FINAL ENVIRONMENTAL IMPACT STATEMENT

U.S. Marine Corps Grow the Force at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point, North Carolina



December 2009

In cooperation with the U.S. Army Corps of Engineers



Final Environmental Impact Statement for the U.S. Marine Corps Grow the Force in North Carolina

Lead Agency:	U.S. Marine Corps
Cooperating Agency:	U.S. Army Corps of Engineers, Wilmington District
Title of Proposed Action:	Grow the Force in North Carolina: Marine Corps Base (MCB) Camp Lejeune, Marine Corps Air Station (MCAS) New River, and MCAS Cherry Point
Designation:	Final Environmental Impact Statement

Abstract: This Final Environmental Impact Statement (EIS) has been prepared by the U.S. Marine Corps (USMC) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 *et seq.*); the Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations 1500-1508); and U.S. Marine Corps Order 5090.2a, Change 2. The proposal evaluated in this Final EIS would permanently increase USMC end forces by 9,900 Marine Corps and civilian personnel at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point. The purpose of the Proposed Action is to provide the infrastructure to support the permanent increases at these three Installations. The USMC needs this Proposed Action to implement President Bush's 2007 mandate and Congressional direction to increase overall USMC end strength across its war-fighting organizations by Fiscal Year 2011. This Final EIS analyzes several action alternatives to support this permanent increase. Depending on the alternative, the Proposed Action may include: 1) new infrastructure, or 3) relocating and realigning existing units and personnel to consolidate and better support the three Installation's missions. The Proposed Action evaluated in this EIS includes only required activities necessary to support permanent personnel increases at USMC Installations in North Carolina, and does not include actions at other USMC bases.

The Final EIS analyzes the potential impacts of three action alternatives and the No-Action Alternative. Environmental resource topics analyzed include land use and coastal zone management; recreation and visual resources; socioeconomics; community services and facilities; transportation and traffic; utilities and infrastructure; hazardous materials, toxic substances, and hazardous waste; noise; air quality; natural resources; earth resources; water resources; cultural resources; and cumulative impacts.

Point of Contact:	Mr. Michael H. Jones
	Naval Facilities Engineering Command, Mid-Atlantic
	Building C, Room 3012, 6506 Hampton Blvd.
	Norfolk, VA 23508-1278
	Telephone: 757-322-4942

EXECUTIVE SUMMARY

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ES.1 INTRODUCTION

The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. § 4321 *et seq.*) requires Federal agencies to examine the environmental effects of major federal actions in an Environmental Impact Statement (EIS), which is a detailed public document that provides an assessment of the potential effects that a major Federal action may have on the human, natural, or cultural environment. The United States Marine Corps (USMC) has prepared this EIS to assess the potential impacts associated with permanently increasing USMC forces at three USMC Installations in North Carolina. These Installations include: Marine Corps Base (MCB) Camp Lejeune, Marine Corps Air Station (MCAS) New River, and MCAS Cherry Point. The USMC is the lead agency for the EIS. The Wilmington District of the U.S. Army Corps of Engineers (USACE) is a cooperating agency and has indicated intent to formally adopt this EIS, in whole or in part, provided that it meets USACE requirements relative to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 (correspondence provided in Appendix A of the EIS).

The USMC needs to be prepared to meet any potential crisis or conflict, have the speed and agility to move immediately and respond at a level that is consistent with the type of conflict encountered; and meet the challenges and opportunities of a rapidly changing world and emerging threats. To meet these needs, President Bush announced, in the January 2007 State of the Union address, his decision to permanently increase USMC forces by Fiscal Year 2011 (FY11). This initiative received Congressional approval and funding and is being implemented across USMC fighting organizations. The purpose, therefore, of this Proposed Action, is to accommodate the permanent increase of forces at three North Carolina USMC Installations. The Proposed Action is needed to support and implement the President's mandate and Congressional direction to increase end strength across the USMC war-fighting organizations by FY11.

MCB Camp Lejeune and MCAS New River are located in southeastern North Carolina, approximately 50 miles north-northeast of Wilmington (Figure ES-1). To the north, MCB Camp Lejeune and MCAS New River are bounded by the City of Jacksonville, North Carolina; to the south, MCB Camp Lejeune extends to the Atlantic Ocean. MCAS New River abuts MCB Camp Lejeune and uses services (i.e., wastewater, roads, and transportation infrastructure) provided/maintained by MCB Camp Lejeune. MCAS Cherry Point is located approximately 50 miles east-northeast of MCB Camp Lejeune in Havelock, North Carolina. Its northern boundaries end at the Neuse River and for the most part, MCAS Cherry Point is bounded by Highway 70 in the south.



Figure ES-1 Regional Area

ES.2 BACKGROUND

Marines are currently deployed around the world at an increased level and duration, causing hardship for Marines and their families and impacting their quality of life. Additionally, USMC Commanders have been challenged in their ability to provide appropriate training which allows the USMC to fully exercise a sophisticated skill set enabling the Marine Air Ground Task Forces (MAGTF) (organized to support Combatant Commanders in various regions, including Europe, Africa, Southwest and Southeast Asia, and Central and South America) to respond quickly and effectively to global crises and conflicts.

USMC mission and subsequent training requirements are derived from Congress' mandate for the USMC to be the Nation's — . . versatile, Expeditionary Force in readiness. . . . To be the most ready when the nation generally is least ready."¹ USMC training requirements are well-defined and structured to provide combat-ready Marines. From the individual to the unit level, training is constantly adapting to meet new challenges in addressing conflicts. The USMC training system provides the means to achieve exacting levels of Marine combat readiness across the entire spectrum of military operations including: working with allies to maintain peaceful relations; deterring enemies through combat; and assisting foreign nations in providing essential services to their populace.² Reduction of the time available to train because of the current 1:1 dwell time (or the time a Marine spends deployed versus the time stationed at home base) complicates the USMC's ability to provide combat-ready unit training in war-fighting capabilities.

To avoid these negative impacts to readiness, training, mission, and quality of life, the Secretary of Defense in 2007 established a 1:2 deployment-to-dwell ratio goal for all active component forces.³ A 1:2 ratio means that Marines would spend twice as much time stationed at home than deployed. The increased dwell time for Marines would: help alleviate the strain on units abroad; provide operational units additional training time to prepare for combat operations abroad; and provide a better quality of life.

To meet the Secretary of Defense's intent to avoid negative impacts to the combat mission, training, and quality of life, the USMC proposed an incremental permanent increase in its overall national end strength from approximately 180,000 to 202,000 Marines by the end of FY11.⁴ This increase in end strength, termed —Growthe Force," would ensure that Marines are properly prepared and trained for traditional combat where the enemy is well defined and fighting occurs in one regional area. The increase would also

¹ Public Law 82-416, 1952.

² The Long War, Send in the Marines. 2008. USMC Headquarters.

³ Statement of General James T. Conway, Commandant of the USMC. 2007. Before the House Armed Services Committee on USMC Posture. Washington, DC. 1 March.

⁴ Note that subsequent the President's announcement, the USMC has exceeded its recruitment goals. As of March 2009, total end-strength of the USMC has reached 201,000.

allow Marines to support the more prevalent non-traditional conflicts that occur in the –Long War" (now referred to as –Oerseas Contingency Operations" under the new Administration). The Long War is typified by multifaceted conflicts (such as terrorism) that span across generations and the globe. Consequently, in January 2007, under recommendation of the Secretary of Defense⁵, the President announced that over the next 5 years, the USMC would increase their end strength from 180,000 to 202,000.

The addition of approximately 22,000 Marines will be accommodated across the USMC organization in a manner that enhances its existing structure. In 1952, Congress directed the Marine Corps' composition as an air-ground combined arms force. This integrated force, known as the MAGTF, has unique and incomparable war-fighting capabilities. The MAGTF is organized along a regional construct to support Combatant Commanders in various areas on the globe, including Europe, Africa, Southwest and Southeast Asia, and Central and South America (U.S. Marine Corps Headquarters 2008). MAGTFs are supported by three levels of operating organizations: Marine Expeditionary Forces (MEF), Marine Expeditionary Brigades (MEB), and Marine Expeditionary Units (MEUs). There are three USMC MEFs (I, II, and III) corresponding to the three-region construct, which represent the biggest MAGTF organizations and constitute the principal war-fighting organizations used to meet larger crises or contingencies. The MEFs are composed of a headquarters element, a ground combat element (GCE), an aviation combat element (ACE), and a logistics combat element (LCE) under a single command for an integrated combined arms force.

Following Operation Desert Shield/Storm in 1991, the Marine Corps reduced in size from end strength of 196,000 to 176,000. This reduction was accomplished in large part by the de-activation of units and commands usually of battalion or squadron size. When this reduction was completed, the 2nd Marine Division of the II MEF (headquartered in MCB Camp Lejeune) was not balanced in comparison to the I MEF (headquartered in MCB Camp Pendleton, California). The infantry regiments in the I MEF each had four infantry battalions assigned, while those in the II MEF only had three assigned infantry battalions. The III MEF, stationed primarily in the Pacific, has one regimental headquarters in Okinawa, one in Hawaii, and three battalions that deploy to Japan from the United States. Under the Grow the Force initiative, this imbalance would be rectified by adding a significant portion of the growth to units within the II MEF.

⁵ Major General Johnson Force Requirements Determination Process before the House Armed Services Committee. January 30, 2007 (Final).

To identify the specific number of personnel and the units where they would be needed to best support the MAGTF organizing structure, the USMC undertook a rigorous screening analysis called the Total Force Structure Process. The goal of this Process was to determine force requirements that balanced the need to comply with the Department of Defense (DoD) policy on 1:2 deployment-to-dwell ratio⁶ with the requirement to meet the core MAGTF training competencies. The Process applied strategic guidance, evaluated policy constraints, and considered commander-generated recommendations to identify the capabilities needed to execute the USMC ever-evolving missions. The Total Force Structure Process recommendations relied on a detailed, integrated examination of doctrine, organization, training, materiel, leadership, personnel, and facilities to ensure that no aspect of the enterprise was ignored and any new requirements were identified.

The Total Force Structure Process was the mechanism the USMC used to identify alternative basing locations. To identify the specific units (i.e., installations) that should receive additional personnel, the USMC used the following specific criteria: 1) personnel increases must promote, support, and/or be consistent with existing National Security, Defense, and USMC mission requirements at an installation; 2) implementation of personnel increases at an installation must be reasonably feasible with respect to cost; and 3) personnel increases must not hinder the sustainability of an installation or its mission. Through this process of evaluating USMC organizations across the globe, ten Installations associated with the I and II MEF were identified for Marine Corps growth. Personnel increases at these installations would not further complicate, hinder, or jeopardize their missions or combat readiness. By augmenting existing units at USMC Installations, with Marines already possessing the appropriate skill sets, there would be the least interruption to the receiving units' mission and combat readiness.

Of the ten, three Installations in North Carolina were selected for gains of about 9,900 active-duty and civilian personnel, which include formal Military Occupational Specialty school students.

ES.3 PROPOSED ACTION

Proposed personnel increases to USMC North Carolina Installations would include approximately 8,050 active-duty Marines, close to 530 formal Military Occupational Specialty school students (junior enlisted Marines transitioning from Boot Camp to their next phase of formal training before being assigned to their operational unit), and about 1,320 civilians, for a total increase of approximately 9,900 personnel (Table ES-1). Also illustrated in this table are the FY06 baseline conditions at each Installation. FY06 was chosen as the baseline year because it represents conditions the year prior to President Bush's

⁶ Secretary of Defense Memorandum. 2007. Utilization of the Total Force. Washington, DC. 19 January.

January 2007 announcement of USMC-mandated increases in end strength. To support this growth, the USMC proposes a combination of: 1) new infrastructure construction (e.g., buildings, roads, and utility lines); 2) demolition and/or upgrades to existing infrastructure; and/or 3) relocating existing units and personnel at the Installations to consolidate and better support the combat missions. These estimates represent the best available data; while there may be some variations that occur as the Proposed Action is implemented, the projected increases should remain representative of the gains expected.

USMC End Force Population						
Installation	FY06 Baseline	Projected Increase	% Increase from Baseline			
MCB Camp Lejeune						
Active Duty	36,823	6,218	16.9			
Formal School Students ¹	**	529	N/A			
Civilians	4,509	959	21.3			
MCB Camp Lejeune Subtotal	41,332	7,706	18.6			
MCAS New River						
Active Duty	6,487	1,267	19.5			
Civilians	474	144	30.4			
MCAS New River Subtotal	6,961	1,411	20.3			
MCAS Cherry Point						
Active Duty	8,420	565	6.7			
Civilians	5,368	219	4.1			
MCAS Cherry Point Subtotal	13,788	784	5.7			
USMC North Carolina						
Active Duty	51,730	8,050	15.6			
Formal School Students ¹	**	529	N/A			
Civilians	10,351	1,322	12.8			
North Carolina Total	62,081	9,901	15.9			

Table ES-1 Projected Increase in North Carolina USMC End Forces

¹ Marine formal school student estimate represents average monthly student population. No associated dependent population increases would occur due to the transient nature of this population.

** FY06 Formal School Students baseline numbers are included in Active Duty numbers.

Gains in Marine and civilian personnel directly associated with the Proposed Action would also result in associated gains in dependent populations (spouses and children). Based on the USMC-wide averages of dependents associated with the expected distribution of Marines by rank, the associated increase in dependent population is estimated at approximately 9,448. Table ES-2 provides a breakdown of the associated dependent increases at each of the three Installations.

Dependent Population Associated with USMC End Force Population						
MCB Camp Lejeune	FY06 Baseline	Projected	% Increase			
Active Duty Dependents	36,287	5,449	15.0			
Civilians	8,116	1,736	21.4			
MCB Camp Lejeune Subtotal	44,403	7,185	16.2			
MCAS New River						
Active Duty	6,787	1,109	16.3			
Civilians	853	262	30.7			
MCAS New River Subtotal	7,640	1,371	17.9			
MCAS Cherry Point						
Active Duty	8,297	496	6.0			
Civilians	9,662	396	4.1			
MCAS Cherry Point Subtotal	17,960	<i>892</i>	5.0			
USMC North Carolina						
Active Duty	51,371	7,054	13.7			
Civilians	18,632	2,394	12.8			
USMC North Carolina Total	70,003	9,448	13.5			

 Table ES-2 Projected Increase in Dependent Populations

ES.4 ALTERNATIVES

Analysis of alternatives forms the core of the NEPA process. In compliance with NEPA and CEQ regulations, the USMC must consider reasonable alternatives to the Proposed Action. Only those alternatives determined to be reasonable relative to their ability to fulfill the need for a Proposed Action warrant detailed analysis. Through the evaluation that took place in the USMC Total Force Structure Process (refer to Section ES.2 and the full EIS for more information), the USMC examined a range of alternatives to identify units to receive augmentation; determine those deemed reasonable; and summarize those not carried forward for detailed analysis. This process identified three Installations in North Carolina to receive increases in personnel.

The following discussion presents the No Action Alternative and the three action alternatives that would best meet the II MEF mission and operational needs, as well as address the comments received during the scoping process. The No Action Alternative is described first, because it represents the baseline conditions from which potential impacts of the action alternatives may be gauged. The alternatives include:

ALTERNATIVE 1 - NO ACTION ALTERNATIVE

For this EIS, the No Action Alternative serves as the baseline from which impacts are compared. The last quarter of FY06 (comprising calendar year July through September 2006) was chosen as the baseline. While this alternative does not reflect current conditions, it does reflect conditions that existed prior to the President's January 2007 announcement of USMC increases in end strength. Under the No Action Alternative, the permanent, incremental increase of Marine Corps personnel at North Carolina Marine Corps Installations would not occur, nor would any construction activities related to the Grow the Force

permanent personnel increase be undertaken. While this does not meet the USMC's purpose and need, evaluating this alternative is in accordance with 40 Code of Federal Regulations (CFR) 1502.14, whereby decision makers can compare the magnitude of potential impacts of not taking action with that of implementing any one of the action alternatives. Therefore, the No Action Alternative is evaluated further in this EIS. Tables ES-1 and ES-2 detail the FY06 baseline personnel and dependent populations at each Installation.

ALTERNATIVE 2 - PREFERRED ALTERNATIVE

Under Alternative 2 (Preferred Alternative), the permanent, incremental increase of Marine Corps personnel at North Carolina Marine Corps Installations would occur at all three Installations as indicated under the Proposed Action (Table ES-1). Marine personnel would grow by 7,706 at MCB Camp Lejeune, 1,411 at MCAS New River, and 784 at MCAS Cherry Point (these numbers include active duty, civilians, and Military Occupational Specialty students). MCB Camp Lejeune would experience an increase of approximately 19 percent in Installation personnel when compared to the baseline. MCAS New River would experience a 20-percent increase in growth from FY06 levels, while MCAS Cherry Point would experience nearly a 6-percent increase in Installation growth. In total, this represents an approximate 15-percent increase in permanent USMC end strength in North Carolina.

The USMC proposes to support this permanent growth through a combination of:

- 1. Constructing new infrastructure such as:
 - headquarters, administrative, and educational facilities;
 - operations and maintenance buildings;
 - lodging accommodations (e.g., bachelor enlisted quarters [BEQs] and mess halls);
 - roads, parking areas, wastewater/stormwater drainage systems, waste disposal systems, and power/communication lines; and
 - community support facilities like fitness/recreation centers, medical/dental clinics, and retail exchanges.
- 2. Relocating personnel within the Base or Air Stations to consolidate parent units and/or better support compatibility between missions found within particular cantonment areas.
- 3. Demolishing and/or upgrading existing infrastructure.

- 4. Facilities would also be sited to:
 - use existing infrastructure to the greatest extent possible;
 - coincide with and/or be a complement to existing missions, operations, and functions;
 - establish facilities on developed, cleared, or previously disturbed lands;
 - avoid areas conveyed for housing privatization initiatives;
 - minimize impact to the environment (e.g., wetlands and sensitive species habitat); and
 - take deployment schedules into consideration when undertaking construction.

In accordance with USMC policy, all new building projects with design starts after January 3, 2007 must comply with the Energy Policy Act of 2005 (as codified under 10 CFR 433 and 435). As of FY09, new building construction must also achieve Silver-Level ratings under the Leadership in Energy and Environmental Design (LEED) certification process. This is a rating system for sustainable building design, construction, and maintenance developed and maintained by the United States Green Building Council.

The discussion below presents the specific construction/development elements proposed under Alternative 2 (Preferred Alternative) at all three Installations.

ALTERNATIVE 2 - MCB CAMP LEJEUNE/MCAS NEW RIVER

MCB Camp Lejeune and MCAS New River would accommodate the permanent increases through new infrastructure (including buildings, roads, and utility lines) construction and upgrades. Projects directly related to Grow the Force and projects identified as —ore" would be constructed. These core construction projects include a list of proposed new facilities that were already planned and programmed by Base Planners when Grow the Force was announced, but which had not yet been reviewed under the NEPA. These projects were not initially identified as Grow the Force projects but would occur within the same areas and timeframe, and in many cases (e.g. bachelor enlisted quarters) would support both existing personnel and new incoming personnel from Grow the Force.

Table ES-3 contains a list of the projects proposed as well as estimated facility footprints. Due to the number of projects, and the processes and time associated with military construction planning, programming, and funding, the *specific* locations for each of the numerous proposed facilities at MCB Camp Lejeune have not been sited. Eight potential cantonment planning areas were carried forward for consideration based on future planning efforts, the functions of the proposed facilities, and the absence of insurmountable (i.e., not costly or time critical) constraints. The cantonment planning areas identified at

MCB Camp Lejeune are Hadnot Point, Wallace Creek, French Creek, Courthouse Bay, Rifle Range (Stone Bay), Camp Devil Dog, Camp Geiger, and Camp Johnson (Figure ES-2). Within each of these planning areas, proposed infrastructure development is identified in blue; some of the proposed infrastructure, however, would occur outside general planning areas and is indicated in red. At MCB Camp Lejeune, construction and/or infrastructure upgrades would disturb approximately 1,717 acres of lands or 1.4 percent of the total *land* area (120,423 acres) within the Base's boundaries.

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Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)				
Hadnot Point							
Consolidated Issue Facility/Nuclear, Biological, and Chemical	GTF	P1258	14				
Hadnot Point Utility Infrastructure Expansion	GTF	P1264	45.6				
Dental Clinic at Mainside	GTE	P1204	3.5				
10th Marine Regiment and Tank Battalion Armory	GTE	P1303	4				
Consolidated Information Technology/Telecom Complex	GTF	P1311	16				
Indoor Fitness Facility	GTF	P1257	25				
2nd Marine Division Tank Battalion/Company Headquarters	GTF	P1300	20				
Mess Hall	GTF	P1301	4				
Parking Deck	GTF	P1321	2.5				
Regimental/Battalion Headquarters 10th Marine Regiment	Core	P1242	7				
2nd Marine Division Training Center and Parking Deck	Core	P1299	12.5				
Mainside Exchange Addition	Core	P1307	6.5				
Installation Personnel Administration Center Facility	Core	P1134	5				
Mess Hall and Parking Deck	Core	P883	6.5				
Light Armored Vehicle Maintenance Shelters	Core	P1131	7.5				
II MEF Simulation Center	Core	P1338	10				
Detainee Facility	Core	P1310	5				
Simulation Integration Center	Core	P1346	5				
			100 (
Hadn	ot Point Proposed P	rojects Total Acres	199.6				
Wallace Cre	eek						
MP Company Complex (Marine Headquarters Group, 2nd MEF)	GTF	P1239	10				
2nd Air Naval Gunfire Liaison Company Maintenance/Operations Complex	GTF	P1240	10				
8th Communications Battalion Complex	GTF	P1279	10				
2nd Radio Battalion Complex	GTF	P1280	10				
2nd Intelligence Battalion Operations Complex	GTF	P1034	25				
2nd Marine Expeditionary Force Armory, Wallace Creek	GTF	P1323	4				
Two Bachelor Enlisted Quarters	GTF	P1315	9				
Bachelor Enlisted Quarters and 900-car parking garage	GTF	P1316	7				
Two Bachelor Enlisted Quarters	GTF	P1249	9				
Bachelor Enlisted Quarters	GTF	P1321	5				

Table ES-3 MCB Camp Lejeune Alternative 2 Proposed Projects

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)		
Bachelor Enlisted Quarters and 900-car parking garage	GTF	P1322	7		
Battalion Area Road Network	GTF	P1298	13.6		
Marine Heavy Group Headquarters and Support Facilities	Core	P1342	12.5		
Wallac	e Creek Proposed F	Projects Total Acres	132.1		
Courthouse	Bay				
Reconnaissance Platoon Operations/Maintenance Complex	GTF	P1237	5		
Mess Hall Addition	GTF	P1256	1		
Medical/Dental Clinic Addition	GTF	P1273	1		
2nd Combat Engineer Maintenance/Operations Complex	GTF	P1253	50		
Courthouse Bay Utility Expansion	GTF	P1266	20		
Marine Corps Engineer School (MCES) Operations and Support Facilities	GTF	P1309	5		
Bachelor Enlisted Quarters	GTF	P1318	7		
Bachelor Enlisted Quarters	GTF	P1251	12		
Bachelor Enlisted Quarters	GTF	P1254	12		
Bachelor Enlisted Quarters	GTF	P1255	12		
Amphibious Assault Company Complex	GTF	P1235	36		
Fire Station	Core	P1203	3		
MCES Community Support Facilities	Core	P1305	0.5		
MCES Applied Instruction Facility	Core	P1312	20		
Expeditionary Fighting Vehicle Maintenance Facility	Core	P1010	5		
Courthouse Bay Proposed Projects Total Acres					
French Cre	ek				
Explosive Ordnance Division Addition	GTF	P1246	2		
French Creek Utility Expansion	GTF	P1265	20		
Mess Hall	GTF	P1267	1.5		
Medical/Dental Clinic Addition	GTF	P1274	3		
Two Bachelor Enlisted Quarters	GTF	P1317	32		
2nd Marine Logistics Group Armory Addition	GTF	P1302	1		
Additions to Combat Logistics Battalion Facilities	GTF	P1241	4		
Additions to Marine Logistics Group Communication Facilities	GTF	P1245	2		
Material Distribution Center	Core	P1035	13		
Location Exchange Addition	Core	P1232	2		
2nd Marine Logistics Group Headquarters/Command Element Administrative Complex	Core	P1252	20		
Tri-Marine Expeditionary Unit Operations Facility	Core	P1199	10		
Combat Logistics Battalion Complex	Core	P1244	27		
8th Engineer Operations/Maintenance Complex	Core	P919	14.8		
Mess Hall, French Creek	Core	P1161	1.5		
French Creek Proposed Projects Total Acres					

Table ES_3	MCR Camp	Laiauna	Altornativo	2 Dro	nasad Praiacts
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Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Rifle Range (Stor	ne Bay)		
Bachelor Enlisted Quarters	GTF	P1286	12
Bachelor Enlisted Quarters	GTF	P1314	9
Special Operations Tactical Group-Embassy Complex	Core	P1349	5
Rifle Range (Sto	ne Bay) Proposed P	rojects Total Acres	26
Camp Devil 1	Dog		
School of Infantry-EAST Field Training Facilities	GTF	P1269	12
Camp De	evil Dog Proposed P	rojects Total Acres	12
Camp Geig	er		
School of Infantry Training and Operations Facilities	GTF	P1268	46.6
School of Infantry Open Bay Barrack and Mess Hall Addition	GTF	P1313	25
Bachelor Enlisted Quarters	GTF	P1109	12
Motor Transportation/Communications Maintenance Facility	Core	P004	12
Camp	Goigor Proposod P	Projects Total Acres	95.6
Camp Johns	son	Tojecis Totui Acres	75.0
Bachelor Enlisted Quarters	GTF	P1319	9
Bachelor Enlisted Quarters	GTF	P1320	12
Applied Instruction Facility	GTF	P1190	5
Utility Expansion, Camp Johnson	GTF	P1340	2.5
Medical/Dental Clinic	GTF	P1341	1
Staff Non-Commissioned Officer Academy	Core	P003	9
Community Facilities	Core	P1270	37
Administrative/Operational Facilities	Core	P1324	20
MCCSSS Logistics Center of Excellence	Core	P1347	12.4
MISTIC Training Center	Core	P1352	10
Camp J	ohnson Proposed P	Projects Total Acres	117.9
Outside Planning	g Areas		
New Base Road/Brewster Boulevard Improvements ¹	GTF	P1382/1383/1384	219.2
Public Private Venture (PPV) Housing – about 1,350 Houses	GTF	N/A	460
Marston Pavilion Annex	GTF	P1293	12.6
Triangle Outpost Gate	Core	P1165	2.5
Water Treatment Facility	Core	P1043	13.6
Water Treatment Facility, Hadnot Point Phase II	Core	P1355	10
Warehouse ²	Core	P1259	10
Relocation of Base Military Police Working Dogs ³	GTF	P1304	30.2
School Age Child Care Center ²	Core	P1356	2
Child Development Center ²	GTF	P1357	5
Child Development Center ²	GTF	P1358	5

Table ES-3 M(B Camp	Lejeune	Alternative	2	Proposed	Projects
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Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)	
Child Development Center ²	Core	P1359	5	
Child Development Center ²	Core	P1360	5	
Storage Facility, Marine Family Services ²	Core	P1361	10	
Proposed Projec	790.1			
MCB Camp Lejeune Proposed Projects Total Acres				

Table ES-3	MCR Camp	Leieune	Alternative	2 Pr	onosed	Proiects
I ubie LS-J		Lejeune	Allernalive	4 I I	oposea	riojecis

Between publication of the Draft and Final EIS, this project (formerly P1262) was refined and combined with improvements to Brewster Road (formerly P1379) to create a new project that would be done in three phases; Phase I is P1382; Phase II, P1383; and Phase III, P1384. These project phases also include a new road to access the Hospital, called the -ring road."

² The specific location within installation is still to be determined.
 ³ Between the Draft EIS and this Final EIS, this project was moved

Between the Draft EIS and this Final EIS, this project was moved from Hadnot Point Area to this Area.

A major project proposed at MCB Camp Lejeune is a new Base road to alleviate traffic congestion along a portion of North Carolina State Highway 24 (NC 24), lessen the Main Gate wait time off NC 24, and provide an internal connection across the New River to Hadnot Point (Figure ES-3). In addition to the road alignment, a new –ring road" to the hospital would be built, and up to seven borrow pits would be needed to accommodate the anticipated 2-million cubic yards of fill. These sites were chosen for their soil characteristics, compatibility with adjacent land uses, and vicinity to existing Base roads. This fill would be used to support infrastructure development and construction across MCB Camp Lejeune.

In this EIS, the proposed projects and their potential construction boundaries, and the new Base road are analyzed. However, the exact design of the projects, routing of the road, and number, breadth, and depth of the borrow pits are not final until the 100-percent designs are approved. At that time, all final project designs and road alignment will be examined to determine consistency with that evaluated in this EIS. This examination by MCB Camp Lejeune environmental branch personnel will identify whether these final designs: 1) impact areas that were not analyzed in this EIS and will need to be newly evaluated; 2) can be tiered from the analyses done for this EIS; or 3) can be categorically excluded. This examination of projects will be reviewed in accordance with Base Order 11000.1D and executed to assure that NEPA and all other applicable laws, regulations, permitting, and consultation requirements are met prior to the commencement of any ground-disturbing activities.

The entirety of MCAS New River is considered one planning area due to its industrial nature. Approximately 160 acres (about 4.5 percent of the 3,510 acres of total land area) at MCAS New River would be needed to support the proposed development (this estimate includes the construction footprint as well as areas needed for construction material and equipment laydown, parking, landscaping, stormwater catch basins, utilities, sidewalks, construction access and egress). Proposed projects and



Figure ES-2 MCB Camp Lejeune and MCAS New River Proposed Development Areas



Figure ES-3 Proposed New Base Road at MCB Camp Lejeune

estimated facility construction footprints are provided in Table ES-4. Proposed projects would occur primarily on areas of the Installation previously disturbed. Due to its industrial nature (i.e., an air station) and the specific types of infrastructure (e.g., hangar, aircraft maintenance facility) being proposed, exact locations have been determined by the Installation within the proposed development area (Figure ES-4). If these proposed construction sites change significantly, the Installation will ensure all proposals meet the requirements for NEPA documentation in accordance with Base Order 11000.1D and that any future NEPA requirements are met in accordance with all applicable laws, regulations, permitting, and consultation requirements.

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)		
Douglass Gate Security Upgrades	GTF	P712	15		
Installation Personnel Administration Center	GTF	P711	1		
Station Armory	GTF	P690	4		
Child Care Addition	GTF	P715	1		
Gym/Pool	GTF	P714	5.3		
Helicopter Marine Training (HMT) Hangar and Apron	GTF	P705	17		
Parallel Taxiway	Core	P311	16		
Aircraft Parking Apron	Core	P688	51		
Aircraft Maintenance Hangar	Core	P683	10		
Aircraft Maintenance Hangar	Core	P687	10		
Ordnance Magazine	GTF	P709	1		
Squadron Warehouse	GTF	P706	3.5		
Combat Aircraft Loading Area (CALA)	GTF	P710	4		
HMLA/Marine Heavy Helicopter (HMH) Squadrons Bachelor Enlisted Quarters	GTF	P707	9		
Bachelors Enlisted Quarters Access Road and Recreation Area	GTF	P717	3		
Consolidated Hazardous Materials Reutilization and Inventory Management Program (CHRIMP) Warehouse	GTF	P718	1		
Aviation Logistics squadron Addition	GTF	P721	1.6		
Helicopter Maintenance Training Facility	Core	P676	2		
Inventory Management Program Hangar Addition	Core	P675	0.35		
Library	GTF	P724	2		
Theater	GTF	P713	1		
MCAS New River Proposed Projects Total Acres					

Table ES-4 MCAS New River Alternative 2 Proposed Projects



Figure ES-4 MCAS New River Proposed Development Area and Projects

ALTERNATIVE 2 - MCAS CHERRY POINT

At MCAS Cherry Point, the USMC balanced master planning efforts and environmental constraints to identify four proposed development areas on the Station: Marine Air Control Squadron-2 Compound, West Quadrant, North Quadrant, and the Ordnance Storage Area (Figure ES-5); major road expansion is also proposed and would traverse several of these areas. Proposed development would disturb approximately 117 acres (this estimate includes building footprints, as well as additional area needed for parking, landscaping, stormwater catch basins, utilities, and sidewalks) under the Preferred Alternative. Table ES-5 provides the proposed projects and their estimated construction footprints. Due to its industrial nature (i.e., an air station) and the specific types of infrastructure (e.g., hangar, aircraft maintenance facility) being proposed, exact locations have been determined within the development areas (Figure ES-5). If these proposed construction sites change significantly, the Installation will ensure all proposals meet the requirements for NEPA documentation in accordance with Base Order 11000.1D and that any future NEPA requirements are met in accordance with all applicable laws, regulations, permitting, and consultation requirements.

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Ordnance S	Storage Area		
Mobilization and Anti-Terrorist/Force Protection Improvements (Slocum Road Realignment)	GTF	P134	14
Ordnance Magazines	Core	P167	19
0	rdnance Storage	Area Total Acres	33
West Q	uadrant		
Bachelor Enlisted Quarters	GTF	P136	5.4
Roosevelt Boulevard Road Improvements	GTF	P177	30
Marine Support Squadron-1 Compound	GTF	P163	1.8
Marine Aviation Logistics Squadron/Fleet Replacement Enlisted Skills Training (MALS/FREST) Maintenance Hangar	Core	P169	12
Motor Transportation/ Communication Shop	Core	P130	3.8
Water Treatment Facility Upgrade	Core	P193	0.5
Commercial Power/Cargo Refueling	Core	P033	0.2
Family Services Center	GTF	P183	0.8
Addition to CDC Center	GTF	P181	5
Aviation Training System (ATS) Training Complex	GTF	P170	1.5
Ground Support Equipment Shop	Core	P153	1
	West Qua	drant Total Acres	62

Table ES-5 MCAS Cherry Point Alternative 2 Proposed Projects

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
North Q			
Armory ¹	Core	P601	1.5
Station Infrastructure Upgrades	GTF	P176	13.1
Expand Marine Air Control Group/Marine Air Traffic Control Squadron Facilities	GTF	P172	2.5
Marine Air Wing Control Squadron Detachment facility	GTF	P173	2.1
Unmanned Aerial Vehicle Facility Addition Tier II	GTF	P194	0.5
	North Qua	drant Total Acres	19.7
Marine Air Control S	oound		
Marine Air Control Squadron/Marine Air Traffic Control Detachment	Core	P129	2
Marine Air Control	2		
MCAS Cherry Po	116.7		

Table ES-5	MCAS Cherry	Point Alternative	2 Pronosed	Projects
<i>I uble LS-5</i>	MCAS Cherry	Tom Anernanve	2 Froposea	riojecis

¹ Between the Draft EIS and this Final EIS, this project was moved from the Ordnance Storage Area to this area.

ALTERNATIVE 3

Under Alternative 3, there would be a permanent increase of approximately 9,900 personnel associated with the Grow the Force initiative, as described for Alternative 2. However, these Marines and their associated operations would continue to be accommodated at existing facilities, and in temporary and/or relocatable buildings already in place (i.e. no new Grow the Force facilities would be constructed). Core projects would be built, as these are needed to support activities already planned and/or programmed that are not tied to the Grow the Force Initiative.

Projects would be located within the same proposed development areas as described previously under Alternative 2 (refer to Figures ES-2, ES-4, and ES-5). The same siting criteria applied for Alternative 2 were also used to site the core projects. Refer to Tables ES-3, ES-4, and ES-5 for a detailed list of core projects that would be constructed at each Installation. Under Alternative 3, close to 360 acres would be disturbed at MCB Camp Lejeune, approximately 90 acres would be disturbed at MCAS New River, and approximately 40 acres would be disturbed at MCAS Cherry Point. While Alternative 3 would satisfy the



Figure ES-5 MCAS Cherry Point Proposed Development Areas and Projects

purpose and need for the Proposed Action at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point, the Grow the Force projects would not be constructed, and existing infrastructure capacity to support all Marines (those who return from deployment and those related to Grow the Force) would be considerably strained once deployments are curtailed. If these proposed construction sites change significantly, the Installation will ensure all proposals meet the requirements for NEPA documentation in accordance with Base Order 11000.1D and that any future NEPA requirements are met in accordance with all applicable laws, regulations, permitting, and consultation requirements.

ALTERNATIVE 4

Under Alternative 4, there would be a permanent increase of approximately 9,900 personnel associated with the Grow the Force initiative as described for Alternative 2. However, under this alternative, neither the Grow the Force nor core construction projects would occur. Therefore, additional personnel would continue to be accommodated in existing facilities and in temporary/relocatable facilities (or Pre-Engineered Buildings designed with a limited lifespan). As in the case of Alternative 3, the purpose and need for the Proposed Action would be met. However, by not implementing either the Grow the Force or core construction projects, existing facility capacity to support all Marines (i.e. those returning from deployments and the increased population) would be considerably strained, and continued use and replacement of Pre-Engineered Buildings would not be cost effective.

ES.5 ENVIRONMENTAL CONSEQUENCES

This EIS analyzes three action alternatives and the No Action Alternative for the USMC Grow the Force initiative in North Carolina; describes baseline FY06 conditions at the three USMC Installations; analyzes and compares how the alternatives could potentially impact the human, natural and cultural environment; and presents the results. A summary of the impacts by resource area for the alternatives is provided in Table ES-6.

ES.6 OTHER CONSIDERATIONS AND CONSULTATIONS

The Preferred Alternative has been assessed to determine its consistency and compliance with applicable environmental regulations and other plans, policies, and controls. The analysis presented in this EIS indicates that the Preferred Alternative would not conflict with the objectives of applicable plans, policies, and regulations. Table ES-7 (starting on page ES-40) provides a summary of the compliance status for these items.

Alternative 1 –			
No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
LAND USE AND COASTAL ZONE M	ANAGEMENT		
	MCB Camp Le	jeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts would occur due to this alternative. However, since FY06 impacts from other activities within and outside Base boundaries have affected these resources.	Increased demand for off-Base residential land and commercial and public services, specifically in Onslow County, would occur as a result of induced growth from personnel gains on the Base; however, continued adherence to county land use plans and regulations ensures minimal impacts due to growth. With construction of additional on-Base housing, growth and demand for off-Base land resources would decrease or stabilize as on-Base housing becomes available. Construction of proposed facilities, roads, and bridges would result in developing on- Base forested areas. The loss of these forests would have direct impacts on natural, water, recreation, and visual resources. Development, however, within the proposed development areas would be consistent with military land uses at the Base. Potential impacts to coastal zone resources would be consistent to the maximum extent practicable with the enforceable policies of North Carolina's Coastal Zone Management Plan.	 Without construction of additional on-Base housing, growth and demand for local land resources in the surrounding counties would likely be greater than what would be anticipated under the Preferred Alternative. Potential impacts to land use on- Base from Alternative 3 would be the same as those described under Alternative 2, but on a much smaller scale. New facility development would occur and could remove some undeveloped or forested areas. Potential impacts to coastal zone resources would be consistent to the maximum extent practicable with the enforceable policies of North Carolina's Coastal Zone Management Plan. 	Without construction of additional on-Base housing, growth and demand for local land resources in the surrounding counties would likely be greater than what would be anticipated under Alternative 2. On Base, there would be no additional construction or ground disturbance; therefore there would be no impact to coastal zone resources. There is the potential to introduce coastal zone impacts off- Base due to the need to accommodate increases in Marine personnel in the surrounding counties.

Table ES-6 Comparison of Impacts by Resource

Alternative 1 -	Alternative 2- Preferred Alternative	Alternative 3	Alternative 4
LAND USE AND COASTAL ZONE M			
LAND USE AND COASTAL ZONE WA	MCAS New R	liver	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Potential impacts would be the same as those described for the MCB Camp Lejeune Preferred Alternative with the exception that most of the proposed construction would occur in already developed areas as opposed to forested areas. Potential impacts to coastal zone resources would be consistent to the maximum extent practicable with the enforceable policies of North Carolina's Coastal Zone Management Plan.	Potential impacts would be similar to those described for MCB Camp Lejeune Alternative 3, with the exception that most of the proposed construction would occur in already developed areas.	Potential impacts would be similar to those described for MCB Camp Lejeune Alternative 4.
	MCAS Cherry	Point	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Increased demand for off-Station residential land and commercial and public services would occur as a result of induced growth from personnel gains on the Station; however, continued adherence to county land use plans and regulations ensures minimal impacts due to growth. Proposed construction would mostly occur in already developed industrial areas, except for some forested areas in the Ordnance Storage Area and along Roosevelt Boulevard. The location of proposed facilities would be consistent with the master plan and current land use planning categories. Potential impacts to coastal zone resources would be consistent to the maximum extent practicable with the enforceable policies of North Carolina's Coastal Zone Management Plan.	The increased demand for off- Station residential land and commercial public services would be the same as that described for the MCAS Cherry Point Preferred Alternative. The potential impacts to land use on-Station would be the same as those described for the MCAS Cherry Point Preferred Alternative. Potential impacts to coastal zone resources would be consistent to the maximum extent practicable with the enforceable policies of North Carolina's Coastal Zone Management Plan.	Potential impacts would be the same as those described for MCAS Cherry Point Alternative 3. However, since no new development would occur on- Station, impacts to undeveloped areas would not occur.

 Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
RECREATION AND VISUAL RESOUF	RCES		
	MCB Camp Le	jeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts would occur due to this alternative. However, since FY06 impacts from other activities within and outside Base boundaries have affected these resources.	On-Base recreational facilities would be constructed under this alternative and on- Base needs would be met. The proposed facilities and new Base road would remove some areas currently used for hunting. The game inhabiting these areas is expected to relocate to other on-Base sites with little or no impacts to the hunting program. The proposed road, bridges, and facilities on the Base would alter the current viewshed in those areas; however, this would not be inconsistent with adjacent military uses of this viewshed. Growth in the surrounding communities from personnel increases would create additional demands to off-Base local recreation facilities. These facilities and programs are expected to be able to accommodate the demand. Viewsheds are not expected to be adversely impacted off- Base	Impacts to on- and off-Base recreational facilities from the additional Marines and their families would be the same as that described under the Preferred Alternative. Impacts from construction would also be similar to the Preferred Alternative, but on a smaller scale. The new Base road, and other Grow the Force projects, would not be constructed and viewsheds would not be adversely impacted. Impacts to viewsheds outside Base boundaries could occur since increases in Marine personnel would need to be accommodated within the surrounding communities and more construction would be needed.	Additional military personnel would increase the demand for on- Base recreational services. Alternative 4 would not provide additional facilities; therefore, recreational needs may not be met and existing facilities strained. Impacts to off-Base recreational facilities would be similar to Alternative 2, but could be strained by the need to meet increased numbers of Marines off-Base. Impacts to viewsheds outside Base boundaries could occur because increases in Marine personnel would need to be accommodated within the surrounding communities and more construction would be needed.
	MCAS New R	liver	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	On-Station recreational facilities would be constructed under this alternative, with needs being met. The proposed facilities would be constructed in mostly developed, industrial areas and changes to the viewshed are not anticipated. Off-Station impacts would be similar to those found under MCB Camp Lejeune Alternative 2.	Impacts would be similar to those described for the MCAS New River Preferred Alternative, but construction would occur on a smaller scale. Off-Station impacts would be similar to those found under MCB Camp Lejeune Alternative 3.	On-Station impacts would be similar to those described for MCB Camp Lejeune Alternative 4. However, more Marines would live off-Station and may strain local recreational facilities, with more construction impacting off- Station viewsheds.

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
RECREATION AND VISUAL RESOUR	RCES		
	MCAS Cherry	Point	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts would be similar to those described for MCB Camp Lejeune Preferred Alternative. The increased recreational needs would be met with the construction of additional facilities. New construction would occur in mostly developed areas of the Station and would not substantially alter the current viewshed.	Impacts would be similar to those described for MCAS Cherry Point Alternative 2, however, without construction of additional recreation facilities more personnel would likely utilize off-Station sources.	Impacts would be similar to those presented under MCAS New River Alternative 4.
SOCIOECONOMICS (includes econo	mics, housing, demographics, environme	ntal justice, and protection of chil	dren)
	MCB Camp Le	jeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented. There would be no changes due to this alternative to FY06 baseline socioeconomic conditions. However, since FY06 impacts from other activities within and outside Base boundaries have affected the socioeconomic environment in the region.	There would be a population increase on- Base and within the surrounding communities which would increase the demand for housing, utilities, community services, and recreation facilities. This increase would also result in increased annual earnings and economic gain in the region. On-Base housing impacts would be ameliorated with construction of homes and bachelors quarters. Off-Base, it is anticipated that local housing stock could accommodate the increased Marine personnel and their dependents. Regionally, there would be short-term economic gains associated with military construction. On Base, there would be no environmental justice (low-income and minority populations) impacts; however, there could be disproportionate impacts to Onslow County schools and competition for affordable housing.	Increased on-Base housing demand, would not be met since there would be no construction of these units under this alternative. Off-Base, housing needs would need to be met but it is anticipated that local housing stock could accommodate this increase. Regionally, there would be short- term economic gains associated with on-Base military and off-Base construction. Long-term gains would occur as well as increased expenditures associated with this growth, but at a lesser degree than the Preferred Alternative. Environmental justice impacts would be similar to those presented under the MCB Camp Lejeune Preferred Alternative.	Impacts would be similar to those found under MCB Camp Lejeune Alternative 3.

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
SOCIOECONOMICS (includes econo	mics, housing, demographics, environme	ental justice, and protection of chi	ldren)
	MCAS New F	River	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts would be similar to those described for MCB Camp Lejeune Alternative 2.	Impacts would be similar to those described for the MCB Camp Lejeune Alternative 3.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 3.
	MCAS Cherry	Point	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative. There would be no change from FY06 baseline socioeconomic conditions at MCAS Cherry Point. However, since FY06 impacts from other activities within and outside Station boundaries have affected the socioeconomic environment in the region.	Impacts would be similar for demographic changes, annual earnings, housing stock, and economic gains to those presented under MCB Camp Lejeune Alternative 2. However, it is not anticipated that there would be any environmental justice impacts on-Station or off.	Impacts would be similar for demographic changes, annual earnings, housing stock, and economic gains to those presented under MCAS Cherry Point Alternative 2.	Impacts would be the same as those described for MCAS Cherry Point Alternative 3.
COMMUNITY SERVICES AND FACIL	ITIES	•	•
	MCB Camp Le	ejeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts would occur to FY06 baseline conditions. However, since FY06 impacts from other activities within and outside Base boundaries have affected these services.	Personnel increases would create additional demands for on-Base emergency services and law enforcement, and increase the current wait-time for child care facilities. Construction of on-Base infrastructure would alleviate the strain on community services at the Installation. Off-Base, community services may be affected in their ability to respond to emergency situations and law enforcement. In addition, if existing expansion plans are not implemented, community school systems may be limited in their ability to provide services.	Impacts to on-Base services would be similar to those presented under Alternative 2; however, on-Base wait times for child care facilities could increase because fewer facilities would be built under this alternative. Off-Base, community services would be impacted similarly as described under MCB Camp Lejeune Alternative 2.	Impacts to on-Base services would be similar to those presented under Alternative 2; however, wait times for on-Base child care facilities could be increased because no child care centers would be built. Off-Base, community services would be impacted similarly as described under MCB Camp Lejeune Alternative 2.

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
COMMUNITY SERVICES AND FACIL	ITIES		
	MCB Camp Lejeur	e (cont'd)	
	Increased school age population in surrounding communities would result in further strain on the Onslow County School District. County plans for constructing additional schools may not alleviate all of the current capacity issues. However, as additional on-Base housing is constructed, military personnel would likely relocate on Base from surrounding communities, alleviating some of the strain on local area community services, specifically to Onslow County Schools.	Because on-Base Grow the Force projects would not be built, there would be severe strains placed on local school districts, particularly on Onslow County School District's ability to meet this increase population of school-aged children.	Impacts to local school districts would be similar to those presented under MCB Camp Lejeune Alternative 3.
	MCAS New R	River	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Construction of on-Station facilities and infrastructure would alleviate the strain on community services. The proposed child care center addition would lessen the strain on the existing center, but may not alleviate the increased demand from the Grow the Force initiative. The impact to off-Base community services would be similar to those described for MCB Camp Lejeune Alternative 2.	Impacts would be similar to those described under MCB Camp Lejeune Alternative 3.	Impacts would be similar to those presented for MCB Camp Lejeune Alternative 3.

 Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4		
COMMUNITY SERVICES AND FACIL	ITIES				
	MCAS Cherry	Point			
Impacts would be the same as those described for MCB Camp Lejeune No Action Alternative. However, since FY06 impacts from other activities within and outside Station boundaries have affected the services in the region.	On-Station, increases in personnel would create additional demands on emergency services and law enforcement, as well as child care; however, not to such an extent to impair their ability to meet these increased demands. There would be short-term impacts until the new facility construction is completed. No negative impacts to regional law enforcement, emergency, and child care community services are anticipated. A slight strain could occur within high schools in the Craven County School District.	Impacts would be similar to those presented for MCAS Cherry Point Alternative 2; however, off-Station community services could be strained to meet increased numbers of Marine populations living off- Station.	Impacts would be the same as those described under MCAS Cherry Point Alternative 3.		
TRANSPORTATION/TRAFFIC	TRANSPORTATION/TRAFFIC				
	MCB Camp Le	jeune			
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, FY06 baseline conditions with intersections failing and congestion on local networks would continue.	Impacts to the on-Base roadway network would be substantially benefitted from the new Base road and Triangle Outpost gate. Off-Base benefits would occur in the form of relief for a portion of NC 24 adjacent to the Installation with the reduction of approximately 30 percent of traffic having to use NC 24 to cross New River and Northeast Creek and enter the Main Gate.	Impacts to the on-Base network would suffer and deteriorate due to congestion on major NC 24 roadway segments, intersections, and Main Gate access. Off-Base, congestion at the Main Gate and along NC 24 would continue and introduce the potential for increased traffic accidents.	Impacts to traffic and transportation would be the same as those described for MCB Camp Lejeune Alternative 3.		

Table ES-6	Comparison	of Impacts	by	Resource
			~	

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
TRANSPORTATION/TRAFFIC			
	MCAS New R	liver	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts to the on-Station network would be improved with the new Base road. Off- Station benefits would be the same as those described for MCB Camp Lejeune Preferred Alternative.	Impacts would be the same as those presented for MCB Camp Lejeune Alternative 3.	Impacts would be similar to those described for MCB Camp Lejeune Alternative 3.
	MCAS Cherry	Point	
The permanent, incremental establishment of Marines associated with Grow the Force initiative would not be implemented. Current traffic congestion and impacts would continue.	Beneficial impacts to the traffic network would occur with the realignment of Slocum Road to avoid the Ordnance Storage Area. Roosevelt Boulevard improvements would alleviate congestion, especially for outbound traffic in evening peak hours. Off-Station, traffic along U.S. Highway 70 and congestion at the Main Gate during morning and evening rush hours would be alleviated.	On-Station traffic would be adversely impacted due to the limitations placed on Slocum Road to accommodate the safety distances required around the Ordnance Storage Area. Increased congestion would occur on Roosevelt Boulevard especially for outbound peak hour traffic. Off-Station traffic in Havelock would be adversely affected by probable re-direction of traffic from Slocum Road through the City of Havelock to access gates other than the Main Gate.	Impacts would be the same as those described under MCAS Cherry Point Alternative 3.

Table ES-6	Compar	ison of	f Impacts	bv .	Resource
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Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4					
UTILITIES/INFRASTRUCTURE								
MCB Camp Lejeune								
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts to FY06 baseline conditions would occur due to this alternative. Capacity issues with respect to telecommunications would continue on Base.	There are capacity issues with respect to electricity and communications; however, planned infrastructure expansions would alleviate this concern. Short-term impacts could occur until upgrades to on-Base infrastructure are complete. Onslow County wastewater system impacts are anticipated. The potential capacity concerns could be lessened through purchases made by Onslow Water and Sewer Authority (ONWASA) and planned expansions to the Jacksonville Wastewater Treatment Plant. With these future changes, the increased demand is not likely to adversely impact off-Base wastewater treatment.	Growth on- and off-Base would increase demand on utility services. Impacts to on- and off-Base utility systems would be similar as MCB Camp Lejeune Alternative 2. On Base, core projects would alleviate current strains on the infrastructure and purchases by ONWASA and Jacksonville wastewater treatment plant expansion would minimize adverse effects off-Base.	On-Base increased demands would not be met and services would be strained. Off-Base, impacts would be similar to those presented under MCB Camp Lejeune Alternative 3.					
MCAS New River								
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts are similar to those presented under MCB Camp Lejeune Alternative 2.	Impacts would be similar to those described for MCB Camp Lejeune Alternative 3.	Impacts would be similar to those presented under MCB Camp Lejeune Alternative 4.					
MCAS Cherry Point								
No additional impacts to the FY06 baseline conditions at MCAS Cherry Point would occur due to this alternative.	An increased demand on utility services on- and off-Station would occur. It is anticipated that this demand can be met both on- and off-Installation.	Impacts would be the same as MCAS Cherry Point Alternative 2.	Impacts would be the same as MCAS Cherry Point Alternative 2.					

Table ES-6 Comparison of Impacts by Resource
Alternative 1 -	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
No Action Alternative			
HAZARDOUS MATERIALS, TOXIC SU	BSTANCES, AND HAZARDOUS WASTE		
	MCB Camp Le	ejeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts to the FY06 baseline conditions would occur due to this alternative.	Under the Preferred Alternative there would be increases in use, storage, and handling of hazardous materials and wastes. The ability to meet the increased level of hazardous materials generated and wastes disposed would be managed through existing acquisition, handling, storage, and disposal processes—no impacts are anticipated. Construction activities would increase the possibility of exposure to contaminated sites within the proposed development areas. Activities in these areas, however, would be conducted in accordance with existing safety procedures. Disposal of construction wastes would follow existing rules and regulations associated with such disposal activities. Off-Base it is not anticipated that this increase in wastes would adversely affect regional disposal systems accepting these	Impacts to hazardous materials and waste management under Alternative 3, on Base and off, would be similar to those described for MCB Camp Lejeune Alternative 2. Fewer on-Base construction projects would mean a decrease in exposure to contaminated sites and in wastes generated; therefore, there would be negligible impacts to safety. Off-Base it is not anticipated that this alternative would adversely impact the capacity of regional disposal systems' ability to accept such wastes.	Impacts to hazardous materials and waste management under Alternative 4, on Base and off, would be similar to those described for MCB Camp Lejeune Alternative 2. No Grow the Force or core construction would occur so exposure to on-Base contaminated sites would not occur. Off-Base, impacts would be similar to those presented under MCB Camp Lejeune Alternative 3.
	wastes.	<u>.</u>	
	MCAS New R	liver	
Impacts would be the same as those described for MCB Camp Lejeune No Action Alternative.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 2.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 3.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 4.
	MCAS Cherry	Point	
Impacts would be to the same as those described for MCB Camp Lejeune No Action Alternative.	Impacts would be the same as those listed for MCB Camp Lejeune Alternative 2.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 3.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 4.

Alternative 1 -	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
No Action Alternative			
TOBE			
	MCB Camp Le	jeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts would occur due to this alternative to FY06 baseline conditions. However, since FY06 impacts from other activities within and outside Base boundaries have changed the noise environment.	Construction noise would be generated only on a short-term, intermittent basis and would not cause hearing impacts nor increase the noise levels experienced on Base or by adjacent communities. The new Base road would add a new noise source in residential areas. However the noise would be controlled through low speed limits through the residential areas. Noise levels at MCB Camp Lejeune due to range activities were evaluated under a separate EA. It was found that noise levels would not increase to such an extent to	There would be no on-Base construction-related noise; noise outside of the Base would be generated by construction to accommodate increases in personnel within the surrounding community; however, no adverse impacts to surrounding communities would occur. Noise-generated impacts within the ranges would be to the same as those found under MCB Camp Lejeune Alternative 2.	
	cause any adverse impacts. MCAS New R	liver	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Construction-generated noise impacts would be similar to those found under MCB Camp Lejeune Alternative 2. Noise levels at MCAS New River due to range activities were evaluated under a separate EA. Negligible increases associated with airfield operations- generated noise contours would occur. Air- to ground noise-generated impacts at the ranges would increase but not to such an extent to adversely affect the health or hearing of community members adjacent to these ranges.	The potential impacts to the noise environment would be the same as presented for MCAS New River Alternative 2, with the exception that construction noise would decrease on-Station but increase off- Station. Only short-term, intermittent impacts would occur and not cause adverse hearing or health effects within the surrounding communities. Noise generated at the airfield and within the ranges would be the same as those found under MCAS New River Alternative 2.	There would be no on-Station construction-related noise; noise outside the Station would be generated by construction to accommodate increases in personnel within the surrounding community. Only short-term, intermittent impacts would occur and not cause adverse hearing or health effects within the surrounding communities. Noise generated at the airfield and within the ranges would be the same as those found under MCAS New River Alternative 2.

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4				
NOISE	NOISE						
	MCAS Cherry	Point					
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Construction-generated noise impacts would be only on a short-term, intermittent basis and would not cause hearing impacts nor increase the noise levels experienced by adjacent communities. Noise levels at MCAS Cherry Point due to increased air and range operations from increased personnel were evaluated under a separate EA, the noise levels would not increase to such an extent to cause adverse impacts.	The potential impacts to the noise environment at MCAS Cherry Point would be the same as described under MCAS New River Alternative 3.	Impacts would be similar to those presented under MCAS New River Alternative 4.				
AIR QUALITY							
	MCB Camp Le	jeune					
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts would occur due to this alternative to FY06 baseline conditions. However, since FY06 impacts from other activities within and outside Base boundaries have contributed emissions to the regional air shed.	With additional personnel commuting to the Installation, there would be an insignificant increase in mobile source emissions. In addition, minor levels of emissions of several regulated hazardous air pollutants and toxic air pollutants would occur but not at a level to negatively impact the regional air quality. Implementing the Preferred Alternative would result in a large multi- year construction process. During this time construction-related mobile source emissions, hazardous air pollutants, and toxic air pollutants would temporarily increase. These emissions are expected to dissipate rapidly once construction ceases. During the peak construction period, no criteria pollutant emissions would exceed 250 tons per year, nor do any represent 10 percent or more of regional emissions.	Impacts with respect to personnel commuting would be the same as those described for the Preferred Alternative. Emissions from construction would be similar to the Preferred Alternative, but on a smaller scale. Under this alternative, there could be an increase of people living off-Base and increase commuting emissions. Construction may need to increase off-Base and introduce associated emissions on a short-term basis. However, it is not anticipated that the regional air quality would be adversely impacted under this alternative.	Air emissions associated with this alternative, both on- and off-Base would be similar to those presented for Alternative 3 at MCB Camp Lejeune.				

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4				
AIR QUALITY							
	MCAS New R	River					
Impacts would similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts would be similar to those described for MCB Camp Lejeune Preferred Alternative.	Impacts would be similar to those described for the MCB Camp Lejeune Alternative 3.	Impacts would be the same as those described for MCB Camp Lejeune Alternative 3.				
	MCAS Cherry Point						
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts would be similar to those presented under Alternative 2 for MCB Camp Lejeune.	Impacts would be similar to those presented under Alternative 3 for MCB Camp Lejeune.					
NATURAL RESOURCES							
	MCB Camp Le	jeune					
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no impacts to the FY06 baseline conditions would occur due to this alternative. However, since FY06 natural resource impacts from other activities within and outside Base boundaries have affected the environment.	This alternative would result in temporary disturbance to wildlife, with smaller, less mobile species being lost during demolition and construction activities. In addition, development of forested areas would permanently remove wildlife habitat. Approximately 1,500 forested acres could be removed. The proposed road would traverse forested areas and would fragment wildlife habitat and introduce a mortality hazard. Construction would temporarily increase turbidity, degrading the water quality and affecting some fish species. No impacts to protected species are anticipated; in consultation with the U.S. Fish and Wildlife Service, they concurred that this alternative would not affect terrestrial special status species, and would affect, but would likely not adversely affect, manatees during bridge construction. Off- Base, impacts could occur to natural resources as a result of community infrastructure construction in support of	Impacts to natural resources would be similar to those described under Alternative 2 on Base, but at a much smaller scale. Approximately 300 acres of forest could be lost. Since this alternative would not include Grow the Force facility or road construction, impacts to on-Base natural resources would be less than those found under Alternative 2. Off-Base, natural resources may be adversely impacted due to the need to support increased numbers of military personnel living off-Base.	Under Alternative 4, no Grow the Force or core projects would be constructed on Base; therefore, impacts would be negligible. Off-Base, natural resources may be adversely impacted due to the need to support increased numbers of military personnel living off-Base.				

 Table ES-6 Comparison of Impacts by Resource

USMC Grow the Force in North Carolina

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4			
NATURAL RESOURCES						
	MCAS New R	liver				
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	acts would be similar to those cribed for MCB Camp Lejeune No on Alternative. No impacts to protected species. Proposed construction would take place mostly in already developed areas and minimal vegetation clearance and associated impacts would occur. Up to 40 acres of forest could be lost. Off-Station, impacts would be similar to those presented for MCB Camp Lejeune Alternative 2.					
	MCAS Cherry	Point				
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts to vegetation, wildlife habitat, and forested areas would be similar to those described for MCAS New River Alternative 2. Up to 70 acres of forest would be lost. Off-Station, impacts would be similar to those presented at MCB Camp Lejeune under Alternative 2. In consultation with U.S. Fish and Wildlife Service, they concurred that this alternative would not affect terrestrial special status species, and would affect, but would likely not adversely affect, manatees during bridge upgrading.	Impacts to natural resources would be similar to those described under MCAS Cherry Point Alternative 2, but at a much smaller scale. Up to 21 acres of forest would be lost. Off-Station, impacts would be similar to those presented at MCB Camp Lejeune under Alternative 3.	On- and off-Station impacts would be similar to those described for MCB Camp Lejeune Alternative 4.			

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4					
EARTH RESOURCES	EARTH RESOURCES							
	MCB Camp Le	jeune						
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts to FY06 baseline conditions would occur due to this alternative. However, since FY06 earth resource impacts from other activities within and outside Base boundaries have affected the regional environment.	Proposed construction and demolition would disturb soil conditions. Topography would be altered due to building and other structure development, as well as up to 6 borrow pits for infrastructure construction (requiring 1 million cubic yards of fill). Soil exposure would increase the erosion potential; however, prescribed best management practices and permitting requirements under Federal, State, and local regulations would minimize erosion and sedimentation potential.	Impacts to earth resources would be similar to those described under Alternative 2 (MCB Camp Lejeune), but at a much smaller scale. Since this alternative would not include Grow the Force facility and road construction, there would be minor impacts to soil disturbance. However, off-Base, soil disturbance may increase to accommodate increased numbers of Marine personnel living off-Base.	No impacts to on-Base earth resources would occur because no core or Grow the Projects would be constructed. Off-Base, however, there could be major impacts to soil disturbance to accommodate even more Marine personnel living off-Base.					
	MCAS New R	liver						
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts would be similar to those described for MCB Camp Lejeune Alternative 2.	Impacts to earth resources on and off-Station would be similar to those described under the MCB Camp Lejeune Alternative 3.	On- and off-Station impacts would be the same as those described for MCB Camp Lejeune Alternative 4.					
MCAS Cherry Point								
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Impacts would be similar to those described for MCB Camp Lejeune Alternative 2.	Impacts to earth resources on and off-Station would be similar to those described under the MCB Camp Lejeune Alternative 3.	On- and off-Station impacts would be the same as those described for MCB Camp Lejeune Alternative 4.					

Table ES-6 Comparison of Impacts by Resource

Tuble LS-0 Comparison of Impacis by Resource							
Alternative 1 - No Action Alternative	Alternative 1 -Alternative 2 - Preferred AlternativeNo Action Alternative		Alternative 4				
WATER RESOURCES							
	MCB Camp Le	jeune					
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts to FY06 baseline conditions would occur due to this alternative. Since FY06, however, impacts to water resources from other activities within and outside Base boundaries have occurred.	No increased risks to groundwater contamination would occur. Adverse impacts from stormwater runoff are not expected with adherence to existing practices prescribed under the Base's stormwater management plan. Since exact locations for most of the proposed facilities at MCB Camp Lejeune have not been selected and final design is not known, exact acreages for wetland disturbance cannot be determined. However, given current designs and master planning concepts for facility locations, up to 125 acres of wetland could be affected (either permanently or temporarily) from proposed facility construction. Unavoidable impacts to wetlands or waters of the U.S would occur but through mandated consultation and permitting requirements (e.g., those found under Sections 404 and 401) with the State and U.S. Army Corps of Engineers, impacts would be minimized and/or offset. Indirect impacts to off-Base waterways could occur due to sedimentation.	Impacts to water resources would be similar to those described under the MCB Camp Lejeune Alternative 2, but at a much smaller scale. Alternative 3 does not include Grow the Force infrastructure projects, which have the greatest potential to impact wetlands and floodplains. It is estimated that construction of core projects could impact up to 3 acres of wetlands. Best management practices, permits, and consultation would occur to minimize and mitigate unavoidable adverse impacts due to core project construction. Direct impacts from contamination and/or sedimentation could occur due to off-Base construction in support of increased numbers of Marine personnel living off-Base. However, mandated consultation and permitting requirements (e.g., those found under Sections 404 and 401) with the U.S. Army Corps of Engineers would minimize and/or offset adverse impacts.	On-Base impacts to water resources would be less than those presented under MCB Camp Lejeune Alternative 2. No Grow the Force or core construction would occur. Direct impacts from contamination and/or sedimentation could occur off-Base. This would be due to construction in support of increased numbers of Marine personnel living off-Base. Mandated consultation and permitting requirements (e.g., those found under Sections 404 and 401) with the U.S. Army Corps of Engineers; however, would minimize and/or offset adverse impacts.				

 Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4				
	MCAS New River						
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Potential impacts are similar to those described for MCB Camp Lejeune Alternative 2; however, only 1 acre of wetlands could be impacted. Indirect impacts to off-Station waterways could occur due to sedimentation.	On-Station impacts to water resources would be similar to those described under the MCB Camp Lejeune Alternative 2, but at a smaller scale. Close to 1 acre of wetlands could be impacted.	Potential on- and off-Station impacts are the same as those described for MCB Camp Lejeune Alternative 4.				
		Off-Station impacts would be similar to those presented under MCB Camp Lejeune Alternative 3.					
	MCAS Cherry	Point	•				
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	Potential impacts are similar to those described for MCB Camp Lejeune Alternative 2. Up to 15 acres of wetlands could be affected, but most likely much less depending on final design. Indirect impacts to off-Station waterways could occur due to sedimentation.	On-Station impacts to water resources would be similar to those described under the MCB Camp Lejeune Alternative 2, but at a smaller scale; up to 1 acre of wetlands could be impacted. Off-Station impacts would be similar to those presented under	Potential on- and off-Station impacts are similar to those described for MCB Camp Lejeune Alternative 4.				
		MCB Camp Lejeune Alternative 3.					

Table ES-6 Comparison of Impacts by Resource

Alternative 1 - No Action Alternative	Alternative 2 - Preferred Alternative	Alternative 3	Alternative 4
Cultural Resources			
	MCB Camp I	Lejeune	
The permanent, incremental establishment of Marines associated with the Grow the Force initiative would not be implemented; therefore, no additional impacts to FY06 baseline conditions would occur due to this alternative. However, since FY06 impacts from other activities within Base boundaries have affected cultural resources.	The USMC has consulted with the State Historic Preservation Office (SHPO) under Section 106 of the NRHP and has received concurrence that there would be no adverse effects to eligible or potentially eligible National Register sites. In accordance with 36 CFR 800, the USMC would avoid, minimize, or mitigate impacts to cultural resources properties. While it is difficult to predict, it is not likely that off-Base cultural resources would be adversely affected by implementing Alternative 2.	There would be no impact to architectural or archaeological resources. While it is difficult to predict, it is not likely that off-Base cultural resources would be adversely affected by implementing Alternative 3.	No new development would occur on Base at MCB Camp Lejeune; therefore, there would be no impact to cultural resources. While it is difficult to predict, it is not likely that off-Base cultural resources would be adversely affected by implementing Alternative 4.
	MCAS New	River	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	No cultural resources are located within the proposed on-Station development areas. No off-Station cultural resources would be adversely affected by implementing Alternative 2.	No cultural resources are located within the proposed development areas on- Station. Off-Station impacts would be similar to those presented under Alternative 3 at MCB Camp Lejeune.	Potential on- and off-Station impacts are similar to those described for MCB Camp Lejeune Alternative 4.
	MCAS Cherr	y Point	
Impacts would be similar to those described for MCB Camp Lejeune No Action Alternative.	No cultural resources are located within the proposed on-Station development areas. No off-Station cultural resources would be adversely affected by implementing Alternative 2.	On-Station, no cultural resources are located within the proposed development areas. Off-Station impacts would be similar to those presented under Alternative 3 at MCB Camp Lejeune.	Potential on- and off-Station impacts are similar to those described for MCB Camp Lejeune Alternative 4.

Table ES-6	Comparison	of Impacts	bv	Resource
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Plans, Policies, and Controls	Regulatory Agency Authority	Status of Compliance	Section of EIS
NEPA (PL 91-190, 42 USC 4341 et seq. as amended) 1969, USMC Environmental Compliance and Protection Manual (Marine Corps Order P5090.2A, Change 2), DoN Procedures for Implementing NEPA (OPNAVINST 5090.1B 2003)	N/A	The EIS portion of this document has been prepared in accordance with NEPA, CEQ regulations, and USMC NEPA procedures. Public participation and review is being conducted in compliance with NEPA.	All of document
Clean Air Act (CAA) of 1987, 42 USC §§ 7401 to 7671	USEPA North Carolina DENR-DAQ	The Proposed Action would not create a new source of air pollution or affect the current attainment status of the region.	Section 3.12
Clean Water Act, 33 USC. §§ 1251 to 1387 (1986 & Supp. 1997).	USACE North Carolina DENR-DWQ	Permits under Sections 401 and 404 are required. Adherence to North Carolina Coastal County Stormwater Rule NPDES	Section 3.9 Section 3.15
Coastal Zone Management Act (CZMA) of 1972 (16 USC 1451)	North Carolina DENR-DCM	The USMC has determined the Proposed Action is consistent to the maximum extent practicable and has submitted on September 23, 2009 the final Coastal Consistency Determinations.	Section 3.4 Appendix C
Rivers and Harbors Act of 1892	USACE	The USACE is a cooperating agency to ensure USMC compliance with Section 10 of this Act — a vigable waters" and 33 USC 9.	Section 3.15
Endangered Species Act of 1973, 16 USC §§ 1531 to 1534	USFWS	MCB Camp Lejeune and MCAS Cherry Point completed informal consultation with USFWS. It was determined that the Proposed Action would not affect terrestrial special status species and may affect, but not likely to adversely affect manatees with respect to P1382 (MCB Camp Lejeune) and P134 (MCAS Cherry Point).	Section 3.13

 Table ES-7 Summary of Applicable Environmental Regulations and Regulatory Compliance for the Preferred Alternative

Plans, Policies, and Controls	Regulatory Agency Authority	Status of Compliance	Section of EIS
National Historic Preservation Act (NHPA) of 1966, as amended in 1980, 16 USC 470 <i>et al.</i>	North Carolina SHPO	MCB Camp Lejeune completed Section 106 consultation with the North Carolina SHPO and they concurred that the Proposed Action would not result in adverse effects to eligible or potentially eligible properties.	Section 3.16
Executive Order 12898 (Environmental Justice) 59 FR 7629 (1994)	N/A	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority or low income populations.	Section 3.6
Executive Order 13045 (Environmental Justice for Children, Protection from Environmental Health Risks and Safety Risks) 62 FR 19883 (1997)	N/A	The Proposed Action would not result in disproportionate risks to children from environmental health risks or safety risks.	Section 3.6
Executive Order 11990 (Protection of Wetlands) 42 FR 26961 (1977)	USACE	The Proposed Action would result in impacts to wetlands on MCB Camp Lejeune and MCAS Cherry Point. Specific mitigation measures would be developed in conjunction with USACE during the permitting phase once projects designs reach 100 percent.	Section 3.15
Migratory Bird Treaty Act of 1918, 16 USC 703 <i>et al.</i>	USFWS	The Proposed Action would not have a significant impact on migratory birds, and would comply with applicable requirements of the Act.	Section 3.13
Magnuson-Stevens Fishery Conservation and Management Act, as amended through 2007	NMFS	The Proposed Action would not adversely affect Essential Fish Habitat.	Section 3.15

 Table ES-7 Summary of Applicable Environmental Regulations and Regulatory Compliance for the Preferred Alternative

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ACRONYMS AND ABBREVIATIONS

ACE	Aviation Combat Element	HMI
AEC	Area of Environmental Concern	HMI
AICUZ	Air Installation Compatible Use Zone	HMT
ATS	Aviation Training System	ICRM
BEQ	Bachelors Enlisted Quarters	
BMP	Best Management Practice	IMP
BRAC	Base Realignment and Closure	INRI
CAA	Clean Air Act	
CALA	Combat Airlift Loading Area	IR
CAMA	Coastal Area Management Act	JLUS
CDC	Child Development Center	JSF
CEQ	Council on Environmental Quality	Κ
CERCLA	Comprehensive Environmental	km
	Response Compensation and Liability Act	kW
CFR	Code of Federal Regulations	LCE
CH_4	Methane	LEE
CHRIMP	Consolidated Hazardous Materials	
	Reutilization and Inventory Management	LOS
	Program	MAG
CLDS	Camp Lejeune Dependents Schools	MAG
CP&L	Community Plans and Liaison	MAG
CO	Carbon Monoxide	MAI
CO ₂	Carbon Dioxide	
CO ₂ e	Carbon Dioxide Equivalents	MAV
CZMA	Coastal Zone Management Act	MCA
dB	Decibel	_
DNL	Dav-Night Sound Level	MCA
DoD	Department of Defense	MCE
DoN	Department of the Navy	MCC
DOT	United States Department of Transportation	
EA	Environmental Assessment	MCC
EFH	Essential Fish Habitat	
EIS	Environmental Impact Statement	MCI
EMC	Electric Membership Corporation	MCF
EMD	Environmental Management Division	MCC
EMS	Emergency Medical Services	MEE
EO	Executive Order	MEF
EOD	Explosive Ordnance Disposal	MEU
ESA	Endangered Species Act	mgd
ESOD	Explosive Safety Quantity Distance	ц <u>е</u> /т
FAA	Federal Aviation Administration	MIL
FMP	Fishery Management Plan	MIS
FONSI	Finding of No Significant Impact	1110
FY	Fiscal Year	MM
GCE	Ground Combat Element	MOS
GHG	Greenhouse Gas	MP
and	Gallons Per Day	MPC
65 GS	General Schedule	MRF
GTF	Grow the Force	N _a O
GWP	Global Warming Potential	NAA
H.SO	Sulfurio Aoid	
	Habitat Area of Particular Concorn	
	Hazardous Air Dollutonto	NC A
11/11 2	Tiazaruous Air Fonutants	INCA

HMH	Marine Heavy Helicopter		
HML/A	Marine Light/Attack Helicopter		
HMT	Helicopter Marine Training		
ICRMP	Integrated Cultural Resources		
	Management Plan		
IMPLAN	Impact Analysis for Planning		
INRMP	Integrated Natural Resources		
	Management Plan		
IR	Installation Restoration		
JLUS	Joint Land Use Study		
JSF	Joint Strike Fighter		
K	Kindergarten		
km	kilometers		
kW	kilowatts		
LCE	Logistics Combat Element		
LEE	Leadershin in Energy		
LLLD	and Environmental Design		
1.05	I evel of Service		
MACS	Marine Air Control Squadron		
MACS	Marine Air Control Squatron Marine Air Group		
MAGTE	Marine Air Ground Task Forea		
MAUT	Marine Ariation Logistics Squadron/		
MALS/FKE	S1 Marine Aviation Logistics Squadion/		
	Marina Air Wing		
MAW	Marine Come Air Crown d Combet		
MCAGCC	Marine Corps Air Ground Combat		
MCAS	Center Marina Carra Ain Station		
MCAS	Marine Corps Air Station		
MCES	Marine Corps Engineer School		
MCCDC	Marine Corps Combat Development		
Maggag	Command		
MCCSSS	Marine Corps Combat Service		
MOI	Support Schools		
MCI	Marine Corps Installation		
MCB	Marine Corps Base		
MCO	Marine Corps Order		
MEB	Marine Expeditionary Brigade		
MEF	Marine Expeditionary Force		
MEU	Marine Expeditionary Unit		
mgd	Million Gallons Per Day		
μg/m ²	Micrograms per Cubic Meter		
MILCON	Military Construction		
MISTIC	Missile System, Target Illuminator		
	Controlled		
MMBtu/hr	million British Thermal Units per hour		
MOS	Military Occupational Specialty		
MP	Military Police		
MPO	Metropolitan Planning Organization		
MRP	Munitions Response Program		
N ₂ O	Nitrous Oxide		
NAAQS	National Ambient Air Quality Standards		
NAVFAC	Naval Facilities Engineering Command		
NC 24	North Carolina State Highway 24		
NCAC	North Carolina Administrative Code		

North Carolina Department of	RCRA	Resource Conservation and Recovery Act
Environment and Natural Resources	ROI	Region of Influence
North Carolina Department of	SARNAM	Small Arms Range Noise
Transportation		Assessment Model
National Environmental Policy Act	SAV	Submerged Aquatic Vegetation
National Emission Standards	SDZ	Surface Danger Zone
for Hazardous Air Pollutants	SIGINT	Signals Intelligence
National Historic Preservation Act	SHPO	State Historic Preservation Office/Officer
National Institute for Occupational	SO_2	Sulfur Dioxide
Safety and Health	SO_X	Sulfur Oxides
National Marine Fisheries Service	SWMU	Solid Waste Management Unit
Nitrogen Dioxide	TAP	Toxic Air Pollutant
Notice of Intent	TMDL	Total Maximum Daily Load
Nitrogen oxides	TSCA	Toxic Substances Control Act
National Pollutant Discharge	TSDF	Treatment, Storage, and Disposal Facility
Elimination System	TSP	Total Suspended Particulates
National Register of Historic Places	USACE	United States Army Corps of Engineers
Ozone	USC	United States Code
Operational Navy Instructions	USDA	United States Department of Agriculture
Onslow Water and Sewer Authority	USEPA	United States Environmental
Occupational Safety and Health		Protection Agency
Administration	USFWS	United States Fish and Wildlife Service
Lead	USGBC	United States Green Building Council
Polychlorinated Biphenyls	USMC	United State Marine Corps
Passenger Cars Per Hour	UST	Underground Storage Tank
Pre-Kindergarten	USWTR	Undersea Warfare Training Range
Public Law	UXO	unexploded ordinance
Particulate Matter	VOC	Volatile Organic Compound
Petroleum, Oils, and Lubricants	WG	Wage Grade
parts per million	WTP	Water Treatment Plant
parts per thousand	WWTP	Wastewater Treatment Plant
Pubic Private Venture		
Quantity/Distance		
Range Air Installation Compatible		
Use Zone		
Range Compatible Use Zone		
	North Carolina Department of Environment and Natural Resources North Carolina Department of Transportation National Environmental Policy Act National Emission Standards for Hazardous Air Pollutants National Historic Preservation Act National Institute for Occupational Safety and Health National Marine Fisheries Service Nitrogen Dioxide Notice of Intent Nitrogen oxides National Pollutant Discharge Elimination System National Register of Historic Places Ozone Operational Navy Instructions Onslow Water and Sewer Authority Occupational Safety and Health Administration Lead Polychlorinated Biphenyls Passenger Cars Per Hour Pre-Kindergarten Public Law Particulate Matter Petroleum, Oils, and Lubricants parts per million parts per thousand Pubic Private Venture Quantity/Distance Range Air Installation Compatible Use Zone Range Compatible Use Zone	North Carolina Department of Environment and Natural Resources North Carolina Department of TransportationRCRA ROINational Environmental Policy Act National Emission Standards for Hazardous Air PollutantsSARNAM SDZ SAV National Historic Preservation Act Safety and Health SO2 Safety and Health National Marine Fisheries Service SWMU Nitrogen Dioxide TAP Notice of Intent Nitrogen oxides TSCA National Register of Historic Places Operational Safety and Health Notice of Intent Sox SACE Ozone USC Operational Navy Instructions Onslow Water and Sewer Authority Occupational Safety and Health Administration USEPAUSFWS Lead USGBC USC Ocone USC Operational Safety and Health AdministrationPolychlorinated Biphenyls Passenger Cars Per Hour Pre-Kindergarten Public Law UXO Particulate Matter Public Law UXO Particulate Matter Pubic Private Venture Quantity/Distance Range Air Installation Compatible Use Zone Range Compatible Use ZoneWWTP

CHAPTER 1 PURPOSE AND NEED FOR THE PROPOSED ACTION
1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] § 4321 *et seq.*) requires Federal agencies to examine major federal actions that may have a significant effect on the environment in an Environmental Impact Statement (EIS), which is a detailed public document that provides an assessment of the potential effects that a major Federal action may have on the human, natural, or cultural environment. The United States Marine Corps (USMC) has prepared this EIS to assess the potential impacts associated with permanently increasing USMC forces at three USMC Installations in North Carolina. These Installations include: Marine Corps Base (MCB) Camp Lejeune, Marine Corps Air Station (MCAS) New River, and MCAS Cherry Point. The USMC is the lead agency for the EIS. The Wilmington District of the U.S. Army Corps of Engineers (USACE) is a cooperating agency and has indicated intent to formally adopt this EIS, in whole or in part, provided that it meets USACE requirements relative to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 (correspondence provided in Appendix A).

MCB Camp Lejeune and MCAS New River are located in southeastern North Carolina approximately 50 miles north-northeast of Wilmington (Figure 1.1-1). To the north, MCB Camp Lejeune and MCAS New River are bounded by the City of Jacksonville, North Carolina, and to the south, MCB Camp Lejeune extends to the Atlantic Ocean. MCAS New River abuts MCB Camp Lejeune and uses services (i.e., wastewater, roads, and transportation infrastructure) provided/maintained by MCB Camp Lejeune. MCAS Cherry Point is located approximately 50 miles east-northeast of MCB Camp Lejeune in Havelock, North Carolina. Its northern boundaries end at the Neuse River and, for the most part, MCAS Cherry Point is bounded by Highway 70 on the south.

The USMC needs to be prepared to meet any potential crisis or conflict; have the speed and agility to move immediately and respond at a level that is consistent with the type of conflict encountered; and meet the challenges and opportunities of a rapidly changing world and emerging threats. To meet these needs, President Bush announced, in the January 2007 State of the Union address, his decision to permanently increase USMC forces by Fiscal Year 2011 (FY11). This initiative received Congressional approval and funding and, as described in Section 1.2, is being implemented across USMC fighting organizations. The purpose, therefore, of this Proposed Action, is to accommodate the permanent increase of forces at three North Carolina USMC Installations. The Proposed Action is needed to support and implement the President's mandate and Congressional direction to increase end strength across the USMC war-fighting organizations by FY11.



Figure 1.1-1 USMC in North Carolina

Infrastructure construction and improvements to accommodate these force "plus-ups" (increases) are evaluated under this EIS; training requirements have been evaluated in the MCB Camp Lejeune/MCAS New River Range Complex Final Environmental Assessment (EA) (MCB Camp Lejeune 2009a) and MCAS Cherry Point Range Complex Final EA (MCAS Cherry Point 2009) and are incorporated by reference.

The decisions to be made by the Assistant Secretary of the Navy (Installations & Environment) include: 1) whether one of the action alternatives should be adopted for implementation; 2) whether to concur or non-concur with the findings presented in the EIS; and 3) whether to implement and fund mitigation measures to minimize adverse impacts.

1.2 Context of the Proposed Action

1.2.1 Background

Marines are currently deployed around the world at an increased level and duration, causing hardship for Marines and their families and impacting their quality of life. Additionally, USMC Commanders have been challenged in their ability to fully exercise the sophisticated skill sets that enable the Marine Air Ground Task Forces (MAGTF) (organized to support Combatant Commanders in various regions, including Europe, Africa, Southwest and Southeast Asia, and Central and South America) to respond quickly and effectively to global crises and conflicts.

The USMC has unquestionably displayed the value of an "expeditionary" force in fighting worldwide terrorism and in conventional conflicts against diverse enemies. The USMC is committed to fighting the "Long War" which includes: defeating terrorist networks, defending the homeland, and preventing hostile states and non-state actors from acquiring or using weapons of mass destruction. The Long War is characterized by current campaigns in the Middle East, as well as by diverse and sustained engagements around the world. Though these engagements occur around the globe they are in defense of the United States' homeland, freedoms, and way of life. The Long War (now referred to as "Overseas Contingency Operations" under the new Administration) is a multifaceted, generational struggle that will not be won in one battle, in one country, or by one method.¹ To meet the demands of the Long War and remain prepared for the inevitable contingencies that will arise, the USMC must be sufficiently manned, effectively trained, and properly equipped.

USMC mission and subsequent training requirements are derived from Congress' mandate for the USMC to be the Nation's ". . . versatile, Expeditionary Force in readiness. . . . To be the most ready when the

¹ United States Marine Corps Concepts and Programs 2007, Division of Public Affairs, Marine Corps News Branch, Headquarters, USMC.

nation generally is least ready."² USMC training requirements are well-defined and structured to provide combat-ready Marines. From the individual to the unit level, training is constantly adapting to meet new challenges in how conflicts are fought and crises are addressed. The USMC training system provides the means to achieve exacting levels of Marine combat readiness across the entire spectrum (from working with allies to maintain peace and deterring enemies through combat, to assisting foreign nations in providing essential services to their populace)³ of military operations. Reduction of the time available to train because of the 1:1 dwell time (or the time a Marine spends deployed versus the time stationed at home base) complicates the USMC's ability to provide combat-ready unit training in war-fighting capabilities.

To avoid these negative impacts to readiness, training, mission, and quality of life, the Secretary of Defense in 2007 established a 1:2 deployment-to-dwell ratio goal for all active component forces.⁴ A 1:2 ratio would allow Marines to spend twice as much time stationed at home than the time spent deployed. The increased dwell time for Marines would help alleviate the strain on units abroad, would provide operational units additional training time to prepare for combat operations overseas, and provide a better quality of life.

To meet this goal, in January 2007, under recommendation of the Secretary of Defense, the President announced that over the next 5 years the USMC would increase their end strength from 180,000 to 202,000.⁵ This increase in end strength, termed "Grow the Force," would ensure that Marines are properly prepared and trained for traditional combat where the enemy is well defined and fighting occurs in one regional area. The increase would also allow Marines to support more non-traditional conflicts that occur in the Long War, which are more prevalent now across the globe.

1.2.2 USMC Grow the Force Initiative at the National Level

The addition of approximately 22,000 Marines will be accommodated across the USMC organization in a manner that capitalizes on its existing force structure. In 1952, Congress directed the Marine Corps' composition as an air-ground combined arms force. This integrated force, known as the MAGTF, has unique and incomparable war-fighting capabilities. The MAGTF is organized along a regional construct to support Combatant Commanders in various areas on the globe, including Europe, Africa, Southwest and Southeast Asia, and Central and South America (U.S. Marine Corps Headquarters 2008). MAGTFs

² Public Law 82-416, 1952.

³ The Long War, Send in the Marines. 2008. USMC Headquarters.

⁴ Statement of General James T. Conway, Commandant of the USMC. 2007. Before the House Armed Services Committee on USMC Posture. Washington, DC. 1 March.

⁵ Major General Johnson Force Requirements Determination Process before the House Armed Services Committee. January 30, 2007 (Final).

are supported by three levels of operating organizations: Marine Expeditionary Forces (MEF), Marine Expeditionary Brigades (MEB), and Marine Expeditionary Units (MEUs). There are three USMC MEFs (I, II, and III) corresponding to the three-region construct, which represent the biggest MAGTF organizations and constitute the principal war-fighting organizations used to meet larger crises or contingencies. The MEFs are composed of a headquarters element, a ground combat element (GCE), an aviation combat element (ACE), and a logistics combat element (LCE) under a single command for an integrated combined arms force. The GCE conducts ground operations and can vary in size from a small ground unit to one or more Marine divisions; the ACE conducts air-to-ground operations and is usually composed of an aviation headquarters and various aviation units or their detachments; and the LCE provides supply, maintenance, transportation, general engineering, health services, and a variety of other services in support of the MAGTF. The LCE varies in size from a small detachment to one or more Marine Corps Headquarters 2008).

Following Operation Desert Shield/Storm in 1991, the Marine Corps reduced in size from end strength 196,000 to 176,000. This reduction was accomplished in large part by the de-activation of units and commands usually of battalion or squadron size. When this reduction was completed, the 2nd Marine Division of the II MEF (headquartered in MCB Camp Lejeune) was not balanced in comparison to the I MEF (headquartered in MCB Camp Pendleton, California). The infantry regiments in the I MEF each had four infantry battalions assigned, while those in the II MEF only had three assigned infantry battalions. The III MEF, stationed primarily in the Pacific, has one regimental headquarters in Okinawa, one in Hawaii, and three battalions that deploy to Japan from the United States.

Under the Grow the Force initiative, this imbalance is rectified by adding a significant portion of the growth to units within the II MEF. Specifically, the Marine Corps would reactivate three infantry battalions and assign them to II MEF to balance its three regiments with the three regiments in the I MEF. The II MEF would also receive additional GCE units such as artillery batteries, light armor reconnaissance platoons, and military police platoons to round out the division in support of the additional infantry battalions, make it a more capable force, utilize the same organizational construct as I MEF, and match concurrent incremental increases to the I and III MEFs. The Grow the Force initiative would also add more Marines to all infantry regiments and battalions, as well as other headquarters and units in the Divisions. Such action would improve performance during assigned and future missions based on lessons learned in Iraq and Afghanistan. Thus, the overall growth of the GCE would be spread across the entire Marine Corps within each of the three Marine Divisions but would be particularly focused on structuring the II MEF headquartered in North Carolina to be parallel with the I MEF in California.

The ACE portion of the Grow the Force initiative was outlined in the 2007 Marine Aviation Transition Plan (U.S. Marine Corps Headquarters 2007). That Plan calls for the rebalancing and realignment of active and reserve aviation component capacities, capabilities, and assets to meet Grow the Force needs. Under the Marine Aviation Transition Plan, the USMC would add combat and training flying squadrons, while balancing resources and capabilities across the entire Marine Corps. The ACE units, capabilities, and resources that would be added to the 2nd Marine Air Wing (2nd MAW) at MCAS New River would align the rotary air wing's capabilities with those already found on the West Coast in the 3rd MAW (Personal communication, Reilly 2009). Some of the additional units' initial basing locations within the 2nd MAW would be on a short-term basis (such as the helicopter squadrons at MCAS New River.

Finally, the logistics combat element, or LCE, would grow to support the increases in the ACE and GCE. Personnel within the LCE, such as Combat Support Service enablers (e.g., Military Police, Explosive Ordnance Disposal, engineering for constructing bridges, and field-level maintenance) would increase incrementally to maintain balanced support to the Marine Divisions' three MEFs. Internally, this increase would enhance the Marine Logistics Group command and control and command support capabilities, through growth in communications and intelligence personnel and equipment. Combined, the LCE's portion of the growth initiative would significantly improve expeditionary logistics support to the MAGTFs and the deployment flexibility of the Marine Logistics Group command.

To identify the units to be augmented and the specific number of personnel to be added to each unit, the USMC undertook a rigorous screening analysis called the Total Force Structure Process. The goal of this Process was to determine force requirements that balanced the need to comply with the Department of Defense (DoD) policy on 1:2 deployment-to-dwell ratio⁶ with the requirement to meet the core MAGTF training competencies. As part of the Process, the USMC applied strategic guidance, evaluated policy constraints, and considered commander-generated recommendations to identify the capabilities that were needed to execute the USMC ever-evolving mission. Process recommendations relied on a detailed, integrated examination of doctrine, organization, training, materiel, leadership, personnel, and facilities to ensure that no aspect of the enterprise was ignored and any new requirements were identified—either from the top-down or from the bottom-up.

A top-down functional area analysis and a functional needs analysis produced tasks, conditions, and standards that needed to be met for the USMC to both successfully accomplish its mission and meet an increased dwell-to-deployment time. This functional analysis process also identified gaps wherein tasks, conditions, and standards were not satisfied by existing USMC force structure. Recommendations to

⁶ Secretary of Defense Memorandum. 2007. Utilization of the Total Force. Washington, DC. 19 January.

remedy gaps were then proposed, analyzed, and presented to the Commandant's Marine Requirements Oversight Council. Operational commanders provided the bottom-up input to the Commandant based on their constant assessment of operational and supporting unit activities.⁷

Ultimately, the Total Force Structure process resulted in a determination that focused growth within the existing war-fighting units within the three MEFs (Figure 1.2-1) would best accomplish the need to improve deployment-to-dwell ratio, enhance the USMC warfare capabilities and contingency missions training, and increase the available training time for most units. The Process considered other options, such as partial or complete reorganization; however, reorganization would take an excessive amount of time, would cost more, would not have met the immediate need to increase personnel numbers, and would have caused further strains on Marine Corps commanders' ability to meet their training requirements. The focused growth proposal, in contrast, will result in a USMC, prepared as a "total force," ready to meet the challenges and opportunities of a rapidly changing world and security environment.



Source: USMC Concepts and Programs, 2007. *Note:* SIGINT = Signals Intelligence.

Figure 1.2-1 Balanced Force Capability Growth

⁷ Please note that the resultant recommendations are fluid and evolve in response to differing conflict circumstances, changes in Administration objectives, meeting new Combatant Commanders' requirements, and addressing varying enemy tactics.

Table 1.2-1 illustrates the types of units that would be augmented across Marine Divisions and associated MEFs. Units identified as reasonable to receive these Marines were those that could support a comprehensive, long-term plan to accommodate these increases, while maintaining a unit's and Installation's carrying capacity (sustainability).

	Tuble 1.2 T Marine Corps Chils	110	Josed Jor mereuses in Lnu Strength
•	Infantry Battalions	٠	Foreign Officer Area/Civil Affairs
•	Artillery Battalions	٠	Unmanned Aerial Surveillance
•	Reconnaissance	•	Logistical Support
٠	Military Police	٠	Engineer Support
•	Air Naval Gunfire Liaison Company	٠	Explosive Ordnance Disposal Units
•	Engineers	٠	Marine Light Attack Helicopter Squadrons
•	Recruiters	٠	Marine Heavy Helicopter Squadrons
•	Trainers	٠	Aviation Command and Control
•	Regiment Headquarters	٠	Communications
•	Artillery Battery	٠	Tank Battalion
٠	Ground Mobility	•	Logistics Company
•	Truck Company	٠	Bridge Company
٠	Intelligence	•	Marine Fixed Wing Squadrons

Table 1 2 1 Manine Con	una Unita Duanagad	for Inonagos in	End Stuamath
1 uble 1.2-1 Mullie Col	ps Onus I roposeu	joi mereuses m	Lnu Strength

To identify the specific units to receive augmentation, the USMC used the following specific criteria:

- Mission Support: Where increases occur, they must promote, support, and/or be consistent with National Security, Defense, and USMC mission requirements. USMC Strategy 21 focuses on the Corps' expeditionary, combined arms character and the drive to enhance strategic agility, operational reach, and tactical flexibility. These capabilities allow the USMC to continue providing regional combatant commanders with tailored, interoperable MAGTF that can respond quickly across the spectrum of crisis and conflict, and conduct forcible entry operations when needed.
 - A. *Training*. To meet the demands of the Long War, the USMC must properly train the force. The USMC Vision for Mission-Capable Ranges is action-oriented strategic planning to solve threats to USMC operational training. The Vision also provides appropriate balance between realistic, quality training and environmental stewardship. Reasonable alternative scenarios would need to meet the goals of the Vision.
 - B. *Operations*. Actions taken to support daily operations and functional activities should promote or enhance mission operations of each existing or increased unit. Alternate stationing scenarios should not cause unnecessary temporary delays or disruptions in current Installation mission or function.

- 2. Economic Feasibility: The increases must also be achievable at units within reasonable cost as compared to other alternatives. Increases at units that were significantly more expensive to implement without increased benefit, commensurate with the additional cost, were eliminated from further consideration.
- 3. **Sustainability**: While meeting the purpose and need of growing the force, alternative unit scenarios could not hinder the sustainability of an Installation and its mission. Unit increases that would limit existing or future operations or training, without the possibility of mitigation, were not considered reasonable.

Application of these criteria resulted in the identification of units within I and II MEFs to receive unit personnel increases. These units are currently based at the 10 installations listed in Table 1.2-2.

Installation	Total	
MCB Camp Lejeune, North Carolina	7,706	
MCAS New River, North Carolina		
MCAS Cherry Point, North Carolina	784	
MCAS Beaufort, South Carolina	246	
Marine Corps Combat Development Command, Quantico, Virginia	101	
MCB Camp Pendleton, California	2,277	
Marine Corps Air Ground Combat Center, Twentynine Palms, California	1,685	
MCAS Camp Pendleton, California	954	
MCAS Miramar, California	596	
MCAS Yuma, Arizona	92	

Table 1.2-2 Proposed (Contiguous U.S. I	Marine Corps Increase	es
------------------------	-------------------	-----------------------	----

By augmenting units at these Marine Corps Installations, there would be the least interruption to the receiving units' mission and combat readiness, and increases would not further complicate, retard, or jeopardize the Marine Corps mission. Movement of the receiving units to other bases was considered, however, movement of existing units would require reorganization of existing force structure, thereby delaying implementation of the Grow the Force initiative, increasing costs, and causing further strains on Marine Corps commanders' ability to meet their training requirements

1.3 USMC Grow the Force Initiative in North Carolina

As shown in Table 1.2-2, the Total Force Structure Process identified the three USMC Installations in North Carolina as recipients of personnel increases. The purpose of the Proposed Action, therefore, is to accommodate the permanent increase of 9,900 Marines and civilian personnel at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point in North Carolina. This Proposed Action is needed to implement the II MEF portion of the national Grow the Force initiative.

To meet the President's 2007 mandate, the USMC began immediate increases of end strength starting in FY07 (i.e., October 2007). At MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point, these increases needed to be accommodated in existing or temporary facilities, since there was no time allotted for acquiring funding for or completion of full Military Construction (MILCON) activities. The impacts associated with temporary basing of the additional personnel at the three North Carolina bases were analyzed (DoN 2008a, 2008b) as separate actions from the permanent increases considered in this EIS. Per discussions with the President's Council on Environmental Quality (CEQ), the decision to temporarily accommodate these personnel increases would in no way prejudice or inform the decision to permanently accommodate these personnel. For specific details of the permanent increases proposed in North Carolina, see Chapter 2 (Proposed Action).

The following provides an overview of the NEPA process the USMC is applying to evaluate potential impacts of the proposed action to incrementally increase, on a permanent basis, Marine Corps personnel at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point.

1.4 Scope of NEPA Analysis

The USMC determined that potential impacts at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point would be evaluated in this one EIS. This approach was taken for several reasons: 1) the geographic proximity of the three Installations, 2) the fact that off-Base personnel coming to these Installations would primarily live in the same three-county region (based on existing locations of personnel living off-Base) thus having a combined regional impact, and 3) the fact that the timing of the incremental increases and infrastructure projects would affect not just one Installation but all three at the same time within the same region.

The three Installations have already temporarily accommodated some of the increased personnel indicated in Table 1.2-2. In order to assess how these Marines could be permanently based at the three Installations, a screening process was developed with the goal of maximizing currently developed areas for any new infrastructure. These areas are considered "unconstrained" for future development. Undeveloped or environmentally sensitive areas, so called "constrained" areas, would only be considered as possible infrastructure candidates if unconstrained areas were incapable of meeting the Proposed Action.

For MCB Camp Lejeune, because of the amount of time needed during the development process for specific projects, it is not possible to determine the precise location of individual buildings, minor roadways, and supporting utilities. Accordingly, in order to assess environmental effects of this future infrastructure, the EIS evaluates the impacts of locating projects in general "planning areas". As the principal environmental effect would be from the modification or creation of impervious surface (e.g.,

buildings, parking lots, housing, etc.) and not necessarily from the specific project, this was considered a reasonable approach to assessing impacts in advance of determining the precise location of individual specific projects for MCB Camp Lejeune. Thus, for MCB Camp Lejeune eight planning areas have been identified in which to focus development in support of the Proposed Action. The discussions in the following sections identify which projects would generally occur within each of these planning areas, but do not identify specific locations for specific projects. There are many proposed projects, and much work remains to be done to identify exact siting requirements for individual projects.

Because they are smaller and more focused in their mission, it is possible to identify specific projects and specific project locations at MCAS New River and MCAS Cherry Point. These specific locations were identified for their consistency with existing master plans and because they would sensibly group facilities near existing infrastructure supporting similar missions. For example, aircraft maintenance facilities would be established adjacent to the flight line where similar facilities are found.

This EIS, which has a multiple Installation-wide scope, analyzes the potential effects of the Proposed Action, as required under the NEPA, at the earliest possible stage in the planning process. As with any planning effort of this scope, individual projects may change in size or location. The Marine Corps will conduct supplemental NEPA if impacts are substantively different than those discussed in this EIS. Each installation would review changes to the Proposed Action as planning proceeds to determine whether these project changes: 1) constitute impacts that were not analyzed in this EIS and will need to be newly evaluated, 2) can be tiered from the analyses done for this EIS, or 3) can be categorically excluded. These projects will be reviewed in accordance with Marine Corps Order (MCO) P5090.2a prior to any irreversible commitment of resources and prior to implementation of the specific project. Furthermore, MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point will complete supplemental NEPA documentation if impacts to resources within the named areas increase beyond those discussed in Chapter 3, or if the projects move outside of these named areas.

The CEQ and USMC NEPA regulations define the steps and milestones in the environmental impact analysis process. The major milestones include:

- 1. *Announcing that an EIS is being prepared*. For this EIS, a Notice of Intent (NOI) was published on December 14, 2007 in the *Federal Register*.
- 2. *Conducting Scoping*. This is the first major step in identifying the relevant issues to be analyzed in depth and eliminating the issues that are not relevant. In order to meet this objective, the USMC was very active in soliciting comments from the public, local governments, Federal and State agencies, and environmental groups, and thereby ensuring that relevant concerns and issues

about the proposed growth were included in the analyses. The USMC held three scoping meetings on January 29, 30, and 31, 2008, in Havelock, Jacksonville, and Holly Ridge, respectively. Advertisements were placed in local newspapers, and letters were sent to agencies and the general public announcing the USMC proposal as well as identifying the scoping meeting dates, times, and locations. See Section 1.4.2.

- 3. *Preparing a draft EIS.* The first comprehensive document for public and agency review is this draft EIS. It examines the environmental impacts of the Proposed Action, all reasonable alternatives, and a No Action Alternative. To ensure the widest dissemination possible, this draft EIS was distributed to agencies, the public who have requested copies, and numerous repositories (see Appendix B), as well as posted on a public website (www.GrowtheForceNC.com). The Notice of Availability was filed with the U.S. Environmental Protection Agency (USEPA) and announced in the *Federal Register* on July 17, 2009; advertisements were placed in local newspapers on the same day. This initiated the 45-day public comment period which ended on October 1, 2009.
- 4. Having a public comment period. The USMC's goal during this process is to provide the public ample opportunity to comment on the analyses presented in the draft EIS. This is accomplished through receipt of comments and at public meetings. The meetings serve as an open forum for discussion of the Proposed Action and its alternatives, the analyses approach and findings, and to provide a direct feedback mechanism for the public and agencies to address the USMC orally or in writing. The USMC will provide a written response to all substantive comments received during this public comment period, and present the issues identified at the public meetings. These comments will also be considered in the preparation of, and be appended to, the final EIS, and disclosed to the decision maker in that phase of the NEPA process.
- 5. Preparing a final EIS. Following the draft EIS public comment period, a final EIS is prepared. This document is a revision of the draft EIS, which includes consideration of all relevant public and agency comments and the USMC's responses. It particularly provides the decision maker with a comprehensive review of all the alternatives, their environmental impacts, and mitigation measures to minimize these impacts.
- 6. *Issuing a Record of Decision.* The final step in the NEPA process is the Record of Decision, which will be released no earlier than 30 days after public release of the final EIS. This decision document identifies the alternative selected by the decision maker and extra-ordinary mitigation measures (above and beyond those already required by permit and regulations and carried out as

part of the normal management practices undertaken by the three Installations) to be carried out by the USMC to reduce impacts.

The following describes the steps that have been achieved thus far in the NEPA process.

1.4.1 Public Involvement

Public participation opportunities with respect to this EIS, and decision making regarding the Proposed Action, are guided by USMC (MCO 5090.2A Change 1) and Department of the Navy (DoN) NEPA implementing regulations (32 Code of Federal Regulations [CFR] 775), which call for an inclusive public involvement program which takes place throughout the EIS process.

The term "public" is used to describe any individual or group that has interest in the Proposed Action; "stakeholders" include Federal, State, and local governmental agencies with regulatory authority over activities within the USMC Installations (e.g., United States Fish and Wildlife Service [USFWS] and the North Carolina Department of Environment and Natural Resources [NCDENR]).

Consideration of the views of and information from the public and stakeholders promotes open communication and enables better decision making. Other agencies, organizations, and members of the public with a potential interest in the Proposed Action (including minority, low-income, and/or disadvantaged groups) are urged also to participate in the decision-making process.

1.4.2 Notification

Official notification of the USMC's intent to prepare the Grow the Force EIS began with publication of the NOI on December 14, 2007 in the *Federal Register* (Appendix A). During the week of December 29, 2007, more than 170 notification letters/brochures were sent out to Federal, State, and local agencies; elected officials; non-governmental organizations; and interested individuals. The letter/brochure outlined the USMC's intent to prepare an EIS, provided a description of the Proposed Action and alternatives, and announced the scoping meeting locations and dates (Appendix A).

Advertisements were also placed in local newspapers (Appendix A) announcing: 1) the USMC's intent to prepare the EIS; 2) the time, date, and location of the scoping meetings; and 3) the duration of the scoping comment period (December 14, 2007 to February 3, 2008). As detailed below, advertisements were placed a number of times in several newspapers prior to the scoping meetings:

 Havelock, North Carolina: New Bern Sun Journal on Monday, December 17, 2007 and Wednesday, January 23, 2008; and Havelock News on Wednesday, December 19, 2007, and Tuesday, January 22, 2008. Jacksonville and Holly Ridge, North Carolina: *The Jacksonville Daily News*, on Monday, December 17, 2007, Monday, December 24, 2007 and Wednesday, January 23, 2008; *The Kingston Free Press* on Wednesday, January 23, 2008; and *The Globe* on Thursday, January 10, 2008, and Thursday, January 24, 2008.

In addition, separate agency letters were sent out on April 16, 2008 requesting agency input on the Proposed Action and assistance in identifying any issues and/or concerns they might have (Appendix A). The USMC asked that these agencies provide their comments by April 25, 2008 to ensure evaluation in the EIS analysis. Only one response was received; the NCDENR submitted comments focusing on coastal management issues (Appendix A).

A mailing list, developed and continually updated for the EIS, is used to ensure that Federal and State agencies, elected officials; non-governmental organizations; interest groups; libraries; media points of contact; and citizens are informed of any public involvement opportunities (Appendix B).

1.4.3 Scoping

Scoping is an early and open process for: 1) actively bringing the public into the decision-making process; 2) determining the scope of issues to be addressed; 3) identifying any reasonable alternatives to the Proposed Action; and 4) meeting both the CEQ and USMC NEPA implementing regulations that require a scoping process in the development of an EIS. For this action, the USMC held scoping meetings on 29, 30, and 31 January 2008 in Havelock, Jacksonville, and Holly Ridge, North Carolina, respectively. In total, 147 people attended these scoping meetings and 22 written and 14 emailed comments were received during the official 30-day comment period. The following discussion summarizes the issues raised during scoping; the USMC used these comments to guide the analyses conducted for this EIS.

Off-Installation Infrastructure. Many citizens were concerned that there could be impacts to the regional infrastructure and long-range development plans for housing, schools, transportation, roads, and medical care facilities. Citizens were also concerned about wastewater facilities and the possible strain these systems may experience with the influx of people to the area. Impacts to existing recreational assets, such as parks, playing fields, and the rails-to-trails corridors, and their ability to meet demands of the increased population, were also a concern.

Off-Installation Community Services. In general, strains on social services, including police and fire departments, as well as elderly and child care capacities, were also identified as issues that should be evaluated in the EIS. Specifically in Havelock, there was widespread concern about the Base Realignment and Closure (BRAC) action that closed the emergency room at the MCAS Cherry Point Base hospital. Many people (especially the elderly) must now travel farther distances to New Bern, Morehead City, or

MCB Camp Lejeune for acute care. In-patient care and obstetric/gynecological facilities were also lost, and the local health care system has been affected.

Off-Installation Traffic and Transportation. At MCB Camp Lejeune, many citizens felt that traffic congestion may be worsened, especially on Lejeune Boulevard and Highway 70 East from Carolina Pines. Commenters were concerned that traffic safety may be compromised, especially at the Main Gate off North Carolina State Highway 24 (NC 24). Another commenter felt that the Highway 17/210 intersection east, to the Sneads Ferry Road outside MCB Camp Lejeune, would need improvement due to the increased traffic anticipated with construction activities. This person also expressed concern with disposal of demolition debris impacts to the environment. A representative from Ellis Airport raised concerns about the airport's parking capacity, especially during the holiday season. Parking lots are already at or above capacity and, with the increased personnel, the situation could worsen.

Socioeconomics. Local business owners recommended an evaluation of how many new jobs would be generated, and local realtors were interested in knowing when and how many people would move to the area.

Natural Resources. The NCDENR/Division of Coastal Management suggested that a section in the EIS be inserted for consistency analysis of the Proposed Action with North Carolina's coastal management program. They continued to be concerned about "how the effects of continued and increasing urbanization and habitat fragmentation can be avoided and if not, how it can be mitigated," recommending that the EIS evaluate mitigation options to assure the maintenance of habitat values. In addition, they were interested in how the proposed activities would be affected by the nesting sea turtle moratorium periods and how to mitigate for adverse effects of artificial lighting. They also suggested that the EIS contain a specific section summarizing all proposed mitigation measures.

In addition to scoping, and to ensure that potential impacts were fully characterized, the USMC met with local communities and the Eastern North Carolina Military Growth Task Force to identify those counties most likely to be impacted by the Proposed Action. The Task Force was organized in October 2007 under the auspices of North Carolina's Eastern Region and includes leaders from the USMC and surrounding counties. This Task Force is working with a seven-county region to evaluate impacts that are occurring, from both growth associated with the military, and due to other demographic changes (e.g., retiree gains in population). While this Task Force is focusing on Onslow, Craven, Carteret, Jones, Pender, Duplin, and Pamlico Counties (Figure 1.4-1), this EIS is evaluating impacts that would most likely occur in a three-county area—Onslow, Craven, and Carteret. This approach is taken since the greatest potential for impacts is anticipated primarily in those three counties.



Figure 1.4-1 Seven County Military Growth Task Force Region of Interest

The USMC has also begun early efforts to involve federal, state, and local governmental agencies, and non-governmental organizations in discussions of specific projects included within this EIS. For example, in May 2009 MCB Camp Lejeune held a series of meetings with federal and state agencies to discuss the proposed new Base entry road (see Chapter 2 for additional details) and get preliminary feedback from such agencies on both the proposed alignment of the road and on the permitting process. Participants at these meetings included the USACE, the U.S. Coast Guard, the National Marine Fisheries Service, and agencies within NCDENR. These meetings were held as an opportunity to generate early discussion on wetland and navigable water impacts, and stormwater treatment requirements so that agency feedback could be incorporated into the design effort.

1.5 Related Environmental Documents

1.5.1 Documents Incorporated by Reference

In accordance with CEQ regulations for implementing NEPA, the following material relevant to the Proposed Action is being incorporated by reference, with the intent of reducing the size of this document. Several documents address actions that are related (but not connected) to the Proposed Action and include:

Environmental Assessment, MCB Camp Lejeune/MCAS New River Range Operations, Onslow and Jones Counties, North Carolina. January 2009.

Environmental Assessment, MCAS Cherry Point Range Operations, Craven, Carteret, and Pamlico Counties, North Carolina. January 2009.

Environmental Impact Statement/Overseas Environmental Impact Statement, Navy Cherry Point Range Complex. Record of Decision issued June 2009.

Environmental Impact Statement/Overseas Environmental Impact Statement Navy Undersea Warfare Training Range. Draft, December 2008.

Environmental Impact Statement/Overseas Environmental Impact Statement Atlantic Fleet Active Sonar Training. December 2008.

Environmental Assessment for Temporary Beddown of Proposed Increase in End Strength, MCAS Cherry Point, North Carolina. Finding of No Significant Impact (FONSI) signed August 2008.

Environmental Assessment for Temporary Beddown of Proposed Increase in End Strength, MCB Camp Lejeune, North Carolina. FONSI signed June 6, 2008.

1.5.2 Other Relevant Environmental Documents

The following completed environmental documents are relevant to the Grow the Force Proposed Action in North Carolina.

Environmental Assessment, Proposed Military Operations Areas in Eastern North Carolina. A written reevaluation was prepared in 2007. FONSI signed January 29, 2008.

Environmental Assessment for a Combat Vehicle Operators Training Course. FONSI signed June 21, 2007.

Environmental Assessment for Training Facility Improvements at Marine Corps Outlying Land Field Atlantic. FONSI signed June 27, 2007.

Environmental Assessment, Construction and Operation of Digital Airport Surveillance Radar in Eastern North Carolina. FONSI jointly signed April 25, 2007 and May 3, 2007.

Environmental Assessment, Bombing Target-11 Target Improvements. FONSI signed February 27, 2007.

Final Environmental Impact Statement on Bogue Inlet Channel Erosion Response Project, Carteret and Onslow Counties, North Carolina. Record of Decision signed October 15, 2004

Final Environmental Impact Statement for the Introduction of F/A-18 E/F (Super Hornet) Aircraft to the East Coast of the U.S. Record of Decision signed October 4, 2003.

Final Environmental Impact Statement, Introduction of the V-22 to the Second Marine Aircraft Wing in Eastern North Carolina. Record of Decision signed December 22, 1999.

1.6 Relevant Statutes, Executive Orders, and Permits

In accordance with CEQ NEPA regulations (40 CFR 1502.25), the USMC has prepared this EIS concurrently with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 USC 661 *et seq.*), the National Historic Preservation Act (NHPA) of 1966 (16 USC 470 *et seq.*), the Endangered Species Act (ESA) of 1973 (16 USC 1531 *et seq.*), and other environmental review laws (and their implementing regulations), and Executive Orders (EOs) outlined by environmental resource in Table 1.6-1.

Environmental Resources	Statute, Regulation, or Executive Order
Air Quality	Clean Air Act of 1970 (Public Law [PL] 95-95), as amended in 1977 and 1990 (PL 91-604); USEPA, Subchapter C-Air Programs (40 CFR 52-99); 40 CFR Part 63, National Emissions Standards for Hazardous Air Pollutants; North Carolina Rules for Air Quality Control (Subchapters 2D, 2H, and 2Q).
Noise	Noise Control Act of 1972 (PL 92-574) and Amendments of 1978 (PL 95-609); USEPA, Subchapter G- Noise Abatement Programs (40 CFR 201-211).
Geology and Soils	National Pollutant Discharge Elimination System (NPDES) Construction Activity General Permit (40 CFR 122-124).
Water Resources	Federal Water Pollution Control Act of 1972 (PL 92-500) and Amendments; Clean Water Act of 1977 (PL 95-217); NPDES Construction Activity General Permit (40 CFR 122-124), NPDES Industrial Permit and NPDES Municipal Separate Storm Sewer System (MS4) Permit; Clean Water Act 40 CFR 112 Spill Prevention Control and Countermeasure; USEPA, Subchapter D-Water Programs (40 CFR 100-145); Water Quality Act of 1987 (PL 100-4); USEPA, Subchapter N-Effluent Guidelines and Standards (40 CFR 401-471); Safe Drinking Water Act of 1972 (PL 95-923) and Amendments of 1986 (PL 99-339); USEPA, National Drinking Water Regulations and Underground Injection Control Program (40 CFR 141-149); North Carolina Clean Water Responsibility Act.
Biological Resources	Migratory Bird Treaty Act of 1918; Fish and Wildlife Coordination Act of 1958 (PL 85-654); Sikes Act of 1960 (PL 86-97) and Amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX); ESA of 1973 (PL 93-205) and Amendments of 1988 (PL 100-478); Fish and Wildlife Conservation Act of 1980 (PL 96-366); Lacey Act Amendments of 1981 (PL 97-79); Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186).
Wetlands and Floodplains	Section 401 and 404 of the Federal Water Pollution Control Act of 1972 (PL 92-500); USEPA, Subchapter D-Water Programs 40 CFR 100-149 (105 ref); Floodplain Management-1977 (EO 11988); Protection of Wetlands-1977 (EO 11990); Emergency Wetlands Resources Act of 1986 (PL 99-645); North American Wetlands Conservation Act of 1989 (PL 101-233).
Cultural Resources	NHPA (16 USC 470 <i>et seq.</i>) (PL 89-865) as amended; Protection and Enhancement of the Cultural Environment-1971 (EO 11593); Indian Sacred Sites-1966 (EO 13007); American Indian Religious Freedom Act of 1978 (PL 94-341); Antiquities Act of 1906; American Indian Religious Freedom Act of 1979 (PL 96-95); Native American Graves Protection and Repatriation Act of 1990 (PL 101-601); Protection of Historic Properties (36 CFR 800).
Hazardous and Toxic Substances and Waste	Resource Conservation and Recovery Act of 1976 (PL 94-5800), as Amended by PL 100-582; USEPA, subchapter I-Solid Wastes (40 CFR 240-280); Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601) (PL 96-510); Toxic Substances Control Act (PL 94-496); USEPA, Subchapter R-Toxic Substances Control Act (40 CFR 702-799); Federal Insecticide, Fungicide, and Rodenticide Control Act (40 CFR 162-180); Emergency Planning and Community Right-to-Know Act (40 CFR 300-399); Federal Compliance with Pollution Control Standards-1978 (EO 12088), Superfund Implementation (EO 12580); Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition (EO 13101), Greening the Government Through Efficient Energy Management (EO 13123), Greening the Government Through Leadership in Environmental Management (EO 13148); North Carolina Hazardous Waste Management Rules.
Socioeconomics	Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898); Protection of Children from Environmental Health Risks and Safety Risks (EO 13045).

Table 1.6-1 Other Major Environmental Statutes, Regulations, and Executive Orders Applicable to Federal Projects

CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the USMC's Proposed Action, which is the permanent incremental increase of Marine Corps personnel at North Carolina Marine Corps Installations. This chapter presents both the process and criteria used to identify the three Proposed Action alternatives, as well as the No Action Alternative required under CEQ (40 CFR Part 1502.14(d)). To support this growth, the USMC proposes a combination of: 1) new infrastructure construction (e.g., buildings, roads, utility lines); 2) demolition and/or upgrades to existing infrastructure; and/or 3) relocating existing units and personnel to consolidate and better support the combat missions (see Section 2.2 for further detail on how the USMC proposes to accommodate this growth).

2.1 Proposed Action

In his January 2007 State of the Union address, the President announced his intention to increase USMC end strength from approximately 180,000 to 202,000 Marines. On the national level this would mean an increase in overall USMC forces of 22,000. Through an evaluation process (described in Chapter 1), specific USMC units were identified for augmentation based on mission compatibilities, combat role, and deployment responsibilities. Their parent units were then identified and personnel increases assigned to them. The following presents the USMC Proposed Action for permanent increases at the three North Carolina Marine Corps Installations.

The units proposed for augmentation at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point would permanently increase by approximately 8,050 active duty Marines and approximately 1,322 civilians, as well as a monthly average increase of approximately 529 formal Military Occupational Specialty (MOS) school students at MCB Camp Lejeune, bringing the total personnel increase to approximately 9,900. These estimates represent the best available data; while some variations may occur as the Proposed Action is implemented, the projected increases should remain representative of the gains expected. Table 2.1-1 lists the specific units projected to gain personnel at the three USMC North Carolina Installations.

MCB Camp Lejeune
Headquarters Battery 5th Battalion, 10th Marine Regiment
1st Battalion, 9th Marine Regiment/2nd Battalion, 9th Marine Regiment
Intelligence Enablers: Counterintelligence/Human Intelligence
Infantry Battalion Analytical
Marine Logistics Group 2nd Intelligence Battalion
Intelligence Enablers: Intelligence Analysts, 2nd Intelligence Battalion
Intelligence Enablers: 2nd Intelligence Battalion
Civil Affairs Detachments

 Table 2.1-1 Receiving USMC Units at North Carolina Installations

MCB Camp Lejeune
Civil Affairs Planners
Truck Company B, Headquarters Battalion, 2nd Marine Division and Headquarters Battalion,
2nd Marine Division
4th Reconnaissance Platoon, Reconnaissance Companies A and B, 2nd Reconnaissance Battalion
3rd Battalion, 9th Marine Regiment
Four Explosive Ordnance Disposal (EOD) Teams
Two Air Naval Gunfire Liaison Company Platoons
Military Police (MP) Company 2nd Marine Division
MP Company 2nd Marine Logistics Group
MP Support Company 2nd MEF Marine Headquarters Group
Combat Logistics Regiment Direct Support Augment
2nd Intelligence Battalion Augmentation (Phase I)
2nd Radio Battalion Augmentation
2nd Intelligence Battalion Augmentation (Phase II)
Counter Battery Radar Platoon, 10th Marine Regiment
Battery F, 2nd Battalion, 12th Marine Regiment (Phase I)
Five EOD Teams
Combat Logistics Regiment Direct Support Augmentation
Combat Logistics Battalion Marine Expeditionary Unit
Marine Logistics Group Maintainers
Infantry Battalion Distributed Operations Augmentation
Headquarters Company Infantry Regiment 24/7 Operations Augmentation
Battery F, 2nd Battalion, 12th Marine Regiment (Phase II)
Company E, 2nd Amphibious Assault Battalion
Combat Logistics Regiment Augments
Marine Logistics Command
Tank Company
Regional Area Officer/Foreign Area Officer
Reconnaissance
Joint Terminal Attack Controller
Maintainers
MCAS New River
One Marine Heavy Helicopter Squadron
Two Marine Light/Attack Helicopter (HML/A) Squadrons
MCAS Cherry Point
Marine Air Control Group Detachment
Marine Air Support Squadron Detachment
MP Company 2nd Marine Air Wing
Marine Wing Communications Squadron Detachment
Marine Air Control Squadron, Air Traffic Control Detachment
Marine Tactical Air Command Squadron Detachment
Unmanned Aircraft System Tier II

<i>Tuble 2.1-1</i> Receiving USMC Units at North Carolina Installations

Under the Proposed Action, the three North Carolina Marine Corps Installations would receive projected permanent increases in personnel as listed in Table 2.1-2.

Installation	Projected Increase¹		
MCB Camp Lejeune			
Active Duty	6,218		
Formal School Students (monthly average) ²	529		
Civilians	959		
MCB Camp Lejeune Subtotal	7,706		
MCAS New River			
Active Duty	1,267		
Civilians	144		
MCAS New River Subtotal	1,411		
MCAS Cherry Point			
Active Duty	565		
Civilians	219		
MCAS Cherry Point Subtotal	784		
USMC North Carolina			
Active Duty	8,050		
Formal School Students (monthly average) ²	529		
Civilians	1,322		
USMC North Carolina Total	9,901		

 Table 2.1-2
 Projected Increase in North Carolina USMC End Force

Sources: 1) Brewer 2007; 2) Personal communication, Brewer 2008a.

For military personnel, ranks are used to establish pay grades; Marine Corps ranks are indicated below. Table 2.1-3 provides a breakdown of the expected distribution of military and civilian personnel gain by grade.

Enlisted

- E-1: Private
- E-2: Private First Class
- E-3: Lance Corporal
- E-4: Corporal
- E-5: Sergeant
- E-6: Staff Sergeant
- E-7: Gunnery Sergeant
- E-8: Master Sergeant/First Sergeant
- E-9: Master Gunnery Sergeant/Sergeant Major/Sergeant

Officer

- O-1: Second Lieutenant
- O-2: First Lieutenant
- O-3: Captain
- O-4: Major
- O-5: Lieutenant Colonel
- O-6: Colonel
- O-7: Brigadier General
- O-8: Major General
- O-9: Lieutenant General
- O-10: General

	Percent Gain	MCB Camp	MCAS New	MCAS Cherry	North Carolina
Grade	in Each Grade	Lejeune	River	Point	Totals
Military ¹					
E-2	15%	933	190	85	1,208
E-3	27%	1,679	342	153	2,174
E-4	23%	1,430	291	130	1,853
E-5	17%	1,057	215	96	1,369
E-6	7%	435	89	40	564
E-7	3%	187	38	17	243
E-8	1%	62	13	6	81
O-1	1%	62	13	6	81
O-2	2%	124	25	11	161
O-3	2%	124	25	11	161
O-4	2%	124	25	11	161
<i>Totals</i> ³	100%	6,218	1,267	565	8,050
Civilians					
WG/GS-3	1%	10	1	2	13
WG/GS-4	12%	115	17	26	159
WG/GS-5	18%	173	26	39	238
WG/GS-6	5%	48	7	11	66
WG/GS-7	20%	192	29	44	264
WG/GS-8	5%	48	7	11	66
WG/GS-9	10%	96	14	23	132
WG/GS-10	3%	29	4	7	40
WG/GS-11	13%	125	19	29	172
GS-12	5%	48	7	11	66
GS-13	3%	29	4	7	40
GS-14	2%	19	3	4	26
GS-15	1%	20	1	2	13
Contractors ²	2%	19	3	4	26
Totals	100%	959	144	219	1,322

Table 2.1-3 Proposed Action Personnel Breakdown by Rank

Notes:

¹ Military grades E-1 and E-9 and O-5 to O-10, as well as civilian grades WG/GS-1 and WG/GS-2 each constitute less than 1 percent of the projected gain and, therefore, were not calculated.

² Contractor grade equivalent ranges from GS-7 to GS-11.

³ Calculations rounded to the nearest whole number; totals were summed from unrounded calculations, and then rounded. *Source:* Personal communication, Brewer 2008b.

As the numbers in Table 2.1-3 demonstrate, the majority of military gain (65 percent) would occur within the lower-ranking enlisted (E) Marines (E-2 to E-4). Marine Non-Commissioned Officers (E-5 and E-6) comprise 24 percent of the gain, and Staff Non-Commissioned Officers (E-7 and above) comprise 4 percent. The remaining 7-percent gain in military personnel would occur in lower-ranking officers (O-1 to O-4). For civilians, personnel grades in the General Schedule (or GS) are used for most professional, technical, administrative, and clerical positions, while the Wage Grade (WG) schedule is used for blue-collar workers. The WG/GS is separated into 15 grades (GS-1 up to GS-15). Entry-level positions are generally in the WG/GS-1 to -7 grades, WG/GS-8 to -12 represent the mid-level, and WG/GS-13 to -15 represent the top-level. The majority of gains (56 percent) would be in the WG/GS-1 to -7 grades,

36 percent would occur at the WG/GS-8 to -12 grades or contractors in the similar mid-level range, and the remaining 6 percent would be in the highest WG/GS-13 to -15 grades.

In addition to gains in Marine and civilian personnel, there would be an increase in Marine formal MOS school students at MCB Camp Lejeune. These students are junior enlisted Marines (E-1 and E-2) who recently left Boot Camp and have arrived to attend their final phase of formal training, before assignment to an operational unit. Therefore, the projected increase of approximately 6,348 on an annual basis would represent an estimated 33 percent over baseline levels. For MCB Camp Lejeune, these student increases would occur at the School of Infantry-East at Camp Geiger, the Engineer School at Courthouse Bay, and the Combat Service Support School at Camp Johnson. Increased student throughput would be accommodated at MCB Camp Lejeune; peak student loads were used to determine infrastructure requirements for this increased throughput.

Gains in Marine and civilian personnel would also result in associated gains in the dependent populations. Dependent numbers were derived by applying the USMC averages for dependents by grade (USMC 2007) to the expected distribution of personnel by grade (see Table 2.1-3 for these grades and the percent of increases in personnel anticipated within these grades). For civilians, the USMC dependent distributions are by civil service-military grade equivalent; Table 2.1-4 provides an estimate of dependents associated with the projected gains in both military and civilian personnel at the three Installations.

Installation	Total Increase ¹	
MCB Camp Lejeune		
Active Duty Dependents	5,449	
Civilian Dependents	1,736	
MCB Camp Lejeune Subtotal	7,185	
MCAS New River		
Active Duty Dependents	1,109	
Civilian Dependents	262	
MCAS New River Subtotal	1,371	
MCAS Cherry Point		
Active Duty Dependents	496	
Civilian Dependents	396	
MCAS Cherry Point Subtotal	<i>892</i>	
USMC North Carolina		
Active Duty Dependents	7,054	
Civilian Dependents	2,394	
USMC North Carolina Total	9,448	

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Note: ¹ Derived by applying the USMC averages for dependents by grade (USMC 2007) to the expected distribution of personnel by grade. For civilians, the USMC dependent distributions are by civil service-military grade equivalent.

2.2 Alternatives

Analysis of alternatives forms the core of the NEPA process. In compliance with NEPA and CEQ regulations, the USMC must consider reasonable alternatives to the Proposed Action. Only those alternatives determined to be reasonable relative to their ability to fulfill the need for a Proposed Action warrant detailed analysis. Through the evaluation that took place in the USMC Total Force Structure Process (refer to Sections 1.2 and 1.3), the USMC examined a range of alternatives to identify units to receive augmentation, and determined those deemed reasonable. This process identified three Installations in North Carolina to receive increases in personnel. The following discussion presents the No Action Alternative and the three action alternatives that would best meet the II MEF mission and operational needs, as well as address the comments received during the scoping process. The No Action Alternative is described first, because it represents the baseline conditions from which potential impacts of the action alternatives are gauged. The alternatives are:

- Alternative 1 (No Action Alternative) Under the No Action Alternative, the permanent, incremental increase of Marine Corps personnel at North Carolina Installations would not occur. This alternative is included in accordance with the CEQ regulations, although it would not meet the purpose and need to permanently increase Marine Corps personnel at the II MEF in North Carolina.
- Alternative 2 (Preferred Alternative) Under Alternative 2, the permanent, incremental increase of Marines would occur at the three North Carolina Marine Corps Installations as described in the Proposed Action (Section 2.1), and a multi-year, major construction effort for the infrastructure to support this increase would occur. The Presidential 2007 mandate to increase Marine Corps personnel would occur at the three North Carolina Installations and all associated Grow the Force activities would be implemented. Under this alternative, two types of construction projects are evaluated: those unique to the permanent increase in Base personnel, and a number of projects, known hereafter as -eore projects" which include a list of proposed new facilities that were already planned and programmed by Base Planners, but which have not yet been reviewed under the NEPA. Although these projects are not uniquely Grow the Force projects and in many cases (e.g. bachelor enlisted quarters) would support both existing personnel and new incoming personnel from Grow the Force, we conservatively added them to our analysis.
- Alternative 3 Under this alternative, the same permanent increase of Marines would occur at the three North Carolina Marine Corps Installations as described in the Proposed Action; however, only core construction projects would be implemented. Therefore, the increase in

Marine Corps personnel would continue to be accommodated in existing facilities or temporary/relocatable buildings already in place. This alternative meets the purpose and need to establish the Marine Corps personnel increases on a permanent basis at the three North Carolina Installations due to the continued Iraq and Afghanistan deployments. However, once deployments are curtailed and Marines return to their home stations from abroad, infrastructure capacity to support all the Marines will be considerably strained at the three Installations and further construction may need to be considered. If that occurs, USMC will do supplemental NEPA on the needed projects as required.

• Alternative 4 – Under Alternative 4, the same permanent increase of Marines would occur at the three North Carolina Marine Corps Installations as described in the Proposed Action; however, no additional Grow the Force or core construction projects would occur. The increased personnel would continue to be accommodated in existing facilities or temporary/relocatable buildings already in place. As with Alternative 3, this alternative meets the purpose and need to establish the Marine Corps personnel increases on a permanent basis at the three North Carolina Installations due to the continued Iraq and Afghanistan deployments. However, once deployments are curtailed and Marines return to their home stations from abroad, infrastructure capacity to support all the Marines will be considerably strained at the three Installations and further construction may need to be considered. If that occurs, USMC will do supplemental NEPA on the needed projects as required.

2.2.1 Alternative 1 (No Action Alternative)

For this EIS, the No Action Alternative serves as the baseline; the permanent, incremental increase of Marine Corps personnel at North Carolina Marine Corps Installations would not occur. While this does not meet the USMC's purpose and need, evaluating this alternative is in accordance with 40 CFR 1502.14, whereby decision makers can compare the magnitude of potential impacts between not taking action and implementing any one of the action alternatives. The last quarter of FY06 (comprising calendar year July through September 2006) was chosen as the baseline, because it reflects conditions that existed prior to the President's January 2007 announcement of USMC increases in end strength and prior to the temporary increases that occurred subsequently. Table 2.2-1 presents the number of personnel found in FY06.

Installation	FY06 ¹			
MCB Camp Lejeune				
Active Duty ¹	36,823			
Civilians	4,509			
MCB Camp Lejeune Subtotal	41,332			
MCAS New River				
Active Duty	6,487			
Civilians	474			
MCAS New River Subtotal	6,961			
MCAS Cherry Point				
Active Duty	8,420			
Civilians	5,368			
MCAS Cherry Point Subtotal	13,788			
USMC North Carolina				
Active Duty	51,730			
Civilians	10,351			
USMC North Carolina Total	62,081			

Table 2.2-1	No Action/Baseline Personnel	
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Note: ¹ Formal MOS school students are included in the baseline for MCB Camp Lejeune Active Duty personnel (36,823).

Source: Personal communication, Brewer 2008a.

In Table 2.2-2, baseline active-duty military dependent numbers for FY06 are presented. These active-duty dependent numbers were based on the proportion of family members recorded in the FY06 population report (Collins 2006). A multiplier of 1.8 was applied to estimate civilian employee dependents for the FY06 baseline (see Table 2.2-2).

Installation	FY06
MCB Camp Lejeune	
Active Duty Dependents	36,287
Civilian Dependents	8,116
MCB Camp Lejeune Subtotal	44,403
MCAS New River	
Active Duty Dependents	6,787
Civilian Dependents	853
MCAS New River Subtotal	7,640
MCAS Cherry Point	
Active Duty Dependents	8,297
Civilian Dependents	9,662
MCAS Cherry Point Subtotal	17,960
USMC North Carolina	
Active Duty Dependents	51,371
Civilian Dependents	18,632
USMC North Carolina Total	70,003

 Table 2.2-2 No Action/Baseline Dependent Population

2.2.2 Alternative 2 (Preferred Alternative)

Under Alternative 2 (Preferred Alternative), the permanent, incremental increase of Marine Corps personnel at North Carolina Marine Corps Installations would occur at all three Installations as indicated under the Proposed Action (Table 2.2-3)—Marine personnel would permanently grow by 7,706 at MCB Camp Lejeune, 1,411 at MCAS New River, and 784 at MCAS Cherry Point (these numbers include active duty, civilians, and MOS students). MCB Camp Lejeune would experience an increase of approximately 19 percent in Installation personnel when compared to the baseline. MCAS New River would experience a 20-percent increase in growth from FY06 levels, while MCAS Cherry Point would experience nearly a 6-percent increase in Installation growth. In total, this represents an approximate 15-percent increase in USMC end strength in North Carolina (Table 2.2-3).

Installation	FY06 Baseline ¹	Increase ²	% Increase
MCB Camp Lejeune			
Active Duty	36,823	6,218	16.9
Formal School Students (monthly average) ^{3, a}		529	N/A
Civilians	4,509	959	21.3
MCB Camp Lejeune Subtotal	41,332	7,706	18.6
MCAS New River			
Active Duty	6,487	1,267	19.5
Civilians	474	144	30.4
MCAS New River Subtotal	6,961	1,411	20.3
MCAS Cherry Point			
Active Duty	8,420	565	6.7
Civilians	5,368	219	4.1
MCAS Cherry Point Subtotal	13,788	784	5.7
USMC North Carolina			
Active Duty	51,730	8,050	15.6
Formal School Students (monthly average) ^{3, a}		529	N/A
Civilians	10,351	1,322	12.8
USMC North Carolina Total	62,081	9,901	15.9

 Table 2.2-3
 Alternative 2 Projected Increase in USMC Personnel

Note: ^a Baseline MCB Camp Lejeune Formal School Students are covered in the baseline MCB Camp Lejeune Active Duty (36,823).

Sources: ¹ Personal communication, Brewer 2008a; ² Personal communication, Brewer 2008b; ³ Brewer 2007.

The combined growth in USMC personnel and dependent population is projected to be approximately 18,820 in North Carolina: 14,362 at MCB Camp Lejeune, 2,782 at MCAS New River, and 1,676 at MCAS Cherry Point (combination of Tables 2.2-3 and 2.2-4). Additional analysis on the retiree population and school-age children is provided in Section 3.6 of this EIS.

Installation	FY06 Baseline	Increase ¹	% Increase
MCB Camp Lejeune			
Active Duty Dependents	36,287	5,449	15.0
Civilian Dependents	8,116	1,736	21.4
MCB Camp Lejeune Subtotal	44,403	7,185	16.2
MCAS New River			
Active Duty Dependents	6,787	1,109	16.3
Civilian Dependents	853	262	30.7
MCAS New River Subtotal	7,640	1,371	17.9
MCAS Cherry Point			
Active Duty Dependents	8,297	496	6.0
Civilian Dependents	9,662	396	4.1
MCAS Cherry Point Subtotal	17,960	<i>892</i>	5.0
USMC North Carolina			
Active Duty Dependents	51,371	7,054	13.7
Civilian Dependents	18,632	2,394	12.8
USMC North Carolina Total	70,003	9,448	13.5

Table 2.2-4 Alternative 2 Projected Increase in Dependents

Note: ¹ Derived by applying the USMC averages for dependents by grade (USMC 2007) to the expected distribution of personnel by grade. For civilians, the USMC dependent distributions are by civil service-military grade equivalent.

The USMC proposes to support this growth through a combination of:

- 1. Constructing new infrastructure such as:
 - headquarters, administrative, and educational facilities;
 - operations and maintenance buildings;
 - lodging accommodations (e.g., bachelor enlisted quarters [BEQs] and mess halls);
 - roads, parking areas, wastewater, stormwater drainage systems, waste disposal systems, and power/communication lines; and
 - community support facilities such as fitness/recreation centers, medical/dental clinics, and retail exchanges.
- 2. Relocating personnel within the Base or Air Stations to consolidate parent units and/or better support compatibility between missions found within particular cantonment areas.
- 3. Demolishing and/or upgrading existing infrastructure.
- 4. Facilities would also be sited to:
 - use existing infrastructure to the greatest extent possible;
 - coincide with and/or be a complement to existing missions, operations, and functions;
 - establish facilities on developed, cleared, or previously disturbed lands;

- avoid areas conveyed for housing privatization initiatives;
- minimize impact to the environment (e.g., avoid wetlands and sensitive species habitat); and
- take deployment schedules into consideration when undertaking construction.

In accordance with USMC policy, all new building projects with design starts after January 3, 2007 must comply with the Energy Policy Act of 2005 (as codified under 10 CFR 433 and 435). As of FY09, new building construction must also achieve Silver-Level ratings under the Leadership in Energy and Environmental Design (LEED) certification process. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: 1) sustainable site development, 2) water savings, 3) energy efficiency, 4) materials selection, and 5) indoor environmental quality. LEED uses a rating system for sustainable building design, construction, and maintenance developed and maintained by the United States Green Building Council (USGBC 2008). The current LEED rating system is based on meeting prescribed green-building attributes that have a point system associated with the five key areas, or attributes, of human and environmental health listed above. For each attribute there are a certain number of points that can be achieved and when added together, the points signify a particular level—LEED-certified, Silver, Gold, or Platinum. By following these LEED guidelines, the consequent green house gas emissions generated by these new building systems and infrastructure are reduced.

The discussion below presents the specific construction/development elements proposed under Alternative 2 (Preferred Alternative) at all three Installations.

2.2.2.1 Alternative 2—MCB Camp Lejeune/MCAS New River

MCB Camp Lejeune and MCAS New River would accommodate the permanent increases through new infrastructure (including buildings, roads, and utility lines) construction and upgrades. To determine the specific infrastructure needed for MCB Camp Lejeune and MCAS New River, and where it would be placed, several screening exercises were undertaken at the two Installations. In the initial phase of the screening exercise, a total of 16 potential areas were identified and analyzed to determine suitability for future development (15 sites at MCB Camp Lejeune and 1 at MCAS New River). These planning areas were already designated either for development or industrial activities (MCB Camp Lejeune 2009b, 2008a, 2008b, 2008c), which made them suitable for future development under this Proposed Action. Four areas were set aside for future expansion of MCB Camp Lejeune's formal schools and were therefore no longer available for Grow the Force development. Three additional areas were excluded from consideration due to existing uses as live-fire ranges or the presence of potential (historic range) or known

munitions, hazardous waste, or petroleum contamination (i.e., areas with contamination that have not yet been remediated).

Nine potential cantonment planning areas (eight at MCB Camp Lejeune and one at MCAS New River) were carried forward for consideration based on future planning efforts, the functions of the proposed facilities, and the absence of insurmountable (i.e., not costly or time critical) constraints. The cantonment planning areas (indicated in green in Figure 2.2-1) identified at MCB Camp Lejeune are Hadnot Point, Wallace Creek, French Creek, Courthouse Bay, Rifle Range (Stone Bay), Camp Devil Dog, Camp Geiger, and Camp Johnson (Figure 2.2-1). Within each of these planning areas, infrastructure development is identified in blue; however, some of the proposed infrastructure would occur outside general planning areas and is indicated in red. These latter infrastructure projects include the new Base road, PPV housing, Waste Water Treatment Facility, Marston Pavilion Annex, and Triangle Outpost Gate. The entirety of MCAS New River is considered one development area due to its industrial nature.

In the next phase of analysis, the following criteria were applied for general facility/infrastructure placement within a proposed development area: 1) size and configuration; 2) operation and function; 3) cost, and 4) environmental constraints.

1. Size and Configuration. Infrastructure and facility development areas need to:

- Accommodate Headquarters buildings; company operations and distribution facilities; mess halls; equipment maintenance shops; organizational vehicle parking; anti-terrorism measures; and storage for deployment equipment, such as weapons, ammunition, and hazardous materials. Supporting infrastructure includes electric service, water, sewer, gas, stormwater drainage, paving, and information systems.
- Provide flat terrain, whenever possible, to minimize: site preparation (i.e., earthwork and fill) costs; reduce the need for complex drainage systems; and facilitate installation of underground rather than overhead utilities.
- Account for anti-terrorism/force protection measures as identified in the Unified Facility Criteria 4-010-01, *DoD Minimum Anti-terrorism Standards for Buildings*. These criteria provide guidance on how far facilities should be located from access control points (security gates), roads, highways, and other features to assure security.
- Provide compact sites that are not linear or spread out (since these are less efficient) and locate facilities with functional relationships next to one another; such as a site that allows for centralized parking, dining facilities, and fitness, recreation, computer and/or distance learning centers. This approach is more efficient in satisfying Marine needs.



Figure 2.2-1 MCB Camp Lejeune and MCAS New River Development Areas

• Allow for efficient and timely communication between commanders and parent units by building adjacent headquarters.

2. Operation/Function. These criteria were applied to identify development areas that would maintain a logical relationship between the new facility and infrastructure operations and functions with existing operations and functions. An isolated site located in an area with dissimilar mission operations and functions would not allow the units to effectively integrate with their parent companies or effectively utilize existing facilities and infrastructure. Therefore, the following factors were considered:

- *A location within already developed or cleared land*–Minimizes the need to encroach upon existing training areas or habitat.
- *Level of service*–Use existing roads or highways that can accommodate the additional traffic volume.
- *Access to ranges and training areas*—Ensure that sites have easy access from their administrative/ maintenance/storage/parking functions to ranges and training areas.
- Access to centralized fueling and washing facilities-Ensure easy access to existing fueling and washing facilities.
- *Physical proximity to*:
 - Housing-minimize commute distances for single Marines as well as those accompanied by their families and living on the Installation. The number of BEQs and on-Base housing is determined by using the anticipated personnel numbers, to include peak numbers associated with the formal school student population (Personal communication, Sylvester 2008).
 - Community facilities-maintain existing shopping, medical, recreational facilities, and restaurants; financial and educational institutions; and other types of services within easy commute. This criterion also includes consideration of the ability of off-Base streets, roads, highways, and bridges to handle the increase in traffic, and the proximity to airports for transporting personnel.
 - Gates (access control points)-minimize driving time for any off-Base support work force (e.g., contractors, delivery trucks, etc.).

3. Costs. Costs associated with construction within these development areas were also considered and include:
- *Capitalizing on existing infrastructure*-areas in which access roads and utilities already exist provide savings by not having to develop these features. However, if utilities are undersized or in poor condition, they would likely need to be replaced or supplemented, which would not contribute to costs savings.
- *Minimizing earthwork*-preparing a site for construction may include leveling terrain and the need for soil as fill. If a lot of fill is required, but cannot be provided by nearby borrow pit sites, there is an additional cost for transporting the fill material. Building at sites that minimize the need for fill reduces costs.
- *Minimizing mitigation requirements*-mitigation may be required to compensate for or offset environmental impacts. By avoiding adverse environmental impacts to the greatest extent possible, the need for mitigation can be eliminated or reduced.
- *Minimizing design and engineering requirements*-methods to minimize design and engineering costs include avoiding sites that drain water poorly, are inaccessible, or have soils that erode easily.

4. Environmental Constraints. This step included an evaluation of environmental constraints to refine areas suitable for development. Constraints include munitions safety firing areas (or Surface Danger Zones [SDZ]), sensitive species habitats, Installation Restoration (IR) sites, Munitions Response Program (MRP) sites, and wetlands. While all effort is being made to avoid these constrained areas, some construction may be necessary in such areas to ensure mission compatibility and administrative effectiveness between facilities. Table 2.2-5 lists the number of unconstrained acres within the development areas. Figures 2.2-2 through 2.2-5 graphically depict these unconstrained (pink) and constrained (un-colored) locations. Areas identified as unconstrained include undeveloped lands with no environmental constraints, and contaminated and/or brownfield areas that can be developed once proper remediation efforts have been implemented.



Figure 2.2-2 MCB Camp Lejeune Unconstrained Areas - Central



Figure 2.2-3 MCB Camp Lejeune Unconstrained Areas - North



Figure 2.2-4 MCB Camp Lejeune Unconstrained Areas - South



Figure 2.2-5 MCB Camp Lejeune – West and MCAS New River Unconstrained Areas

Planning Area	Unconstra (ac	ined Areas res)	Proposed Construction Footprint (acres) ¹	Difference Between Unconstrained Areas and Construction Footprint (acres)
MCB Camp Lejeune	Developed ²	Undeveloped ³		
Hadnot Point	526	526	199.6 ⁴	852.4
Wallace Creek	21	473	132.1	361.9
French Creek	356	470	153.8	672.2
Courthouse Bay	121	178	189.5	109.5
Rifle Range/Stone Bay	29	458	26	461
Camp Devil Dog	2	48	12	38
Camp Geiger	97	193	95.6	194.4
Camp Johnson	277	374	117.9	533.1
Other Areas Proposed for Development	2	953	790.1 ⁴	164.9
MCAS New River	815	907	158.8	1,563.2

Table 2.2-5	Alternative 2	Unconstrained	Area	Comparison
1 1000 4.4 5	11110111111110 2	Cheomon annea	mu	comparisor

¹ These footprints include, but are not limited to, parking lots, driveways, drainage ponds, etc

² Developed areas include impervious surfaces such as buildings, parking lots, and roads.

³ Undeveloped areas do not include those impervious surfaces, but can include areas used for training and ranges.

Please note that several projects were either refined or moved between publication of the Draft and Final versions of the EIS. For example, in the Other Areas Proposed for Development, the New Base Road and Brewster Road construction projects (P1393/1384/1385) were refined and a new Ring Road added to better access the hospital; in Hadnot Point the Relocation of the Military Police Working Dogs project (P1304) was moved out of the Hadnot Point Planning Area into the Other Areas Proposed for

Development. These refinements and project moves resulted in approximately 18 more acres being affected within MCB Camp Lejeune.

After these four steps, it was then determined how many unconstrained and constrained areas existed within each of the nine planning areas; these areas were then assessed to determine how many acres would be needed for proposed infrastructure development versus the number of unconstrained acres (refer to Table 2.2-5) within MCB Camp Lejeune. Although all proposed infrastructure fits within these unconstrained areas, some specific projects may still need to occur outside the unconstrained areas due to the need to maintain a certain facility size, topography, and/or identification of an unforeseen/unknown cultural resource. Therefore, to ensure maximum planning flexibility this EIS conservatively assumes the projects could occur anywhere within the identified –proposed development areas" (indicated with yellow boundaries) at MCB Camp Lejeune, rather than entirely within the unconstrained locations shown in the figures. Unavoidable impacts on natural or environmental resources that have the potential to occur within the constrained locations represent the upper limits (i.e., worst-case) of the impacts addressed by this EIS. As discussed previously, if projects change locations outside of identified proposed developed areas or designs are found to impact constrained areas, not previously identified or evaluated sufficiently in this EIS, supplemental NEPA on these proposed projects will be performed.

The following figures illustrate Alternative 2 (Preferred Alternative) development areas (in yellow) at MCB Camp Lejeune and the projects that are proposed for that Installation. Hadnot Point is depicted in Figure 2.2-6, Wallace Creek in Figure 2.2-7, Courthouse Bay in Figure 2.2-8, French Creek in

Figure 2.2-9, Rifle Range/Stone Bay in Figure 2.2-10, Camp Devil Dog in Figure 2.2-11, Camp Geiger in Figure 2.2-12, and Camp Johnson in Figure 2.2-13. Figures 2.2-14 and 2.2-15 illustrate projects that fall outside the eight planning areas. Within each figure is a table indicating proposed development projects, their titles, USMC-designated project numbers, and estimated construction footprint acreages. Each footprint includes the approximate size of the building, as well as space needed to accommodate construction materials and equipment (i.e., laydown area), utilities, sidewalks, landscaping, parking, construction access/egress, etc. that would be built within the proposed development area. At MCB Camp Lejeune, construction and/or infrastructure upgrades would disturb approximately 1,717 acres of lands or 1.4 percent of the total *land* area (120,423 acres) within the Base's boundaries.

Tables 2.2-6 through 2.2-14 present, by MCB Camp Lejeune development area, the project titles, project numbers, and estimated construction footprints for all projects. Under Alternative 2 (Preferred Alternative) both projects directly-related to Grow the Force (GTF) and those identified as core would be constructed.

Project Title ¹	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Regimental/Battalion Headquarters, 10th Marine Regiment	Core	P1242	7
Consolidated Issue Facility/Nuclear, Biological, and Chemical Warehouses	GTF	P1258	14
Hadnot Point Utility Infrastructure Expansion	GTF	P1264	45.6
Dental Clinic at Mainside	GTF	P1276	3.5
2nd Marine Division Training Center and Parking Deck	Core	P1299	12.5
10th Marine Regiment and Tank Battalion Armory	GTF	P1303	4
Mainside Exchange Addition	Core	P1307	6.5
Consolidated Information Technology/Telecom Complex	GTF	P1311	16
Indoor Fitness Facility	GTF	P1257	25
2nd Marine Division Tank Battalion/Company Headquarters	GTF	P1300	20
Mess Hall	GTF	P1301	4
Installation Personnel Administration Center Facility	Core	P1134	5
Mess Hall and Parking Deck	Core	P883	6.5
Light Armored Vehicle Maintenance Shelters	Core	P1131	7.5
II MEF Simulation Center	Core	P1338	10
Simulation Integration Center	Core	P1346	5
Parking Deck	GTF	P1321	2.5
Detainee Facility	Core	P1310	5
Hadnot Point Prop	posed Projects	Total Acres	199.6

Table 2.2-6 MCB Camp Lejeune/Hadnot Point Proposed Projects Within Development Areas

Between the Draft EIS and this Final EIS, the Relocation of the Military Police Working Dogs project (P1304) was moved from this Area to the Proposed Projects Outside Designated Planning Area.



Figure 2.2-6 Hadnot Point Proposed Project Development Areas

	,	1	-
Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
MP Company Complex (Marine Headquarters Group, 2nd MEF)	GTF	P1239	10
2nd Air Naval Gunfire Liaison Company Maintenance/Operations Complex	GTF	P1240	10
8th Communications Battalion Complex	GTF	P1279	10
2nd Radio Battalion Complex	GTF	P1280	10
2nd Marine Expeditionary Force Armory, Wallace Creek	GTF	P1323	4
2nd Intelligence Battalion Operations Complex	GTF	P1034	25
Two Bachelor Enlisted Quarters	GTF	P1315	9
Bachelor Enlisted Quarters & 900-Car Parking Garage	GTF	P1316	7
Two Bachelor Enlisted Quarters	GTF	P1249	9
Bachelor Enlisted Quarters	GTF	P1321	5
Bachelor Enlisted Quarters & 900-Car Parking Garage	GTF	P1322	7
Battalion Area Road Network	GTF	P1298	13.6
MEF Headquarters Group and Support Facilities	Core	P1342	12.5
Wallace Creek Pro	posed Project	s Total Acres	132.1

 Table 2.2-7 MCB Camp Lejeune/Wallace Creek Proposed Projects Within Development Areas

 Table 2.2-8 MCB Camp Lejeune/Courthouse Bay Proposed Projects Within Development Areas

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Reconnaissance Platoon Operations/Maintenance Complex	GTF	P1237	5
Mess Hall Addition	GTF	P1256	1
Medical/Dental Clinic Addition	GTF	P1273	1
Fire Station	Core	P1203	3
2nd Combat Engineer Maintenance/Operations Complex	GTF	P1253	50
Courthouse Bay Utility Expansion	GTF	P1266	20
Marine Corps Engineer School (MCES) Community Support Facilities	Core	P1305	0.5
MCES Operations and Support Facilities	GTF	P1309	5
MCES Applied Instruction Facility	Core	P1312	20
Bachelor Enlisted Quarters	GTF	P1318	7
Bachelor Enlisted Quarters	GTF	P1251	12
Bachelor Enlisted Quarters	GTF	P1254	12
Bachelor Enlisted Quarters	GTF	P1255	12
Amphibious Assault Company Complex	GTF	P1235	36
Expeditionary Fighting Vehicle Maintenance Facility	Core	P1010	5
Courthouse Bay P	roposed Projec	ts Total Acres	189.5



Figure 2.2-7 Wallace Creek Proposed Project Development Areas

Project Title	GTF or CORE	Project Number	Estimated Facility Footprint (acres)
e Platoon Operations/Maintenance Complex	GTF	P1237	
ition	GTF	P1256	
al Clinic Addition	61F	P1273	
animae Maintananea (Oncertiane Famalau	CORE	P1203	
igneer ivaniteriance/operations complex	GTF	P1266	202
nity Support Facilities	CORE	P1305	0.0
ons and Support Facilities	GTF	P1309	
Engineer School (MCES) Applied Instruction Facility	CORE	P1312	20
ted Quarters	GTF	P1318	1
ted Quarters	GTF	P1251	12
ted Quarters	GTF	P1254	12
ted Quarters	GTF	P1255	12
ssault Company Complex	GTF	P1235	36
sy Projects Total (29.9% of Development Area) אי Development Area דעיפו			184.
	A B		
0.25 0 0.5 0 0.5 0 0 0	0.25	0.5 Miles	ilometers
	Project Title	Pojet Title GF or conc Platoon Operations/Maintenance Complex 017 Outing 010 Outing <td>Project Title GF or CORE Project Title Palaton Operations/Maintenance Complex GF P1235 Diano GF P1235 Gine Maintenance Complex GF P1235 Diano CORE P1235 Gine Maintenance/Operations Complex GF P1235 Diano CORE P1235 P1235</td>	Project Title GF or CORE Project Title Palaton Operations/Maintenance Complex GF P1235 Diano GF P1235 Gine Maintenance Complex GF P1235 Diano CORE P1235 Gine Maintenance/Operations Complex GF P1235 Diano CORE P1235 P1235

Figure 2.2-8 Courthouse Bay Proposed Project Development Areas

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Material Distribution Center	Core	P1035	13
Explosive Ordnance Division Addition	GTF	P1246	2
French Creek Utility Expansion	GTF	P1265	20
Mess Hall	GTF	P1267	1.5
Medical/Dental Clinic Addition	GTF	P1274	3
Two Bachelor Enlisted Quarters	GTF	P1317	32
Location Exchange Addition	Core	P1232	2
2nd Marine Logistics Group Headquarters/ Command Element Administrative Complex	Core	P1252	20
2nd Marine Logistics Group Armory Addition	GTF	P1302	1
Tri-Marine Expeditionary Unit Operations Facility	Core	P1199	10
Additions to Combat Logistics Battalion Facilities	GTF	P1241	4
Combat Logistics Battalion Complex	Core	P1244	27
Additions to Marine Logistics Group Communication Facilities	GTF	P1245	2
8th Engineer Operations/Maintenance Complex	Core	P919	14.8
Mess Hall, French Creek	Core	P1161	1.5
French Creek	Proposed Projects	Total Acres	153.8

Table 2.2-9 MCB Camp Lejeune/French Creek Proposed Projects Within Development Areas

 Table 2.2-10 MCB Camp Lejeune/Rifle Range (Stone Bay) Proposed Projects

 Within Development Areas

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Bachelor Enlisted Quarters	GTF	P1286	12
Bachelor Enlisted Quarters	GTF	P1314	9
Special Operations Tactical Group Embassy Complex	Core	P1349	5
Rifle Range (Stone Bay) 1	Proposed Projects	Total Acres	26

Table 2.2-11 MCB Camp Lejeune/Camp Devil Dog Proposed Projects Within Development Areas

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
School of Infantry-EAST Field Training Facilities	GTF	P1269	12
Camp Devil Dog P	roposed Projects	Total Acres	12



Figure 2.2-9 French Creek Proposed Project Development Areas

	Doctors Title	GTF or	Project	Estimated Facility
		CORE	Number	Footprint
	Ar Enlisted Quarters	GTE	D1386	(derres)
Bachel	for Enlisted Quarters	GTF	P1314	6
COTG.	Embacev Complex at Stone Ray Rifle Range	CORE	D1340	
Contraction of the second se	Emiloasy Complex at Stone Day Mile Mange Bay (Difle Danre) Drojecte Total (2 3% Development Area)		CLOT -	20
Stone Stone	bay (nine nange) ri ojecus i otal (2:3% Development Area) Bav Development Area Total	Т		1 140
				01-11-
	New River			
RIFLE RANGE (Stone Bay)				
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Stone Bay Rifle Range Boundary Building MCB Camp Lejeune	0.25	0 02	52 O	5 Milac
Proposed Development Areas Road — Major Roads	0.5	0.5		1 Kilometers
1100 March				

Figure 2.2-10 Rifle Range (Stone Bay) Proposed Project Development Area



Figure 2.2-11 Camp Devil Dog Proposed Project Development Area

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
School of Infantry Training and Operations Facilities	GTF	P1268	46.6
School of Infantry Open Bay Barrack and Mess Hall Addition	GTF	P1313	25
Bachelor Enlisted Quarters	GTF	P1109	12
Motor Transportation/Communications Maintenance Facility	Core	P004	12
Camp Geiger Proposed Projects Total Acres			

 Table 2.2-12 MCB Camp Lejeune/Camp Geiger Proposed Projects Within Development Areas

<i>Table 2.2-13</i>	MCB Camp	Lejeune/Camp	Johnson	Proposed	Infrastructure	Projects
	_	Within Devel	opment A	Ireas	-	-

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Staff Non-Commissioned Officer Academy	Core	P003	9
Bachelor Enlisted Quarters	GTF	P1319	9
Community Facilities	Core	P1270	37
Bachelor Enlisted Quarters		P1320	12
Marine Corps Combat Service Support Schools (MCCSSS) Headquarters	Core	P1324	20
Applied Instruction Facility	GTF	P1190	5
Utility Expansion, Camp Johnson	GTF	P1340	2.5
Medical/Dental Clinic	GTF	P1341	1
Logistics Center of Excellence	Core	P1347	12.4
Missile System, Target Illuminator Controlled (MISTIC) Training Center	Core	P1352	10
Camp Johnson Propos	sed Projects	Total Acres	117.9



Figure 2.2-12 Camp Geiger Proposed Project Development Area

Poliet Title Fried Project Title Project Reality Reality Right Non-Commissioned Officer Academy Commissioned	Miles Alimeters	°	0 102	
Project Title Froject Title Froject Facility Raff Non-Commissioned Officer Academy Fre or CORE Project Facility Raff Non-Commissioned Officer Academy Ere or CORE Project Facility Raff Non-Commissioned Officer Academy Ere or CORE Project Facility Raff Non-Community Facilities Community Facilities Ere or CORE Project Pacinic Community Facilities Community Facilities Core Project Pacinic Ereconstant Recently Contracting Core Core Project Pacinic Ereconstant	Ass)			
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Project Title Froject Title Froject Facility 24 Bachelor Enlisted Outrers GTF or CORE Project Facility Bachelor Enlisted Ouarters GTF P1319 9 24 Community Facilities GTF P1319 9 25 Bachelor Enlisted Ouarters GTF P1319 9 26 GTF P1319 9 27 Dutility Facilities GTF P1329 9 28 MCCSSS Headquarters GTF P1329 9 27 MCCSSS Headquarters GTF P1329 9 28 Utility Expansion, Camp Johnson GTF P1390 2.5 MCCSSS Logistics Center of Excellence GTF P1340 2.5 MISTIC Training Center GTF P1340 2.5 MISTIC Training Center CORE P1347 1.124	785			Camp Johnson Projects I otal (12% Development Area) Camp Johnson Development Area Total
Project Title Froject Title Froject Facility Staff Non-Commissioned Officer Academy CORE Project Facility Staff Non-Commissioned Officer Academy CORE P003 9 Community Facilities GTF P1319 9 Rachelor Enlisted Quarters CORE P1339 9 MCCSSS Headquarters CORE P1230 12 MCCSSS Headquarters CORE P1320 12 McCSSS Headquarters CORE P1330 12 McCSSS Headquarters CORE P1330 12 McCSSS Logistic, Camp Johnson GTF P1340 2.5 McCSSS Logistics Center of Excellence CORE P1341 1	117.9	P1352	CORE	MISTIC Training Center Camp Johnson Projects Total (15% Development Area)
Control Froject Title Froject Facility Staff Non-Commissioned Officer Academy GTF or CORE Project Facility Bachelor Enlisted Quarters GTF P1319 9 Community Facilities GTF P1319 9 MCCSSS Headquarters CORE P1320 37 Applied Instruction Fac. MCCSSS GTF P1320 12 Utility Expansion, Camp Johnson GTF P1320 21	12.4	P1341	CORE	Medical/Dental Clinic MCCSSS Logistics Center of Excellence
Addition Froject Title Froject Facility Staff Non-Commissioned Officer Academy GTF or CORE Project Facility Bachelor Enlisted Quarters CORE P003 9 Community Facilities CORE P1319 9 MCCSSS Headquarters CORE P1320 37 Applied Instruction Fac. MCCSSS CORE P1320 112	2.5	P1340	GTF	Utility Expansion, Camp Johnson
Staff Non-Commissioned Officer Title GTF or CORE Project Facility Staff Non-Commissioned Officer Academy CORE P1033 9 Bachelor Enlisted Quarters CORE P1033 9 Staff Non-Community Facilities CORE P1339 9 MCCSSS Headquarters CORE P1320 37	2	P1190	GTF	Applied Instruction Fac - MCCSSS
Addition Project Title Froject Facility Staff Non-Commissioned Officer Academy GTF or CORE Project Facility Staff Non-Commissioned Officer Academy CORE P003 9 Staff Non-Commissioned Officer Academy CORE P003 9 Bachelor Enlisted Quarters CORE P1319 9 Bachelor Enlisted Quarters CORE P1320 37	20	P1324	CORE	MCCSSS Headquarters
Project Title GTF or CORE Project Facility Staff Non-Commissioned Officer Academy CORE P003 9 Bachelor Enlisted Quarters GTF P1319 9 Community Facilities CORE P003 9	12	P1320	GTF	Bachelor Enlisted Quarters
Project Title GTF or CORE Project Facility Staff Non-Commissioned Officer Academy CORE P003 9 Bachelor Enlisted Quarters GTF P1319 5	37	P1270	CORE	Community Facilities
Project Title GTF or CORE Project Facility Staff Non-Commissioned Officer Academy CORE P003 5 5	6	P1319	GTF	Bachelor Enlisted Quarters
Project Title GTF or CORE Project Facility Number Footprint	6	P003	CORE	Staff Non-Commissioned Officer Academy
	Facility Footprint (acres)	Project Number	GTF or CORE	Project Title

Figure 2.2-13 Camp Johnson Proposed Project Development Area

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
New Base Road/Brewster Road ¹	GTF	P1382/1383/1384	219.2
Triangle Outpost Gate	Core	P1165	2.5
Public Private Venture (PPV) Housing—about 1,350 Houses	GTF	N/A	460
Marston Pavilion Annex	GTF	P1293	12.6
Water Treatment Facility	Core	P1043	13.6
Water Treatment Facility, Hadnot Point Phase II	Core	P1355	10
Warehouse ²	Core	P1259	10
Relocation of Base Military Police Working Dogs ³	GTF	P1304	30.2
School Age Child Care Center ²	Core	P1356	2
Child Development Center (CDC) ²	GTF	P1357	5
CDC^{2}	GTF	P1358	5
CDC ²	Core	P1359	5
CDC^{2}	Core	P1360	5
Storage Facility, Marine Family Services ²	Core	P1361	10
Proposed Project	s Outside Plan	ning Areas, Total Acres	790.1

Table 2.2-14 MCB Camp Lejeune Proposed Projects Outside Designated Planning Areas

Between publication of the Draft and Final EIS, this project (formerly P1262) was refined and combined with improvements to Brewster Road (formerly P1379) to create a new project that would be done in three phases; Phase I is P1382; Phase II, P1383; and Phase III, P1384. These project phases also include a new road to access the Hospital, called the **-r**ing road."

² The specific location within installation is still to be determined.

³ Between the Draft EIS and this Final EIS, this project was moved from Hadnot Point Area to this Area.

As mentioned earlier, a new Base road is proposed at MCB Camp Lejeune to alleviate traffic congestion along portions of North Carolina State Highway 24 (NC 24), lessen the Main Gate wait time at Lejeune Boulevard, and provide an internal connection across New River to Hadnot Point (Figure 2.2-16). The Main Gate on Lejeune Boulevard is the primary access point to the Installation and handles the largest volume of traffic from NC 24. Currently, residents must exit the housing areas, travel east along NC 24, and re-enter at the Main Gate, thereby increasing vehicular traffic (Dewberry and Davis, Inc. 2007). Providing an internal connection from the housing areas, where none currently exists, would allow residents to travel directly to the main Installation. The new road would divert up to one third of the traffic volume along the NC 24 corridor and lessen congestion along Lejeune Boulevard to the Main Gate. An existing access gate at Knox Park Road would be upgraded and re-opened for the new road access. The 7-mile new road would operate as an arterial boulevard capable of supporting a high-vehicle capacity and be a four-lane divided highway with paved shoulders and a grassy median. There would be few entries and exits, and a posted speed limit averaging 45 miles per hour (Dewberry and Davis, Inc. 2007).

Figure 2.2-14 MCB Camp Lejeune Proposed Projects Outside Designated Development Areas-North

2-34



Figure 2.2-15 MCB Camp Lejeune Proposed Projects Outside Designated Development Areas-South

Evaluation of alignment alternatives included incorporating developed and/or disturbed lands, and avoiding or minimizing, to the greatest extent practicable, impacts to sensitive environmental resources such as wetlands, floodplains, coastal zones, protected species, and Installation Restoration sites. In May 2009, MCB Camp Lejeune held a series of meetings with federal and state agencies to discuss the proposed new Base entry road and collect preliminary feedback from such agencies on both the proposed alignment of the road and the permitting process. Meeting participants included the USACE, the U.S. Coast Guard, the National Marine Fisheries Service, and agencies within NCDENR. These meetings provided an opportunity to generate early discussion on wetland and navigable water impacts, and stormwater treatment requirements in order to incorporate agency feedback into the design effort. The proposed road alignment depicted in Figure 2.2-16 and figures throughout the EIS reflect agency input from such meetings, and represent the compromise between constraints associated with future and existing development and the need to minimize impacts to resources, particularly waters of the U.S. and cultural resources. These figures show the proposed pathway of the road centerline and bridge crossings over waters; however, they do not yet show the total footprint of disturbance proposed from edge to edge of the road nor of intersection interchanges since these elements are still under design.

Under the road alignment, both Northeast and Wallace Creeks and associated smaller tributaries and wetlands would need to be traversed, resulting in impacts to wetlands and waters of the U.S. In addition to the road alignment, up to seven borrow pits would be needed to accommodate the anticipated 2 million cubic yards of fill. These borrow sites were chosen for their soil characteristics, compatibility with adjacent land uses, and vicinity to existing Base roads. The fill would be used to support infrastructure development across MCB Camp Lejeune. Figure 2.2-16 illustrates the proposed road alignment and seven possible borrow pit locations.

The proposed projects, their potential construction boundaries, and the new Base road are analyzed within this EIS. However, the exact design of the projects, routing of the road, and number, breadth, and depth of the borrow pits are not final until the 100-percent designs are approved. At that time, all final project designs and road alignment will be examined to determine potential differences from that evaluated in the EIS and whether additional NEPA will be required.



Figure 2.2-16 Proposed New Road Alignment and Borrow Pit Sites

Figure 2.2-17 depicts the proposed development areas for MCAS New River (NAVFAC 2008). Approximately 160 acres (about 4.5 percent of the 3,510 acres of total land area at MCAS New River) would be needed to support this development (this estimate includes the construction footprint, as well as areas needed for construction material and equipment laydown, parking, landscaping, stormwater catch basins, utilities, sidewalks, construction access, and egress). Proposed projects would occur primarily on areas of the Installation that are already disturbed. As with previous figures, the project titles, project numbers, and estimated construction footprints are presented in Table 2.2-15 and identified in Figure 2.2-17. Due to its industrial nature (i.e., an air station) and the specific types of infrastructure (e.g., hangar, aircraft maintenance facility) being proposed, exact locations have been determined by the Installation within the development area. If these proposed construction sites change significantly additional NEPA will be conducted as necessary.

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Douglass Gate Security Upgrades	GTF	P712	15
Installation Personnel Administration Center	GTF	P711	1
Station Armory	GTF	P690	4
Child Care Addition	GTF	P715	1
Gym/Pool	GTF	P714	5.3
Helicopter Marine Training (HMT) Hangar and Apron	GTF	P705	17
Parallel Taxiway	Core	P311	16
Aircraft Parking Apron	Core	P688	51
Aircraft Maintenance Hangar	Core	P683	10
Aircraft Maintenance Hangar	Core	P687	10
Ordnance Magazine	GTF	P709	1
Squadron Warehouse	GTF	P706	3.5
Combat Aircraft Loading Area (CALA)	GTF	P710	4
HMLA/Marine Heavy Helicopter (HMH) Squadrons Bachelor Enlisted Quarters	GTF	P707	9
Bachelors Enlisted Quarters Access Road and Recreation Area	GTF	P717	3
Consolidated Hazardous Materials Reutilization and Inventory Management Program (CHRIMP) Warehouse	GTF	P718	1
Aviation Logistics squadron Addition	GTF	P721	1.6
Helicopter Maintenance Training Facility	Core	P676	2
Inventory Management Program Hangar Addition	Core	P675	0.35
Library	GTF	P724	2
Theater	GTF	P713	1
MCAS New River P	ronosed Project	ts Total Acres	158 75

 Table 2.2-15 MCAS New River Proposed Projects

Ending Ending<	le l		Project Title	CORE or GTF	ect Facility
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Ender Internet Control Ender Internet Control<	Bit Bit <td></td> <td>IPAC</td> <td>GTF P711</td> <td></td>		IPAC	GTF P711	
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Among the second	Contract Variance in the stant of the stant		Combat Aircraft Loading Area (CALA)	GTF P710	
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Construction Construction<	Carlon Lighters frances Reserved Frances Reser		Consolidated Hazardous Materials Reutilization and Inventory Management		
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Control Control <t< td=""><td>Sector Control Control</td><td></td><td>HI P Maintenance training facility</td><td>CORF D676</td><td></td></t<>	Sector Control		HI P Maintenance training facility	CORF D676	
Other Other <th< td=""><td>Micros Micros Micros</td><td></td><td>IMP Handar Addition</td><td>CORE P675</td><td>c</td></th<>	Micros		IMP Handar Addition	CORE P675	c
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		Road/Parking			Kilometers

Figure 2.2-17 MCAS New River Proposed Infrastructure Projects

2.2.2.2 Alternative 2—MCAS Cherry Point

The primary mission of the Station is providing a combat-ready aerial strike force through the training and support of aircrews. As such, the Station has designated planning areas for administration and support activities, airfield and airfield support functions, housing and community services, and an ordnance storage area (MCAS Cherry Point 1988). Due to its industrial nature (i.e. an Air Station) and the specific types of facilities (e.g., hangars, equipment shops, refueling areas) being proposed for infrastructure construction and upgrades, exact locations for projects have been identified by Station Planners.

The proposed projects under the Alternative 2 (Preferred Alternative) have been sited in such a manner as to coincide with current and future master planning efforts; four development areas have been identified at MCAS Cherry Point. Such areas consider the function and operations of the new infrastructure; future planning efforts; environmental constraints; and siting criteria as presented in Section 2.2.2.1. Constraints include munitions safety areas (SDZs), sensitive species habitats, IR sites, and wetlands. Once these constraints were identified, -polgons" were created to identify where development could occur with little or no environmental concerns. Table 2.2-16 lists the unconstrained acreage within the proposed development areas and Figure 2.2-18 graphically presents these constrained (uncolored areas) and unconstrained locations (indicated in pink). Unconstrained areas also include contaminated sites and/or brownfields that can be cost effectively remediated and free for development. As indicated in Table 2.2-16, proposed construction footprints can be accommodated within the unconstrained areas. In total, proposed construction would disturb approximately 117 acres (Table 2.2-17); this estimate includes the construction footprints, and additional areas needed for construction material/equipment laydown, parking, landscaping, stormwater catch basins, utilities, sidewalks, and construction access/egress (NAVFAC 2008). The area to be affected represents only 1 percent of the total *land* area (11,614 acres) within MCAS Cherry Point boundaries and occurs primarily in already disturbed sites. Figure 2.2-19 presents the locations of the projects (identified by their project numbers).

Development Area	Unconstrained (acres) Developed ¹ Undeveloped ²		Estimated Construction Footprint (acres)	Difference Between Unconstrained Areas and Footprint (acres)
Ordnance Storage Area	48	806	33	821
West Quadrant	328	467	62	733
North Quadrant	63	158	19.7	201.3
MACS 2 Compound	8	27	2	33

 Table 2.2-16
 Alternative 2 MCAS
 Cherry Point Unconstrained Area
 Comparison

¹ Developed areas include impervious surfaces such as buildings, parking lots, and roads.

² Undeveloped areas do not include those impervious surfaces, but can include areas used for training and ranges.

2.2.3 Alternative 3

Under Alternative 3, there would be a permanent increase of approximately 9,900 personnel associated with the Grow the Force initiative as described for Alternative 2. However, these Marines and their associated operations would continue to be accommodated at existing facilities as well as in temporary and/or relocatable buildings already in place (i.e. no new Grow the Force facilities would be constructed). Core projects would still be constructed to support activities already planned and/or programmed, but not tied directly to the Grow the Force Initiative.



Figure 2.2-18 MCAS Cherry Point Unconstrained Areas

Project Title	GTF or Core	Project Number	Estimated Construction Footprint (acres)
Ordnance Storag	e Area	I	
Mobilization and Anti-Terrorist/Force Protection Improvements (Slocum Road Realignment)	GTF	P134	14
Ordnance Magazines	Core	P167	19
Ordnan	ce Storage Area	Total Acres	33
West Quadra	int		
Bachelor Enlisted Ouarters	GTF	P136	5.4
Roosevelt Boulevard Road Improvements	GTF	P177	30
Marine Support Squadron-1 Compound	GTF	P163	1.8
Marine Aviation Logistics Squadron/Fleet Replacement Enlisted Skills Training (MALS/FREST) Maintenance Hangar	Core	P169	12
Motor Transportation/ Communication Shop	Core	P130	3.8
Water Treatment Facility Upgrade	Core	P193	0.5
Commercial Power/Cargo Refueling	Core	P033	0.2
Family Services Center	GTF	P183	0.8
Addition to CDC Center	GTF	P181	5
Aviation Training System (ATS) Training Complex	GTF	P170	1.5
Ground Support Equipment Shop	Core	P153	1
	West Quadrant	Total Acres	62
North Quadra	ant		
Armory ¹	Core	P601	1.5
Station Infrastructure Upgrades	GTF	P176	13.1
Expand Marine Air Control Group/Marine Air Traffic Control Squadron Facilities	GTF	P172	2.5
Marine Air Wing Control Squadron Detachment facility	GTF	P173	2.1
Unmanned Aerial Vehicle Facility Addition Tier II	GTF	P194	0.5
	North Ouadrant	Total Acres	19.7
Marine Air Control Squad	ron Compound		
Marine Air Control Squadron/Marine Air Traffic Control Detachment	Core	P129	2
Marine Air Control Squa	dron Compound	Total Acres	2
MCAS Cherry Point Pi	roposed Projects	Total Acres	116.7

¹ Between the Draft EIS and this Final EIS, this project was moved from the Ordnance Storage Area to this area.

	Cherry Point				Estimated	Total
Aeu.	Construction	Project Title	GTF or Core	Project Number	Facility	Facility Footprint
a se a					(acres)	(acres)
"in the second second	Ordnance	Mobilization and Anti-lerronst/Force Protection Improvements (Slocum Road Realignment)	GTF	P134	14	33
er l	Area	Ordnance Magazines	Core	P167	19	
		Bachelors Enlisted Quarters	GTF	P136	5.4	
		Widen Roosevelt Boulevard	GTF	P177	30	
		Marine Support Squadron-1 Compound	GTF	P163	1.8	
		MALS/FREST Maintenance Hangar	Core	P169	12	
	West	Motor Transportation/Communication Shop	Core	P130	3.8	1
	Quadrant	Water Treatment Facility Upgrade	Core	P193	0.5	62
	1	Commercial Power/Cargo Retuening Family Services Center	GTF	P183	0.8	
	100	Addition to Child Development Center	GTF	P181	2	
	194	ATS Training Complex	GTF	P170	1.5	
	1	Ground Support Equipment Shop	Core	P153	1	
		Station Infrastructure Upgrades	GTF	P176	13.1	
MAGS2 PR	North	Expand MACG/MTACS Facilities	GTF	P172	2.5	2.01
Compound	Quadrant	MWCS Detachment raciiity	Core	P601	1.2	1.61
		UAV Addition Tier II	GTF	P194	0.5	
	MACS 2	Marina Air Control Suuadron Air Traffic Control Datachmont	Core	0170	, ,	2
Contance Shrane Area	Componing	Marrie An Control Squadron An Harrie Control Detachment		L 1423	7	116.7
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2.2.3.1 Alternative 3—MCB Camp Lejeune/MCAS New River

At MCB Camp Lejeune and MCAS New River, core projects would take place within the same development areas indicated in Figures 2.2-6 through 2.2-15 (MCB Camp Lejeune) and Figure 2.2-17 (MCAS New River) under Alternative 2 (Preferred Alternative). The same siting criteria, defined in Section 2.2.2.1 (size and configuration, operation/function, and costs), were used for identifying the construction sites of the core projects. Also, an evaluation of constrained and unconstrained areas within the proposed development areas occurred as described in Section 2.2.2 (see Figures 2.2-2 through 2.2-5). Tables 2.2-18 and 2.2-19 provide a list of core projects at the two Installations according to their designated planning areas. As noted previously, the exact design of the projects are not final until the 100-percent designs are approved. At that time, all final project designs will be examined to determine whether they differ from what was evaluated in this EIS. This examination by MCB Camp Lejeune environmental branch personnel will identify whether these final designs: 1) impact areas that were not analyzed in this EIS and will need to be newly evaluated; 2) can be tiered from the analyses done for this EIS; or 3) can be categorically excluded. This examination of projects will be reviewed in accordance with Base Order 11000.1D and executed to assure that NEPA and all other applicable laws, regulations, permitting, and consultation requirements are met prior to any ground-disturbing activities.

While Alternative 3 would satisfy the purpose and need for the Proposed Action at MCB Camp Lejeune and MCAS New River, the Grow the Force projects would not be constructed, and existing infrastructure capacity to support all Marines (those who return from deployment and those related to Grow the Force) may be considerably strained once deployments are curtailed.

Under Alternative 3, approximately 358 acres may be disturbed, which represents less than 1 percent of the total land area found at MCB Camp Lejeune. Additionally, the land area disturbed would be 4.3 times less than Alternative 2 (Preferred Alternative). This difference is primarily due to the fact that the new Base road would not be constructed under Alternative 3.

As shown in Table 2.2-19, about 89 acres, or 3 percent of the total acreage at MCAS New River, would be disturbed under Alternative 3, compared to the 160 acres disturbed under Alternative 2 (Preferred Alternative).

Project Title Hadnot Pe	Core	Project Number	Estimated Construction Footprint (acres)			
Pagimental/Pottolion Headquarters, 10th Marine Pagiment	Coro	D1242	7			
Regimental/Battation Headquarters, Toth Marine Regiment	Cole	F1242	/			
2nd Marine Division Training Center and Parking Deck	Core	P1299	12.5			
Mainside Exchange Addition	Core	P1307	6.5			
Installation Personnel Administration Center Facility	Core	P1134	5			
Mess Hall and Parking Deck	Core	P883	6.5			
Light Armored Vehicle Maintenance Shelters	Core	P1131	7.5			
II MEF Simulation Center	Core	P1338	10			
Detainee Facility	Core	P1310	5			
Simulation Integration Center	Core	P1346	5			
Hadnot P	Point Proposed Proje	ects Total Acres	65			
Wallace Ci	reek					
Marine Heavy Group Headquarters and Support Facilities	Core	P1342	12.5			
Wallace C	reek Proposed Proje	ects Total Acres	12.5			
Courthouse	e Bay	-				
Fire Station	Core	P1203	3			
Marine Corps Engineer School (MCES) Community Support Facilities	Core	P1305	0.5			
MCES Applied Instruction Facility	Core	P1312	20			
Expeditionary Fighting Vehicle Maintenance Facility	Core	P1010	5			
Courthouse	Bay Proposed Proje	ects Total Acres	23.5			
French Cr	eek					
Material Distribution Center	Core	P1035	13			
Location Exchange Addition	Core	P1232	2			
2nd Marine Logistics Group Headquarters/Command Element Administrative Complex	Core	P1252	20			
Tri-Marine Expeditionary Unit Operations Facility	Core	P1199	10			
Combat Logistics Battalion Complex	Core	P1244	27			
8th Engineer Operations/Maintenance Complex	Core	P919	14.8			
Mess Hall, French Creek	Core	P1161	1.5			
French C	reek Proposed Proje	ects Total Acres	<i>88.3</i>			
Rifle Range (St	one Bay)	1	r			
Special Operations Tactical Group-Embassy Complex	Core	P1349	5			
Rifle Range (Stone 1	Bay) Proposed Proje	ects Total Acres	5			
Camp Gei	ger	1				
Motor Transportation/Communications Maintenance Facility	Core	P004	12			
Camp Geiger Proposed Projects Total Acres 12						
Camp John	nson					
Staff Non-Commissioned Officer Academy	Core	P003	9			
Community Facilities	Core	P1270	37			
Administrative/Operational Facilities	Core	P1324	20			
MCCSSS Logistics Center of Excellence	Core	P1347	12.4			
MISTIC Training Center	Core	P1352	10			
Camp John	nson Proposed Proje	ects Total Acres	88.4			

Table 2 2-18	MCR Camp	Loiouno	Altornativo	3 P	Pronosod	Pro	incto
<i>1 able 2.2-10</i>	MCD Camp	Lejeune	Allernalive	э г	roposea	rro	jecis

Project Title	Core	Project Number	Estimated Construction Footprint (acres)		
Outside Planning Areas					
Triangle Outpost Gate	Core	P1165	2.5		
Water Treatment Facility	Core	P1043	13.6		
Water Treatment Facility, Hadnot Point Phase II	Core	P1355	10		
Warehouse ²	Core	P1259	10		
School Age Child Care Center ²	Core	P1356	2		
CDC ²	Core	P1359	5		
CDC ²	Core	P1360	5		
Storage Facility, Marine Family Services ²	Core	P1361	10		
Proposed Projects Outside Planning Areas, Total Acres					

Table 2.2-18	MCB Camp	Lejeune Alternative 3	Pro	posed Pro	ojects
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¹ PPV Housing Areas were previously evaluated for the construction of ~ 850 housing units. The footprint acreage noted in the table represents the difference between the total PPV area and the area of disturbance of the previous action.

Project Title	Core	Project Number	Estimated Construction Footprint (acres)
Parallel Taxiway	Core	P311	16
Aircraft Parking Apron	Core	P688	51
Aircraft Maintenance Hangar	Core	P683	10
Aircraft Maintenance Hangar	Core	P687	10
Helicopter Maintenance Training Facility	Core	P676	2
Inventory Management Program Hangar Addition	Core	P675	0.35
MCAS New Ri	89.35		

Table 2.2-19 MCAS New River Alternative 3 Proposed Projects

2.2.3.2 Alternative 3—MCAS Cherry Point

Under Alternative 3, although permanent increases in Marine and support personnel would occur as stated in Section 2.2.3, no new Grow the Force infrastructure would be constructed. Hence, the additional Marines and their associated operations would continue to be accommodated at existing facilities, as well as in temporary and/or relocatable buildings already in place. Table 2.2-20 provides a summary of the core projects that would be constructed; proposed locations for core projects would be the same as those identified under Alternative 2 (Preferred Alternative). As discussed previously, if projects change locations outside of identified proposed developed areas or designs are found to impact constrained areas, not previously identified or evaluated sufficiently in this EIS, supplemental NEPA on these proposed projects will be performed. Refer to Figure 2.2-19 for these project locations.

Project Title	Core	Project Number	Estimated Construction Footprint (acres)	
Ordnanc	e Storage Area			
Ordnance Magazines	Core	P167	19	
Ordn	ance Storage Are	a Total Acres	19	
West	t Quadrant			
MALS/FREST Maintenance Hangar	Core	P169	12	
Motor Transportation/ Communication Shop	Core	P130	3.8	
Water Treatment Facility Upgrade	Core	P193	0.5	
Commercial Power/Cargo Refueling	Core	P033	0.2	
Ground Support Equipment Shop	Core	P153	1	
	17.5			
Marine Air Control Squadron Compound				
Marine Air Control Squadron/Marine Air Traffic Control Detachment	Core	P129	2	
Marine Air Control Sq	2			
North Quadrant				
Armory	Core	P601	1.5	
	1.5			
MCAS Cherry Point Proposed Projects Total Acres			40	

Table 2.2-20	MCAS Cherry	Point Alternative 3	Proposed Projects
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At MCAS Cherry Point, less than 1 percent of the total land area would be disturbed. When compared to Alternative 2 (Preferred Alternative), Alternative 3 would cause nearly three times less disturbance. As described for MCB Camp Lejeune and MCAS New River, although Alternative 3 would satisfy the purpose and need for the Proposed Action, existing infrastructure capacity to support all Marines may be considerably strained without the Grow the Force projects once deployments are curtailed.

2.2.4 Alternative 4

Under Alternative 4, there would be a permanent increase of approximately 9,900 personnel associated with the Grow the Force initiative as described for Alternative 2. However, under this alternative, neither the Grow the Force nor core construction projects would occur. Therefore, the additional personnel would continue to be accommodated in existing facilities and in temporary/relocatable facilities (or Pre-Engineered Buildings designed with a limited lifespan). As in the case of Alternative 3, the purpose and need for the Proposed Action would be met. However, by not implementing either the Grow the Force or core construction projects, existing facility capacity to support all Marines (i.e. those returning from deployments and the increased population) may be considerably strained and continued use and replacement of Pre-Engineered Buildings would not be cost effective.

2.3 Alternatives Considered But Not Carried Forward for Further Analysis

The USMC considered other alternatives to the Proposed Action. These included alternative basing locations, phasing of implementation, modifying Grow the Force increases, and internal reorganization. However, due to considerable concerns about security, connectivity between unit operations, unit integrity, and the ability to meet the missions, the alternatives were determined to be untenable and not carried forward for further analysis (see Sections 1.2 and 1.3).

Another alternative considered but eliminated from the analysis was the option of only constructing Grow the Force projects to support the proposed increase in personnel and not the core projects. However, since core projects have already been planned and programmed by the Installations, any one or all of them could be implemented regardless of the Grow the Force decision with proper NEPA documentation. If this were to occur, this alternative would be similar to or the same as Alternative 2, the Preferred Alternative. Therefore, this alternative would not be considered reasonable and has been eliminated from further consideration.

2.4 Summary of Alternatives Carried Forward

As detailed in the sections above, three action alternatives to implement the Proposed Action, in addition to the No Action Alternative, were carried forward for detailed analysis in this EIS. Table 2.4-1 provides a summary of the major components of these alternatives.

Components	Alternative 1 – No Action Alternative	Alternative 2 – Preferred Alternative	Alternative 3	Alternative 4
Personnel Increase	None	Full implementation: 7,706 at MCB Camp Lejeune 1,411 at MCAS New River 784 at MCAS Cherry Point	Full implementation: 7,706 at MCB Camp Lejeune 1,411 at MCAS New River 784 at MCAS Cherry Point	Full implementation: 7,706 at MCB Camp Lejeune 1,411 at MCAS New River 784 at MCAS Cherry Point
Construction Projects	None	GTF and Core	Core only	None, personnel accommodated in existing facilities and already in place temporary/relocatable facilities
Construction Disturbance (acres)	None	1,717 at MCB Camp Lejeune 160 at MCAS New River 117 at MCAS Cherry Point	360 at MCB Camp Lejeune 90 at MCAS New River 40 at MCAS Cherry Point	None
Construction Cost (\$ million [M])	None	\$3,362M, MCB Camp Lejeune \$417M, MCAS New River \$322M, MCAS Cherry Point	\$1,127M, MCB Camp Lejeune \$242M, MCAS New River \$232M, MCAS Cherry Point	None

Table 2.4-1 Summary of Alternative Components
CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes existing conditions and environmental consequences for resources potentially affected by the Proposed Action and alternatives.

3.1 Resource Areas Analyzed

The environmental impact analysis process is designed to focus on those elements of the natural and human environment that could potentially be affected by the Proposed Action and alternatives. Potential effects may result from different aspects of an alternative—construction, operations, or maintenance. For this EIS, resources have been either grouped or analyzed individually according to resource categories. Thirteen resource categories were analyzed for potential impacts; they are listed below:

Land Use and Coastal Zone Management (Section 3.4) includes discussion of potential impacts to on- and off-Base land use and management, as well as an analysis of coastal consistency with North Carolina's Coastal Zone Management Program.

Recreation and Visual Resources (Section 3.5) evaluates impacts to recreational assets (parks, pools, and playing fields), both on- and off-Base. Changes to the visual character, visual compatibility, and viewer sensitivity to the landscape that could occur are also evaluated.

Socioeconomics (Section 3.6) analyzes potential impacts to income, demographics, housing, environmental justice, and protection of children.

Community Services and Facilities (Section 3.7) includes discussion of the potential effects that population increases could have on law enforcement, fire, emergency services, hospitals, schools, and childcare.

Transportation and Traffic (Section 3.8) presents and analyzes the potential impacts to the traffic and transportation networks (both on- and off-Base).

Utilities and Infrastructure (Section 3.9) discusses potential impacts to potable water use, wastewater, energy/power sources, communications, and solid waste.

Hazardous Materials, Toxic Substances, and Hazardous Waste (Section 3.10) evaluates the potential effect of materials and waste generated by the Proposed Action on the environment. Safety aspects associated with the handling and disposal of hazardous wastes and toxic materials are also considered.

Noise (Section 3.11) analyzes impacts to the noise environment and how these may affect land uses, adjacent communities, and health.

Air Quality (Section 3.12) presents the potential increase in air quality criteria levels, hazardous air pollutants, toxic air pollutants, and fugitive dust emissions that could occur under the Proposed Action. This section addresses the effect these emissions could have on regional air quality.

Natural Resources (Section 3.13) includes discussion of potential effects on vegetation, wildlife, terrestrial and aquatic habitats, Bird/Wildlife Aircraft Strike Hazard, migratory birds, and Essential Fish Habitat, and special status species.

Earth Resources (Section 3.14) presents potential effects on geological and topographic features and soil.

Water Resources (Section 3.15) analyzes potential effects to surface water, stormwater, ground water, wetlands, and floodplains.

Cultural Resources (Section 3.16) addresses potential effects to pre-historic and historic archaeological and architectural resources.

Mitigation Measures (Section 3.17) provides a description of specific mitigation measures identified for the Proposed Action. Existing management plans and procedures (as specified in each resource analysis), as well as local, State, and Federal laws and permit requirements to minimize and avoid impacts are *not* considered separate mitigation measures under this EIS.

3.2 Methodology

The impact analysis process requires collecting scientifically valid and up-to-date information. Data collection involves:

- reviewing previous studies, such as technical publications, agency databases, management plans, and other NEPA documents;
- obtaining information on specific resources from agencies and local governments, such as the USFWS, USACE, NCDENR, North Carolina State Historic Preservation Office (SHPO), county/city managers, and community planners;
- reviewing public input during the scoping process; and
- conducting field studies.

The resources analyzed in this EIS are interdependent. For example, a change in soils might affect local vegetation, which in turn could affect wildlife that depends on the plants for food. The increase in population could affect water conditions around the Installations and thereby indirectly impact adjacent waters of the U.S. These types of interrelationships are recognized in 40 CFR 1502.6, which states

-environmental impact statements shall be prepared using an inter-disciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts."

Assessment of environmental consequences is also based on an understanding that different resources are not equally sensitive to all elements of an action. For example, cultural resources—especially archaeological sites—are most likely affected by activities that disturb the ground (such as facility and road construction) and are usually not affected by noise. On the other hand, certain animal species may be less sensitive to short-term construction activities than long-term exposure to noise increases.

Potential environmental impacts cannot be determined without first understanding the existing conditions in the affected environment. For this reason, the impact analysis process involves two steps. First, this EIS helps the reader develop an understanding of the existing environmental setting and conditions by identifying the —fafected environment" or -region of influence (ROI)." The geographic extent of this area is determined by the potential for impacts from construction, operations, and personnel increases associated with the various resources. The definition of the ROI depends on the resource category. For instance, soils may be directly impacted from construction activities within the boundaries of the proposed development areas or within the boundaries of the specific Installations so the ROI for soils would be MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point; however, the air quality ROI would be a larger geographic area since the emissions from construction activities and the generation of dust could possibly impact the regional air quality. Second, the EIS uses details of the alternatives (see Section 2.0) to assess their impacts on the existing environment, or the –environmental consequences."

As required by USMC and DoN NEPA implementing regulations, this EIS addresses impacts associated with the No Action Alternative as well as three action alternatives. To better evaluate existing conditions, numerous studies and/or surveys were utilized. A summary follows:

Cultural Resources Surveys – Cultural resources surveys (Phase I and/or II) have been conducted in all MCB Camp Lejeune proposed development areas. Survey results are presented in Section 3.16, Cultural Resources. Formal consultation with the North Carolina SHPO has been completed by MCB Camp Lejeune and the SHPO concurred that there would be no adverse effects to eligible or potentially eligible sites (Appendix H, page H-58).

Coastal Zone Consistency – Determination of coastal zone consistency was undertaken with results presented in Section 3.4 Land Use and Coastal Zone Management; Appendix C provides supporting documentation.

Socioeconomics Assessment – The USMC used the IMPLAN (IMpact analysis for PLANning) model, a Federally-recognized economic modeling program. The IMPLAN model is based on information

derived from Federal agency databases. IMPLAN uses regional industrial spending and trading patterns data to estimate the change in expenditures and employment within the local and State economy from a change in the USMC's expenditure of dollars. The results were integrated into Section 3.6, Socioeconomics, and presented in Appendix D.

Noise – MCB Camp Lejeune used small arms and large caliber operational data detailing weapons and ammunition use at the Installation to generate noise contours. Noise contours at both MCAS New River and MCAS Cherry Point were generated using aircraft operational data. These data are presented and analyzed in Section 3.11, Noise.

Air Quality – Emissions generated as a result of construction activities and commuting were examined. Results are summarized in Section 3.12, Air Quality, and criteria and data used to derive these results are found in Appendix E.

Wetlands Assessment – Wetlands delineation was (or, in some cases, will be) conducted on all of the proposed areas where construction would occur. As the reports are finalized, the wetland delineation are being forwarded to the Wilmington Field Office of the USACE Regulatory Branch (a cooperating agency in this NEPA analysis) for verification. Results to date are presented in Section 3.15, Water Resources.

Special Status Species Surveys – Surveys of federally-protected species were conducted. Results of these surveys are summarized in Section 3.13, Natural Resources. USFWS concurred that manatees would likely be affected but not adversely; no other special status species were found to be adversely affected. Information used to derive these results is provided in Appendix F.

3.3 Summary of Alternatives

As detailed in Chapter 2, three action alternatives to implement the Proposed Action and the No Action Alternative were carried forward for detailed analysis. Table 3.3-1 provides a summary of the major components of these alternatives.

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Components	Alternative 1 – No Action Alternative	Alternative 2 – Preferred Alternative	Alternative 3	Alternative 4
Personnel Increase	None	Full implementation: 7,706 at MCB Camp Lejeune 1,411 at MCAS New River 784 at MCAS Cherry Point	Full implementation: 7,706 at MCB Camp Lejeune 1,411 at MCAS New River 784 at MCAS Cherry Point	Full implementation: 7,706 at MCB Camp Lejeune 1,411 at MCAS New River 784 at MCAS Cherry Point
Construction Projects	None	GTF and Core	Core only	None, personnel accommodated in existing facilities and already in place temporary/relocatable facilities
Construction Disturbance (acres)	None	1,717 at MCB Camp Lejeune 160 at MCAS New River 117 at MCAS Cherry Point	360 at MCB Camp Lejeune 90 at MCAS New River 40 at MCAS Cherry Point	None
Construction Cost (million [M])	None	\$3,362M, MCB Camp Lejeune\$417M, MCAS New River\$322M, MCAS Cherry Point	\$1,127M, MCB Camp Lejeune\$242M, MCAS New River\$232M, MCAS Cherry Point	None
Note: Construction ac	creages have been round	ed		

Table 3.3-1 Summary of Alternative Components

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3.4 Land Use and Coastal Zone Management

Land use refers to modification of land for human purposes. Land use primarily serves human habitation and economic purposes, but it also includes lands that are set aside for recreation and conservation purposes. The attributes of land use include patterns of land jurisdiction, land ownership, and the types of uses that are allowable. Land uses are frequently regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable or to protect specially designated or environmentally sensitive uses. Both in terms of the affected environment and potential environmental consequences, this assessment first focuses on land use and management within the boundaries of MCB Camp Lejeune/MCAS New River and MCAS Cherry Point followed by a discussion of land use and ownership for lands in the surrounding counties. The ROI for land use outside the Installation boundaries includes all or portions of the following counties: Onslow, Craven, and Carteret. As described in Section 1.4.3, these counties have been identified as the region to likely receive the most growth related impacts from the Proposed Action.

This section also contains a discussion of the affected environment and potential impacts to the coastal zone at MCB Camp Lejeune/MCAS New River and MCAS Cherry Point. The Coastal Zone Management Act (CZMA) of 1972 (16 USC 1451) provides a means for protecting and managing the natural, ecological, and aesthetic resources of the coastal zone and requires states within the coastal zone to establish Coastal Zone Management Programs.

3.4.1 Affected Environment

3.4.1.1 MCB Camp Lejeune/MCAS New River

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.

Although primarily categorized as operational and training land uses, undeveloped forested areas on MCB Camp Lejeune (MCAS New River comprises mostly developed lands) are also managed for natural resources values and commodity production. Activities span from timber production, and management of habitats for native and migratory wildlife, to threatened and endangered species management. Undeveloped forested areas also provide aesthetic benefits, and serve as a buffer between developed cantonment areas and surface waters thereby helping to filter stormwater runoff which ultimately benefits water quality. Recreational uses such as hunting are a key land use of undeveloped, forested areas within MCB Camp Lejeune (see Section 3.5, Recreation and Visual Resources). Land use and management is primarily in accordance with the Integrated Cultural Resources Management Plan (ICRMP), Integrated

Natural Resources Management Plan (INRMP), Hadnot Point Master Plan (MCB Camp Lejeune 2009c), Wallace Creek North Master Plan (MCB Camp Lejeune 2009d), and Base-wide Master Plans still in development (French Creek, Camp Johnson, Courthouse Bay, and Camp Geiger and Camp Devil Dog [called SOI-E]). Other regulations governing land use management include Environmental Compliance and Protection Manual (MCO 5090.2a); Protected Species Program (MCO 5090.11); Use of Off-road Recreational Vehicles (MCO 5090.111); and Hunting, Fishing, and Trapping Regulations (MCO 5090.115). Base Order 5090.8 is also followed for cultural resource management.

The MCB Camp Lejeune INRMP establishes procedures and guidelines for natural resources management and compliance procedures at both MCB Camp Lejeune and MCAS New River (MCB Camp Lejeune 2006). The ICRMP establishes procedures and guidelines for cultural resources management and compliance procedures at both Installations (USACE 2002). The ICRMP is currently being updated and expected to be completed by the end of 2009 (Personal communication, Richardson 2009). These documents guide land use by identifying potential conflicts between the Installations' missions and cultural and natural resources management, recommending compliance actions necessary to maintain the availability of mission-essential properties and acreage, and developing a comprehensive plan for deliberately managing cultural and natural resources. The ultimate goal of these plans is to attain and sustain stewardship requirements, while optimizing primary activities on mission land and, where compatible, conducting secondary activities. Cultural resources management is discussed in more detail in Section 3.16. Land use components principally guided by the INRMP include forest management, outdoor recreation, habitat management, threatened and endangered species and other wildlife management, and wetland conservation. The natural resources management components of the INRMP are addressed in more detail in Section 3.13; wetland conservation is addressed in Section 3.15.

Figures 3.4-1 through 3.4-4 show current land use for those areas within MCB Camp Lejeune and MCAS New River that have been identified to support facility construction and/or development. Land uses are categorized into cantonment, training, and forested/undeveloped areas. Cantonment refers to areas of the Installation actively used for administrative, housing, and industrial activities. Training includes outdoor mounted heavy and light vehicle maneuvering, dismounted maneuvering, small and large arms ranges, as well as indoor academic training and practice areas. Undeveloped/forested areas include forested, undeveloped areas that are not currently used for training activities, and to a large extent serve as a safety buffer for range operations.



Figure 3.4-1 Current Land Use MCB Camp Lejeune - Northside



Figure 3.4-2 Current Land Use MCB Camp Lejeune - Central





Figure 3.4-3 Current Land Use MCB Camp Lejeune - Southside



Figure 3.4-4 Current Land Use MCB Camp Lejeune/MCAS New River - Westside

As Figures 3.4-1 through 3.4-4 show, the proposed development areas within Hadnot Point, French Creek, Camp Devil Dog, and Courthouse Bay have smaller portions of undeveloped/forested areas compared to Camp Geiger, Wallace Creek, Camp Johnson, and Rifle Range/Stone Bay. MCAS New River is almost entirely cantonment area and has only a small portion of undeveloped forested area. Refer to Section 3.13, Natural Resources, for a more detailed description of the amount and type of forest located within the proposed development areas.

In addition to describing existing land uses, this section includes a description of the various land use designations within the Installations based on master planning efforts. This description is provided to determine land use compatibility of the Proposed Action with future planning efforts. Land use planning categories at MCB Camp Lejeune/MCAS New River are summarized in Table 3.4-1 and illustrated in Figures 3.4-5 through 3.4-8. For MCB Camp Lejeune, the specific distribution of these land use types within each of the eight proposed development areas is discussed briefly following the figures.

Land Use	Definition	
	Headquarters and office buildings to accommodate officers, professional and	
Administrative Facilities	technical activities, records, files, and administrative supplies. These areas are	
Administrative racintles	largely concentrated in the Hadnot Point area (MCB Camp Lejeune) and the	
	area north and west of the runway (MCAS New River).	
	Facilities providing for both inpatient and outpatient medical and dental care	
Hospital and Medical Facilities	for active duty and retired personnel. The Naval Hospital represents the	
	largest area of this category with smaller clinics located throughout the Base.	
	Facilities that house single Marines and military families. This category also	
Housing and Community Facilities	includes support and recreation facilities, outdoor athletic areas, as well as	
	commercial and service facilities associated with the on-Base community.	
	Facilities and shops for maintenance, repair, and production of all types of	
Maintenance and Production	military equipment. These areas are concentrated in Hadnot Point, French	
Facilities	Creek, and the Courthouse Bay area at MCB Camp Lejeune and the west side	
	of the flight line at MCAS New River.	
Operational and Training Facilities	Includes outdoor maneuvering areas and indoor academic training areas. At	
MCAS New River, this category also includes all flight operation		
Research Development and Test	Facilities to support research, development, and test operations. At MCB	
Facilities	Camp Lejeune, this category encompasses one small area on Hadnot Point. At	
racinues	MCAS New River, this category includes facilities for the V-22 Osprey.	
Supply Equilities	Depot, terminal, and bulk-type covered or open storage for all classes of	
Suppry Facilities	military supply, including ammunition and fuel.	
Utilities and Ground Improvements	Electrical power, heating, air conditioning, sewage and waste, potable water,	
Ounties and Oround Improvements	roads and streets, ground improvement structures, and miscellaneous utilities.	
Available for Development but	Vecent nemels with ne comment land use	
Pending Designation		

Table 3.4-1 Land Use Planning Categories Defined by MCB Camp Lejeune/MCAS New River.

Note: Forested/Undeveloped areas on the Installations are included in the "Operational and Training Facilities" as well as the "Available for Development but Pending Designation" categories. Figures 3.4-1 through 3.4-4 illustrated the forested/undeveloped areas.



Figure 3.4-5 Land Use Planning MCB Camp Lejeune - Northside



Figure 3.4-6 Land Use Planning MCB Camp Lejeune - Central



Figure 3.4-7 Land Use Planning MCB Camp Lejeune - Southside



Figure 3.4-8 Land Use Planning MCB Camp Lejeune/MCAS New River - Westside

A small portion of French Creek is overlapped by explosive safety quantity distance (ESQD) arcs. The Secretary of Defense has established basic explosives safety standards and minimum ESQD criteria which are to be observed by DoD components in the performance of operations involving ammunition and explosives. ESQD standards require that ammunition and explosives be handled, stored, or under the supervision of the military services, and be maintained at certain minimum distances from inhabited buildings, passenger railroads, public highways, ships, and other facilities and property (DoN 1999). Areas encumbered by ESQD arcs are not considered to have high development potential.

Camp Johnson: Camp Johnson is located at the northernmost part of MCB Camp Lejeune, and is transected by NC 24. Most of the land within this area is undeveloped, but other primary land uses include operational and training facilities, housing and community facilities, administrative facilities, and utilities and ground improvements.

Wallace Creek: Wallace Creek is located in the eastern-central part of the Base, and is considered a subcantonment area within Hadnot Point. This area is predominantly classified as operational and training facilities and undeveloped land. Forested areas support recreational uses such as hiking and mountainbiking and also provide non-road access to training areas for heavy equipment that cannot travel on paved surfaces (e.g., tanks). In a separate NEPA action, a new Wallace Creek Regimental Area Complex is proposed for construction in this area, which would likely take place on approximately 302 acres (MCB Camp Lejeune 2008e). The incidental impacts of this project, along with the Grow the Force initiative are evaluated in Section 4, Cumulative Impacts.

Hadnot Point: Hadnot Point is located in the eastern-central part of the Base, north of French Creek. This area is highly developed, with only a relatively small portion of the area designated as undeveloped land. The primary land use designation is administrative, maintenance, and production facilities.

French Creek: French Creek is located in the eastern-central part of the Base, south of Hadnot Point. This area supports a variety of land uses, with the predominant land uses being housing and community facilities, maintenance and production facilities, operational and training facilities, and undeveloped land.

Courthouse Bay: Courthouse Bay is located in the southeastern part of the Base, across the New River from Sneads Ferry. The predominant land use classification is operational and training facilities, followed by housing and community facilities, and maintenance and production facilities. Only a small percentage of land is designated as undeveloped.

Rifle Range/Stone Bay: The Rifle Range/Stone Bay area is located in the southern part of the Base, east of the Greater Sandy Run Training Area. The primary land use designation is operational and training facilities, with much smaller areas for housing and community facilities, utilities and ground

improvements, and supply and maintenance facilities. Construction of a new, 544-acre Marine Special Operations Command Complex is underway within this area (MCB Camp Lejeune 2007a).

Camp Devil Dog: Camp Devil Dog is designated almost entirely as operational and training facilities, with roadways and other paved areas classified as utilities and ground improvements. It is located in the western portion of the Base directly south of MCAS New River.

Camp Geiger: Camp Geiger is located directly north of MCAS New River. Camp Geiger supports a variety of land uses, including operational and training facilities, undeveloped land, housing and community facilities, and hospital and medical facilities.

Additionally, as noted in Section 2.2, several of the proposed projects occur outside of the eight proposed development areas at MCB Camp Lejeune. These projects intersect numerous land classifications, as shown on Figures 3.4-5 and 3.4-6.

MCAS New River

Land use at MCAS New River supports its mission to maintain and operate aviation facilities and provide services and material to support ground combat forces at MCB Camp Lejeune. Most Station development is concentrated to the northwest, adjacent to the runway. One ordnance area is located within the proposed development area, in the southwest portion of the Station.

Lands at MCAS New River are managed in accordance with the INRMP (MCB Camp Lejeune 2006) and ICRMP (USACE 2002) with respect to natural and cultural resources. Management of these resources is further discussed in Section 3.13 and Section 3.16, respectively.

Current land use was illustrated in Figure 3.4-4 and master planning categories at MCAS New River were summarized in Table 3.4-1 and illustrated in Figure 3.4-8. Proposed projects for MCAS New River are located in areas classified as operational/training facilities, utilities and ground improvements, supply facilities, maintenance and production, and housing and community facilities. Development would also occur within the ordnance area, which is currently categorized as supply facilities. This area contains ESQD arcs which prohibit or limit development.

3.4.1.2 MCAS Cherry Point

The primary mission of MCAS Cherry Point is to provide a combat-ready aerial strike force through the training and support of aircrews. Land use on the Station is guided by master planning documents. Previous master planning efforts at MCAS Cherry Point include a 1980 Master Plan that was updated in 1988 (MCAS Cherry Point 1988). The planning initiatives for the Station in this plan remain sound; however, significant changes to the physical development, mission operations, and strategic vision have

occurred. The plan is currently being updated with an electronic, graphical document that consolidates several sources of data (Personal communication, Lombardo 2008). When complete, the MCAS Cherry Point Electronic Master Plan will provide the Commanding Officer and other key decision makers with a picture of MCAS Cherry Point's present and future capability to support its mission. Through this master planning process, the Station Commander and personnel will be able to comprehensively analyze Station development and identify viable solutions to limitations. Natural and cultural resource management at MCAS Cherry Point is in accordance with procedures and guidelines established in the INRMP and ICRMP (MCAS Cherry Point 2001b, USMC 2008).

Figure 3.4-9 presents current land uses within the proposed development areas. Current land uses are categorized in the same manner as found at the other two Installations: cantonment, training, and forested/undeveloped areas. The Ordnance Storage Area is predominately undeveloped/forested, as is a majority of the North Quadrant. ESQD arcs overlap a portion of the Ordnance Storage Area. As a result, these areas are unsuitable for the development of living or working facilities. The West Quadrant is primarily cantonment, while the MACS-2 compound is exclusively a training area.

Land use planning categories for MCAS Cherry Point are defined in Table 3.4-2 and illustrated in Figure 3.4-10. The distribution of these land use categories within the proposed development areas is summarized following the figures.

Land Use	Definition
Administrative/Industrial Easilities	Military and civilian personnel offices, security operations, headquarters, and
Administrative/Industrial Facilities	communication centers.
	Flying unit operations facilities, maintenance hangars, passenger and freight
	terminals, and aircraft maintenance facilities. This category also includes
Operations and Training	airfield uses: runways, overruns, taxiways, aircraft parking areas, navigation
	aids, and airfield clear zones. The training areas include classroom training,
	flight simulator training, combat pool training, and outdoor areas.
	Family housing, billeting, exchange and commissary facilities, banking
Housing and Community Facilities	facilities, library, chapel facilities, and other facilities that directly support
	personnel living and/or working on MCAS Cherry Point.
Undeveloped/Forested	All forested areas on Station as well as the golf course, athletic fields, and
Ondeveloped/1-orested	park and picnic areas.

Table 3.4-2 Land Use Planning Categories Defined by MCAS Cherry Point

MCAS Cherry Point encompasses 13,164 acres on the Air Station proper, with an additional 15,975 acres of auxiliary properties (DoN 2005). Current and planned land use at the Station is influenced by airfield facilities and environmental constraints associated with creeks, wetlands, and floodplains. Aircraft operational areas include four runways, runway clear zones, and accident potential zones. Other land uses include support and training facilities, administrative, maintenance and supply, housing and community facilities, utilities, forestry, and open space/conservation (DoN 2003a).



Figure 3.4-9 Current Land Use MCAS Cherry Point



Figure 3.4-10 Land Use Planning MCAS Cherry Point

The core area of MCAS Cherry Point, the most developed portion of the Station, covers approximately 1,172 acres of land between Runways 5R/32L and 14L/32R and east of Roosevelt Boulevard. Industrial uses, such as aircraft hangars, maintenance, supply, and storage, are located parallel to Runways 5R/32L and 14L/32R. Also within this area is the Fleet Readiness Center, which is one of only three aircraft maintenance, engineering, and logistics facilities operated by the Navy/USMC and the only such facility located on a USMC Installation. The central and western sections of the core area are less intensely developed, consisting mainly of land uses such as combined bachelor quarters, training facilities, recreation or entertainment uses, and administrative functions (DoN 2003a).

West of Roosevelt Boulevard, land uses include family housing, personnel support facilities, recreational facilities, and the ordnance area. The remainder of the Station is largely undeveloped forestland and primarily classified as open/conservation areas. Within this undeveloped area, however, are a number of isolated land use activities such as training, operations, and recreation.

The USMC has acquired restrictive easements on 1,279 acres of land beyond the boundary of MCAS Cherry Point. These easements were purchased from landowners and allow the USMC to restrict certain activities on the property that would be incompatible with airfield operations (e.g., residential construction) (DoN 2003a).

MCAS Cherry Point also manages undeveloped forested areas for ecosystem values and commodity production. Activities include timber production, management of habitats for native and migratory wildlife, threatened and endangered species management, and the application of fire to maintain ecosystem health. These areas also provide additional cover and nesting habitat for game and non-game species. Recreational uses such as hunting, camping, and bird watching are also conducted on undeveloped, forested areas.

Most forestland outside developed areas is defined as ground-maneuver training areas. Ground-based military training opportunities provided on MCAS Cherry Point lands play a vital role in meeting individual training standards of 2nd Marine Air Wing units and other visiting II MEF units. Ground maneuver training is controlled in a cooperative administrative process between MCAS Cherry Point's Training and Operations, Environmental Affairs, and G-3 2nd Marine Air Wing divisions.

Proposed Development Areas: Proposed development areas at MCAS Cherry Point are in four basic locations on the Installation. The North Quadrant encompasses some of the runway and associated operations and training land, administrative/industrial facilities, and undeveloped land. The MACS 2 Compound consists of administrative/industrial facilities surrounded entirely by undeveloped land. The West Quadrant is west of the runway extending to Roosevelt Boulevard. This area primarily supports

administrative/industrial facilities and contains a small portion of undeveloped land. The Ordnance Area, west of Slocum Creek, is mostly undeveloped land designated for training and operational purposes. Roosevelt Boulevard begins at the Main Gate, along the southern border of the Station, and provides the primary access to the Station. It extends north along the western side of the airfield before turning northeast to provide access to the northern area of the Station. Primary land uses on either side of the road are administrative, community housing, and undeveloped areas. There are some small areas of training and operations. Slocum Road bridges Slocum Creek providing access between the Ordnance Area and the West Quadrant. It traverses operations and training areas as well as some administrative/industrial areas.

3.4.1.3 Off-Base Land Use and Management

Comprehensive planning in North Carolina is primarily conducted at the regional and local level. Although local governments are encouraged to develop Land Use Plans, the State of North Carolina does not monitor or require development of these types of plans (Personal communication, Nevilles 2008). The Coastal Area Management Act (CAMA), however, requires each of the 20 coastal counties in North Carolina to develop a CAMA Land Use Plan in accordance with guidelines established by the North Carolina Coastal Resources Commission (see Section 3.4.1.4, Coastal Zone Management). Specifically, local policy statements are required on resource protection; resource production and management; economic and community development; continuing public participation; and storm hazard mitigation, post-disaster recovery, and evacuation plans. Upon approval by the North Carolina Coastal Resources Commission, each plan becomes part of the North Carolina Coastal Management Plan.

The NCDENR, Office of Conservation and Community Affairs is responsible for managing the "One North Carolina Naturally" initiative which promotes and coordinates the long-term conservation of North Carolina's threatened land and water resources. The Office of Conservation and Community Affairs manages the program by leading the development and implementation of a comprehensive statewide conservation plan involving government agencies, private organizations, landowners and the public (NCDENR 2008b). The ROI for the Proposed Action falls within the Southern Coastal Plain Region planning area. The Eastern Carolina Council addresses Comprehensive Planning initiatives in this region.

Onslow County. MCB Camp Lejeune and MCAS New River are located entirely within Onslow County. The Citizens' Comprehensive Plan for Onslow County is the current comprehensive plan (Onslow County 2003). MCB Camp Lejeune/MCAS New River is the single largest property occupying the majority of the county's mid-section, coastline, and the New River Estuary. The Base has a profound influence on the growth and economic viability of the county. The Comprehensive Plan provides guidelines for addressing the following key issues: containing sprawl by implementing zoning; protecting

surface water quality; planning for water supply and sewage treatment systems; improving highway access; and diversifying the economy by providing for better paying jobs (Onslow County 2003).

Current land use within developed areas of the county (excluding MCB Camp Lejeune/MCAS New River) is predominantly single-family residential (13,568 acres or 57 percent), followed by streets and right of ways (5,254 acres or 22 percent) and mobile home parks (2,500 acres or 11 percent). Industrial/warehousing, commercial/retail, office/institutional, and multi-family residential make up the remaining developed land area (2,559 acres or 10 percent combined). The growth factor analysis in the Comprehensive Plan determined that an additional 3,270 acres would need to be developed within the county to accommodate growth between the years 2000 to 2020. This analysis assumed a population density of 4.9 persons per acre, which was based on the 2000 Census, and a general increase in population of approximately 16,000 more people outside of MCB Camp Lejeune by 2020. The majority of the anticipated acreage would be single and multi-family residential (1,919 acres). Streets and right-of-ways would make up the next largest portion of the predicted acreage (719 acres), followed by mobile home parks (343 acres). Mixed commercial/industrial/office use comprises the remainder of the acreage (288 acres). The current policies for managing development focus on residential subdivisions. The county has adopted and enforces various land use and zoning ordinances to prevent overcrowding and promote orderly growth (Onslow County 2003).

The Camp Davis Outlying Landing Field is located near the southern edge of the Greater Sandy Run Training Area at MCB Camp Lejeune. This facility lies in close proximity to the town of Holly Ridge in Onslow County. Camp Davis is operated as a satellite facility of MCAS New River and is used for USMC helicopter training exercises.

Carteret County. Carteret County is located adjacent to Onslow County. MCAS Cherry Point boundaries fall within Craven County; however, approximately 16,000 acres of auxiliary activities, including USMC Auxiliary Landing Field Bogue, are located within Carteret County. Land use planning is conducted under the guidance of the 2005 Carteret County Land Use Plan Update (Carteret County 2005). The county is currently updating their plan and expects completion by the end of 2009. Carteret County offers plentiful waterfront areas that attract tourists, vacation home owners, and retirees and has experienced significant growth since 1970 (95 percent). The county's land use plan focuses on utilizing the economic opportunities that are attractive to younger adults. MCAS Cherry Point is the county's leading employer. The Community Vision strives to balance the benefits of new development with the protection of its valuable natural resources that enhance the area. It is anticipated that the western and central portions of the county would continue to grow, specifically the White Oak Township. Growth projections in the 2005

Land Use Plan estimate that an additional 1,740 acres would be needed to accommodate increases in the permanent and seasonal population from 2005 to 2025 (Carteret County 2005). The proposed growth acreage was based upon a population density of 2.86 households per acre and was derived from 2000 Census data. However, the county planning board has increased the projected acreage by 50 percent, making it 2,610 acres. This increase is to allow for unanticipated growth, to provide market flexibility, and to anticipate the acreages of lands that are undevelopable, notably wetlands or other protected lands (Carteret County 2005). The projected acreage needed for future growth would be composed of the following land uses: residential (2,401 acres), commercial (131 acres), institutional (52 acres), and industrial (26 acres).

Current land uses in Carteret County include industrial, residential, institutional, commercial, and undeveloped areas. Over half of the county is considered undeveloped land (182,510 acres or 66 percent) which includes areas that may be used for forestry or agriculture practices. The second largest area (79,964 acres or 29 percent) is classified as institutional which includes military bases, Federal land, State-owned land, county parks, and beach access points. Residential areas occupy 12,548 acres (5 percent) while commercial and industrial areas occupy a combined 733 acres (0.4 percent) (Carteret County 2005).

Craven County. Craven County encompasses MCAS Cherry Point and extends northwest around the Neuse River. Land use planning is conducted under guidelines outlined in the 1996 Land Use Plan Update (Craven County 1996). The City of Havelock prepared a separate but coordinating land use plan, 1996 Land Use Plan Addendum (City of Havelock 1999). Both plans are currently being updated and are expected to be completed in 2009. Like most coastal counties, Craven has experienced significant population growth since 1960 (approximately 48 percent). As North Carolina has grown into a recreational/retirement center, average household sizes have decreased and the median age has increased. Most of the coastal counties have lost their rural nature as they shift toward a retail- and service-based economy with the population centered on urban areas. Growth at MCAS Cherry Point has also contributed to growth within the county. In the 1990 census, over half of Craven County's population lived in New Bern, Havelock, River Bend, and Trent Woods exceeding the rural population for the first time. MCAS Cherry Point is the county's most important economic contributor, employing 19 percent of the county's workforce in 1990. Planning within the county and the City of Havelock are heavily influenced by manpower changes on MCAS Cherry Point (Craven County 1996, City of Havelock 1999).

The majority of Craven County's total area is forested (estimated at 279,000 acres or 55 percent). Farms account for 72,181 acres (14 percent) while State, Federal, and local parks account for 63,694 acres (13 percent). Urban and built-up areas cover approximately 37,260 acres (7 percent). Right of ways cover the

remaining 7,765 acres of land (2 percent). Water covers approximately 42,400 acres (8 percent) of the county (Craven County 1996). Zoning has only occurred around MCAS Cherry Point in the City of Havelock. Land use compatibility with future development is a concern in the county and the City of Havelock.

3.4.1.4 Coastal Zone Management

The coastal zone is rich in natural, commercial, recreational, ecological, industrial, and aesthetic resources. As such, it is protected by legislation for the effective management of its resources. The CZMA of 1972 (16 USC §1451, *et al.*, as amended) was enacted to encourage coastal States, such as North Carolina, to develop comprehensive programs to manage and balance competing uses of and impacts to coastal resources.

The North Carolina CAMA of 1974 was passed in accordance with the Federal CZMA and established a cooperative program of coastal area management between local and State governments. CAMA established the Coastal Resources Commission, required local land use planning in the coastal counties, and provided for a program for regulating development. The North Carolina Coastal Management Program was federally approved in 1978. North Carolina's coastal zone includes the 20 counties that are adjacent to, adjoining, intersected, or bounded by the Atlantic Ocean or any coastal sound. The coastal zone extends seaward to the 3-nautical mile territorial sea limit. Onslow, Carteret, and Craven counties are within the coastal zone and their specific CAMA land use plans were described in Section 3.4.1.3.

CZMA policy is implemented through State coastal zone management programs. Federal lands are exempt from the jurisdiction of these State programs. However, because North Carolina's Coastal Management Program is Federally approved, a number of activities are required to comply with the enforceable policies of the State's certified coastal management program. Activities on Federal lands are subject to CZMA Federal consistency requirements if the activity would affect any land, water, or natural resource of the coastal zone, including reasonably foreseeable effects. This determination is made in the form of either a Negative Determination or a Federal Coastal Consistency Determination. A Negative Determination would be prepared for those proposed actions that do not have the potential to affect the State's coastal zone or any of the coastal resources. For a proposed activity that would affect coastal resources, a Federal Coastal Consistency Determination is required. A Federal Coastal Consistency Determination 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."

For this project, the USMC would submit a statement and supporting documentation (i.e., the Coastal Consistency Determination) to the State's program once the Draft EIS has been publicly released, indicating that the proposed action is consistent with the program. The State reviews the determination and either provides concurrence or objection.

There are two tiers of regulatory review for projects within the coastal zone. The first tier includes projects that are located in State-designated Areas of Environmental Concern (AECs), which are designated by the State. Under North Carolina Administrative Code (NCAC) 07K.0402 all Federal agency development activities in AECs are exempt from the CAMA permit requirement, but would still be subject to a consistency review. The second tier includes land uses with the potential to affect coastal waters, even though they are not defined as AECs. These projects are reviewed under the CAMA General Policy Guidelines. Both of these are explained in more detail below.

Areas of Environmental Concern: 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 3 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 may 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.

General Policy Guidelines: Projects that are located outside of an AEC are reviewed under the General Policy Guidelines. The North Carolina CAMA sets forth 11 General Policy Guidelines, addressing:

- 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.

The purpose of these rules is to establish generally applicable objectives and policies to be followed in the public and private use of land and water areas within the coastal area of North Carolina. Figures 3.4-11 through 3.4-13 provide a graphical summary of coastal resources within the proposed development areas. Following is a brief summary of the AECs located within the proposed development areas at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point (also see Table 3.4-3). Additional details are provided in the Coastal Consistency Determinations found in Appendix C of this EIS.

MCB Camp Lejeune/MCAS New River Coastal Resources

MCB Camp Lejeune/MCAS New River includes coastal resources designated as AECs, including estuarine coastal waters, coastal shorelines, and coastal wetlands of the Estuarine and Ocean System AECs, as well as habitat for Federal or State designated species and archaeological or historic resources of the Natural and Cultural Resource Area AEC. Furthermore, all land located within 75 feet of the normal high water level of coastal waters and within 30 feet of the normal high water level of inland water is also considered to be coastal shoreline within the Estuarine and Ocean System AEC.

MCAS Cherry Point Coastal Resources

MCAS Cherry Point also includes coastal resources designated as AECs, including Inland and Coastal Shoreline AECs and Estuarine Wetlands. The Tucker Creek Natural Area is located in the northwest portion of the Station. The Roosevelt Boulevard project crosses several AECs along its stretch. Hunter's Branch, a tributary of Slocum Creek, is listed as both an Inland AEC and Estuarine Wetlands. Duck Creek is considered Estuarine Wetlands and is also along the path of Roosevelt Boulevard. The Slocum Road expansion would traverse Slocum Creek, an Inland AEC.



Figure 3.4-11 Coastal Resources at MCB Camp Lejeune/MCAS New River – North



Figure 3.4-12 Coastal Resources at MCB Camp Lejeune/MCAS New River – South



Figure 3.4-13 Coastal Resources at MCAS Cherry Point

Proposed Development Area	Coastal Resource	Area of Concern		
MCB Camp Lejeune				
Camp Johnson	New River Northeast Creek Scales Creek	Primary Nursery Area Special Secondary Nursery Area Estuarine Wetlands Coastal Waters AEC		
Camp Geiger	Brinson Creek	Coastal Waters AEC		
Hadnot Point	New River Wallace Creek	Special Secondary Nursery Area Coastal Waters AEC Estuarine Wetlands Inland Waters AEC		
French Creek	New River French Creek	Special Secondary Nursery Area Coastal Waters AEC Estuarine Wetlands Inland Waters AEC		
Courthouse Bay	New River	Primary Nursery Area Estuarine Wetlands		
Stone Bay/Rifle Range	Everett Creek New River Stone Creek 2 unnamed creeks	Estuarine Wetlands Coastal Waters AEC Primary Nursery Area Special Secondary Nursery Area		
New Base Road	Northeast Creek Wallace Creek	Primary Nursery Area Estuarine Wetlands Coastal Waters AEC Inland Waters AEC		
PPV Housing Area	Northeast Creek Frenchmans Creek	Estuarine Wetlands Coastal Waters AEC Primary Nursery Area		
MCAS New River				
MCAS New River Construction Area	New River	Coastal Waters AEC Estuarine Wetlands		
MCAS Cherry Point				
Roosevelt Road Widening	Hunter's Branch Duck Creek	Inland AEC Estuarine Wetlands		
Slocum Road Expansion	Slocum Creek	Inland AEC		

Table 3.4-3 Coastal Resources within Proposed Development Areas at MCB Camp Lejeune/ MCAS New River and MCAS Cherry Point

3.4.2 Environmental Consequences

This section provides a detailed description of the potential impacts associated with implementation of the alternatives including the No Action Alternative. Factors used to consider the extent of impacts included:

- Compatibility with land use planning efforts within MCB Camp Lejeune/MCAS New River and MCAS Cherry Point,
- Consistency with the environmental goals, objectives, or guidelines of the Land Use Plans for the three-county ROI, and
- Consistency with the enforceable policies of the State's approved coastal management program.

3.4.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) land use conditions as a result of this alternative would occur. However, that does not mean that land uses at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected land use conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4).

Under the No Action Alternative, development of undeveloped/forested land would not occur. These areas would continue to provide wildlife habitat, buffering between developed areas and nearby surface waters, filtration of stormwater, carbon sequestration, and aesthetic and recreational benefits.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. These activities would be compatible with land use planning efforts at MCB Camp Lejeune/MCAS New River.

The Preferred Alternative would change current land use at MCB Camp Lejeune/MCAS New River due to the proposed construction projects. The proposed construction projects would result in converting some undeveloped (forested) areas to developed areas.

All proposed construction would be within the Installation boundaries and would support the current military mission. Although there would be some change in land use from undeveloped to developed areas, the proposed construction would be compatible with land use planning categories at MCB Camp Lejeune and MCAS New River as depicted in Figure 3.4-5 through Figure 3.4-8. As previously mentioned, a portion of French Creek and MCAS New River is encumbered by ESQD arcs. The Installations would ensure that all applicable guidelines are followed to ensure land use compatibility within these areas for any new development that would occur.

There are approximately 95,000 acres of managed forest at MCB Camp Lejeune, most of which is used for military training (MCB Camp Lejeune 2006). Since the exact location of facilities within the proposed

development areas has not been determined, it is reasonable to assume that some projects would be constructed within forested or undeveloped areas. The potential forest clearance area within the proposed development areas (over 1,500 acres) represents less than 2 percent of the total forested area within MCB Camp Lejeune. The change in land use from forested to developed areas would result in some direct impacts to recreation and visual resources, natural resources, and water resources (see Sections 3.5, 3.13, and 3.15 respectively for additional details), including loss of wildlife habitat, reduced buffering between developed areas and nearby surface waters, reduced filtration of stormwater by the forested areas, reduced capacity for carbon sequestration, and minor loss of aesthetic and recreational benefits. The permanent conversion of forested areas to developed areas would also result in a loss of future timber revenues. See Section 3.13 Natural Resources, for a more detailed analysis of the types of forest vegetation that would be removed as a result of implementing the Preferred Alternative.

Final site designs are not currently available. However, preliminary planning concepts indicate that less than 40 acres would be cleared at MCAS New River. The land use of these areas would thus change from forested/undeveloped to cantonment.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Potential impacts to land use from Alternative 3 would be the same as those described under Alternative 2, but on a much smaller scale. Under Alternative 3, new facility development would occur and could remove some undeveloped or forested areas at MCB Camp Lejeune (approximately 300 acres of clearance, 0.3 percent of total forested area on the Installation). Estimated forest clearance at MCAS New River would be less than one acre under this Alternative.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. Under the increase of these troops,
some land use changes would occur as a result of increases in population, training, and throughput of Marines; however, these changes would be compatible with surrounding land use designations.

3.4.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) land use conditions as a result of this alternative would occur. However, that does not mean that land uses at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected land use conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4).

Under the No Action Alternative, development of undeveloped/forested land would not occur. These areas would continue to provide wildlife habitat, buffering between developed areas and nearby surface waters, filtration of stormwater, carbon sequestration, and aesthetic and recreational benefits.

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. These activities would be compatible with land use planning efforts at MCAS Cherry Point.

The Preferred Alternative would result in minor land use changes at MCAS Cherry Point. The proposed construction projects would result in approximately 117 acres of land disturbance. All proposed construction would be on-Station and would support the current military mission. There would be some change in land use from undeveloped to developed areas.

The construction projects would primarily occur in the developed industrial area of the Station surrounding the airfield. Most of the proposed facilities would be constructed in land currently classified as administrative/industrial. Up to 70 acres of forest could be cleared as a result of the proposed projects. Approximately 12 acres of forestland along the existing road shoulder would be permanently cleared to allow for the widening of Roosevelt Boulevard. The realignment of Slocum Road and the ordnance magazine project would result in clearing approximately 14 acres and 12 acres respectively in the Ordnance Storage Area. Infrastructure upgrades would account for clearing or disturbing 20 acres of

forestland in the North Quadrant. Several other projects would result in minor clearance throughout the proposed development areas. The change in land use from forested to developed areas would result in some direct impacts to recreation and visual resources, natural resources, and water resources (see Sections 3.5, 3.13, and 3.15 respectively for additional details), including loss of wildlife habitat, reduced buffering between developed areas and nearby surface waters, reduced filtration of stormwater by the forested areas, reduced capacity for carbon sequestration, and minor loss of aesthetic and recreational benefits. See Section 3.13 Natural Resources, for a more detailed analysis of the types of forest vegetation that would be removed as a result of implementing the Preferred Alternative.

The realignment of Slocum Road has been designed to avoid ESQD arcs overlapping the Ordnance Storage Area. Any other development occurring within the Ordnance Storage Area would adhere to all appropriate guidelines for developing within ESQD arcs to ensure land use compatibility.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. The potential impacts to land use would be the same as those described for the Preferred Alternative, but on a smaller scale. Approximately 40 acres of construction is proposed with up to 21 acres of potential forest clearance or disturbance.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. Under the increase of these troops, some land use changes would occur as a result of increases in population, training, and throughput of Marines; however, these changes would be compatible with surrounding land use designations.

3.4.2.3 Off-Base Land Use and Management

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. There would be no increase in personnel at any of

the three Installations. No growth or associated change to baseline (FY06) land use conditions within the surrounding communities as a result of this alternative would occur.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads on the Installations. These activities and the associated growth in the surrounding communities would be consistent with environmental goals, objectives, or guidelines of the Land Use Plans for the three-county ROI.

Under the Preferred Alternative, the increase in personnel at the three Installations would likely result in induced growth within the surrounding communities. In terms of land use, it is anticipated that there would be an increased demand for residential land and commercial and public services. The increased demand for these land types could create the need for new development within the ROI which could result in changes to land use. Such changes, however, should not be inconsistent or in conflict with the environmental goals, objectives, or guidelines of the existing Comprehensive Plans of the surrounding counties, including nearby cities such as the City of Jacksonville, the City of Havelock, and the City of New Bern.

In general, the communities surrounding the three Installations have been conducting their Comprehensive Planning with the understanding that the military has a strong presence in eastern North Carolina, and have taken into account additional land within each county that would be required to accommodate future growth based on population projections.

To address the overall growth occurring at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point, a Military Growth Task Force was organized in October 2007 under the auspices of North Carolina's Eastern Region. As partners with the Task Force, the Installations would continue to work with the local community to address concerns regarding future development and potential changes to land use within their communities as a result of induced growth.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their

dependents would be supported in existing facilities and temporary/relocatable buildings already in place. The increase in personnel at the three Installations would result in induced growth within the surrounding communities, similar to that described under the Preferred Alternative. However, without construction of additional on-Base housing to accommodate the personnel increases, growth and demand on local land resources in the surrounding counties (specifically Onslow County) would likely be more than what would be anticipated under the Preferred Alternative. Section 3.6 addresses potential impacts to housing.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. The increase in personnel at the three Installations would result in induced growth within the surrounding communities and have the same potential impacts as described under Alternative 3.

3.4.2.4 Coastal Zone Management

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. There would be no increase in personnel at any of the three Installations and therefore, no growth or development within the surrounding communities. There would be no change to coastal zone management as a result of this alternative.

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads on the Installations.

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 Coastal Consistency Determinations for each Installation (Appendix C). In

accordance with Section 307(c)(1) of the Federal CZMA of 1972 as amended, the USMC has concluded that the Preferred Alternative is consistent to the maximum extent practicable with the coastal zone management program enforceable policies of the State of North Carolina.

There are 11 general policy guidelines issued by the NCAC for the coastal area. The policies applicable to each Installation and consistency with these policies are *briefly* summarized in the following paragraphs.

In addition to the 11 enforceable policies, there are also 4 categories of AECs afforded protection under North Carolina's CAMA because they are areas of statewide concern within the coastal area. The following paragraphs summarize the applicability of policies designed to protect AECs and the determination of no adverse impact to North Carolina's coastal zone.

MCB Camp Lejeune/MCAS New River

Applicable general policy guidelines:

- Shoreline Erosion Policies (15A NCAC 7M .0200) Although estuarine shorelines are along some of the proposed development areas, no facilities or infrastructure would be constructed within the shoreline except for the new Base road. The proposed new Base road includes a bridge crossing at Northeast Creek, Wallace Creek, and Bearhead Creek. To the extent practicable, construction techniques and best management practices (BMPs) would avoid impacts to and erosion of the shoreline.
- Mitigation Policy (15A NCAC 7M .0700) Upland forest habitat would be lost under the Preferred Alternative. The exact amount of forest areas to be cleared at MCB Camp Lejeune is unknown since site planning and design has not been finalized; however, the worst case scenario would be approximately 1,500 acres. Approximately 40 acres of forest on MCAS New River could be cleared based on the estimated footprint for the proposed projects. This represents a minimal amount of forested areas within MCB Camp Lejeune/MCAS New River.

The proposed development area for the Triangle Outpost Gate would result in the loss of approximately one acre of red-cockaded woodpecker foraging habitat within active clusters; however, this loss is not expected to affect the Base's ability to maintain sufficient foraging habitat.

Palustrine wetlands are present within all of the proposed development areas and estuarine wetlands are present within Wallace Creek, Hadnot Point, Courthouse Bay, Stone Bay/Rifle Range, and Camp Johnson. Final site design would avoid these wetlands to the maximum extent practicable. Less than 105 acres of wetlands could potentially be affected under the worst-case

scenario on MCB Camp Lejeune given current master planning concept and project location (see Section 3.15). The real impact to wetlands would likely be much less. However, if wetlands are unavoidable during the final design phase of the projects, all necessary Section 404 permitting and mitigation measures would be undertaken to mitigate for any wetland-destroying activities. One acre or less of wetlands on MCAS New River has the potential to be affected.

• **Coastal Water Quality Policies (15A NCAC 7M .0800)** - Stormwater runoff would be managed in accordance with existing stormwater pollution prevention plans as well as site-specific Erosion and Sedimentation Control Plans to eliminate or minimize the potential impact to coastal water quality. BMPs (see Section 3.15 for more detailed information on permitting and plans) would be implemented during the construction phase as well as operation phase of the projects to further eliminate potential contamination to coastal waters.

AECs afforded protection:

- Estuarine and Ocean Systems (15A NCAC 07H .0200) Palustrine wetlands are present within all of the proposed development areas and estuarine wetlands are found within Wallace Creek, Hadnot Point, Courthouse Bay, Stone Bay/Rifle Range, and Camp Johnson. As described for the general policies above, wetlands would be avoided during final site design to the extent practicable. If avoidance is not possible, all applicable permits and mitigation plans would be obtained prior to any construction activities. Stormwater would be managed in accordance with the Base Stormwater Management Plan to minimize potential contamination of wetlands from stormwater runoff (see Section 3.15).
- Public Water Supplies (15A NCAC 07H .0400) There are potable water wells located throughout the Base in the following areas: Camp Geiger, Courthouse Bay, French Creek, Hadnot Point, and Stone Bay/Rifle Range. All facilities would be constructed at least 75 feet from drinking water wells; no sewers or septic systems would be constructed; the proposed development would not significantly limit the quality or quantity of the public water supply or the amount of rechargeable water; and the project would not cause salt water intrusion or result in the discharge of toxic or soluble contaminants into standing or groundwater. Therefore, the Preferred Alternative is consistent with this policy.
- Natural and Cultural Resource Areas (15A NCAC 07H .0500) The loss of one acre of redcockaded woodpecker foraging habitat within active clusters is not expected to affect the Base's ability to maintain sufficient foraging habitat.

The two natural areas registered by the North Carolina Natural Heritage Program (CF Russell Longleaf Pine Natural Area and the Wallace Creek Natural Area) are located well beyond the proposed development area boundaries; therefore this policy is not applicable.

There are three archaeological sites eligible for the National Register of Historic Places (NRHP) within the proposed development areas: Sites 31ON308/308** and 31ON379 within Courthouse Bay and Site 31ON536 within the proposed development area for the new Base road. Site 31ON308/308** would be within the ROI for proposed utility upgrades, however, these activities are not expected to have an adverse effect on the site. There would be no impact to site 31ON379. Construction of the new Base road would affect less than 100 ft of Site 31ON536, in an area where there are no longer intact resources. Therefore, impacts from road construction would not be expected to have an adverse effect on this site.

Historic Districts are located at Hadnot Point, Wallace Creek, Courthouse Bay, Stone Bay/Rifle Range, Camp Geiger, and Camp Johnson. Master planning level efforts have indicated that the construction of P1279 and P1249 would result in the need to demolish PT-4 and PT-5 in the Parachute Training Historic District (Wallace Creek). In accordance with 36 CFR 800, the Marine Corps would consult with the North Carolina SHPO on the Proposed Action and its potential effects to these historic properties (Section 3.16). As appropriate, the Marine Corps would develop a Memorandum of Agreement with the North Carolina SHPO to mitigate adverse impacts to the historic districts.

Current master planning efforts and design plans indicate that construction of P1286 (a BEQ) would be best placed in the area of Rifle Range 9 (a historic structure within the Stone Bay Rifle Range Historic District). Rifle Range 9 has numerous structural problems and would not be economical to rehabilitate to current BEQ standards. Either an existing Programmatic Agreement for this area or consultation with the North Carolina SHPO would be utilized to determine the mitigation requirements for the demolition of Rifle Range 9. With required consultation and the implementation of any mitigation measures identified during that consultation, the Preferred Alternative is consistent with this policy.

MCAS Cherry Point

Applicable general policy guidelines:

• Mitigation Policy (15A NCAC 7M .0700) - Under the Preferred Alternative, approximately 117 acres of construction would occur within the proposed development areas. As a result, up to 70 acres of forested areas could be cleared based on current project footprint estimates.

Implementation of site-specific Erosion and Sedimentation Control Plan management practices within proposed development areas would minimize or avoid the potential release of sediments into stormwater.

Based on preliminary design of project site locations, approximately 14.5 acres of wetlands would be affected by the proposed construction at MCAS Cherry Point. The majority of this acreage (11.06 acres) is associated with the larger planning area for the Slocum Road realignment. The exact impact to wetlands would likely be less. Unavoidable impacts to wetlands or waters of the U.S. would likely occur along the Roosevelt Boulevard expansion and the Slocum Road realignment and bridge construction. For those unavoidable wetland areas, MCAS Cherry Point would obtain the necessary permits and implement mitigation to minimize impacts.

 Coastal Water Quality Policies (15A NCAC 7M .0800) - Stormwater runoff would be managed in accordance with the Station's Stormwater Management Plan as well as site-specific Erosion and Sedimentation Control Plans to prevent contamination to coastal waters. All discharges would be in accordance with the Station's National Pollutant Discharge Elimination System (NPDES) permit. Runoff minimization efforts during construction and operation phases of the project would further avoid contamination of stormwater. As a result, the Preferred Alternative would not impair coastal water quality and would be consistent with this policy.

AECs afforded protection:

- Estuarine and Ocean Systems (15A NCAC 07H .0200) Estuarine wetlands are located at Slocum Creek. The proposed road improvements (Roosevelt Boulevard and Slocum Road) have the potential to impact these wetlands. The appropriate permits would be obtained and mitigation would be implemented to minimize the impact to wetlands; therefore, the Preferred Alternative would be consistent with this policy. Stormwater would be managed in accordance with the Stormwater Management Plan to minimize the potential contamination of wetlands from stormwater runoff.
- Natural and Cultural Resource Areas (15A NCAC 07H .0500) There are no threatened or endangered species locations, unique geological formations, designated fragile coastal natural or cultural resource areas, or coastal historic architectural areas within the proposed development areas. One designated natural area, the Tucker Creek Natural Area, is located well beyond the proposed development area boundaries. All high probability archaeological sensitive soils have been surveyed and no NRHP-eligible or potentially eligible archaeological sites have been identified within the proposed development areas.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. The project development areas at each Installation would remain the same and potential impacts to coastal resources would be similar to those described for the Preferred Alternative. Under this alternative, approximately 360 acres of construction would occur at MCB Camp Lejeune, 90 acres at MCAS New River, and 40 acres at MCAS Cherry Point.

MCB Camp Lejeune/MCAS New River

Applicable general policy guidelines:

- Shoreline Erosion Policies (15A NCAC 7M .0200) No facilities or infrastructure would be constructed within the shoreline.
- Mitigation Policy (15A NCAC 7M .0700) Upland forest habitat would be lost under the Preferred Alternative. Under the worst case scenario, approximately 300 acres on MCB Camp Lejeune and less than one acre of forest on MCAS New River could be cleared based on the estimated footprint for the proposed projects. This represents a minimal amount of forested areas within MCB Camp Lejeune/MCAS New River.

The potential impacts from the Triangle Outpost Gate would be the same as those described under the Preferred Alternative (Alternative 2). Informal consultation with USFWS would be completed prior to construction activities to ensure protection of the species.

Less than 3 acres of wetlands could potentially be affected under the worst-case scenario on MCB Camp Lejeune for Alternative 3 given current master planning concept and project location (see Section 3.15). The real impact to wetlands would likely be much less. Final site design would likely avoid these wetland areas and impacts are not expected. However, if wetlands are unavoidable, all necessary Section 404 permitting and mitigation measures would be undertaken to minimize any wetland-destroying activities.

• **Coastal Water Quality Policies (15A NCAC 7M .0800)** – Potential impacts would be the same as those described under Preferred Alternative (Alternative 2).

AECs afforded protection:

- Estuarine and Ocean Systems (15A NCAC 07H .0200) Potential impacts would be the same as those described under the Preferred Alternative (Alternative 2).
- **Public Water Supplies (15A NCAC 07H .0400)** Potential impacts would be the same as those described under the Preferred Alternative (Alternative 2).
- Natural and Cultural Resource Areas (15A NCAC 07H .0500) The loss of one acre of redcockaded woodpecker foraging habitat within active clusters is not expected to affect the Base's ability to maintain sufficient foraging habitat. MCB Camp Lejeune would consult with the USFWS prior to implementing this project. The stability of on-Base wildlife populations would not be affected.

There would be no impact to archaeological or architectural resources at any of the proposed development areas. Projects P1279, P1249, and P1286 would not occur under Alternative 3.

MCAS Cherry Point

Applicable general policy guidelines:

• Mitigation Policy (15A NCAC 7M .0700) - Under the Preferred Alternative, approximately 40 acres of construction would occur within the proposed development areas. As a result, up to 20 acres of forested areas could be cleared based on current project footprint estimates. Implementation of site-specific Erosion and Sedimentation Control Plan management practices within proposed development areas would minimize or avoid the potential release of sediments into stormwater.

Based on preliminary design of project site locations, less than one acre of wetlands would be affected by the proposed construction at MCAS Cherry Point. For those unavoidable wetland areas, MCAS Cherry Point would obtain the necessary permits and implement mitigation to minimize impacts.

• **Coastal Water Quality Policies (15A NCAC 7M .0800)** – Potential impacts would be the same as those described for the Preferred Alternative (Alternative 2).

AECs afforded protection:

• Estuarine and Ocean Systems (15A NCAC 07H .0200) – There are no estuarine wetlands associated with the proposed project areas under Alternative 3. Stormwater would be managed in

accordance with the Stormwater Management Plan to minimize the potential contamination of wetlands from stormwater runoff.

• Natural and Cultural Resource Areas (15A NCAC 07H .0500) – Potential impacts would be the same as those described for the Preferred Alternative (Alternative 2).

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no additional construction or ground disturbance, therefore, no impact to coastal zone resources.

3.5 Recreation and Visual Resources

Recreation includes those outdoor recreational activities that take place away from the residence of the participant. This analysis focuses on the recreation areas designated or available for public use. Visual resources are the natural (landforms, water bodies, vegetation) and man-made features (buildings, fences, signs) that give a particular environment its aesthetic qualities. A visual impression of an area is derived from the type, arrangement, and contrast between these features. Although each viewer's perception may be slightly different, an overall landscape character can be assigned to an area and impacts to that character can be assessed. The ROI for recreational and visual resources includes the proposed development areas for construction and both on- and off-Base recreational services.

3.5.1 Affected Environment

3.5.1.1 MCB Camp Lejeune/MCAS New River

Recreation

The Marine Corps Community Services offices for MCB Camp Lejeune and MCAS New River provide a full range of recreational services and facilities to military personnel and their dependents and include the following:

- an archery range
- a skeet/trap shooting range
- 2 marinas
- 2 campgrounds
- picnic areas
- horse stables
- 2 golf courses
- 124 athletic fields
- 62 tennis courts
- 21 handball/racquetball/squash courts
- 39 basketball courts
- a paintball field
- a bowling center

- 8 gymnasium/fitness centers
- a paved, multi-use Greenway Trail
- a swimming/surfing beach complex
- a fishing pier
- 3 swimming pools
- 2 movie theaters
- 4 hobby shops
- 5 recreation centers
- 2 community centers
- a youth center
- 9 communication centers
- one marina (MCAS New River)
- one campground (MCAS New River)

Big game, small game, upland game birds, furbearers, and migratory waterfowl hunting is allowed on the Base within designated military training areas and other managed forest compartments. Hunting is allowed during appropriate seasons established by the State from 13 September until 1 January, as well as a spring wild-turkey season from mid-April to mid-May. Hunting opportunities for game species include bow and arrow hunting, individual hunting with shotgun and primitive weapons, and organized hunting with dogs. Recreational fishing is available on the Installation along creeks, freshwater ponds, tidal

estuaries, and beaches in designated areas. Hunting and fishing participation fluctuates annually, but approximately 1,200 to 1,500 individual hunting and fishing permits are issued each year (MCB Camp Lejeune 2006).

Approximately 10,000 acres of woodlands in the cantonment areas of the Base are designated as bow hunting only, predominantly for safety reasons. Approximately 1,000 acres of hunting areas are scattered throughout residential and built-up areas to control the urban deer population. The remainder of MCB Camp Lejeune is open to firearms hunting in accordance with hunting, fishing, and trapping regulations. Each year approximately 800 deer and 20 wild turkeys are harvested on the Base (MCB Camp Lejeune 2006).

The proposed development areas coincide with designated hunting areas 2, 3, 5, 6, and 7 (Figures 3.5-1 and 3.5-2). The majority of hunting areas 2 and 5 encompass the proposed development areas and are considered Quality Deer Management Units. These areas were established in 1998 to improve the overall health of the deer herd. Densities of the deer population vary across the Base depending on habitat quality, but average approximately one deer per 28 acres. Game populations on the Base are considered stable (Personal communication, Garber 2008).

The surrounding counties offer numerous recreation facilities and opportunities throughout the region, including parks, beaches, multi-use trails, playgrounds, playing fields, and ball courts that support activities such as hiking, paddling, bird watching, organized sports, fishing, and hunting. Some of the highlights are described below.

The Onslow County Parks and Recreation Department operates five main parks, four regional beach access sites on North Topsail Beach, and a kayak and canoe paddling trail. The 17-mile Onslow County Cow Horn-New River paddle trail travels the New River stopping at the Henry McAllister Landing at Rhodestown Road Bridge, the Burton Industrial Park Landing, and finally the New River Waterfront Park in Jacksonville (Onslow County 2008c). Other recreational sites include Hofmann Forest, a portion of which is located in Onslow County. This Forest is about 80,000 acres in size and managed for both hunting and forest products by the North Carolina State University. Hammocks Beach State Park, a 927-acre barrier island directly adjacent to the eastern boundary of the Base, provides visitors with beach access and kayak trails though the marsh (North Carolina State Parks 2008). The City of Jacksonville operates parks, playgrounds, recreational centers, a skate park, and a system of trails and greenways. Trails and greenways are a creative way to preserve and reuse old roads, railways, and pioneer trails for recreation activities such as pedestrian and bicycle use. In August 2008, the City of Jacksonville had the



Figure 3.5-1 Hunting Areas on MCB Camp Lejeune/MCAS New River – East



Figure 3.5-2 Hunting Areas on MCB Camp Lejeune/MCAS New River – West

grand opening of the Rails for Trails program which converted an old rail line that enters into Camp Lejeune and proceeds into the city. Dedicated bicycle trails are part of this program. There are greenways located adjacent to the boundary of MCB Camp Lejeune and NC 24. Carteret County has seven parks that offer athletic fields, play lots, picnic shelters, and comfort stations. Beaufort, North Carolina and Harkers Island offer picnic areas and beach access (Carteret County 2008b). Harkers Island is home to the Cape Lookout National Seashore, which offers a variety of things to do including: shelling, fishing, swimming, camping, birding, horse watching, hunting, and hiking (National Park Service 2008).

Visual Resources

MCB Camp Lejeune/MCAS New River is a 142,852-acre USMC facility with the largest single concentration of Marines anywhere in the world. Geographically, it is located in the Outer Coastal Plain of North Carolina and encompasses the onshore, near shore, and surf areas in and adjacent to the Atlantic Ocean and the New River. East of the New River is primarily flatland ranging in elevation from 25 feet to 45 feet. Between New River and US 17, the changes in elevation are more pronounced with three areas reaching 72 feet in elevation. The Base has over 95,000 acres of forest, 17,000 acres of non-forested land, and 12,500 acres of impact areas. Much of the remaining area consists of rivers and creeks (MCB Camp Lejeune 2006).

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. The undeveloped areas are not only utilized for training, but also maintained for natural resources. The built areas of the Installation have a uniform military appearance in accordance with design and planning specifications identified in the Unified Facilities Criteria system. Historic structures and districts exist within many of the developed areas of the Installation (see Section 3.16 for information on historic properties). Most of the proposed construction projects would occur within these developed and industrial areas adjacent to existing facilities of similar function. The affected environment for the proposed new Base road would include the housing areas at Camp Johnson and Tarawa Terrace and the area south to Hadnot Point (see Figure 2.2-15). Currently, there are over 500 miles of roads on the Installation (MCB Camp Lejeune 2008a).

3.5.1.2 MCAS Cherry Point

Recreation

MCAS Cherry Point provides a full range of recreational services and on-Station facilities to military personnel and their dependents. These facilities include the following:

- a marina
- a golf course
- a bowling center
- 4 physical fitness centers
- 3 swimming pools
- a movie theater
- Children and Youth
- programsIntramural sports league
- 3 managed fishing ponds
- Archery range
- Skeet range
- Mountain biking trails

Hunting, fishing, and trapping are allowed on more than 10,000 acres at MCAS Cherry Point (Figure 3.5-3). Hunting does not occur in the West Quadrant cantonment area and is restricted in the Ordnance Storage Area for safety reasons. Bow hunting is allowed in the North Quadrant and gun hunting is allowed at the MACS 2 Compound. Hunting opportunities for deer and wild turkey are available for more than 15,000 man-days each year. Hunting is used to facilitate reduction in deer/aircraft strike hazards on the airfield. Outdoor recreation is a joint responsibility between the Natural Resources Division and the Marine Corps Community Services (MCAS Cherry Point 2001b).

The surrounding counties offer numerous recreational facilities and opportunities throughout the region, including parks, beaches, multi-use trails, playgrounds, playing fields, and ball courts that support activities such as hiking, paddling, bird watching, organized sports, fishing, and hunting. Some of the highlights are described below.

Craven County Parks and Recreation Department operates Creekside Park which includes 12 athletic fields, a large playground, picnic shelters, and a walking trail. The waterfront area provides canoe and kayak access, picnic shelters, and walkways to Brice's Creek. Craven County Parks and Recreation Department also offers youth and adult programs. The youth programs include various lessons (e.g. youth beginner tennis lessons), and year-round Special Olympics athletics and training. The adult programs offer various clubs and training lessons (Craven County 2008a).

The Croatan National Forest is a 157,000-acre National Forest that borders the City of Havelock on three sides. It offers a wide variety of activities spanning from salt and freshwater fishing to camping, picnicking, hiking, boating, and hunting (U.S. Forest Service 2008).

The City of Havelock maintains over 100 acres of park grounds, and facilitates various youth athletic programs (e.g., youth soccer). The City of Havelock's Recreation Center is a 50-acre athletic complex offering a full court gymnasium, exercise/weight room, arts and crafts room, and conference room (City of Havelock 2008).

Visual Resources

MCAS Cherry Point is the primary airfield for USMC aviation on the east coast covering more than 13,000 acres. The Station is located in the Talbot Terrace Plain and consists of broad, flat terraces



Figure 3.5-3 Hunting Areas on MCAS Cherry Point

between major stream valleys. Elevation ranges from near sea level along the shores of the Neuse River, Slocum Creek, and Hancock Creek, to 25 to 33 feet above sea level on the terraces (MCAS Cherry Point 2001b). Approximately one half of the land area of MCAS Cherry Point is forested (DoN 2003a). The developed areas of the Installation occupy approximately 1,100 acres and have a uniform military appearance in accordance with design and planning specifications identified in the Unified Facilities Criteria system. The four runways are situated in a cross configuration and are surrounded by grasslands (DoN 2003a). The majority of the proposed construction projects would occur within or next to these developed areas adjacent to existing facilities of similar function.

3.5.2 Environmental Consequences

This section provides a detailed description of the impacts associated with implementation of the alternatives including the No Action Alternative. Factors considered in the analysis of recreational and visual resources include: whether or not existing recreational services could meet the anticipated demand; and whether or not the action would result in a substantial degradation of the current viewshed.

3.5.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no additional demand for recreational services at MCB Camp Lejeune/MCAS New River as a result of this alternative. However, that does not mean that demands for recreational services at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected recreational resources. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). The Marine Corps Community Services office would continue to provide fitness and recreation programs and family services in direct support of individual and family readiness and retention. Without proposed development and construction activity in forested areas, there would be no change to the visual resources or impacts to recreational areas or the hunting program on the Installation.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. The anticipated increase in demand for recreational services could

be met with existing services. Likewise, the proposed activities would not result in a substantial degradation of the current viewshed.

Recreation

The Grow the Force initiative would result in over 4,000 families relocating to the Base or within the surrounding communities. The Marine Corps Community Services office is committed to providing fitness and recreation programs and family services in direct support of individual and family readiness and retention. The recreational facilities available on the Installation are not expected to be overburdened by the increase in personnel (Personal communication, Hildreth 2008). Popular programs such as hunting and fishing would likely have an increase in participation from the additional personnel generating additional revenue from permits and licenses.

Short-term impacts to recreation (including hunting and fishing) would occur during demolition and construction activities. Adjacent or nearby recreational and hunting areas would experience noise disturbance, making them less desirable to participants and the game inhabiting those areas. Construction activities could also result in a temporary increase of sediment in nearby water resources potentially affecting recreational fishing (see Water Resources, Section 3.15). These impacts would be localized to the construction areas and cease once construction was complete and would not result in long-term impacts to recreational opportunities on Base.

Although most of the proposed development would occur within or adjacent to already developed areas of the Base, the Preferred Alternative would involve permanently removing some forestland for facility and road development at MCB Camp Lejeune and MCAS New River. Bow hunting is allowed in these forested areas in and around developed areas. Removing these smaller forests could increase hunting pressure in other forests on the Installations. Game species inhabiting the disturbed forests are expected to relocate to other available forests on the Installations (see Natural Resources, Section 3.13).

Reducing the available hunting areas or making these areas less favorable for hunters could ultimately impact deer and other game species management. The current density of deer is approximately one deer for every 28 acres and the population is considered stable. Facility encroachment on the forests could slightly increase this density, especially in the higher quality habitat areas. The deer management program would continue to monitor the resident population and make the necessary program adjustments to maintain the overall health and numbers of game species on the Installations (Personal communication, Garber 2008).

Visual Resources

Under the Preferred Alternative, several military construction projects (including a new Base road) would be constructed at MCB Camp Lejeune and MCAS New River. In accordance with the selection criteria discussed in Section 2.0, most of the proposed construction sites would be within already developed or cleared land and adjacent to facilities of similar function. Projects would adhere to Unified Facilities Criteria and would not alter the overall visual aesthetics of the Base. Landscaping would be integrated into the conceptual design to enhance the visual aesthetics of the new buildings. The viewshed within the proposed development areas and any perceived changes to it are subjective and could be improved for some people or degraded for others. In some areas of the Base new facilities would be constructed to reflect modern design which could be more appealing to some people. Removing forested areas for the proposed development could be seen as degrading the viewshed for others. Proposed facilities within historic districts or renovations to historic structures would be compatible with the architectural style of the district and consultation with the North Carolina SHPO would occur prior to any construction/demolition activities (see Section 3.16 for a full discussion on cultural resources).

The new Base road would be approximately 7 miles long and would bridge Northeast Creek and Wallace Creek and associated wetlands. Portions of the proposed route for this road would be through undeveloped areas. Development of forested areas for construction of the road would create a change in the viewshed on the Base in these areas. The bridges and culverts would be designed in accordance with Unified Facilities Criteria to maintain the visual integrity of the Base.

Off-Base Recreation and Visual Resources

The surrounding communities would experience a population increase. The size of the state and county forests, parks, and recreation departments and the opportunities available (specifically athletic programs) are directly related to the number of residents living within the county. It is anticipated that the surrounding state and county recreational areas could adjust with the increase of residents; however, these areas may need to be more intensively managed and increased funding needed to keep pace with the growth in the region. Minor inconveniences from the increase of residents could result in difficulty reserving camping sites, picnic shelters, or spaces in athletic programs.

Construction activities near the boundary of the Base (such as the Triangle Outpost Gate) would temporarily disturb nearby recreational facilities and areas such as Hammocks Beach State Park. With the construction of on-Base housing and facilities to support the new personnel, it is anticipated that some military families would relocate from off-Base housing to the Base as the housing becomes available. This action would effectively reduce the long-term demand for off-Base recreation.

Any changes to viewshed in the surrounding counties due to new development by the counties to support the population increase would be in accordance with county/city land use plans, development guidelines, and regulations. Therefore, impacts are not anticipated to the overall viewshed in the community.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Recreation

Under Alternative 3, fewer facilities to support recreation and other community services would be constructed; however, the increase in families associated with the Grow the Force initiative would be the same as that described under the Preferred Alternative. The Marine Corps Community Services office is committed to providing fitness and recreation programs and family services in direct support of individual and family readiness and retention, but the increased demand may strain recreational facilities.

The potential disturbance to recreation from construction activities would be the same as those described under the Preferred Alternative, but would occur on a smaller scale. Adjacent or nearby recreational and hunting areas would experience noise disturbance, making them less desirable to participants and the game inhabiting those areas. Construction activities could also result in a temporary increase of sediment in nearby water resources potentially affecting recreational fishing (see Water Resources, Section 3.15). These impacts would be localized to the construction areas and cease once construction was complete and would not result in long-term impacts to recreational opportunities on Base.

Visual Resources

Under Alternative 3, core military construction projects would be constructed at MCB Camp Lejeune and MCAS New River. In accordance with the selection criteria discussed in Section 2.0, most of the proposed construction sites would be within already developed or cleared land and adjacent to facilities of similar function. Projects would adhere to Unified Facilities Criteria and would not alter the overall visual aesthetics of the Base. Landscaping would be integrated into the conceptual design to enhance the visual aesthetics of the new buildings.

Off-Base Recreation and Visual Resources

The surrounding communities would experience a population increase. The potential impacts to off-Base recreation and visual resources would be the same as described under the Preferred Alternative.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

Recreation

Under Alternative 4, no additional facilities to support recreation or other community services would be constructed; however, the increase in families associated with the Grow the Force initiative would be the same as that described under the Preferred Alternative. The Marine Corps Community Services office is committed to providing fitness and recreation programs and family services in direct support of individual and family readiness and retention, but the increased demand may strain recreational facilities.

Visual Resources

There would be no construction of permanent facilities under Alternative 4; however, the additional personnel would be accommodated in existing or temporary facilities. Without construction of facilities and infrastructure projects, there would be no change to the viewshed on the Installations as a result of this alternative.

Off-Base Recreation and Visual Resources

The surrounding communities would experience a population increase. The potential impacts to off-Base recreation and viewshed would be the same as those described under the Preferred Alternative.

3.5.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no additional demand for recreational services at MCAS Cherry Point as a result of this alternative. However, that does not mean that demands for recreational services at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be

implemented in the future that have affected recreational resources. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4). The Marine Corps Community Services office would continue to provide fitness and recreation programs and family services in direct support of individual and family readiness and retention. Without proposed development and construction activity in forested areas, there would be no change to the visual resources or recreational areas on the Station.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. The anticipated increase in demand for recreational services could be met with existing services. Likewise, the proposed activities would not result in a substantial degradation of the current viewshed.

Recreation

The Grow the Force initiative would result in approximately 400 families relocating to the Station or within the surrounding communities. The Marine Corps Community Services office is committed to providing fitness and recreation programs and family services in direct support of individual and family readiness and retention. The recreational opportunities available on the Station are not expected to be impacted with the anticipated growth (Personal communication, Bellamy 2008).

Loss of forested areas from proposed construction of facilities, the realignment of Slocum Road, and the widening of Roosevelt Boulevard could impact hunting opportunities on the Station by limiting the suitability of certain areas for hunting. Given the available hunting areas on the Station this impact is expected to be minimal. Programs such as hunting and fishing would benefit from the increase in personnel due to revenues generated from permits and licenses.

Construction and demolition activities could create a noise disturbance for adjacent or nearby recreational areas (including hunting areas). The construction and demolition noise would make the area less desirable to personnel and wildlife utilizing the area. This impact would cease once construction was complete and a long-term impact to recreational resources is not expected.

Visual Resources

Under the Preferred Alternative, several projects would be constructed at MCAS Cherry Point, including the realignment of Slocum Road and widening of Roosevelt Boulevard. In accordance with the selection criteria discussed in Section 2.0, the proposed construction sites would be located within or next to already developed or cleared land and adjacent to facilities of similar function where practicable. Landscaping would be integrated into the conceptual design to enhance the visual aesthetics of the new buildings. The viewshed within the proposed development areas and any perceived changes to it are subjective and could be improved for some people or degraded for others. In some areas of the Station, new facilities would be constructed to reflect modern design which could be more appealing to some people. Removing forested areas for the proposed development could be seen as degrading the viewshed for others. The proposed projects would adhere to Unified Facilities Criteria and would not alter the overall visual aesthetics of the Station. The addition of a parallel bridge with the Slocum Road realignment would slightly alter the viewshed in this area. Since a bridge currently exists in this area, the change in viewshed would be minor.

Off-Station Recreation and Visual Resources

The surrounding communities would experience a population increase. The size of the county parks and recreation departments and the opportunities available (specifically athletic programs) are directly related to the number of residents living within the county. It is anticipated that the surrounding county parks and recreation departments would adjust with the increase of residents. Minor inconveniences from the increase of residents could result in difficulty reserving camping sites, picnic shelters, or spaces in athletic programs.

Construction activities near the boundary of the Station would temporarily disturb nearby recreational facilities and areas.

Any changes to viewshed in the surrounding communities due to new development by the county to support the population increase would be in accordance with county/city land use plans, development guidelines, and regulations. Therefore, impacts are not anticipated to the overall viewshed in the community.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Recreation

Under Alternative 3, the increase in families associated with the Grow the Force initiative would be the same as that described under the Preferred Alternative. The Marine Corps Community Services office is committed to providing fitness and recreation programs and family services in direct support of individual and family readiness and retention.

Construction activities for core projects would create minor disturbance in nearby recreation areas. Adjacent or nearby recreational and hunting areas would experience noise disturbance, making them less desirable to participants and the game inhabiting those areas. Construction activities could also result in a temporary increase of sediment in nearby water resources potentially affecting recreational fishing (see Water Resources, Section 3.15). These impacts would be localized to the construction areas and cease once construction was complete and would not result in long-term impacts to recreational opportunities on Station.

Visual Resources

Under Alternative 3, core military construction projects would be constructed at MCAS Cherry Point. In accordance with the selection criteria discussed in Section 2.0, most of the proposed construction sites would be within already developed or cleared land and adjacent to facilities of similar function. Projects would adhere to Unified Facilities Criteria and would not alter the overall visual aesthetics of the Station. Landscaping would be integrated into the conceptual design to enhance the visual aesthetics of the new buildings.

Off-Station Recreation and Visual Resources

The potential impacts to off-Station recreation and visual resources would be the same as described under the Preferred Alternative.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

Recreation

Under Alternative 4, the increase in families associated with the Grow the Force initiative would be the same as that described under the Preferred Alternative. The Marine Corps Community Services office is

committed to providing fitness and recreation programs and family services in direct support of individual and family readiness and retention.

Visual Resources

There would be no construction of permanent facilities under Alternative 4; however, the additional personnel would be accommodated in existing or temporary facilities. Without construction of facilities and infrastructure projects, there would be no change to the viewshed on the Station as a result of this alternative.

Off-Station Recreation and Visual Resources

The surrounding communities would experience a population increase. The potential impacts to off-Station recreation and viewshed would be the same as those described under the Preferred Alternative.

3.6 Socioeconomics

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Economic activity typically encompasses employment, personal income, and industrial growth, but the socioeconomic analysis takes a broader look at how the potentially affected population lives, works, plays, relates to one another, organizes to meet their needs, and generally functions as a society. Data on community services (including public school enrollment) are provided in Section 3.7.

The ROI for socioeconomics is defined as the area in which the principal effects arising from implementation of the Proposed Action or alternatives are likely to occur. For this study, the ROI includes the three-county area of Carteret, Craven, and Onslow counties in North Carolina. To provide context, data and analysis are also provided for North Carolina as a whole.

Data herein are collected from a variety of sources including U.S. Census Bureau 2000 Census and 2006 American Community Survey estimates, Small Area Income and Poverty Estimates; U.S. Bureau of Economic Analysis; North Carolina Office of State Budget and Management; and USMC. Data are presented for the most recent year where comparable data were available throughout the ROI. For some statistics, the 2000 Census is the most recent available data.

3.6.1 Affected Environment

3.6.1.1 MCB Camp Lejeune/MCAS New River

Demographics

The baseline military and civilian personnel and dependents for MCB Camp Lejeune/MCAS New River are presented in Section 2.2.1. As presented in Table 3.6-1, there are approximately 10,740 retired Marines and Federal civil service personnel that reside within a 50-mile radius of MCB Camp Lejeune and MCAS New River. There are an estimated 38,762 family members associated with these retirees. Given the location of MCAS New River within MCB Camp Lejeune, the MCAS New River estimate is calculated based on the relative share of the total population of MCB Camp Lejeune and MCAS New River.

Installation	Retired Federal	Retired Family Members	Total
MCB Camp Lejeune	9,342	33,723	43,065
MCAS New River	1,396	5,039	6,435
Totals	10,738	38,762	49,500

Table 3.6-1 Retiree Population as of 2008

Source: Salvetti 2008.

Economic Impact of MCB Camp Lejeune/MCAS New River

For the purposes of this EIS, the economic impact of MCB Camp Lejeune and MCAS New River is not separated from the economic impact of MCAS Cherry Point. USMC estimates of FY07 economic impact in North Carolina are summarized in Table 3.6-2. This \$7.6 billion direct economic impact has associated indirect impacts as the direct jobs and expenditures result in secondary jobs and expenditures throughout various economic sectors. Some installation-specific data are provided in Table 3.6-2; however the total direct economic impact includes all three Installations. Economic data are not collected or maintained by USMC for specific installations, but rather for a North Carolina perspective.



Table 3.6-2 FY07 Economic Impact of USMC in North Carolina
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Source: MCI East 2007.

Base Housing

Family Housing. Family housing at MCB Camp Lejeune and MCAS New River is currently undergoing major reconstruction and privatization. As existing housing units are either destroyed, rebuilt, or renovated, the number of military personnel and families living on-Base fluctuates greatly and would continue to do so for the foreseeable future. At MCB Camp Lejeune/MCAS New River, activities related to the construction and renovation of homes under Phases I, II, and III of the family housing privatization initiative were initiated or completed in FY05, FY06, and FY07, respectively. Phases IV and V of the Public Private Venture (PPV) Initiative at MCB Camp Lejeune and the continuation of Phase II of the

PPV Initiative at MCAS New River are being implemented in FY08 to FY09. In 2009, the total number of housing units at MCB Camp Lejeune and MCAS New River (all of which have been privatized) was 4,327 (Personal communication, Sylvester 2009).

Bachelor (Unaccompanied Personnel) Housing. Unaccompanied personnel housing at the three North Carolina USMC Installations also is in a state of flux. The USMC's BEQ Campaign Plan calls for the construction of additional BEQs necessary to eliminate space deficiencies, provide more space and privacy for Marines, and eliminate barracks with inadequate building condition ratings. All bachelor enlisted personnel of ranks E5 (Sergeants) and below, are required to live on-Base unless adequate space is not available, in which case Basic Allowance for Housing at the without-dependents rate has been authorized. E6 (Staff Sergeants) and above or equivalent may elect to live off-Base and receive Basic Allowance for Housing rather than occupy government quarters. If sufficient space is not available to house all bachelors of Ranks E1 through E5, generally the senior Marines would be the first personnel authorized Basic Allowance for Housing at the without-dependents rate (USMC 2006).

At MCB Camp Lejeune and MCAS New River, in the FY06 baseline condition, there was a deficiency in barracks at these installations totaling approximately 4,500 man spaces with a total inventory of approximately 20,200 man spaces (MCB Camp Lejeune 2007c). Military construction projects (not a part of this EIS) for MCB Camp Lejeune and MCAS New River include the construction of three BEQs in FY08 and seven BEQ projects in FY09 for a total of approximately 3,400 man spaces (Sylvester 2008).

Military Basic Allowance for Housing

Military personnel residing in community housing receive a Basic Allowance for Housing. Military personnel are assumed to pay approximately 85 to 100 percent of Maximum Acceptable Housing Cost (rent, utilities, and renters insurance). As shown in Table 3.6-3, in the MCB Camp Lejeune area, Basic Allowance for Housing for military families ranges from \$848 per month to \$1,472 per month depending on grade. For unaccompanied personnel Basic Allowance for Housing ranges from \$671 to \$1,280 per month.

MUD Camp Lejeune/MUCAS New River (Monthly)							
		Without					
Military Rank	With Dependents	Dependents					
O7 and Above	\$1,472	\$1,280					
O6	\$1,455	\$1,255					
05	\$1,443	\$1,202					
O4	\$1,365	\$1,167					
03	\$1,252	\$1,032					
02	\$1,105	\$878					
01	\$919	\$802					
W5	\$1,345	\$1,175					
W4	\$1,297	\$1,123					
W3	\$1,255	\$1,010					
W2	\$1,186	\$936					
W1	\$1,111	\$833					
E9	\$1,285	\$1,004					
E8	\$1,219	\$937					
E7	\$1,162	\$872					
E6	\$1,110	\$833					
E5	\$894	\$759					
E4	\$848	\$671					
E3	\$848	\$671					
E2	\$848	\$671					
E1	\$848	\$671					

Table 3.6-3 Military Basic Allowance for Housing a
MCB Camp Lejeune/MCAS New River (Monthly)

Source: U.S. Department of Defense 2008.

3.6.1.2 MCAS Cherry Point

Demographics

The baseline military and civilian personnel and dependents for MCAS Cherry Point are presented in Section 2.2.1. As presented in Table 3.6-4, there are approximately 5,350 retired Marines and Federal civil service personnel that reside within a 50-mile radius of MCAS Cherry Point. There are an estimated 16,006 family members associated with these retirees.

Table 3.6-4Retiree Population as of 2008

Installation	Retired Federal	Retired Family Members	Total
MCAS Cherry Point	5,350	16,006	21,356

Source: Salvetti 2008.

Economic Impact of MCAS Cherry Point

As stated in Section 3.6.1.1, the economic impact of MCAS Cherry Point is analyzed together with the economic impact of MCB Camp Lejeune/MCAS New River for the purposes of this EIS. USMC estimates of FY07 economic impact in North Carolina are summarized in Table 3.6-2, with some specifics provided for MCAS Cherry Point.

Base Housing

MCAS Cherry Point military family and bachelor housing is currently in a state of flux. As of March of 2008, the total number of family housing units was 1,748 of which 1,394 were occupied and 354 units were vacant (Personal communication, Murney 2008). An FY09 BEQ project for MCAS Cherry Point would provide a total of approximately 350 man spaces (Personal communication, Carpenter 2008).

Military Basic Allowance for Housing

As shown in Table 3.6-5, in the MCAS Cherry Point area, Basic Allowance for Housing is slightly higher than MCB Camp Lejeune/MCAS New River, ranging from \$998 to \$1,660 for military families and \$769 to \$1,517 for unaccompanied personnel.

		Without					
Military Rank	With Dependents	Dependents					
O7 and Above	\$1,660	\$1,517					
O6	\$1,640	\$1,487					
05	\$1,627	\$1,436					
O4	\$1,569	\$1,402					
O3	\$1,484	\$1,255					
O2	\$1,340	\$1,060					
01	\$1,121	\$904					
W5	\$1,554	\$1,409					
W4	\$1,518	\$1,359					
W3	\$1,487	\$1,228					
W2	\$1,419	\$1,141					
W1	\$1,347	\$1,010					
E9	\$1,509	\$1,221					
E8	\$1,452	\$1,142					
E7	\$1,397	\$1,048					
E6	\$1,346	\$1,010					
E5	\$1,092	\$860					
E4-E1	\$998	\$769					

Table 3.6-5 Military Basic Allowance for Housing atMCAS Cherry Point (Monthly)

Source: U.S. Department of Defense 2008.

3.6.1.3 Off-Base Socioeconomics

Demographics

Population and Population Density. The 2006 estimate of the total population of the ROI is 309,132 (U.S. Census Bureau 2008a). As shown in Table 3.6-6, the population of Onslow County comprises 49 percent of the ROI population, followed by Craven County (at 31 percent), and Carteret County (at 21 percent). The population of the ROI is 3.5 percent of the population of North Carolina, while the ROI comprises 4 percent of North Carolina's land area. Population density varies within the ROI, from 114 persons per square mile in Carteret to 196 persons per square mile in Onslow County (based on the 2000 Census). With the exception of Onslow County, the ROI is less densely populated than North Carolina as a whole.

The average population density in the ROI is 146.4 persons per square mile, while North Carolina's population density is 165 persons per square mile.

Tuble 5.0-0 Topulation and Topulation Density							
Jurisdiction	2006 Population Estimate	Land Area (2000 square miles)	Persons per Square Mile (2000)				
Carteret County	63,584	520	114.2				
Craven County	94,875	708	129.1				
Onslow County	150,673	767	196.0				
ROI Total	309,132	1,995	155.0				
North Carolina	8,856,505	48,711	165.2				

Table 3.6-6 Population and Population Density

Source: U.S. Census Bureau 2008a.

Population Growth

As shown in Table 3.6-7, all three counties have experienced population increases from 1980 to 2000. Onslow County increased by 33 percent from 1980 to 1990, but by less than 1 percent from 1990 to 2000. Craven County's population increased by 15 percent from 1980 to 1990 and 12 percent from 1990 to 2000. Carteret County experienced a 28 percent population growth from 1980 to 1990 then slowed to 13 percent from 1990 to 2000. North Carolina as a whole increased in population by about 13 percent from 1980 to 1990 and 21 percent from 1990 to 2000.

The population of all counties is expected to increase from 2000 to 2010. Over this time period, an 18 percent population increase is predicted for Onslow County and about 8 percent for Craven and Carteret counties. By comparison, the population projection for 2010 for North Carolina represents an 18 percent increase from 2000.

Race and Ethnicity

Census data on the racial and ethnic composition of the ROI are summarized by county in Table 3.6-8. Overall, the majority of the ROI is white. Blacks comprise a greater percentage of the population in Craven County as compared to North Carolina as a whole. American Indian/Alaska Natives and Asians comprise a smaller percentage of the county's populations as compared to North Carolina with one exception: a slightly higher percentage of Asians in Onslow County. Native Hawaiians and Other Pacific Islanders comprise a very small portion of the population. Persons of Hispanic or Latino origin comprise less of a percentage of the population in the ROI counties, than in North Carolina.

Iurisdiction	1980 ¹	1990 ¹	2000 ²	Projected	Percent Change 1980-1990	Percent Change 1990-2000
Carteret County	41.092	52,556	59.383	64.286	27.9	13.0
Craven County	71,043	81,613	91,436	98,781	14.9	12.0
Onslow County	112,784	149,838	150,355	174,731	32.9	0.3
ROI Total	224,919	284,007	301,174	337,798	26.2	6.0
North Carolina	5,881,766	6,628,637	8,049,313	9,502,904	12.7	21.4
	Graphical Rep	resentation – P	opulation Grov	wth in the ROI	1980 - 2010	
180,000 160,000 160,000 140,000 120,000 100,000 80,000 60,000 40,000 20,000 0 0	Carteret County	Cra	ven County	 Onslow	County	 1980 1990 2000 Projected 2010

Table 3.6-7	Population	Trends	1980-2010
	1 opnimion	Inchus	1700-2010

Sources: ¹U.S.Census Bureau 1995. ²U.S Census Bureau 2008a.

³North Carolina Office of State Budget and Management 2008.

Jurisdiction	White ¹	Black ¹	American Indian/ Alaska Native	Asian ¹	Native Hawaiian/ Other Pacific Islander ¹	Hispanic or Latino Origin ²
Carteret County	90.5	7.0	0.5	0.8	0.1	2.3
Craven County	72.4	24.3	0.5	1.3	0.1	3.1
Onslow County	76.1	17.8	0.7	2.1	0.2	5.8
North Carolina	74.0	21.7	1.3	1.9	0.1	6.7

Table 3.6-8 Race and Ethnicity 2006 (percent)

¹ Indicates persons reporting only one race. Notes:

² Hispanic origin, may be of any race.

Source: U.S. Census Bureau 2008a.

Armed Services and Veteran Populations

As shown in Table 3.6-9, throughout the ROI, approximately 17.7 percent of the population 18 years and older are in the Armed Services.

Jurisdiction	Population 18 Years and Older	Population In Armed Forces	Percent Population 18 Years and Older in Armed Forces
Carteret County	47,147	703	1.5
Craven County	69,078	7,097	10.3
Onslow County	110,950	32,371	29.2
ROI Total	227,175	40,171	17.7

Table 3.6-9 Population in the Armed Forces (2000)

Source: U.S. Census Bureau 2000.

As indicated in Table 3.6-10, military veterans within the ROI total 41,606 or 13 percent of the total ROI population.

Military Veterans 18 to 64 Years Old	Military Veterans 65 Years and Older	Total Veterans
6,296	3,448	9,744
9,206	3,861	13,067
15,817	2,977	18,794
31,319	10,286	41,606
	Military Veterans 18 to 64 Years Old 6,296 9,206 15,817 31,319	Military Veterans 18 to 64 Years Old Military Veterans 65 Years and Older 6,296 3,448 9,206 3,861 15,817 2,977 31,319 10,286

Table 5.0-10 Milliary velerans (2000)	Table 3.6-10	Military	Veterans	(2000)
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Source: U.S. Census Bureau 2000.

Economic Characteristics

Median Household Income and Poverty Rates. Table 3.6-11 presents median household income and poverty data for 1999 and 2005 based on the 2000 U.S. Census and 2005 Small Area Income and Poverty Estimates, respectively. Median household income levels within the ROI are slightly lower than (Craven and Onslow) or slightly higher than (Carteret) North Carolina as a whole. From 1999 to 2005, median household income increased throughout the ROI with the most notable increase for Onslow County (roughly 18 percent from \$33,756 to \$39,942). Craven and Carteret counties experienced increases in median household income of 12.5 percent and 11.1 percent, respectively, over the same period. On average, median household income within the ROI increased by 13.9 percent from 1999 to 2005.

The percent of persons below the poverty line is greater than the statewide percentage for Onslow County and less than the statewide percentage in Carteret and Craven counties. All three counties experienced increases in the number of persons living below the poverty line from 1999 to 2006, with the greatest percentage increase in Onslow County (from 12.9 percent to 17.6 percent).

	Median Household Income		Percent of Persons Below Poverty Line		
Jurisdiction	1999 ¹	2005 ²	1999 ¹	2005 ²	
Carteret County	\$38,344	\$42,615	10.7	12.8	
Craven County	\$35,966	\$40,460	13.1	13.9	
Onslow County	\$33,756	\$39,942	12.9	17.6	
North Carolina	\$39,184	\$40,781	12.3	14.9	

Table 3.6-11	Income and	Poverty ((1999) and	2005))

Sources: ¹U.S. Census Bureau 2000.

 2 U.S. Census Bureau 2000.

Employment

Table 3.6-12 presents key data on nonfarm employment from 2000 to 2005. With the exception of Onslow County, the percent of the population in the labor force is lower than the statewide average. The change in private nonfarm employment from 2000 to 2005 shows a wide range of change, with Carteret County showing a gain of 3.7 percent, Craven County showing a gain of 6.1 percent, and Onslow County showing a gain of 9.8 percent.

Jurisdiction	Percent in Labor Force (16 Years and Older, 2000) ¹	Private Nonfarm Establishments (2005) ²	Private Nonfarm Employment (2005) ²	Private Nonfarm Employment, Percent Change 2000-2005
Carteret County	60.0	2,035	18,384	3.7
Craven County	62.8	2,272	30,364	6.1
Onslow County	74.2	2,642	32,024	9.8
North Carolina	65.7	216,994	3,409,968	0.7

 Table 3.6-12 Private Nonfarm Employment

Sources: 1 U.S. Census Bureau 2000.

² U.S. Census Bureau 2008a.

As shown in Table 3.6-13, employment in the private sector varies widely throughout the ROI. Retail trade, construction, and accommodation and food services are important employment sectors throughout the ROI. Whereas manufacturing is North Carolina's largest employer, this sector's importance is less in the ROI with the exception of Carteret County.
(Percent of 10tal Private Employment, 2000)									
	Craven	Carteret	Onslow	North					
Industry	County	County	County	Carolina					
Forestry, fishing, related activities, and other ¹	D^2	1.1	D^2	0.6					
Mining	D^2	0.2	D^2	0.1					
Utilities	0.4	0.3	0.5	0.3					
Construction	13.5	8.5	12.4	8.9					
Manufacturing	5.1	12.4	2.3	13.0					
Wholesale trade	2.4	2.7	1.7	4.4					
Retail trade	16.7	14.1	18.3	12.8					
Transportation and warehousing	2.1	3.8	2.9	3.5					
Information	1.7	1.7	1.4	2.0					
Finance and insurance	2.8	3.0	3.3	4.6					
Real estate and rental and leasing	10.3	4.7	5.1	4.6					
Professional and technical services	5.2	6.6	5.6	6.3					
Management of companies and enterprises	0.1	0.3	0.8	1.6					
Administrative and waste services	6.0	7.9	9.1	7.3					
Educational services	0.8	1.1	1.2	2.1					
Health care and social assistance	7.0	12.3	10.0	10.9					
Arts, entertainment, and recreation	3.3	2.0	1.6	2.1					
Accommodation and food services	11.8	9.2	13.9	7.9					
Other services, except public administration	8.3	8.1	8.5	6.8					

 Table 3.6-13 Private Employment by North American Industry Classification System Sector

 (Percent of Total Private Employment, 2006)

Notes: ¹ "Other" consists of U.S. residents employed by international organizations and foreign embassies and consulates in the United States.

 2 (D) indicates that data is not reported by the U.S. Bureau of Economic Analysis to avoid disclosure of information. Therefore, these data are not calculated in the percentages provided.

Source: U.S. Bureau of Economic Analysis 2008.

In North Carolina, 84.5 percent of jobs are in the private sector. Within the ROI, 85.6 percent of jobs are in the private sector in Carteret County while in Craven County 65.8 percent of jobs are in the private sector and only 44.4 percent of jobs in Onslow County. Those jobs that are not in the private sectors are in the government and government enterprise sectors. As indicated in Table 3.6-14, military and Federal civilian jobs are substantially higher by percentage in Onslow and Carteret counties as compared to the statewide averages. Government and government enterprise employment within Craven County is predominantly in State and local government jobs.

Industry	Craven County	Carteret County	Onslow County	North Carolina
Federal, civilian	5.0	27.0	9.1	7.7
Military	8.4	39.4	77.2	15.7
State and local	86.6	33.6	13.8	76.7

 Table 3.6-14 Government and Government Enterprise Employment by

 North American Industry Classification System Sector (Percent of Total, 2006)

Source: U.S. Bureau of Economic Analysis 2008.

Housing

Total Housing Units, Tenure of Occupied Units, and Vacancy Rates. As shown in Table 3.6-15, according to 2000 census data, vacancy rates vary widely from 38.4 percent in Carteret County to 9.4 percent in Craven County. The number of owner-occupied units versus renter-occupied units roughly follows the trends for North Carolina as a whole. Onslow County had the greatest proportion of renter-occupied units (42 percent). Median monthly rent in all of the ROI counties (at \$501 to \$518) was less than that of North Carolina as a whole (\$548).

		Occupie	d Units	Doncont	Μ	edian
Jurisdiction	Total Units	Percent Owner	Percent Renter	Vacant	Gross Rent ¹	Value ²
Carteret County	40,947	76.6	23.4	38.4	\$511	\$123,900
Craven County	38,150	66.7	33.3	9.4	\$501	\$96,600
Onslow County	55,726	58.1	41.9	13.6	\$518	\$85,900
North Carolina	3,523,944	69.4	30.6	11.1	\$548	\$108,300

Table 3.6-15 Housing Units by County, 2000

Notes: ¹ Gross monthly rent.

² Value of owner-occupied units.

Source: U.S. Census Bureau 2000.

Owner-occupied units in Carteret County represent the greatest median value (\$123,900) which is well above that of North Carolina as a whole (\$108,300). The high percentage of housing vacancy in Carteret County (38 percent) reflects, in part, the substantial number of seasonal housing units.

As shown in Table 3.6-16, housing units in the three counties (includes single family homes, duplexes, multiplexes, and apartments) has increased approximately 13 percent between 2000 and 2006, less than the statewide rate in North Carolina. The trend in more recent years (2005 to 2007) has been a decreasing number of estimated public permits, reduced by approximately 6.7 percent throughout the ROI between 2005 and 2006, and 29 percent between 2006 and 2007. Estimated building permits in Onslow County increased from 2005 to 2006, but then decreased in 2007.

Jurisdiction	2000 ¹	2006 ²	Percent Change	Building Per	mit Estimates (Total Units) ³
Jurisdiction	2000	2000	2000-2006	2005	2006	2007
Carteret County	40,947	45,110	10.2	1,035	757	453
Craven County	38,150	43,271	13.4	1,285	1,057	644
Onslow County	55,726	63,741	14.4	1,818	2,045	1,636
ROI Totals	134,823	152,122	12.8	4,138	3,859	2,733
North Carolina	3,523,944	4,028,959	14.3	97,910	99,979	85,777
2,500 - 2,000 - 1,500 - 1,000 -						005 006 007
500 - 0 -	Carteret C	County C	Craven County	Onslow C	ounty	

Table 3.6-16 Housing Units and Building Permits (2000-2007)

^{2.} U.S. Census Bureau 2008a.

^{3.} U.S. Census Bureau 2008c.

Environmental Justice/Protection of Children

Environmental Justice. EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was signed into law on 11 February 1994. The EO establishes environmental justice as a regulatory objective pertaining to the proportional distribution of adverse environmental effects that would be experienced by minority communities and low-income socioeconomic groups. In particular, environmental justice is achieved if low-income and minority communities are not subjected to disproportionately high or adverse environmental effects. In environmental justice analysis, minority populations and low-income populations are defined as follows.

- A minority represents the union between (not the sum of) minority race populations (Black or • African American, American Indian and Alaska Native, Asian Alone, Native Hawaiian and Other Pacific Islander) and the Hispanic/Latino population (CEQ 1997). The union includes those that reported some other race and two or more races and Whites of Hispanic/Latino origin.
- Minority populations are identified where either: (a) the minority population of the affected area exceeds 50 percent, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (CEQ 1997).

Low-income populations are defined as areas where a greater percentage of persons are living below the poverty level than in the comparison population. Poverty statistics presented in U.S. Census Bureau publications use thresholds prescribed for Federal agencies. The official definition uses 48 thresholds that take into account family size and the presence and number of family members under 18 years old. For the 2000 Census (which relies on 1999 income levels), the weighted average poverty threshold for a family of four is \$17,029 (U.S. Census Bureau 2003). In 2006 it was \$19,806 (U.S. Census Bureau 2007).

For the purposes of this analysis, North Carolina serves as the community of comparison since it is the next largest geographic area that encompasses the ROI. In North Carolina, the total minority population is 32.1 percent and the total percent of individuals living below the poverty line is 14.9 percent. These percentages are the minority/low-income population thresholds for the purposes of this EIS. As shown in Table 3.6-17, under baseline conditions, Onslow County exceeded the threshold for low-income populations. Carteret and Craven counties do not exceed either threshold.

	Minority l	Population	Low-Income	Population
Jurisdiction	Percent Minority (2006)	Exceeds Threshold (32.1 percent)	2005 Percent Below the Poverty Line	Exceeds Threshold (14.9 percent)
Carteret County	11.5		12.8	
Craven County	30.0		13.9	
Onslow County	28.3		17.6	✓

Table 3.6-17 Minority and Low-Income Populations

Source: U.S. Census Bureau 2008a.

Protection of Children. EO 13045, Environmental Health Risks and Safety Risks to Children, which was signed by President Clinton on 21 April 1997, states:

A growing body of scientific knowledge demonstrates that children may suffer disproportionately more environmental health risks and safety risks. These risks arise because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves. Therefore, to the extent permitted by law and appropriate, and consistent with the agency's mission, each Federal agency:

• shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children; and

• ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks and safety risks.

Under the definitions provided in EO 13045, covered regulatory actions include those that may be "economically significant" (under EO 12866) and "concern an environmental health risk and safety risk that an agency has reason to believe may disproportionately affect children." Further, EO 13045 defines environmental health risks and safety risks 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 (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)."

3.6.2 Environmental Consequences

Methods and Factors Considered in Analysis

The information collected to describe the baseline conditions (Section 3.6.1) was used as the basis for evaluation of project impacts. An economic input-output model, IMPLAN (Minnesota IMPLAN Group 2004), was used to analyze impacts of implementing the Grow the Force initiative. The modeling effort was for the full Grow the Force permanent gain of 6,218 active duty and 959 civilian personnel at MCB Camp Lejeune; 1,267 active duty and 144 civilian personnel at MCAS New River; and 565 active duty and 219 civilian personnel at MCAS Cherry Point. Additional details on the IMPLAN model are provided in Appendix D. The estimated gain of Marine formal school students at MCB Camp Lejeune (529 students per month) was not included in the IMPLAN model, but is otherwise addressed in this analysis.

Consistent with economic theory, categories of economic impacts are discussed as:

- Direct effects the economic sectors experiencing the initial final demand changes would expand as some establishments increase production and new establishments open. To support their increased output, these sectors would purchase more materials, services, and labor.
- Indirect effects additional economic sectors would then expand in response to those direct effects. Moreover, these indirectly-affected sectors would make additional purchases, and the industries supporting them would expand to make more purchases, and so on.
- Induced effects the households gaining income from those direct and indirect effects would spend money too. Much like the initial spending effects of the new personnel, the personal consumption expenditures of these households multiply through the regional economy.

Factors considered in the analysis of socioeconomic impacts include:

• redistribution, influx, or loss of population within the ROI,

- employment and income impacts,
- Base/Station and community housing,
- changes to the tax base,
- environmental justice, and
- environmental health and safety risks to children.

Socioeconomic impacts, particularly growth impacts such as those being evaluated in this EIS, are often mixed: positive in terms of gains in jobs, expenditures, tax revenues, etc., and adverse in terms of growth management related issues such as demands on housing and community services (see Section 3.7).

Some specific impacts for MCB Camp Lejeune/MCAS New River are provided in Section 3.6.2.1 and some specific impacts for MCAS Cherry Point are provided in Section 3.6.2.2, but many of the impacts are presented in Section 3.6.2.3, since there would be combined regional impacts throughout the ROI. Environmental justice and protection of children issues are discussed in Section 3.6.2.3.

3.6.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline socioeconomics at MCB Camp Lejeune/MCAS New River described in Section 3.6.1.1. However, that does not mean that socioeconomic conditions at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected socioeconomic conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). Additional economic gains from the increase in personnel and construction activity associated with the Grow the Force initiative would not be realized. The BEQ and housing deficit on the Installation would continue without the construction of additional housing.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Demographic Impacts

The proposed increase at MCB Camp Lejeune and MCAS New River of 7,485 military and 1,103 civilians (see Table 2.2-3) and their 8,556 dependents (see Table 2.2-4) would increase the population in the ROI. The monthly/annual average gain in Military formal school student population is not included in these estimates because this population would be transient and not have the same demographic impact as permanent party personnel. The population increase would have corresponding impacts in the demand for on- and off-Base housing as well as commercial real estate, recreational services (Section 3.5), community services (Section 3.7), traffic (Section 3.8), and utilities (Section 3.9). The FY06 baseline military and civilian population of these Installations (48,293) was 15.6 percent of the total population associated with MCB Camp Lejeune and MCAS New River would comprise 18.4 percent of the total ROI population. The FY06 baseline population of MCB Camp Lejeune/MCAS New River *with dependents* was 32.5 percent of the total population of the ROI. With full implementation of the ROI. With full implementation of the ROI. With full implementation of the ROI. With full population with dependents would increase to 38 percent of the total ROI population.

Over time, parallel increases in the veteran and military and federal civil service retiree population in the ROI would be expected as an indirect impact of the long-term increased end force at MCB Camp Lejeune and MCAS New River.

Economic Impacts

The proposed increase in end strength of 8,588 personnel at MCB Camp Lejeune/MCAS New River (does not include the 529 transient Marine formal school students) would translate to an estimated earnings total of \$349.9 million each year once end strength is reached:

- \$290.2 million at MCB Camp Lejeune and
- \$56.7 million at MCAS New River.

This includes basic pay and housing and subsistence allowances. Some of these earnings would be paid to taxes, and some would be saved and invested, but most would be spent on consumer goods and services in the region. For the regional economy, this spending would represent final demand increases to dozens of economic sectors.

Regional procurements are another source of primary economic impacts, contributing final demand changes to dozens more economic sectors. In essence, the industrial output of the Federal Military sector would increase. Together, expansion at MCB Camp Lejeune and MCAS New River would increase the sector's output by an estimated 19.6 percent in Onslow County. Annual final demand changes for this sector were estimated as follows:

- \$573.3 million at MCB Camp Lejeune and
- \$112.7 million at MCAS New River.

This analysis separated the payrolls and other transfers to the Federal military sector itself from those final demand changes in estimating the regional impacts of the increased procurement expenditures. Further details on the economic impact are presented in Section 3.6.2.3.

In addition, there would be short-term economic gains associated with the proposed military construction under the Preferred Alternative. These gains were estimated based on the best available data on cost estimates (DoD form 1391s) for the major military construction projects that would be implemented at MCB Camp Lejeune and MCAS New River under the Preferred Alternative. This spending is estimated at \$3,362.09 million at MCB Camp Lejeune, plus \$417.23 million at MCAS New River to be implemented in FY10 through FY16. Given the common regional impact area for socioeconomic effects, the direct, indirect, and induced impacts of this gain were analyzed in terms of regional impacts and are presented in Section 3.6.2.3.

Housing Impacts

The bachelor housing deficit would be addressed with the construction of the 14 proposed BEQ projects at MCB Camp Lejeune. These BEQ projects would collectively provide approximately 5,600 man spaces with other planned FY10 through FY13 BEQ projects providing approximately 4,100 man spaces (Sylvester 2008). The barracks projects included in the Preferred Alternative typically provide 400 man spaces each, but range from 200 to 600 man spaces. The typical barracks would be 100-room, interior-corridor, multi-story barracks that meet the USMC BEQ Campaign goals (MCB Camp Lejeune 2007c). The Marine Corps based the requirements for the 14 BEQs on that which would be needed to eliminate any need for off-Base bachelor housing. Short-term demand for off-Base housing while BEQs are being constructed could be accommodated within the surrounding community as described below.

The Housing Market Analysis for MCB Camp Lejeune/MCAS New River estimates a 6,638 unit community housing shortfall for military families in 2011. The shortfall is, in actuality, somewhat offset by virtue of personnel occupying housing that is not considered "suitable" under USMC standards and is, therefore, counted in the community housing shortfall. An estimated 36.5 percent of the rental stock in the MCB Camp Lejeune/MCAS New River area (including mobile homes) is unacceptable in quality by USMC standards. This rental housing stock that is considered unsuitable includes 2,159 non-mobile home rental units and 4,690 mobile home units (Robert D. Niehaus Inc. 2008). Because the USMC has no way to prevent individuals from spending their Basic Housing Allowance on housing that does not meet USMC standards, an unknown percentage of military families likely would occupy these housing units,

resulting in a corresponding offset to the estimated community housing shortfall. Increased demand for community housing for civilians would add approximately 660 units to the shortfall (estimated at 60 percent of the 1,103 increase at these Installations). Based on the historic pace of residential construction in the ROI (see Table 3.6-16), the housing market in the MCB Camp Lejeune/MCAS New River area would have the capacity to respond to actual increased market demand for housing that would occur with the increased end force at MCB Camp Lejeune and MCAS New River. The total housing supply has increased by an average of 1,865 units (2.1 percent) annually since 2000 (Robert D. Niehaus Inc. 2008). With the Preferred Alternative, 1,350 privatized military family housing units would be added at three MCB Camp Lejeune sites. The construction of the 1,350 military family housing units would reduce the community housing shortfall.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Demographic and Economic Impacts

Under Alternative 3, long-term population gains associated with the Grow the Force initiative and economic gains associated with the direct employment and procurements to the related mandated increase in USMC end strength at MCB Camp Lejeune/MCAS New River would be the same as described for the Preferred Alternative. In addition, there would be short-term economic gains associated with the proposed military construction (core projects) under Alternative 3. These gains were estimated based on the best available data on cost estimates for the military construction projects that would be implemented at MCB Camp Lejeune and MCAS New River under Alternative 3. This spending is estimated at \$1,127.69 million at MCB Camp Lejeune, plus \$242.60 million at MCAS New River to be implemented in FY10 through FY16. Given the common regional impact area for socioeconomic effects, the direct, indirect, and induced impacts of this gain were analyzed in terms of regional impacts and are presented in Section 3.6.2.3.

Housing Impacts

Under Alternative 3, there would be adverse impacts in terms of bachelor and family housing. The FY06 baseline bachelor housing deficit of approximately 4,500 man spaces would increase to approximately 8,000 man spaces with the increased end strength. Bachelor housing requirements of Marine formal school students are included in these estimates. Currently planned FY10 through FY13 BEQ projects

would provide approximately 4,100 man spaces (Sylvester 2008) and offset this deficit to approximately 4,800 man spaces (with the FY10 through FY13 projects, some existing man spaces would be lost in demolitions). The long-term deficit of approximately 4,800 man spaces would result in increased housing demand in the community.

Additional on-Base PPV housing would not be constructed under Alternative 3. The demand for off-Base housing would be higher than that described under the Preferred Alternative. However, as described under the Preferred Alternative, this housing demand is anticipated to be accommodated within the surrounding community given the current rate of residential construction in the ROI. It is likely that short-term impacts would occur in the surrounding communities with the influx of military personnel and families while the community responds to the increased demand. Some of this demand could be offset with the 36.5 percent of the rental stock that is not considered suitable according to USMC standards.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

Demographic and Economic Impacts

Under Alternative 4, long-term population gains associated with the Grow the Force initiative and economic gains associated with the direct employment and procurements to the related mandated increase in USMC end strength at MCB Camp Lejeune/MCAS New River would be the same as described for the Preferred Alternative. There would be no additional construction under this alternative and the short-term economic gains associated with military construction would not be realized.

Housing Impacts

Under Alternative 4, the same adverse impacts in terms of bachelor and family housing as described under Alternative 3 would occur. This housing shortfall is anticipated to be accommodated within the surrounding community.

3.6.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline

socioeconomics at MCAS Cherry Point as described in Section 3.6.1.2. However, that does not mean that socioeconomic conditions at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected socioeconomic conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4). Additional economic gains from the increase in personnel and construction activity associated with the Grow the Force initiative would not be realized.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Demographic Impacts

The proposed increase at MCAS Cherry Point of 565 military and 219 civilians (see Table 2.1-2) and their 892 dependents (see Table 2.1-4) would increase the population in the ROI. The population increase would have corresponding impacts in the demand for on- and off-Station housing as well as commercial real estate, recreational services (Section 3.5), community services (Section 3.7), traffic (Section 3.8), and utilities (Section 3.9). The FY06 baseline military and civilian population of MCAS Cherry Point was 4.5 percent of the 2006 population estimate for the ROI. Under full implementation of the Grow the Force initiative, the military and civilian population employed at MCAS Cherry Point would comprise 4.7 percent of the total ROI population. The FY06 baseline population of MCAS Cherry Point *with dependents* was 10.3 percent of the total population of the ROI. With full implementation of the Grow the Force initiative, this population *with dependents* would increase to 10.8 percent of the total ROI population.

Over time, parallel increases in the veteran and military and Federal civil service retiree population in the ROI would be expected as an indirect impact of the long-term increased end force at MCAS Cherry Point.

Economic Impacts

Including their basic pay, and housing and subsistence allowances, the total gain of personnel at MCAS Cherry Point would earn an estimated total of \$32.5 million in direct income each year once end strength is reached. Some of these earnings would be paid to taxes, and some would be saved and invested, but most would be spent on consumer goods and services in the region. For the regional economy, this spending would represent final demand increases to dozens of economic sectors.

Regional procurements are another source of primary economic impacts, contributing final demand changes to dozens more economic sectors. In essence, the industrial output of the Federal military sector would increase by an estimated 9.4 percent in Craven County. Estimated annual final demand changes would be \$66.6 million at MCAS Cherry Point.

In addition, there would be short-term economic gains associated with proposed military construction under the Preferred Alternative. These gains were estimated based on the best available data on cost estimates for the major military construction projects that would be implemented at MCAS Cherry Point under the Preferred Alternative. This spending is estimated at \$322.26 million at MCAS Cherry Point to be implemented in FY11 through FY14. Given the common regional impact area for socioeconomic effects, the direct, indirect, and induced impacts of this gain were analyzed in terms of regional impacts and are presented in Section 3.6.2.3.

Housing Impacts

The two BEQ projects that would be constructed at MCAS Cherry Point for permanent party personnel would provide 928 man spaces and, along with the construction of the FY09 350-man-space BEQ at MCAS Cherry Point would eliminate any demand for off-Station housing for bachelor personnel. Therefore, demand for off-Station housing associated with implementation of the Grow the Force initiative at MCAS Cherry Point would be limited to those military families that are not housed in on-Base housing and civilians.

The Housing Market Analysis for MCAS Cherry Point estimates that the community housing shortfall in 2012 would be 1,316 (Robert D. Niehaus Inc. 2007). As discussed for MCB Camp Lejeune/MCAS New River, the deficit is, in actuality, somewhat offset by virtue of personnel occupying housing that is not considered "suitable" under USMC standards and is, therefore, counted in the community housing shortfall. An estimated 31.4 percent of the rental stock in the MCAS Cherry Point area (including mobile homes) is unacceptable in quality by USMC standards. This rental housing stock that is considered unsuitable includes 1,421 non-mobile home rental units and 3,952 mobile home units (Robert D. Niehaus Inc. 2007). Because the USMC has no way to prevent individuals from spending their Basic Housing Allowance on housing that does not meet USMC standards, an unknown percentage of military families likely would occupy these housing units, resulting in a corresponding offset to the estimated community housing shortfall. Increased demand for community housing for civilians would add approximately 137 units to the shortfall (estimated at 60 percent of the 229 increase at MCAS Cherry Point). Based on the historic pace of residential construction in the ROI (see Table 3.6-16), the housing market in the MCAS Cherry Point area would have the capacity to respond to actual increased market demand for housing that

would occur with the increased end force at MCAS Cherry Point. The total housing supply has increased by an average of 1,761 units (1.9 percent) annually since 2000 (Robert D. Niehaus Inc. 2007).

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Demographic and Economic Impacts

Under Alternative 3, long-term population gains associated with the Grow the Force initiative and economic gains associated with the direct employment and procurements to the related mandated increase in USMC end strength at MCAS Cherry Point would be the same as described for the Preferred Alternative. In addition, there would be short-term economic gains associated with the proposed military construction (core projects) under Alternative 3. These gains were estimated based on the best available data on cost estimates for the military construction projects that would be implemented at MCAS Cherry Point under Alternative 3. This spending is estimated at \$232.82 million at MCAS Cherry Point to be implemented in FY12 through FY13. Given the common regional impact area for socioeconomic effects, the direct, indirect, and induced impacts of this gain were analyzed in terms of regional impacts and are presented in Section 3.6.2.3.

Housing Impacts

Under Alternative 3, there would be increased community housing shortfalls as compared to Alternative 2. For the on-Station bachelor housing, there would be a deficit of approximately 928 man spaces for permanent party personnel. As described under the Preferred Alternative, this deficit could be accommodated in the off-Station community given the current rate of residential construction in the ROI. It is likely that short-term impacts would occur in the surrounding communities with the influx of military personnel and families while the community responds to the increased demand. Some of this demand could be offset with the 31.4 percent of the rental stock that is not considered suitable according to USMC standards.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

Demographic and Economic Impacts

Under Alternative 4, long-term population gains associated with the Grow the Force initiative and economic gains associated with the direct employment and procurements to the related mandated increase in USMC end strength at MCAS Cherry Point would be the same as described for the Preferred Alternative. There would be no additional construction and short-term economic gain with respect to construction would not occur.

Housing Impacts

Under Alternative 4, increased community housing shortfalls and deficit of 928 man spaces for bachelor housing as described under Alternative 3 would occur. This deficit could be accommodated in the off-Station community.

3.6.2.3 Regional Impacts

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. The socioeconomic conditions in the region would not change from those described in the baseline Section 3.6.1.3. However, that does not mean that socioeconomic conditions in the region have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected socioeconomic conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). Additional economic gains from the increase in personnel and construction activity associated with the Grow the Force initiative would not be realized.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Demographic Impacts

The proposed increase of military and civilians and their dependents at the three Installations (see Tables 2.1-2 and 2.1-4) would increase the population in the ROI by approximately 6.1 percent of the 2006 ROI population (see Table 3.6-6). The FY06 baseline military and civilian population of the three Installations was 20.1 percent of the 2006 population estimate for the ROI population. With full implementation of the

Grow the Force initiative, the military and civilian population associated with MCB Camp Lejeune/MCAS New River and MCAS Cherry Point would comprise 23.1 percent of the total ROI population. The FY06 baseline population of these three installations *with dependents* was 42.7 percent of the total population of the ROI. With full implementation of the Grow the Force initiative, this population *with dependents* would increase to 48.8 percent of the total ROI population.

Although the ROI in this analysis focuses on three counties (Onslow, Craven, and Carteret), it should be noted that the current distribution of military dependents associated with MCB Camp Lejeune/MCAS New River and MCAS Cherry Point covers a larger area. Currently, approximately 97 percent of military dependents live within these three counties chosen as the ROI, but growth could occur in other counties not contiguous to the Installations (USMC 2007). This growth would be spread across a large area and growth within an individual county would be minimal. Therefore, growth within the ROI would likely be slightly less than what is presented here. The existing distribution of dependents would be expected to shift somewhat over time corresponding with overall urbanization trends within the ROI. Such trends would be influenced by how these counties plan to accommodate growth.

Over time, parallel increases in the veteran and military and Federal civil service retiree population in the ROI would be expected as an indirect impact of the long-term increased end force at the USMC Installations in North Carolina.

Economic Impacts

Primary employment impacts associated with an end strength total of new Marines and civilian personnel include their basic pay, and housing and subsistence allowances. Together, these new personnel would earn an estimated total of \$379.4 million each year once end strength is reached:

- \$290.2 million at MCB Camp Lejeune, plus
- \$56.7 million at MCAS New River, plus
- \$32.5 million at MCAS Cherry Point.

Regional procurements by the three Installations are another source of primary economic impacts, contributing demand changes to dozens more economic sectors. In essence, the industrial output of the Federal Military sector would increase. Together, expansion at MCB Camp Lejeune and MCAS New River would increase the sector's output by an estimated 19.6 percent in Onslow County, and expansion at MCAS Cherry Point would increase the sector's output by an estimated 9.4 percent in Craven County. Estimated annual final demand changes for this sector are as follows:

- \$573.3 million at MCB Camp Lejeune, plus
- \$112.7 million at MCAS New River, plus
- \$66.6 million at MCAS Cherry Point.

As indicated in Table 3.6-18, ongoing secondary impacts (considering both sources of final demand changes together, direct, indirect, and induced effects) would total an estimated 2,860 jobs, and an estimated \$82.4 million in labor income. The jobs include full- and part-time positions, and the income includes both employee compensation and proprietors' income. These jobs - in addition to the primary impacts at the three Installations – would last as long as the end strength changes are in effect, and the income would occur each year (though results are presented in 2008 dollars).

Though substantial, these employment impacts represent just 1.4 percent of the 200,905 people in the region's civilian labor force in May 2008 (Employment Security Commission of North Carolina 2008). Furthermore, an estimated 10,513 regional workers were unemployed that month (5.2 percent unemployment), up 2,160 people since May 2006. It should be expected that many of the new jobs would be filled by this unemployed labor force. Other jobs would be filled by family members of the new personnel, by other regional workers taking second jobs, and by existing employees working extra hours. Therefore, it does not seem likely that the employment impacts by themselves would trigger any inmigration to the region, beyond the military and civilian personnel and family members.

	Direct	Indirect	Induced	Total			
Employment Impacts ²							
MCB Camp Lejeune	1,624	245	315	2,184			
MCAS New River	318	48	62	428			
MCAS Cherry Point	185	27	36	248			
Total	2,127	320	413	2,860			
Labor Income Impacts ³							
MCB Camp Lejeune	47.1	7.3	8.5	62.9			
MCAS New River	9.2	1.4	1.7	12.3			
MCAS Cherry Point	5.4	0.8	1.0	7.2			
Total	61.7	9.6	11.1	82.4			

Table 3.6-18 Annual Employment and Income Impacts¹ Associated with Preferred Alternative in USMC End Strength in North Carolina

*Notes:*¹ Impacts due to personal consumption expenditures from increased payrolls, plus other Installation operation expenditures, and excluding new construction. ² Number of jobs.

³ Employee compensation plus proprietors' income (in millions of 2008 dollars).

Source: Estimated for this study with IMPLAN (Minnesota IMPLAN Group 2004).

Additional taxes would accrue to the Federal, State, and local governments as a result of this new economic activity. As shown in Table 3.6-19, according to the social accounting framework used for this analysis (Minnesota IMPLAN Group 2004), the Federal government would collect an additional \$18.8 million annually, and North Carolina and local governments would collectively gain \$17.9 million annually.

Ena Strength in North Carolina										
	Federal ²	State/Local ³	Total Tax							
MCB Camp Lejeune										
Corporate profits tax/dividends	3,435,103	1,456,570	4,891,673							
Indirect business taxes	1,041,727	10,027,499	11,069,225							
Personal income tax	4,231,976	1,748,685	5,980,660							
Other personal taxes	0	368,347	368,347							
Social insurance tax	5,675,266	103,579	5,778,846							
Subtotal	14,384,072	13,704,680	28,088,752							
MCAS Ne	w River									
Corporate profits tax/dividends	672,089	284,983	957,072							
Indirect business taxes	203,830	1,962,037	2,165,867							
Personal income tax	829,074	342,580	1,171,653							
Other personal taxes	0	72,162	72,162							
Social insurance tax	1,111,886	20,294	1,132,180							
Subtotal	2,816,879	2,682,055	5,498,933							
MCAS Che	rry Point									
Corporate profits tax/dividends	387,634	164,366	552,000							
Indirect business taxes	117,599	1,131,990	1,249,590							
Personal income tax	481,345	198,895	680,240							
Other personal taxes	0	41,896	41,896							
Social insurance tax	645,722	11,788	657,511							
Subtotal	1,632,300	1,548,936	3,181,237							
Regional Impacts (all	three Installatio	ns)								
Corporate profits tax/dividends	4,494,826	1,905,919	6,400,745							
Indirect business taxes	1,363,156	13,121,526	14,484,682							
Personal income tax	5,542,394	2,290,160	7,832,554							
Other personal taxes	0	482,405	482,405							
Social insurance tax	7,432,875	135,662	7,568,536							
TOTAL	18,833,251	17,935,671	36,768,922							

Table 3.6-19 Annual Tax Impacts¹ Associated with Preferred Alternative in USMC End Strength in North Carolina

Notes: ¹ Impacts due to personal consumption expenditures from increased payrolls, plus other installation operation expenditures, and excluding new construction. ² Non-Defense.

³ Non-Education.

Source: Estimated for this study with IMPLAN (Minnesota IMPLAN Group 2004).

Based on best available data, the combined economic gains from military construction projects would exceed \$4.1 billion and span seven funding years from FY10 through FY16. By location, these expenditures are estimated at:

- \$3,362.09 million at MCB Camp Lejeune, plus
- \$417.23 million at MCAS New River, plus
- \$322.26 million at MCAS Cherry Point.

Assuming that all construction contracts are awarded to regional firms, these expenditures would represent final demand changes in the region that would lead to direct, indirect, and induced economic impacts within the ROI.

As shown in Table 3.6-20, the peak year of impacts would be FY12 for projects at MCB Camp Lejeune and the region as a whole, but impacts would peak in FY10 at MCAS New River and FY13 at MCAS Cherry Point. Total regional employment impacts from construction spending would total an estimated 20,180 full- and part-time jobs in FY12, including 14,516 direct construction jobs, plus 2,350 indirect jobs to support these construction activities, plus 3,314 induced jobs from regional purchases due to the increased earnings of impacted workers. Total labor income impacts in that peak year are estimated at \$653 million.

These employment impacts would be substantial, especially to the construction industry. Overall, the peak year total represents about 10 percent of the region's civilian labor force in May 2008 (Employment Security Commission of North Carolina 2008) and the peak construction employment represents 95.6 percent of the 15,181 total regional construction jobs in 2006 (according to the base year data of the modeling framework used for this analysis). Therefore, whereas the regional labor force should be able to easily absorb the indirect and induced jobs, it seems likely that some workers would move into the region in response to the direct job impacts in construction. Such impacts are short-term though, and it should be expected that any construction workers who in-migrate would leave the region for other opportunities by 2013, when the total impacts are reduced to levels that existing regional workers can satisfy.

Associated with Preferred Alternative Multury Construction Projects							
	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Employment Impacts ²							
Direct							
MCB Camp Lejeune	4,959	8,241	12,778	6,148	5,331	2,497	355
MCAS New River	1,802	1,553	595	515	803	0	0
MCAS Cherry Point	0	1,088	1,143	1,474	322	0	0
Total Direct	6,761	10,882	14,516	8,137	6,456	2,497	355
Indirect							
MCB Camp Lejeune	739	1,296	2,165	1,046	823	319	48
MCAS New River	207	163	70	81	81	0	0
MCAS Cherry Point	0	188	115	159	52	0	0
Total Indirect	946	1,647	2,350	1,286	956	319	48
Induced							
MCB Camp Lejeune	1,123	1,873	2,930	1,406	1,209	558	80
MCAS New River	403	344	132	117	177	0	0
MCAS Cherry Point	0	249	252	326	73	0	0
Total Induced	1,526	2,466	3,314	1,849	1,459	558	80
Total							
MCB Camp Lejeune	6,821	11,410	17,873	8,600	7,363	3,374	483
MCAS New River	2,412	2,060	797	713	1,061	0	0
MCAS Cherry Point	0	1,525	1,510	1,959	447	0	0
Total Direct, Indirect, &							
Induced	9,233	14,995	20,180	11,272	8,871	3,374	483
Labor Income Impacts ³							
Direct							
MCB Camp Lejeune	167.3	277.7	430.1	206.3	179.4	84.5	12.0
MCAS New River	61.5	53.0	20.2	17.4	27.3	0.0	0.0
MCAS Cherry Point	0.0	36.6	38.9	50.1	10.8	0.0	0.0
Total Direct	228.9	367.2	489.2	273.8	217.5	84.5	12.0
Indirect							
MCB Camp Lejeune	23.7	41.0	68.4	32.9	26.2	10.5	1.6
MCAS New River	6.9	5.5	2.3	2.6	2.8	0.0	0.0
MCAS Cherry Point	0.0	5.9	3.9	5.4	1.7	0.0	0.0
Total Indirect	30.6	52.4	74.7	40.8	30.7	10.5	1.6
Induced							
MCB Camp Lejeune	30.3	50.6	79.1	38.0	32.6	15.1	2.2
MCAS New River	10.9	9.3	3.6	3.2	4.8	0.0	0.0
MCAS Cherry Point	0.0	6.7	6.8	8.8	2.0	0.0	0.0
Total Induced	41.2	66.6	89.5	49.9	39.4	15.1	2.2
Total						•	
MCB Camp Lejeune	221.3	369.3	577.6	277.2	238.2	110.0	15.7
MCAS New River	79.3	67.8	26.1	23.1	34.9	0.0	0.0
MCAS Cherry Point	0.0	49.2	49.6	64.3	14.5	0.0	0.0
Total Direct, Indirect, & Induced	300.7	486.2	653.4	364.6	287.6	110.0	15.7

Table 3.6-20 Employment and Income Impacts¹
 Associated with Preferred Alternative Military Construction Projects

Notes:

¹Impacts due to military construction projects, assuming all expenditures in region.

²Number of jobs.

³Employee compensation plus proprietors' income (in millions of 2008 dollars).

Source: Estimated for this study with IMPLAN (Minnesota IMPLAN Group 2004).

The additional taxes that would accrue to the Federal, State, and local governments as a result of the construction activities also would be substantial. As shown in Table 3.6-21, according to the social accounting framework used for this analysis (Minnesota IMPLAN Group 2004), the Federal government would collect an additional \$117 million due to FY12 construction projects alone and \$395.9 million over the course of the 7-year construction period. Meanwhile, North Carolina and local governments would collectively gain \$65 million due to FY12 construction projects, and \$217.1 million over the 7 years of construction.

Associated with Preferred Alternative Military Construction Projects							
	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Federal Tax ²							
MCB Camp Lejeune	\$39,383,725	\$66,196,803	\$104,368,795	\$49,822,232	\$42,361,339	\$19,307,385	\$2,764,896
MCAS New River	\$13,981,203	\$11,823,974	\$4,556,110	\$4,126,647	\$6,030,031	\$0	\$0
MCAS Cherry Point	\$0	\$8,863,556	\$8,585,851	\$11,163,257	\$2,582,603	\$0	\$0
Total Federal	\$53,364,928	\$86,884,332	\$117,510,756	\$65,112,135	\$50,973,973	\$19,307,385	\$2,764,896
State/Local Tax ³							
MCB Camp Lejeune	\$21,681,894	\$35,994,680	\$58,316,629	\$27,796,003	\$23,468,465	\$10,382,305	\$1,499,490
MCAS New River	\$7,350,208	\$6,179,655	\$2,408,313	\$2,295,086	\$3,133,055	\$0	\$0
MCAS Cherry Point	\$0	\$4,904,788	\$4,460,996	\$5,857,045	\$1,445,043	\$0	\$0
Total State/Local	\$29,032,103	\$47,079,123	\$65,185,938	\$35,948,135	\$28,046,562	\$10,382,305	\$1,499,490
Total Tax							
MCB Camp Lejeune	\$61,065,619	\$102,191,483	\$162,685,424	\$77,618,235	\$65,829,804	\$29,689,690	\$4,264,385
MCAS New River	\$21,331,412	\$18,003,628	\$6,964,423	\$6,421,734	\$9,163,086	\$0	\$0
MCAS Cherry Point	\$0	\$13,768,344	\$13,046,847	\$17,020,302	\$4,027,646	\$0	\$0
Total Federal & State/Local	\$82,397,030	\$133,963,455	\$182,696,694	\$101,060,270	\$79,020,536	\$29,689,690	\$4,264,385

 Table 3.6-21 Tax Impacts¹

 ssociated with Preferred Alternative Military Construction Project

Notes:

¹Impacts due to military construction projects, assuming all expenditures in region.

²NonDefense.

³NonEducation.

Source: Estimated for this study with IMPLAN (Minnesota IMPLAN Group 2004).

Environmental Justice/ Protection of Children

Impacts considered here include not just those related to socioeconomics, but any environmental impact that would be adverse and have the potential for disproportionate impacts to the minority and/or low-income populations identified in Table 3.6-17. There would be no on-Base/on-Station environmental justice impacts. Growth-related adverse impacts to Onslow County (a low-income population) are likely to be disproportionate given that the majority of growth is anticipated in this county. Most growth-related impacts are subjective; viewed as adverse to some and positive by others. Growth levels beyond existing or planned capacity, however, are generally seen as adverse. By this measure, the potential impact of increasing school enrollment within Onslow County (assessed in detail in Section 3.7) is an environmental justice impact. In addition, the increased demand for affordable housing by the incoming

military population could disproportionately affect non-military low-income families in the area also looking for affordable housing (to buy or rent).

Potential environmental health and safety risks to children associated with implementation of the Preferred Alternative are not foreseen.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Demographic Impacts

Combined demographic impacts under Alternative 3 would be the same as noted for the Preferred Alternative.

Economic Impacts

Alternative 3 would have the same recurring annual impacts from the increase in end strength presented under the Preferred Alternative. In addition to these recurring annual impacts from the increase in end strength, the construction expenditures for the military construction projects associated with Alternative 3 (core projects) would result in economic impacts during the construction phase. Based on best available data, the combined economic gains from military construction projects would exceed \$1.6 billion and span seven funding years from FY10 through FY16. By location, these expenditures are estimated at:

- \$1,127.69 million at MCB Camp Lejeune, plus
- \$242.60 million at MCAS New River, plus
- \$232.82 million at MCAS Cherry Point.

Assuming that all construction contracts are awarded to regional firms, these expenditures would represent final demand changes in the region that would lead to direct, indirect, and induced economic impacts within the ROI.

As shown in Table 3.6-22, the peak year of impacts would be FY12 for projects at MCB Camp Lejeune and the region as a whole, but impacts would peak in FY13 for projects at MCAS Cherry Point and FY10 in MCAS New River. Total regional employment impacts from construction spending would total an estimated 8,166 full- and part-time jobs in FY12, including 5,963 direct construction jobs, plus 858 indirect jobs to support these construction activities, plus 1,345 induced jobs from regional purchases due

to the increased earnings of impacted workers. Total labor income impacts in that peak year are estimated at \$265 million.

These employment impacts would be substantial, especially to the construction industry. Overall, the peak year total represents about 4 percent of the region's civilian labor force in May 2008 (Employment Security Commission of North Carolina 2008) and the peak construction employment represents 39.3 percent of the 15,181 total regional construction jobs in 2006 (according to the base year data of the modeling framework used for this analysis). Therefore, whereas the regional labor force should be able to easily absorb the indirect and induced jobs, it seems likely that some workers would move into the region in response to the direct job impacts in construction. Such impacts are short-term though, and it should be expected that any construction workers who in-migrate would leave the origin for other opportunities by 2013, when the total impacts are reduced to levels that existing regional workers can satisfy.

The additional taxes that would accrue to the Federal, State, and local governments as a result of the construction activities also would be substantial. As shown in Table 3.6-23, according to the social accounting framework used for this analysis (Minnesota IMPLAN Group 2004), the Federal government would collect an additional \$46 million due to FY12 construction projects alone and \$151 million over the course of the 7-year construction period. Meanwhile, North Carolina and local governments would collectively gain \$25.6 million due to FY12 construction projects, and \$82 million over the 7 years of construction.

Environmental Justice/Protection of Children

The environmental justice and protection of children impacts of Alternative 3 would be similar to those described for the Preferred Alternative. Under Alternative 3, additional on-Base housing would not be constructed at MCB Camp Lejeune resulting in more military families residing off-Base. The increase in families within the community would put further strain on Onslow County schools and increase competition for affordable housing in the area representing a potential environmental justice impact.

Associatea wa	n Allernul	ive 5 Milli	ary Const	ruction FI	Djecis		
	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Employment Impacts ²							
Direct	60.0					4 500	
MCB Camp Lejeune	690	501	5,052	2,761	3,305	1,593	355
MCAS New River	1,163	879	0	198	803	0	0
MCAS Cherry Point	0	0	911	1,110	0	0	0
Total Direct	1,853	1,380	5,963	4,069	4,108	1,593	355
Indirect							
MCB Camp Lejeune	100	65	767	449	520	172	48
MCAS New River	127	93	0	32	81	0	0
MCAS Cherry Point	0	0	91	111	0	0	0
Total Indirect	227	158	858	592	601	172	48
Induced							
MCB Camp Lejeune	156	112	1,144	629	750	352	80
MCAS New River	260	195	0	45	177	0	0
MCAS Cherry Point	0	0	201	245	0	0	0
Total Induced	416	307	1,345	919	927	352	80
Total							
MCB Camp Lejeune	946	678	6,963	3,839	4,575	2,117	483
MCAS New River	1,550	1,167	0	275	1,061	0	0
MCAS Cherry Point	0	0	1,203	1,466	0	0	0
Total Direct, Indirect, & Induced	2,496	1,845	8,166	5,580	5,636	2,117	483
	,	, , , , , , , , , , , , , , , , , , , ,	, ,	, , , , , , , , , , , , , , , , , , , ,	,		
Labor Income Impacts ³							
Direct							
MCB Camp Lejeune	23.3	17.0	170.0	92.7	111.1	54.1	12.0
MCAS New River	39.8	30.1	0.0	6.6	27.3	0.0	0.0
MCAS Cherry Point	0.0	0.0	31.0	37.8	0.0	0.0	0.0
Total Direct	63.1	47.0	201.0	137.1	138.5	54.1	12.0
Indirect		.,					
MCB Camp Leieune	3.2	2.1	24.5	14.2	16.5	5.8	1.6
MCAS New River	4.3	3.2	0.0	1.0	2.8	0.0	0.0
MCAS Cherry Point	0.0	0.0	3.1	3.8	0.0	0.0	0.0
Total Indirect	7.5	5.3	27.7	19.1	19.3	5.8	1.6
Induced	,			- , , -	- / 10		
MCB Camp Leieune	4 2	3.0	30.9	17.0	20.3	95	2.2
MCAS New River	7.0	53	0.0	12	4 8	0.0	0.0
MCAS Cherry Point	0.0	0.0	5.0	6.6	0.0	0.0	0.0
Total Induced	11.2	83	36.3	24.8	25.0	9.5	2.2
Total	11.2	0.5	50.5	21.0	20.0	7.5	2.2
MCB Camp Leieune	30.7	22.1	225.5	123.9	147 9	69.4	157
MCAS New River	51.1	38.5	0.0	8.9	34.9	0.0	0.0
MCAS Cherry Point	0.0	0.0	39.5	48.2	0.0	0.0	0.0
Total Direct Indirect & Induced	81.8	60.6	265.0	181.0	182.8	69.4	15.7

 Table 3.6-22 Employment and Income Impacts¹

 ssociated with Alternative 3 Military Construction Projec

Notes:

¹Impacts due to military construction projects, assuming all expenditures in region. ²Number of jobs.

³Employee compensation plus proprietors' income (in millions of 2008 dollars).

Source: Estimated for this study with IMPLAN (Minnesota IMPLAN Group 2004).

				~			
	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Federal Tax ²							
MCB Camp Lejeune	\$5,429,844	\$3,886,542	\$40,036,147	\$22,124,871	\$26,343,099	\$12,057,773	\$2,764,896
MCAS New River	\$9,031,499	\$6,752,742	\$0	\$1,584,302	\$6,030,031	\$0	\$0
MCAS Cherry Point	\$0	\$0	\$6,840,316	\$8,333,939	\$0	\$0	\$0
Total Federal	\$14,461,344	\$10,639,284	\$46,876,463	\$32,043,112	\$32,373,130	\$12,057,773	\$2,764,896
State/Local Tax ³							
MCB Camp Lejeune	\$2,979,195	\$2,096,496	\$22,136,271	\$12,379,520	\$14,633,857	\$6,325,932	\$1,499,490
MCAS New River	\$4,747,415	\$3,535,921	\$0	\$886,464	\$3,133,055	\$0	\$0
MCAS Cherry Point	\$0	\$0	\$3,554,059	\$4,330,108	\$0	\$0	\$0
Total State/Local	\$7,726,610	\$5,632,414	\$25,690,330	\$17,596,092	\$17,766,911	\$3,325,932	\$1,499,490
Total Tax							
MCB Camp Lejeune	\$8,409,040	\$5,983,034	\$62,172,418	\$34,504,391	\$40,976,956	\$18,383,705	\$4,264,385
MCAS New River	\$13,778,914	\$10,288,663	\$0	\$2,470,766	\$9,163,086	\$0	\$0
MCAS Cherry Point	\$0	\$0	\$10,394,375	\$12,664,047	\$0	\$0	\$0
Total Federal &							
State/Local	\$22,187,954	\$16,271,697	\$72,566,794	\$49,639,204	\$50,140,041	\$18,383,705	\$4,264,385

	Table	e 3.6-23 Tax II	npacts ¹	
Associat	ed with Altern	ative 3 Militar	ry Constructi	ion Projects

Notes:

¹Impacts due to military construction projects, assuming all expenditures in region.

²NonDefense.

³NonEducation.

Source: Estimated for this study with IMPLAN (Minnesota IMPLAN Group 2004).

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

Demographic Impacts

Combined demographic impacts under Alternative 4 associated with the increase in end strength would be the same as noted for the Preferred Alternative.

Economic Impacts

Alternative 4 would have the same recurring annual impacts from the increase in end strength presented under the Preferred Alternative. There would be no construction expenditures for military construction projects associated with Alternative 4.

Environmental Justice/Protection of Children

The environmental justice and protection of children impacts of Alternative 4 would be the same as those described for Alternative 3.

3.7 Community Services and Facilities

Community services and facilities include emergency services and law enforcement, hospitals, schools, and childcare. The Proposed Action includes an increase in manpower at each of the Installations, which would result in an increase of new residents in the surrounding communities and demand for these resources. On-Base services as well as services within the surrounding counties that could likely receive new residents are addressed. The ROI would encompass all or parts of the following counties: Onslow, Carteret, and Craven Counties.

3.7.1 Affected Environment

3.7.1.1 MCB Camp Lejeune/MCAS New River

Emergency Services and Law Enforcement

The MCB Camp Lejeune Fire Protection Division provides emergency response to fires and accidents, and initial response to fuel or oil spills. MCB Camp Lejeune's Explosive Ordnance Division has cooperative agreements with regional law enforcement agencies for the diffusion, detonation, and disposal of suspected or live unexploded ordnance. The Provost Marshal's office, located on McHugh Boulevard, is the primary police station for the military police force (DoN 2008a). The consolidated 911-call center receives approximately 5,300 calls per week which includes medical emergencies, fires, and calls to the military police; however, medical and fire emergency calls constitute only about 4,000 calls per year. The average response time to emergency calls is 6.5 minutes (Personal communication, Saunders 2008).

MCB Camp Lejeune, along with the City of Jacksonville and Onslow County, contribute personnel and expertise to the Military-Civilian Task Force for Emergency Response. This task force coordinates all regional (military and civilian) emergency services in the event of a natural or man-made disaster. (DoN 2008a).

Hospitals

Medical care is provided to MCB Camp Lejeune/MCAS New River military personnel and their dependents by the on-Base Naval Hospital Camp Lejeune. It is a fully accredited 117-bed hospital with four inpatient areas, an Ambulatory Procedures Unit, six off-site medical support facilities (or branch clinics), and a number of specialized clinics throughout the Base for convenient access (Naval Hospital Camp Lejeune 2008). MCB Camp Lejeune has a cooperative agreement with the Onslow Memorial Hospital, located in the City of Jacksonville, to serve as a local alternative for medical care (DoN 2008a).

Schools

School-age children of military families residing on-Base attend the MCB Camp Lejeune Dependents Schools (CLDS) system. The CLDS operates five elementary schools, one middle school, and one high school. Table 3.7-1 shows the approximate yearly capacity and enrollment of students and approximate core classroom teachers among these schools. Total enrollment in CLDS varies yearly. The CLDS coordinates with the Base Commander as well as the Commander of Marine Corps Installations (MCI) East to project enrollment, ensure capacity, and provide recommendations on staffing considerations within the schools (Personal communication, Gray 2008). According to the 2005/2006 enrollment data, there were approximately 1,128 available seats within the CLDS system.

Schools	Student Enrollment 2005/2006 ³	Approximate Yearly Capacity	Core Classroom Teachers
Berkley Manor (3-5)	353	n/a	n/a
Russell Elementary (3-5)	170	n/a	n/a
Bitz Intermediate (PK-5)	n/a	600	23
Delalio (PK-5) ¹	315	340	15
Johnson Primary (PK-2)	779	800	35
Tarawa Terrace 1 (PK-1)	233	400	8.5 ²
Tarawa Terrace 2 (K-5)	353	525	16
Brewster Middle (6-8) ¹	545	840	25
Lejeune High $(9-12)^1$	429	800	38
Total	3,1 77	4,305	152

Table 3.7-1 CLDS Enrollment Data

PK=prekindergarten, K=kindergarten.

Berkley Manor and Russell Elementary both closed in 2006 and were replaced with Bitz Intermediate.

¹ Serves MCAS New River.

² Includes 8 full time, 1 part-time.

³ Personal communication, Gray 2008.

Childcare

On-Base childcare facilities are available at Brewster, Midway Park, Tarawa Terrace, and New River. Each of these locations has a program for children age 6 weeks to 5 years. The facilities are open Monday through Friday, 6:00 a.m. to 6:00 p.m. Children can be dropped off and picked up anytime during those hours. There is an average wait time for these programs of 3 to 4 months. The New River facility has a shortage of available space and wait times may be longer at this location (Personal communication, Thacker 2008). There are also Family Child Care options on the Installation in which families living on-Base provide child care services to other on-Base families. These homes can have up to six children at a time, including their own (Personal communication, Carr 2008).

3.7.1.2 MCAS Cherry Point

Emergency Services and Law Enforcement

The MCAS Cherry Point Fire Protection Division provides emergency response to fire and accidents on-Station. The Provost Marshal's office, located in Building 294, is the primary police station for MCAS Cherry Point's military police force (MCAS Cherry Point 2008). The Provost Marshal's office receives an average of 1,500 911-calls per year with an average response time of 1.5 minutes or less (Personal communication, Quilling 2008).

MCAS Cherry Point has several emergency service agreements with regional service providers. Mutual aid agreements have been signed with Craven County and the City of Havelock for police, fire, and emergency medical services at the Station (DoN 2008b). In addition, MCAS Cherry Point, along with Craven County and the City of Havelock, contribute personnel and expertise to the Military-Civilian Task Force for Emergency Response. This task force coordinates all regional (military and civilian) emergency services in the event of a natural or human-made disaster in the region (DoN 2008b). MCAS Cherry Point's Explosive Ordnance Division has cooperative agreements with regional law enforcement agencies for the diffusion, detonation, and disposal of suspected or live unexploded ordnance (DoN 2008b).

Hospitals

The Naval Clinic Cherry Point located on-Station provides outpatient medical care to military personnel and their dependents. This facility used to be a fully accredited tertiary care hospital. However, it was recently closed and now functions as a day-time clinic only (Naval Health Clinic Cherry Point 2008).

Schools

Five elementary schools, two middle schools, and one high school within the Craven County School District provide public education to school-age children of military families residing on MCAS Cherry Point. Table 3.7-2 provides enrollment data, school capacity, and the number of students living on MCAS Cherry Point during the 2005/2006 school year.

Childcare

There are two child development centers on MCAS Cherry Point. One offers child care for children 6 weeks of age to 12 years and the other offers child care for children 6 weeks of age to 5 years. Both centers are open Monday through Friday, 6:00 a.m. to 6:00 p.m. Average wait times for enrollment vary depending on the age, with an approximate wait time for infants of 8 to 12 months, and approximately 2 to 5 months for older children. A Family Child Care system (in-home care by other military families living on-Station) is also available. These home care providers are required to adhere to the same criteria as the child development centers (Personal communication, Goin 2008 and Kuhlenbeck 2008).

Schools	Student Enrollment ¹ 2005/2006	Capacity	Percent Capacity	MCAS Cherry Point Students ²
Arthur Edwards Elementary School	652	774	84	355 (54%)
Graham A. Barden Elementary School	316	390	81	76 (24%)
Havelock Elementary School	370	445	83	76 (21%)
Havelock High School	1,215	1,215	100	105 (9%)
Havelock Middle School	475	528	90	27 (6%)
Roger Bell Elementary School	520	523	99	26 (5%)
Tucker Creek Middle School	535	642	83	131 (24%)
W.J. Gurganus Elementary School	450	445	101	45 (10%)
Total	4,533	4,962	91	841 (19%)

Table 3.7-2 Enrollment Data for Craven County Schools Serving Families on MCAS Cherry Point

Sources: ¹ Personal communication, Clifton 2008.

² Personal communication, Cherry 2008.

3.7.1.3 Off-Base Community Services and Facilities

Emergency Services and Law Enforcement

Onslow County. Onslow County Department of Emergency Services and Homeland Security consolidate under one department several emergency service agencies: the Emergency 911 Communications Center, Emergency Management Office, Emergency Medical Services (EMS), Hazardous Materials Management, Fire Marshal's Office, and Safety and Security. The EMS Department has 7 active Advanced Life Support Paramedic units and coordinates with 9 volunteer rescue squads and 20 volunteer fire departments. The Department averages a 911-call volume of 13,000 per year (Onslow County 2008a); the average response time during FY07/08 was 9 minutes or less, 32 percent of the time (Personal communication, Goodman 2008).

Onslow County Sheriff's Office provides public safety services throughout most of the county, excluding MCB Camp Lejeune/MCAS New River, Hofmann State Forest, Hammocks Beach State Park, and the county's six municipalities, including the City of Jacksonville. The Sheriff's office is organized into 13 principal divisions, units, and programs and is headquartered on Mill Avenue in Jacksonville (Onslow County 2008b).

Carteret County. The Emergency Services Department of Carteret County serves as liaison between the county and the 15 EMS providers in Carteret County. The County's EMS and Rescue squads are a combination of both paid and independently chartered private, non-profit corporations that provide emergency medical and rescue services to the local government within designated EMS and Rescue districts. The County's volunteer fire departments are independently chartered private, non-profit corporations that provide firefighting to local government within designated fire districts (Carteret County

2008a). The County receives approximately 9,000 911-calls per year with an average response time of 7 to 9 minutes from dispatch to on-scene (Personal communication, Keroack 2008).

The Sheriff's Department patrols unincorporated areas of Carteret County, responds to calls for service, and investigates crimes in these areas. The Sheriff's Department serves criminal and civil papers, provides courtroom security, and operates the Emergency 911 communications center. The Sheriff is also responsible for the operation of the county jail in Beaufort, North Carolina. The Teen Court program also reports to the Sheriff (Carteret County 2008c).

Craven County. Craven County Department of Emergency Services consolidates under one department several emergency service agencies: the Emergency 911 Communications Center, Emergency Management Office, EMS, and Fire Marshal's Office (DoN 2008b). The Emergency Services Department coordinates with seven combined paid and volunteer emergency services and four private ambulance services.

Craven County Sheriff's Department provides public safety services throughout most of the county and eight municipalities, excluding MCAS Cherry Point. The department has four divisions: administration, communication, jails, and school resource officers (Craven County 2008b).

Hospitals

Onslow County. Onslow Memorial Hospital is located on Western Boulevard in Jacksonville and is a 162-bed facility with a variety of healthcare services and state-of-the-art diagnostic services that include a Women's Imaging Center, Sleep Lab, Heartburn Center, Cardiac Cath Lab, Neurodiagnostic Lab, Magnetic Resonance Imaging, and Computed Tomography Scan (Onslow Memorial Hospital 2008).

Carteret County. Carteret General Hospital, a not-for-profit 135-bed hospital, is located in Morehead City. Carteret General offers a full range of acute care, diagnostic and outpatient services, including a comprehensive Cancer Treatment Center, Imaging Center, Specialty Clinic, Hospice, Home Health, Cardiac Rehabilitation, and a Birthing Center (Carteret General Hospital 2008).

Craven County. Craven Regional Medical Center, located in New Bern, is a fully accredited medical facility with 313 beds and approximately 200 Board Certified physicians representing nearly all medical specialties. The center offers care in most areas including emergency, out-patient, cancer, rehabilitation, mental health, primary, and home health. There are dedicated units for neurosurgical, intensive and intermediate care, women's care, pediatric care and cancer care (Craven Regional Medical Center 2008).

Schools

Federal Impact Aid. Impact aid is a Federal grant program designed to assist local school districts that have lost traditional revenue sources due to the presence of tax-exempt Federal property or that have experienced increased expenditures due to the enrollment of federally connected children. Traditional revenue sources include property, sales, and personal income taxes, which usually account for a large portion of the average school district's annual budget (DoN 2008a). Impact aid provides the school district a payment-in-lieu of these lost taxes to assist with the basic educational needs of its students. For impact aid payments, students are placed in two categories: category "A" students live on Federal property with at least one parent who is a uniformed military employee, and category "B" students reside off-Base with a uniformed military parent(s) or a civilian parent employed by the military.

A summary of impact aid provided to the surrounding counties of MCB Camp Lejeune/MCAS New River and MCAS Cherry Point is provided in Table 3.7-3. Onslow County received approximately 24 percent of the total impact aid payment for the State of North Carolina in 2006 while Craven County received 16 percent; Carteret County received less than 1 percent. To be eligible for Federal impact aid assistance, a school district must educate at least 400 federally connected children in average daily attendance or the federally connected children must make up at least 3 percent of the school district's total average daily attendance (U.S. Department of Education 2008a).

				0.0.0
		2000	2006	
School District	Payment (\$)	Percent of State Payment	Payment (\$)	Percent of State Payment
Carteret County	9,929	<1	21,222	<1
Onslow County	1,432,975	15	3,227,873	24
Craven County	2,340,271	25	2,166,933	16
State Total	9,370,659		13,474,589	

Table 3.7-3 Federal Impact Aid Payments to Surrounding Counties

Source: U.S. Department of Education 2008 b, c.

In addition to Federal Impact Aid provided by the U.S. Department of Education, Onslow and Craven Counties receive DoD supplemental impact aid. In 2007, Onslow County Board of Education received \$442,295.71 and Craven County Board of Education received \$366,729.71 (Personal communication, Fulton 2009).

Onslow County. Public schools within Onslow County consist of 18 elementary schools, 8 middle schools, and 7 high schools. Twenty of these schools were considered over capacity during the 2005/2006 school year (Table 3.7-4). Almost all of the elementary schools were over capacity. Over 8,600 students (about 37 percent) within the Onslow County School system were federally connected during the

2005/2006 school year (a breakdown of federally connected students by school is not available for the 2005/2006 school year) (Personal communication, Bowers 2008). Category A students totaled 44 and Category B students totaled 8,575. Military activities, such as the Grow the Force initiative, greatly influence planning at Onslow County Public Schools and are a major part of the Capital Improvements Program. Upcoming facility plans include expanding three schools and constructing two new elementary schools to alleviate some of the capacity issues. One of the elementary schools (Meadow View Elementary) opened in the fall of 2008 and the other (Stateside Elementary) is scheduled to open in the fall of 2009. Together they will have a capacity of about 1,342 students (Onslow County 2008d).

Schools	Student Enrollment ¹	Capacity ²	Percent Capacity
Bell Fork Elementary School	417	515	81
Blue Creek Elementary School	728	590	123
Carolina Forest Elementary School	510	617	83
Clyde Erwin Magnet School	410	427	96
Dixon Elementary School	778	644	121
Dixon High School	609	555	110
Dixon Middle School	473	634	75
Hunters Creek Elementary School	862	701	123
Hunters Creek Middle School	797	582	137
Jacksonville Commons Elementary School	557	691	110
Jacksonville Commons Middle School	770	884	87
Jacksonville High School	1,316	1,335	99
Morton Elementary School	447	523	85
New Bridge Middle School	541	494	110
Northside High School	816	790	103
Northwoods Elementary School	430	399	108
Nothwoods Park Middle School	675	722	93
Parkwood Elementary School	585	444	132
Queens Creek Elementary School	545	533	102
Richlands Elementary School	642	646	99
Richlands High School	867	640	135
Richlands Primary School	715	500	143
Sand Ridge Elementary School	566	516	110
Silverdale Elementary School	466	320	146
Southwest Elementary School	887	685	129
Southwest High School	769	820	94
Southwest Middle School	579	582	99
Summersill Elementary School	757	644	118

 Table 3.7-4 Enrollment Statistics for Onslow County Public Schools (2005/2006)

Table 5.7 4 Elifonment Statistics for Onsion County 1 abite Schools (2005/2000)			
Schools	Student Enrollment ¹	Capacity ²	Percent Capacity
Swansboro Elementary School	526	400	132
Swansboro High School	1,003	1,100	91
Swansboro Middle School	787	842	93
Trexler Middle School	611	598	102
White Oak High School	1,211	1,075	113
Onslow County Learning Center ³	n/a	120	n/a
TOTAL	22,854	21,448	107

 Table 3.7-4 Enrollment Statistics for Onslow County Public Schools (2005/2006)

Notes and Sources:

1 Personal communication, Grantham 2008

2 Personal communication, Nash 2008

3 Onslow county Learning Center is an alternative school. The students are assigned there on a temporary basis and enrollment numbers are counted with their home school.

Within Onslow County, there are several private or alternative schools: Jacksonville Christian (PK-12), Living Water Christian School (PK-12), Born Again Christian Academy (K-12), Fellowship Christian School (K-12), Grace Baptist School, Infant of Prague Catholic School (PK-8), Montessori Children's School (PK-3), Shiloh Institute of Learning (K-7), and St. Annes Day School (nursery-4) (Private School Review 2008).

Carteret County. Carteret County Public Schools include 8 elementary schools, 4 middle schools, and 3 high schools. None of the schools were at or above 100-percent capacity; however, three schools were at or above 90-percent capacity during the 2005/2006 school year (Morehead City Primary School, West Carteret High School, and Croatan High School) (Table 3.7-5). Federally connected students (totaling 374) made up less than 5 percent of the 2005/2006 students within the school system. Three private schools are also located in Carteret County: Carteret Academy (5-12), Gramercy Christian School (K-12), and St. Egbert Elementary (K-5) (Private School Review 2008). Tiller Elementary (K-5) is a free public charter school located just outside of Beaufort City. Any student can apply for enrollment and applicants are selected during a spring lottery (Tiller School 2008). The school is undergoing expansion and expects to ultimately have capacity to educate 192 students in the next few years (Personal communication, Plume 2008).

Carteret County Schools	Student Enrollment	Capacity	Percent Capacity
Atlantic Elementary School	154	200	77
Beaufort Elementary School	458	600	76
Harkers Island Elementary School	173	220	79
Newport Elementary School	805	900	89
Smyrna Elementary School	298	350	85
White Oak Elementary School	589	675	87
Morehead Elementary CG	282	400	71
Bogue Sound Elementary School	417	550	76
Morehead City Primary School	661	700	94
Beaufort Middle School	248	350	71
Morehead City Middle School	492	600	82
Broad Creek Middle School	575	650	88
Newport Middle School	507	600	85
East Carteret High School	658	850	77
West Carteret High School	1,259	1,400	90
Croatan High School	818	850	96
Bridges Alternative School ¹	31	n/a	n/a
Tiller Elementary School ²	140	n/a	n/a
TOTAL	8,425	9,895	85

 Table 3.7-5
 Carteret County Public Schools Enrollment Data (2005/2006)

Source: Personal communication, Courtney 2008

Notes:

Bridges Alternative School is a public alternative school that serves at risk students within the Carteret County School System until they can return to the normal curriculum. It educates students from 3^{rd} to the 9^{th} grades.

² Tiller Elementary School is a free public charter school that is not considered part of the Carteret County Public School System. Since it is free and any student could apply for enrollment, it has been included in this table; however, it is not included in the totals. Since enrollment is controlled, capacity issues are not possible. The school does not collect data on federally connected students.

Craven County. Craven County has 14 elementary schools (Creekside Elementary opened in 2007, and is not included in this data), 5 middle schools, and 4 high schools (including those specific schools listed in Table 3.7-2). Four of these schools (one elementary school and three high schools) were at or above 100-percent capacity during the 2005/2006 school year (Table 3.7-6). Federally connected students associated with MCAS Cherry Point made up approximately 26 percent of the enrollment during the 2005/2006 school year (Personal communication, Cherry 2008). Of the 3,912 total federally connected students, 871 were Category A and 3,041 were Category B. The student population in the Craven County School District has been consistent over the last several years and redistricting or expansion has not had to occur. However, the district has been given funding to purchase land for the construction of a new high school (Personal communication, Clifton 2008). Within Craven County, there are several private schools: Liberty Christian School (PK-12), Methodist Home (6-12), New Bern Country Day (3-12), Ruth's Chapel

Christian School (PK-12), Annunciation Catholic School (PK-8), Calvary Baptist Church School (5-8), and St. Paul Education Center (PK-8) (Private School Review 2008).

Schools	Student Enrollment ²	Capacity	Percent Capacity
Albert H. Bangert Elementary School	430	481	89
Arthur W. Edwards Elementary School ¹	652	774	84
Ben D. Quinn Elementary School	472	502	94
Bridgeton Elementary School	496	554	90
Brinson Memorial Elementary School	933	940	99
Graham A. Barden Elementary School ¹	316	390	81
Havelock Elementary School ¹	370	445	83
James W. Smith Elementary School	579	701	83
J.T. Barber Elementary School	406	519	78
Oaks Road Elementary School	436	460	95
Roger R. Bell Elementary School ¹	520	523	99
Trent Park Elementary School	399	450	89
Vanceboro-Farm Life Elementary School	633	695	91
W.J. Gurganus Elementary School ¹	450	445	101
Grover C. Fields Middle School	648	734	88
Havelock Middle School ¹	475	528	90
H.J. MacDonald Middle School	820	1,048	78
Tucker Creek Middle School ¹	535	642	83
West Craven Middle School	928	974	95
Havelock High School ¹	1,215	1,215	100
New Bern High School	1,873	1,625	115
West Craven High School	1,148	1,055	109
TOTAL	14,734	16,335	90

 Table 3.7-6 Enrollment Statistics for Craven County Schools (2005/2006)

Notes and Sources:

¹ These schools educate students living on-Station at MCAS Cherry Point. Enrollment data includes these students.
 ² Personal communication, Clifton 2008

Childcare

The Resource and Referral Service at each Installation provides specific information to families living onor off-Base for childcare options. North Carolina has one of the highest rates of working mothers with young children; therefore, childcare is a top priority for the State. Child development centers and daycare centers are a private industry and respond to supply and demand within the area they serve. A review of the North Carolina Division of Child Development database indicates there are 93 Child Care Centers and 192 Family Child Care facilities (in-home child care) within the surrounding counties (Table 3.7-7). More options are available in the urban areas as opposed to the rural townships (North Carolina Division of Child Development 2008).

County	Child Care Centers	Family Child Care Facilities	
Onslow	39	116	
Craven	30	59	
Carteret	24	17	
Total	93	192	

Table 3.7-7 Off-Base Childcare Options

Source: North Carolina Division of Child Development 2008.

3.7.2 Environmental Consequences

This section provides a detailed description of the impacts associated with implementation of the Alternatives including the No Action Alternative. Factors considered to determine the extent of impacts to community services include:

- Increased response times for fire/emergency services and law enforcement;
- Increased demand on fire/emergency services and law enforcement, and medical services; and
- Increased enrollment in school systems.

3.7.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline community services at MCB Camp Lejeune/MCAS New River described in Section 3.7.1 as a result of this action. However, that does not mean that demands on community services at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected community services. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). Without the construction of additional child care facilities on the Installation, the wait times for entrance into these programs would continue. At MCAS New River, the already extensive wait time would possibly worsen over time.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. These activities and the associated growth on MCB Camp

Lejeune/MCAS New River would increase the demand and response times for emergency services and law enforcement as well as increase enrollment in the school system.

The Grow the Force initiative would result in a permanent increase of 7,177 Marines and civilians at MCB Camp Lejeune (not including transient Marine formal school students) and 1,411 Marines and civilians at MCAS New River by FY11. USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of families and school-age children associated with the personnel increase (USMC 2007) (Table 3.7-8). For civilians, the same multipliers were applied to the equivalent civilian grade.

Based on a review of recent trends in military personnel living on- and off-Base (Salvetti 2008), an estimate of the number of military families and school-age children living on- and off-Base was determined for analysis purposes. It should be recognized that the current proportion of on-Base residents is low because of a current lack of available housing options on the installations. The following assumptions have been used for analysis purposes:

- MCB Camp Lejeune 17 percent of families live in privatized on-Base housing, 83 percent live off-Base.
- MCAS New River 13 percent of families live in privatized on-Station housing, 87 percent live off-Station.

All civilian families and school-age children were assumed to live in the community rather than on the Installations. Table 3.7-8 provides the estimates used for analytical purposes. These projected increases are estimates used for analytical purposes and exact numbers of families and school-age children cannot be predicted. Approximately 527 additional families and 453 additional school-age children would reside at MCB Camp Lejeune/MCAS New River. Interrelationships with off-Base impacts are identified here, but assessed in Section 3.7.2.3.
	Families			School-age Children		
	Total	Residing		Total	Rest	iding
	Projected Increase	On-Base	Off-Base	Projected Increase	On-Base	Off-Base
MCB Camp Lejeune						
Active Duty	2,684	456	2,228	2,308	392	1,916
Civilians	684	0	684	588	0	588
Subtotal	3,368	456	2,912	2,896	392	2,504
MCAS New River						
Active Duty	547	71	476	470	61	409
Civilians	101	0	101	87	0	87
Subtotal	648	71	577	557	61	496
ΤΟΤΑΙ	4 016	527	3 489	3 453	453	3 000

 Table 3.7-8 Projected Increase in Families and School-age Children at MCB Camp Lejeune and MCAS New River

Note: USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of families and school-age children associated with the personnel increase (USMC 2007).

Emergency Services and Law Enforcement

MCB Camp Lejeune/MCAS New River currently provides fire/emergency services and police protection for approximately 3,650 military families and more than 25,000 unaccompanied enlisted permanent personnel residing on-Base (Robert D. Niehaus Inc. 2008). With the increase of Marines and their dependents, response times to emergency situations may be impacted (Personal communication, Saunders 2008) with the Preferred Alternative. However, to meet increased demands a fire station at Courthouse Bay, a Military Police Company Complex in Wallace Creek, and various antiterrorism/force protection improvements would be established throughout MCB Camp Lejeune/MCAS New River. These added services would reduce any potential for negative impacts to emergency and law enforcement response times.

Hospitals

Under the Preferred Alternative, there would be a medical/dental clinic addition at existing facilities at Courthouse Bay and French Creek, and a new medical/dental clinic at Hadnot Point and Camp Johnson. The proposed construction schedules for these facilities and the personnel increases may not completely coincide and there may be short-term impacts to Naval Hospital Camp Lejeune and Onslow Memorial Hospital with USMC plus ups prior to completion of the new facilities. Once the new facilities are complete however, there would be no long-term impacts to meeting on-Base medical service demands under the Preferred Alternative.

Schools

School-age children of military families living on-Base at MCB Camp Lejeune/MCAS New River attend CLDS schools. There were 1,128 available seats within the school system during the 2005/2006 school year, more than enough to accommodate the anticipated increase of approximately 453 school-age students residing on-Base under the Grow the Force initiative. None of the on-Base schools are considered at capacity, and the proposed increase would not create a capacity issue. Under the PPV housing initiative, a new school is also built with every 500 new homes constructed. These new schools, once constructed, would provide adequate space for any additional school-age children associated with the Grow the Force initiative.

Childcare

Under the Preferred Alternative, five child care centers at MCB Camp Lejeune and a child care addition at MCAS New River would be constructed. While the child care addition at MCAS New River may alleviate current demand, it may not lessen the wait times or demand resulting from the Preferred Alternative (Personal communication, Thacker 2008). It is anticipated that there could be negative impacts on MCAS New River for meeting child care demands. On MCB Camp Lejeune, the additional five child care facilities would meet increased demand and, therefore, no impacts are anticipated under the Preferred Alternative.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Emergency Services and Law Enforcement

The increase of Marines and their dependents without the construction of additional emergency facilities on-Base, could increase response times to emergency situations and introduce negative long-term impacts (Personal communication, Saunders 2008).

Hospitals

An increase in the number of personnel associated with MCB Camp Lejeune/MCAS New River would result in an increase in use of the on-Base Naval Hospital Camp Lejeune. The impact to the Hospital is expected to be minimal since the Base has a cooperative agreement in place with Onslow Memorial

Hospital to provide alternative medical care (see off-Base environmental consequences for impacts to Onslow Memorial Hospital).

Schools

As with Alternative 2, there would be an increase in enrollment within the CLDS system. The CLDS system currently has 1,128 available seats and a new school is developed with every 500 houses constructed on-Base. As with the Preferred Alternative, there would be no impacts to on-Base demand if Alternative 3 were implemented.

Childcare

Under Alternative 3, three child care/development center core projects would be constructed on MCB Camp Lejeune. These projects would meet current demand but would not meet Grow the Force increases; therefore, negative impacts are anticipated.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

Emergency Services and Law Enforcement

With the increase of Marines and their dependents, response times to emergency situations may be impacted (Personal communication, Saunders 2008). Under Alternative 4, permanent construction to support emergency services and law enforcement and various antiterrorism/force protection improvements would not be implemented. Temporary facilities are not necessarily optimally sited, are not intended to last more than five years, and would degrade over time. Inadequate facilities, in combination with additional growth, would further strain MCB Camp Lejeune/MCAS New River emergency services and law enforcement services at a level that would be expected to increase response times.

Hospitals

An increase in the number of personnel associated with MCB Camp Lejeune/MCAS New River would result in an increase in use of the Naval Hospital Camp Lejeune located on-Base. Temporary medical/dental facilities are not necessarily optimally sited, are not intended to last more than five years, and would degrade over time. Inadequate facilities, in combination with additional growth, would be expected to increase demand for services at Naval Hospital Camp Lejeune. The impact to Naval Hospital

Camp Lejeune is expected to be minimal since the Base has a cooperative agreement in place with Onslow Memorial Hospital to provide alternative medical care.

Schools

There would be an increase in enrollment within the CLDS system. The CLDS system currently has 1,128 available seats. In addition, a new school is developed with the addition of approximately every 500 houses constructed on-Base under the PPV housing initiative (some phases of this initiative are addressed under separate NEPA documents and one phase is addressed in this EIS). These new schools, once constructed, would provide adequate space for any additional school-age children associated with the Grow the Force initiative.

Childcare

Like with on-Base schools, the child development programs available for children ages 6 weeks to 5 years are expected to see an increase in demand. There is currently a wait list to enter the programs and with the proposed manpower increase, the wait time prior to gaining entrance into the program would likely be longer.

3.7.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline community services at MCAS Cherry Point as a result of this alternative. However, that does not mean that demands for community services at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected community services. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).There is a wait list for childcare services provided on the Station, specifically for younger children (infants and toddlers). The wait list would continue, however, Family Child Care as well as childcare centers in the surrounding communities would continue to alleviate this inconvenience.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

The Grow the Force initiative would result in a permanent increase of 784 Marines and civilians at MCAS Cherry Point by FY11. USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of families and school-age children associated with the personnel increase (USMC 2007) (Table 3.7-9). For civilians, the same multipliers were applied to the equivalent civilian grade.

Based on a review of recent trends in military personnel living on- and off-Station (Salvetti 2008), the following assumption was used to project the number of Marines and their dependents living on- and off-Station: 30 percent of families live in on-Station privatized housing; 70 percent live in off-Station housing. All civilians were evaluated as living off-Station. Table 3.7-9 provides the projected increase of Marines and their dependents and the breakdown of those expected to live on and off of the Station. These projected increases are estimates used for analytical purposes and exact numbers of families and school-age children cannot be predicted. Approximately 74 additional families and 63 school-age children would reside on-Station. Interrelationships with off-Station impacts are identified here, but assessed in Section 3.7.2.3.

	Families			School-age Children		
	Total	Residing		Total	Residing	
	Projected Increase <i>On-Base Off-Base</i>		Projected Increase	On-Base	Off-Base	
MCAS Cherry Point						
Active Duty	245	74	172	211	63	147
Civilians	157	0	157	135	0	135
TOTAL	402	74	329	346	63	282

Table 3.7-9 Projected Increase in Families and School-age Children at MCAS Cherry Point

Note:

USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of families and school-age children associated with the personnel increase (USMC 2007).

Emergency Services and Law Enforcement

MCAS Cherry Point currently provides fire/emergency services and police protection for approximately 1,288 military families and more than 3,100 unaccompanied enlisted permanent personnel residing on-Station (Robert D. Niehaus Inc. 2007). With the increase of Marines, civilians, and their dependents, response times to emergency situations may be impacted. An increase in staffing in these service areas is expected to alleviate any impacts to emergency response times; therefore, only minor short-term impacts are anticipated (Personal communication, Quilling 2008). Various antiterrorism and force protection improvements at MCAS Cherry Point would provide for increased efficiencies. This would offset impacts to service response times resulting from increased end strength.

Hospitals

The hospital on MCAS Cherry Point currently only operates as a daytime clinic. In-hospital care is provided in the outside community, most likely at Craven County Regional Medical Center. This facility provides a multitude of medical services and has over 300 beds. The increase in personnel on MCAS Cherry Point is not expected to impact the Naval clinic or the Craven County Regional Medical Center.

Schools

Under the Grow the Force initiative, it is anticipated that an additional 63 school-age children would attend schools within the Craven County School System that serve military families living on-Station at MCAS Cherry Point. A broad look at those schools that educate children living on-Station (see Table 3.7-2) indicates there are approximately 429 available seats within the school system. Therefore, the increase of approximately 63 school-age children is not expected to have an impact in the Craven County schools that educate students living on-Station.

Childcare

The two child development centers located on-Station would be expected to see a moderate increase in demand. There is currently a wait list that may increase with the subsequent increase in demand. Families with infants currently experience the longest wait time of up to 12 months. Military families relocating to MCAS Cherry Point with infants and toddlers may have a more difficult time finding on-Station childcare options. Family Child Care as well as childcare centers in the surrounding communities would be expected to alleviate this inconvenience. An addition to the child development center is proposed under the Preferred Alternative that would alleviate some of the demand on the facility and wait times would likely decrease.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Emergency Services and Law Enforcement

MCAS Cherry Point currently provides fire/emergency services and police protection for approximately 1,288 military families and more than 3,100 unaccompanied enlisted permanent personnel residing on-Station (Robert D. Niehaus Inc. 2007). With the increase of Marines, civilians, and their dependents, response times to emergency situations may be impacted. An increase in staffing in these service areas is expected to alleviate any impacts to emergency response times; therefore, only minor short-term impacts are anticipated (Personal communication, Quilling 2008).

Hospitals

The hospital on MCAS Cherry Point currently only operates as a daytime clinic. In-hospital care is provided in the outside community, most likely at Craven County Regional Medical Center. This facility provides a multitude of medical services and has over 300 beds. The increase in personnel on MCAS Cherry Point is not expected to impact the Naval clinic or the Craven County Regional Medical Center.

Schools

Under the Grow the Force initiative, it is anticipated that an additional 63 school-age children would attend schools within the Craven County School System that serve military families living on-Station at MCAS Cherry Point. A broad look at those schools that educate children living on-Station (see Table 3.7-2) indicates there are approximately 429 available seats within the school system. Therefore, the increase of approximately 63 school-age children is not expected to have an impact in the Craven County schools that educate students living on-Station.

Childcare

The two child development centers located on-Station would be expected to see a moderate increase in demand. There is currently a wait list that may increase with the subsequent increase in demand. Families with infants currently experience the longest wait time of up to 12 months. Military families relocating to MCAS Cherry Point with infants and toddlers may have a more difficult time finding on-Station childcare options. Family Child Care as well as childcare centers in the surrounding communities would be expected to alleviate this inconvenience.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. The potential impacts to community services would be the same as those described for Alternative 3.

3.7.2.3 Off-Base Community Services

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline community services in the communities surrounding MCB Camp Lejeune, MCAS New River, or MCAS Cherry Point. However, that does not mean that demands on community services in the region have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected community services. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). The capacity concerns within Onslow County Schools would continue.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads on the Installations. The Grow the Force initiative would result in a permanent increase of 7,177 Marines and civilians at MCB Camp Lejeune, 1,411 Marines and civilians at MCAS New River, and 784 Marines and civilians at MCAS Cherry Point as well as their associated dependents. As discussed with Sections 3.7.2.1 and 3.7.2.2, a breakdown of the Marines and their dependents expected to live on and off the Installations was developed based on a review of recent trends at each Installation (Salvetti 2008). All civilians were evaluated as living off the Installations. Table 3.7-10 provides a summary of the projected increase of Marines and their dependents and the breakdown of those expected to live on and off of the Installations. These estimates were used for analytical purposes and exact numbers of families and school-age children are not known.

	Families			Scl	School-age Children		
	Total	Residing		Total	Res	Residing	
	Projected Increase	On-Base	Off-Base	Projected Increase	On-B ase	Off-Base	
MCB Camp Lejeune							
Active Duty	2,684	456	2,228	2,308	392	1,916	
Civilians	684	0	684	588	0	588	
Subtotal	3,368	456	2,912	2,896	<i>392</i>	2,504	
MCAS New River							
Active Duty	547	71	476	470	61	409	
Civilians	101	0	101	87	0	87	
Subtotal	648	71	577	557	61	496	
MCAS Cherry Point							
Active Duty	245	74	172	211	63	147	
Civilians	157	0	157	135	0	135	
Subtotal	402	74	329	346	63	282	
TOTAL	4,418	601	3,817	3,799	517	3,283	

Table 3.7-10 Projected Increases in Families and School-age Children at Each Installation

Note:

USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of families and school-age children associated with the personnel increase (USMC 2007).

The current distribution of military dependents living off-Base by zip code of residence was used to project the number of families and school-age children for each county (Personal communication, Fleming 2008) (Table 3.7-11). These estimates were used for analytical purposes and exact numbers of families and school-age children are not known.

County	Distribution of Off-	Projected Increase ¹		
County	Base Dependents (%)	Families	School-age Children	
Onslow County	74.1	2,828	2,432	
Craven County	20.6	786	676	
Carteret County	1.9	73	63	
Other ²	3.4	130	112	
Total	100	3,817	3,283	

 Table 3.7-11 Projected Estimates for Off-Base Dependent Community Services

Note:

¹ The projected increase by county was calculated by multiplying the current distribution percentage by the total projected off-base numbers of families and school-age children presented in Table 3.7-10.

² A small number of military dependents live in ten other counties throughout North Carolina that are not contiguous with the installations. Since this number is so small for each county, detailed analysis was not performed for these counties.

Under the Grow the Force initiative, approximately 3,817 families and 3,283 school-age children are projected to relocate to North Carolina within the ROI. As depicted in Table 3.7-11, most of this growth (approximately 95 percent) is expected to occur in the counties immediately surrounding MCB Camp Lejeune/MCAS New River and MCAS Cherry Point, Onslow County and Craven County; Carteret County is expected to experience minimal growth.

The Military Growth Task Force in North Carolina was organized to provide support to the surrounding counties in general services planning. A committee has been organized for medical, health, social services, and childcare that assess the ability of local and regional service providers to accommodate the anticipated growth. Tasks of this committee include identifying current and projected service levels, noting shortfalls, and providing recommendations to resolve the issues. Ongoing cooperation between the military and community leaders under this task force would help to lessen the off-base impacts to community services.

Emergency Services and Law Enforcement

The projected increase in residents living off-Base or off-Station could increase average response times for emergency services. Onslow and Craven Counties utilize paid and volunteer EMS squads to provide emergency response services to the residents of the county. Increased growth could require additional EMS squads and law enforcement personnel if response times are increased. Within the more rural counties (Carteret and those other non-contiguous counties), response times are more a function of distance than number of residents. Given the small projected increase for these areas, impacts to emergency services and law enforcement are not expected.

Hospitals

Onslow Memorial Hospital and Craven Regional Medical Center are located within the counties expected to receive the majority of the growth. Increased demand that could not be accommodated at the Naval Hospital Camp Lejeune, in particular, would result in increased demand at Onslow Memorial Hospital given the cooperative agreement in place for Onslow Memorial Hospital to provide alternative medical care. The projected growth in the communities is not anticipated to impact the ability of Onslow Memorial Hospital to provide service (Personal communication, Burlingame 2008).

Community impacts to hospitals would be offset under the Preferred Alternative with the construction of proposed permanent health care clinic facilities on the Installations. These additional facilities would provide more opportunity for military families to meet their medical needs on the Installations instead of utilizing facilities in the communities. Continued coordination with community service providers under the Growth Task Force initiative would further offset impacts.

Schools

The addition of 3.283 school-age children in the ROI would increase student enrollment in the public school systems. Almost all of Onslow County Schools are over capacity. Plans to construct two new elementary schools and renovate existing schools would alleviate some of the existing strain on the school system. The new elementary schools opening in 2008 and 2009 would accommodate an additional 1,342 students. The projected increase of approximately 2,432 school-age children in Onslow County would increase strain on the already strained public school system if all students attended public schools. This would represent an 11 percent increase over the total 2005/2006 student enrollment and a 28 percent increase in the federally connected student population. Even with the opening of two new elementary schools, capacity issues are still expected since the majority of the projected increase in school-age children would likely be in grades K-6. Accommodating additional students would likely result in redistricting, crowded classrooms, increased student to teacher ratios, and construction of temporary facilities. With the additional federally connected students, the school district could apply for increased Federal impact aid payments to help subsidize the costs associated with these issues. There are eight private schools in Onslow County that could receive some of the projected increase in students, alleviating some of the capacity issues within the public school system. As previously stated, continued cooperation between the military and community leaders under the Military Growth Task Force would help to alleviate some of the impacts associated with overcrowding of schools. With the construction of additional housing on MCB Camp Lejeune under the Preferred Alternative, it is anticipated that long-term growth associated with the Grow the Force initiative in the surrounding communities in Onslow County would stabilize or decrease. As proposed on-Base housing is constructed, it is likely that some of these families would move on-Base and utilize the CLDS system, offsetting capacity issues in Onslow County School District. The CLDS system currently has over 1,128 available seats and could accommodate the anticipated long-term growth. In addition, as new on-Base housing is constructed under the PPV initiative, new schools are also constructed on-Base to support growth on the Installation.

Craven County schools are under capacity on average. During the 2005/2006 school year, there were over 1,600 available seats in the school system. However, all of the high schools and three of the elementary schools were near full capacity or exceeded capacity. The projected increase of approximately 676 students would not likely create a capacity issue depending on the age of the children that would be entering the school system. The growth would be an approximate 4.5 percent increase of the 2005/2006 student enrollment and approximately 17 percent increase of the federally connected students associated with MCAS Cherry Point. There would be a moderate strain on the high schools and temporary crowding of classrooms could occur until the new high school is constructed. The school district would be eligible to apply for additional Federal impact aid with the additional federally connected students. There are

seven private schools in Craven County that could receive some of the projected increase in students, alleviating some of the potential capacity issues within the public school system.

Carteret County schools are currently under capacity. The projected increase of approximately 63 students would not impact the school system. The projected students would increase the federally connected students by approximately 17 percent.

Childcare

Within the ROI, there are 93 child care centers, and 102 Family Child Care facilities registered with the State of North Carolina. The projected growth could create the need for additional facilities within Onslow and Craven Counties. Since childcare is a private industry, it is expected that the industry would respond to an increase in demand with additional facilities. Therefore, long-term impacts are not expected. Under the Preferred Alternative, the construction of child care facilities on the Installations would ultimately result in less demand for private childcare facilities located in the communities.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

Emergency Services and Law Enforcement

The increased demand for emergency services and law enforcement in the surrounding communities would be the same as that described under the Preferred Alternative.

Hospitals

The growth in the surrounding communities would increase demand for hospital services and care, specifically Onslow Memorial Hospital and Craven Regional Medical Center. As described under the Preferred Alternative, the projected growth in the communities is not anticipated to impact the ability of Onslow Memorial Hospital to provide service (Personal communication, Burlingame 2008).

Schools

The addition of 3,283 school-age children in the ROI would increase student enrollment in the public school systems. As described under the Preferred Alternative, almost all of Onslow County Schools are over capacity. The additional school-age children in the community would put further strain on the school system. The strain on the school system under this alternative would have a long-term impact without the

construction of additional PPV housing at MCB Camp Lejeune as described under the Preferred Alternative. No impact is expected to Carteret or Craven County schools.

Childcare

The projected growth could create the need for additional facilities within Onslow and Craven Counties. Since childcare is a private industry, it is expected that the industry would respond to an increase in demand with additional facilities. Therefore, long-term impacts are not expected.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. The potential impacts to community services (emergency services, hospitals, schools, and childcare) would be the same as those described under Alternative 3.

3.8 Transportation and Traffic

Transportation and traffic involves the movement of people and vehicles through a transportation network. The amount or volume of people and vehicles moving through a transportation network has an effect on the time it takes to get from one point to another in the system. Transportation and traffic are assessed in this EIS to address potential effects on the overall transportation network as well as specific segments of the transportation network. Both on- and off-Base transportation and traffic are assessed. The ROI evaluated encompasses MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point and the roadways adjacent to these Installations, as well as public transportation and transit that serve the area's population (Figure 3.8-1). Populations living and working at the three Installations, as well as the general public that use the transportation network near the Installations, are affected by vehicular traffic and the condition of the transportation network.

The following transportation system modes are examined:

- motor vehicle road networks and associated controls including:
 - o parking on the Installations,
 - Installation-wide traffic controls (e.g., signals, gates, separation of commercial and general traffic), and
 - o integrated bicycle and pedestrian networks (e.g., routes and paths);
- passenger services airports (as opposed to general aviation airports where it is presumed there would be little if any effect from the Proposed Action);
- bus transportation;
- railroad transportation; and
- water transportation.

3.8.1 Affected Environment

Baseline transportation conditions consist of the current status of the transportation network as well as improvements to the transportation system that have been proposed. Transportation planning and improvements (particularly for motor vehicle systems) are ongoing; therefore, conditions are not static. Plans for transportation improvements evaluated herein are those that have been initiated to address ,background' growth (i.e., growth and change in the system regardless of the Grow the Force initiative evaluated in this EIS).



Figure 3.8-1 Regional Transportation Network in Vicinity of MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point

Evaluation of transportation networks are often described in terms of Level of Service (LOS). The concept of LOS enables transportation planners and decision-makers the opportunity to evaluate qualitative issues, such as congestion, and correlate them to measurable quantities such as operating speeds and vehicular delays. According to the Highway Capacity Manual 2000, the letters "A" though "F" are used to characterize road networks with "A" representing ideal conditions and "F" representing over-saturated traffic volume conditions.

3.8.1.1 MCB Camp Lejeune/MCAS New River

On-Base Roadways

The October 2007 Transportation Study for MCB Camp Lejeune (Dewberry and Davis 2007) is used to establish baseline information for on-Base traffic and transportation system conditions. This study analyzed the Hadnot Point area, proposed development in the Wallace Creek and Cogdel's Creek areas, and the proposed new Base road. Figures 3.8-2 and 3.8-3 illustrate the general roadway network for MCB Camp Lejeune and MCAS New River. The following on-Base roadways are most likely to be affected by the implementation of the Grow the Force initiative:

- Holcomb Boulevard, a four-lane divided roadway, which has a posted speed limit up to 55 miles per hour and a 2007 Average Daily Traffic count of 30,800 to 35,800 vehicles per day;
- Piney Green Road, a two-lane roadway, which has a posted speed limit up to 45 miles per hour and a 2007 Average Daily Traffic count of 6,500 vehicles per day; and
- Brewster Boulevard, a two lane roadway, which has a posted speed limit of 25 to 45 miles per hour (Dewberry and Davis 2007).

Off-Base Roadways

The main roads in the vicinity of MCB Camp Lejeune and MCAS New River are:

United States Route 17 (US 17, Wilmington Highway), which traverses roughly north-south, connecting the North Carolina cities of Jacksonville and Wilmington (approximately 51 miles to the south of Jacksonville) and New Bern (approximately 36 miles to the north of Jacksonville). There are two points of access to MCAS New River off of US 17: Douglass Gate (which is at the intersection of US 17 and Bonnyman Street/ Douglass Road) and Curtis Road. US 17 in the vicinity of MCB Camp Lejeune and MCAS New River had a 2006 Average Daily Traffic count of 22,000 vehicles per day south of North Carolina Route 24, and 21,000 vehicles per day north of North Carolina Route 24 (North Carolina Department of Transportation [NCDOT] 2008).



Figure 3.8-2 General Roadway Network for MCB Camp Lejeune and MCAS New River-North



Figure 3.8-3 General Roadway Network for MCB Camp Lejeune and MCAS New River-South

- North Carolina Route 24 (Lejeune Boulevard), which traverses roughly east-west, connects the North Carolina cities of Jacksonville and Morehead City (43 miles to the east of Jacksonville) and Fayetteville (105 miles to the west of Jacksonville). Local access to the Mainside area of MCB Camp Lejeune is provided by North Carolina Route 24 via the Main Gate at Holcomb Boulevard and via the Piney Green Gate at Piney Green Road. North Carolina Route 24 has a posted speed limit of 45 to 55 miles per hour and a 2007 Average Daily Traffic count of 20,400 to 37,500 vehicles per day. All commercial (truck) traffic into MCB Camp Lejeune is restricted to the Piney Green Gate. The Main Gate operates 24 hours a day, 7 days a week, however, the Piney Green Gate operates Monday through Friday from 5:00 a.m. to 7:00 p.m. (MCB Camp Lejeune 2008g).
- North Carolina Route 50 traverses generally north-south along the western boundary of the MCB Camp Lejeune's Greater Sandy Run Area. It connects Holly Ridge on the south to Local Route 1105 to the north. Local Routes 1105 and 1107 traverse southwest to northeast and west to east, respectively, forming in part the northern boundary of the Greater Sandy Run Area. The 2006 Average Daily Traffic count along North Carolina Route 50 was 1,400 vehicles per day near the intersection with Local Route 1105 and 4,000 vehicles per day south of US 17 and the village of Holly Ridge (NCDOT 2008).
- North Carolina Route 172, a two-lane arterial roadway with a posted speed limit of 35 miles per hour to 55 miles per hour, runs parallel to the MCB Camp Lejeune eastern boundary and traverses approximately 7.75 miles through the southeastern corner of the Base south of the G-10 Impact Area and provides access to Courthouse Bay and the community of Sneads Ferry. The road was closed to the public in March 2007. The 2006 Average Daily Traffic count for North Carolina Route 172 was 22,700 vehicles per day approximately 4 miles south of its intersection with North Carolina Route 24 and 6,100 vehicles per day at the bridge over the New River (NCDOT 2008).

Capacity Analysis

In order to determine if the Grow the Force initiative would have a negative effect on the baseline transportation conditions, individual roadway or intersection capacity analysis is necessary. For the most part, roadway segments were measured in capacity using the specific Average Daily Traffic volumes provided. Intersections were measured in terms of LOS.

Roadway Segment Capacity Analysis – On-Base Roads

Roadways of concern on MCB Camp Lejeune/MCAS New River and their Average Daily Traffic volumes and remaining capacity are shown in Table 3.8-1. Remaining capacity is calculated based on the

Highway Capacity Manual (Transportation Research Board 2000), which provides a methodology to calculate a roadway's overall capacity depending upon various input factors (e.g., terrain, percentage of truck or bus traffic, speed limit). Capacity is measured in passenger cars per hour (pc/h) which can be converted to vehicles per day.

Roadway	Classification	Roadway Cross-section	Posted Speed Limit (miles per hour)	Average Daily Traffic (vehicles per day) ¹	Remaining Capacity (vehicles per day) ²
Holcomb Boulevard	Arterial	4 lane divided	45	35,800	45,800
Piney Green Road	Arterial	2 lane	35	6,500	75,100
Brewster Boulevard	Arterial	2 lane	25 - 45	-	-

Table 3.8-1 On-Base Roadway Capacity at MCB Camp Lejeune/MCAS New River

Sources: ¹Dewberry and Davis, 2007.

²Calculated using Transportation Research Board 2000 methodology.

Roadway Segment Capacity Analysis – Off-Base Roads

For off-Base roadways in the vicinity of MCB Camp Lejeune/MCAS New River, Table 3.8-2 shows existing volume and remaining capacity, again in accordance with Highway Capacity Manual methodologies (Transportation Research Board 2000).

Roadway	Classification	Roadway Cross-	Posted Speed Limit (miles per hour)	Average Daily Traffic (vehicles per day) ¹	Remaining Capacity (vehicles per day) ²
Rouway	Clussification	4 to 6 lane	noury	per day)	per uuyy
US 17	Freeway	divided	55	34,000	47,600
	Major				
NC 24 (Lejeune Boulevard)	Arterial	6 lane divided	45-55	37,500	44,100
NC 50	Local	2 lane	45	4,000	77,600
NC 172	Arterial	2 lane	35 - 55	4,200	77,400

Table 3.8-2 Off-Base Roadway Capacity in the MCB Camp Lejeune/MCAS New River Vicinity

Sources: 1NCDOT 2008.

²Calculated for this EIS using Transportation Research Board 2000 methodology.

3.8.1.2 MCAS Cherry Point

On-Station Roadways

The most recent on-Station vehicular traffic study for MCAS Cherry Point was completed in 2002 (Gannett Fleming 2002). This study investigated gates, traffic flow, and roadway safety. The MCAS Cherry Point traffic network is shown in Figure 3.8-4. The four main gates providing points of ingress and egress to the Station, their associated roadways, and notable recommendations from this study are as follow:

- Slocum Road Gate is open from 6:00 a.m. to 10:00 p.m. 7 days a week. At the gate, which is approximately one-half mile east of US 70, the road is two lanes inbound with one lane outbound. To alleviate slowing and congestion at this gate, the 2002 study recommended three inbound lanes as well as additional improvements and options (Gannett Fleming 2002). Currently, screening occurs at the gate and with the reduced Force Protection threat level, not every vehicle warrants screening thus allowing traffic to flow quicker. However, when threat levels are elevated, there is increased congestion. Some traffic backup still occurs in the mornings onto US 70 but its duration has been lessened given the faster processing through the gate (Personal communication, Carpenter 2008). At the Slocum Road exit to US 70, Slocum has two outbound lanes with the far right lane dedicated to northbound traffic and the left lane sharing northbound and southbound movements.
- Staff Capehart Gate previously provided school bus access to on-Station housing, but it has been closed. Access from the public side was previously from Catawba Road off of US 70. It can be used for emergency access if the need arises but it is closed on a permanent basis.
- The Main Gate is located 250 feet north of the intersection of Highway 101 and Roosevelt Boulevard. This gate has been improved since the study was conducted. There are outbound lanes (two dedicated westbound, two straight south, and one allowing an eastbound turn onto Highway 101). There are three inbound lanes which include the westbound turn lane from Highway 101. Interchanges are provided before and after the gate sentry station allowing access to the pass and identification office. The morning peak-hour inbound demand traffic is estimated at 1,440 vehicles (Gannet Fleming 2002).
- Gate 6 (Cunningham Gate) is open Monday through Friday from 6:00 a.m. to 8:00 a.m. for inbound traffic only, from 11:00 a.m. to 1:00 p.m. for two-way traffic, and then from 3:00 p.m. to 5:30 p.m. for outbound traffic only. It is closed on weekends. Peak-hour traffic demand is estimated at 1,460 vehicles. The identification check is moved inward approximately 850 feet to help prevent queuing up onto public streets. The queue is approximately 800 feet during the morning peak period (Gannett Fleming 2002). Field observations noted during the 2002 study were that all vehicles traveling westbound on Highway 101 must either turn right into MCAS Cherry Point or turn left onto Cunningham Boulevard towards US 70 with no advance warning for these required turn options (Gannet Fleming 2002). The observations included that drivers travelling eastbound on Highway 101 do not have a protected left turn into MCAS Cherry Point at Cunningham Boulevard (Gannet Fleming 2002).



Figure 3.8-4 General Roadway Network for MCAS Cherry Point including Proposed Slocum Road Realignment and Roosevelt Boulevard Widening

In addition to access points and gates, roadway corridors can be affected by increased traffic due to population increases. Descriptions, traffic volumes, and applicable recommendations from the primary on-Station roadway segments investigated in the most recent traffic study (Gannett Fleming 2002) are as follows:

- Slocum Road. This road provides access eastward from US 70 and intersects with Roosevelt Boulevard in the MCAS Cherry Point cantonment area. It is generally a two lane, open section roadway with side drainage ditches. There are two signalized intersections, one at Alexander Road and the other at Roosevelt Boulevard. East of Alexander Road, Slocum Road crosses Slocum Creek on a two lane 775-ft bridge. In addition to the travel lanes on the bridge, there is a pedestrian/bicycle lane separated from traffic by a jersey-style barrier. This lane is on the southern side of the bridge. Average Daily Traffic counts for Slocum Road are 4,854 vehicles per day inbound (east) as measured at the gate, 6,150 vehicles per day inbound measured at Slocum Creek bridge and 4,166 vehicles per day outbound (westward) measured at the gate, and 5,840 vehicles per day outbound (westward) measured at the Slocum Creek bridge (measured in 1998). Recommendations include widening the existing bridge with an additional bridge structure (Gannett Fleming 2002). Slocum Road has a maximum capacity restriction of 10,000 passengers per day due to explosive safety limitations from the Station's adjacent ammunition bunkers (Personal communication, Carpenter 2008).
- Roosevelt Boulevard. This north-south road serves as the main thoroughfare for the Station. On the Station, the roadway is two lanes in each direction. Between the Main Gate and A Street, there is a median. From A Street to E Street, the roadway is four lanes with additional turning lanes at the intersections. North of E Street, the roadway is a two-lane cross section with turning ,storage' lanes at many of the intersections. There are no traffic volumes available for Roosevelt Boulevard.
- Cunningham Boulevard. Gate 6 is located at Cunningham Boulevard where it meets Highway 101 (Fontana Boulevard), approximately 1,600 feet east of the Main Gate at Roosevelt Boulevard. Cunningham Boulevard is an open-section, divided four-lane roadway (two lanes in each direction). It has been recommended that because Gate 6 sits within the airfield runway safety clear zone, it be permanently closed. If this occurs, Cunningham Boulevard would serve as an internal roadway only, completing the perimeter road connection around the airfield. No roadway segment volumes were provided for Cunningham Boulevard.

Off-Station Roadways

US 70 is the main roadway adjacent to and in the vicinity of MCAS Cherry Point. US 70 traverses across North Carolina from Asheville in the west, through Winston-Salem and Greensboro (following Interstate 40), to Raleigh, Goldsboro, New Bern, past Havelock and MCAS Cherry Point, and on to Morehead City. Figure 3.8-1 illustrates the regional transportation network surrounding MCAS Cherry Point. The corridor predominantly serves through traffic desiring a quick connection between Raleigh, large communities, and the beaches, including truck traffic generated by the deep water port in Morehead City and petroleum and natural gas facilities along the corridor. The NCDOT prepared the "US 70 Access Management Study, Clayton to Morehead City, North Carolina" to evaluate existing operational characteristics and safety concerns along the corridor and develop a conceptual access management plan that reinforces the primary function of this strategic corridor for providing mobility between regional destinations (NCDOT 2005). US 70 runs parallel with the western edge of MCAS Cherry Point from the northwest to the southwest. There are numerous side streets and access driveways off of US 70. Highway 101 (Fontana Boulevard) crosses US 70, proceeds east for access to the Main Gate at Roosevelt Boulevard or Gate 6 at Cunningham Boulevard, and forms the divide between MCAS Cherry Point's southern border and the City of Havelock.

Capacity Analysis

In order to determine if the Grow the Force initiative would have a negative effect on the baseline transportation conditions, individual roadway or intersection capacity analysis is necessary. For the most part, roadway segments were measured in capacity using the specific Average Daily Traffic volumes provided. Intersections were measured in terms of LOS.

Roadway Segment Capacity Analysis – On-Station Roads

Roadways of concern on MCAS Cherry Point and their Average Daily Traffic volumes and remaining capacity are shown in Table 3.8-3. Remaining capacity is calculated based on the Highway Capacity Manual (Transportation Research Board 2000), which provides a methodology to calculate a roadway's overall capacity depending upon various input factors (e.g., terrain, percentage of truck or bus traffic, speed limit). Capacity is measured in pc/h which can be converted to vehicles per day.

Roadway	Classification	Roadway Cross-section	Posted Speed Limit (miles per hour)	Average Daily Traffic (vehicles per day) ¹	Remaining Capacity (vehicles per day) ²
Slocum Road	Arterial	2 lane	35	9,020	72,580
Roosevelt Boulevard	Arterial	4 lane	35 - 45	25,029	56,571
Cunningham Boulevard	Arterial	2 lane	25	16,790	22.310

Table 3.8-3 On-Station	Roadway C	Capacity at MCAS	S Cherry Point
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Note: Slocum Road has a maximum capacity restriction of 10,000 passengers per day due to explosive safety limitations. This maximum capacity restriction would remain in effect until the road is re-aligned.

Cunningham Boulevard capacity based on volume through the Gate 6, and weekday opening of 11.5 hours per day.

Sources: ¹Gannett Fleming 2002 and Personal communication, Carpenter 2008.

² Calculated using Transportation Research Board 2000 methodology.

Roadway Segment Capacity Analysis – Off-Station Roads

In the vicinity of MCAS Cherry Point, the off-Station roadways are shown in Table 3.8-4 with their existing volume and remaining capacity.

Roadway	Classification	Roadway Cross-section	Posted Speed Limit (miles per hour)	Average Daily Traffic (vehicles per day) ¹	Remaining Capacity (vehicles per day) ²
US 70	Major Arterial	4 lane divided	55	32,000	49,600
Highway 101	Arterial	2 lane	45	15,000	66,600

Table 3.8-4 Off-Station Roadway Capacity in the MCAS Cherry Point Vicinity

Sources: ¹NCDOT 2008.

²Calculated using Transportation Research Board 2000 methodology.

3.8.1.3 Public Transportation

BUS TRANSPORTATION

On-Base Bus Transportation, MCB Camp Lejeune. MCB Camp Lejeune offers on-Base shuttle bus service in the Courthouse Bay area and Camp Geiger and Camp Johnson areas. These two bus services run weekday morning and afternoon circuits from 7:00 a.m. to 6:30 p.m. (6:14 p.m. for Geiger/Johnson). There are numerous, conveniently located stops for each bus service. Weekends and holidays (and winter schedule) are adjusted, starting at 10:00 a.m. and finishing at 6:10 p.m., with fewer but still popular destination stops (MCB Camp Lejeune 2008h).

Off-Base Bus Transportation. In the City of Jacksonville, Jacksonville Transit operates a loop bus service from College Street downtown to Henderson Drive, Western Boulevard (northwest), McDaniel Drive, connecting to the Coastal Carolina Community College, the Jacksonville Mall, Onslow Memorial Hospital, to Western Boulevard in the southeast to on-Base Camp Johnson and MCB Camp Lejeune via Butler Drive South. Currently, the Jacksonville Transit provides express service on Fridays and Saturdays to MCB Camp Lejeune with direct service to and from downtown Jacksonville. There are two

commercial bus lines (Greyhound Bus Service and Carolina Trailways) that offer service to and from Jacksonville (City of Jacksonville 2008b).

There is no public transportation system in the City of Havelock.

AIR TRANSPORTATION

Air passenger service is offered at Albert J. Ellis Airport, serving the regional Jacksonville area; Coastal Carolina Regional Airport, near New Bern, serves the regional population where MCAS Cherry Point is located. Both airports are served by Delta and U.S. Airways. The closest major passenger airports are Wilmington International Airport (approximately 60 miles from MCB Camp Lejeune/MCAS New River and 115 miles from MCAS Cherry Point) and Raleigh Durham International (approximately 185 and 135 miles away from MCB Camp Lejeune/MCAS New River and MCAS Cherry Point, respectively).

RAILROAD TRANSPORTATION

According to the 2003 Joint Land Use Study prepared for Onslow County, general rail service to the county was discontinued in the 1990s when the CSX line was abandoned (ECC 2002). The Norfolk Southern railroad, however, does provide service on a DoD line between MCB Camp Lejeune/MCAS New River and MCAS Cherry Point to transport military equipment. The Norfolk Southern line provides service to the MCAS Cherry Point region five times per week, operating Sundays through Fridays (Personal communication, Moss 2008). Just west of MCAS Cherry Point, the Norfolk Southern rail line parallels US 70. This segment of the railroad network runs between Raleigh and Morehead City. To the southwest of MCAS Cherry Point, near the intersection of US 70 and Highway 101, west of Havelock, the railroad has a spur that goes westward to MCB Camp Lejeune. The railroad enters MCB Camp Lejeune after crossing North Carolina Route 24 near Piney Green. Shortly after entering the Base, the rail line splits in two with one rail spur turning north that dead ends north of the Main Gate. The southern spur turns and parallels Holcomb Boulevard until it crosses Sneads Ferry Road and enters the cantonment area of Cogdel's Creek. This railroad service is for freight and heavy equipment, and does not offer passenger service (US Railroad Retirement Board 2008).

MCAS Cherry Point is also served by rail for freight deliveries. The former Beaufort and Morehead Railway spur enters the Station southeast of the Main Gate at Roosevelt Boulevard. At this point, spurs go east toward the flightline area while the main railroad spur runs north. The main spur line crosses Roosevelt Boulevard and then parallels it for a distance until it crosses Slocum Road west of the Roosevelt Boulevard intersection. The railroad spur dead ends north of Slocum Road. The railroad volume is light at one to three trains a week, depending on the time of year. The railroad corridor lacks

any flashing lights or crossing gates. Military police escort the trains onto the Station, clearing traffic at the crossings (Gannett Fleming 2002).

WATER TRANSPORTATION

Vessel movement along the New River at MCB Camp Lejeune/MCAS New River is mostly recreational boating with very limited navigable waters above the Herbert G. Buddy Phillips Bridge at Highway 24/Marine Boulevard. There is little commercial development and access is restricted along this portion of the New River (see Figure 3.8-3) due to it being bounded on both sides by MCB Camp Lejeune. The Intracoastal Waterway traverses the mouth of the New River where it meets the Atlantic Ocean.

The Neuse River flows southeast past New Bern along MCAS Cherry Point, and flows into the Pamlico Sound. Although the Neuse River is much longer and broader than the New River, vessel movement is mostly recreational boater traffic with little to no riverside commercial development in the vicinity of the Station. Large vessel access is limited by water depth and the Neuse River/US 17/Route 55 Bridge about 15 miles upriver, near New Bern.

3.8.2 Environmental Consequences

This section provides a detailed description of the impacts associated with implementation of the alternatives including the No Action Alternative. Factors that were considered to determine the extent of impacts to transportation and traffic include base connectivity, on-Base intersection and segment capacities, and interaction of the on- and off-Base traffic network.

The transportation impacts primarily focus on roadways and are described in the following sections for transportation elements on the Installations and vicinity. The following criteria have been developed to assess the traffic impacts for each of the alternatives:

No Impact – No alterations of traffic patterns and trends would occur as a result of the alternatives.

No Significant Impact – Short- or long-term changes to the traffic patterns and LOS that would not cause a roadway segment or an intersection to fail, as a result of implementing the alternatives. An intersection is said to have failed when it reaches an LOS E or lower.

Significant Impact – An impact would be considered significant if a roadway segment or intersection that had not failed under baseline conditions fails under the alternative.

3.8.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline traffic or transportation services at MCB Camp Lejeune/MCAS New River. However, that does not mean that traffic conditions at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected traffic conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). Heavy traffic conditions on and within the vicinity of the Installation would continue or worsen at major intersections and gates.

The 2007 Transportation and Traffic Study determined an LOS F for all time periods (AM peak, noon, and PM peak) at the Holcomb Boulevard/Sneads Ferry intersection and LOS F for Holcomb Boulevard/Parachute Tower Road during AM and PM peak hours. Also under current conditions, both eastbound and westbound lanes of NC 24 entering the Base through the Main Gate operate at an equivalent LOS F, a wait time of more than 80 seconds per vehicle on average during the AM peak hour. A City of Jacksonville LOS map in 2000 indicated that NC 24 in the vicinity of MCB Camp Lejeune and MCAS New River was an LOS of D (NCDCM 2007). The Jacksonville Metropolitan Planning Organization (MPO) noted that this area operates on some occasions at an LOS of F (Personal communication, Lukasina 2008). It was also noted by the MPO that the intersection of Western Boulevard and US 17 is the busiest intersection in North Carolina east of Interstate 95 (Personal communication, Lukasina 2008). These heavy traffic conditions and intersection failures would continue under the No Action Alternative without the proposed roadway improvements on the Installation. Detailed comparisons of the baseline conditions and transportation improvements proposed under the alternatives are provided in the sections below.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

On-Base Impacts

Proposed construction activities would require delivery of construction equipment and materials to the Installations. However, the projects would occur over several years and only a few would likely occur simultaneously during any one time period. Accordingly, construction traffic would constitute a small portion of the total projected traffic volume in the region. The majority of vehicles for construction activities would be driven to the construction sites and kept onsite for the duration of each project, resulting in only a small increase in vehicle trips. In addition, any increases in traffic volumes associated with construction would be temporary. Even during peak construction periods, impacts to area transportation systems would be negligible. Only minor affects to the congested Main Gate at Holcomb Boulevard would occur during construction since all commercial traffic is required to enter the base through the Piney Green Gate. Minor, temporary impacts to traffic circulation at the Installation would result from increased traffic associated with construction vehicles. In addition, some temporary traffic detours would potentially be required for limited periods around construction sites. If it was found that a new entrance was needed for just construction vehicles, the USMC would evaluate the potential environmental impacts of this need through their NEPA process.

With the Preferred Alternative, the new Base road would provide a connection from NC 24 and two housing areas to the main cantonment area of the Base. Positive improvements in intersection capacity would occur with the construction of this new road. Table 3.8-5 presents the results of the 2007 study projections for the three Holcomb Boulevard intersections which were the only intersections evaluated in the Transportation and Traffic study. This study projected an additional 6,000 Marines, vice the 9,100 that are anticipated at MCB Camp Lejeune/MCAS New River with the Grow the Force initiative. While originally the 6,000 was considered a conservative estimate at MCB Camp Lejeune, the additional 3,100 Marines above this total would represent a 52 percent increase. However, since the new road would provide more options for USMC personnel entering and exiting the Base the additional Marines would not significantly change this conclusion. Under existing conditions, Holcomb Boulevard operates at an average LOS C (Dewberry and Davis 2007).

Intersection Number	ction Der Intersection		Existing 2007		Preferred Alternative	
			Delay	LOS	Delay	LOS
			34.9	С	27.8	С
1	Holcomb Blvd. / Brewster Blvd	Noon	19.5	В	21.2	С
		PM	47.0	D	34.0	С
			#	F	30.2	С
2	Holcomb Blvd. / Sneads Ferry Road	Noon	223.5	F	18.4	В
		PM	#	F	36.5	D
		AM	25.3	С	24.9	С
3	Holcomb Blvd. / Birch Street	Noon	29.3	С	29.8	С
		PM	39.8	D	39.6	D

 Table 3.8-5
 Projected Intersection Capacity

Source: Dewberry and Davis 2007.

Note: The "#" sign in the above table denotes that there were no delay estimates provided for this intersection in the 2007 Dewberry and Davis study.

Eastbound traffic accessing the Base via the Main Gate at Holcomb Boulevard uses a dual lane approach with a single lane approach with overpass for westbound NC 24 traffic. Using an NCDOT approved simulation model calibrated with field monitored data, an estimate of the amount of time a vehicle would wait in line at the gate with the new Base road was projected for 2012. The NCDOT methodology translates the per vehicle delay for traffic at a signal and at a stop sign to an LOS category. A gate functions similarly to a signal in that vehicles accessing the Base are processed or signaled through the security point. An LOS A would exist for a signalized intersection with a per vehicle delay of less than 10 seconds. An LOS of F would exist for a per vehicle delay of greater than 80 seconds. The NCDOT LOS analysis is not exactly the same for a signalized intersection versus an entry gate but is illustrative of the impacts with and without the new Base road. Currently, using the signalized intersection LOS per vehicle approach comparison, both eastbound and westbound lanes entering the Base operate at an equivalent LOS F, greater than 80 seconds per vehicle on average during the AM peak hour. It is estimated that the construction of the new Base road would reduce the gate delay from a projection of 296 seconds for eastbound approach traffic to approximately 10 seconds or roughly an LOS A. The westbound approach delay would not change with construction of the new Base road. Table 3.8-6 summarizes the differences between the AM peak hour vehicular delay estimates for the existing conditions in the 2007 study, projected 2012 delays without construction of the new Base road, and projected 2012 delays with construction of the new Base road.

	Delay (Seconds/Vehicle)					
Scenario	NC 24 Eastbound	NC 24				
	Lanes	Westbound Lanes				
2007 Existing	182.1	122.8				
2012 Future Without						
Road	295.9	521.9				
2012 Future With Road	10.5	521.9*				

Table 3.8-6	AM Peak Hour	Vehicular Delav	Estimates – Main Gate
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Source: Dewberry and Davis 2007.

* Refers to note by Dewberry and Davis 2007 study that the Future Build Westbound delay and queues will closely match the Future No-Build delay/queues because of similar volumes.

The proposed improvements to the Triangle Outpost Gate would not affect traffic or transportation on or off the Installation. This is an existing gate that would only receive minor improvements.

Also under the Preferred Alternative, Brewster Boulevard would be widened from two lanes to four lanes. In addition, a center turning lane and intersection improvements would occur at Stone Street and Holcomb Boulevard. These improvements would be needed to accommodate the projected traffic increase in the Hadnot Point housing area and other proposed infrastructure and facility projects. With these improvements and the anticipated increased traffic, the projected intersection (Holcomb Boulevard/Brewster Boulvard) LOS would improve to C (see Table 3.8-5).

Off-Base Impacts

Under the Preferred Alternative, the majority of the projected increase of Marines would reside off the Installations according to current housing trends. A review of Table 3.8-2 indicates that there is sufficient capacity to handle the increase in traffic associated with this additional increase. The LOS on NC 24 between the Holcomb Boulevard Gate and the connection to the new Base road would improve with a traffic reduction of 30 percent between those areas. The MPO is currently updating its Long Range Transportation Plan (Personal communication, Lukasina 2008). A City of Jacksonville LOS map in 2000 indicated that NC 24 in the vicinity of MCB Camp Lejeune and MCAS New River was an LOS of D (NCDCM 2007). The MPO noted that this area currently operates on some occasions at an LOS of F (Personal communication, Lukasina 2008). It was also noted by the MPO that the intersection of Western Boulevard and US 17 is the busiest intersection in North Carolina east of Interstate 95 (Personal communication, Lukasina 2008). While improvements resulting from the new Base road would reduce Main Gate traffic flow by an estimated 30 percent, it is still anticipated that road segments on Western Boulevard and other network connections (such as US 17 at Western Boulevard) may continue to experience congestion and long wait times due to the additional population travelling to and from the Installations.

The City of Jacksonville and the USMC are working cooperatively to encourage the use of mass transit as a means to reduce existing and potential future traffic. There are possibilities that the existing express service provided by Jacksonville Transit can be expanded in the future (Personal communication, Massey 2008). Discussions between the USMC and the City of Jacksonville have advanced the possibility of using a Park and Ride system so that persons who are properly credentialed could use an express shuttle service to MCB Camp Lejeune and MCAS New River and surrounding on-Base areas.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. With the exception of the Triangle Outpost Gate improvements, no improvements to transportation or roadway systems are proposed under Alternative 3. As described under the Preferred Alternative, the proposed improvements to the Triangle Outpost Gate would not affect traffic or transportation on or off the Installation. This is an existing gate that would only receive minor improvements.

On-Base Impacts

As described under the Preferred Alternative, proposed construction activities would require delivery of construction equipment and materials to the Installations. However, the projects would occur over several years and only a few would likely occur simultaneously during any one time period. Accordingly, construction traffic would constitute a small portion of the total existing traffic volume in the region.

Under Alternative 3, Marines would face considerable delays at multiple intersections across MCB Camp Lejeune. There would continue to be no internal connection from Camp Johnson and Tarawa Terrace to the Main Base without the construction of the new Base road. Similarly, there would be no internal connection to the Main Base from MCAS New River, Camp Geiger, or Camp Devil Dog. All traffic accessing Hadnot Point from Tarawa Terrace, Camp Johnson, MCAS New River and all Base areas west of New River and Northeast Creek would continue to have to leave the Base, travel on congested NC 24, and re-enter the Base at either the Main Gate at Holcomb Boulevard, Piney Green Gate, or the eastern NC 172 Gate (Triangle Gate). The current LOS for NC 24 in the vicinity of Camp Lejeune is an LOS of D (Personal communication, Lukasina 2008). The City of Jacksonville's goal as part of its Local Comprehensive Plan is to have an LOS of C or better on its roadway systems and under current conditions, the LOS is below expectations.

In the 2007 Transportation Study prepared for MCB Camp Lejeune, it was noted that the minimum acceptable on-Base intersection LOS categories were D for signalized intersections and E for critical approaches at unsignalized intersections (Dewberry and Davis 2007). With an LOS of E, the system would experience unstable flow, reduced speeds, and create a traffic atmosphere where comfort and convenience are very poor (Dewberry and Davis 2007). With an LOS of F, the transportation system is operating at a forced or breakdown of flow, traffic volumes exceed capacity, formation of unstable queues occur, and persons in vehicles experience stoppages for long periods of time. Long periods of time are defined as per vehicle delays exceeding 80 seconds at a signalized intersection and per vehicle delays at stop signs exceeding 50 seconds (Dewberry and Davis 2007).

The Hadnot Point area is the hub of Base operations with the Headquarters sited in this area. From this Headquarters, the activities of 50,000 Marines, Navy personnel, civilian employees, and military families are managed and directed (Dewberry and Davis 2007). Most of the major roadways converge on the Hadnot Point area making it a strategic cog in the Base transportation network. Key roadways in this area include Holcomb Boulevard, McHugh Boulevard, and Sneads Ferry Road. Table 3.8-7 presents the Hadnot Point intersection capacity analysis for existing 2007 LOS conditions and those that would be found if the new Base road were not constructed. In this analysis, 2 of the 16 intersections in 2007 baseline conditions operated at an LOS of either E or F; under Alternative 3 without construction of the new Base road, 6 out of 16 would operate at an LOS of E or F in at least one peak hour.

Number Intersection Period Existing Autentanty 5 1 Holcomb Blvd. / Brewster Blvd. AM 34.9 C 86.5 F 1 Holcomb Blvd. / Brewster Blvd. AM 34.9 C 86.5 F 2 Holcomb Blvd. / Sneads Ferry Road M 4 F 4 F 2 Holcomb Blvd. / Birch Street AM 4 F 4 F 3 Holcomb Blvd. / Birch Street Noon 19.8 B 20.0 B 4 Sneads Ferry Road / Louis Street / Piney Green Road AM 36.1 D 61.4 E 5 Sneads Ferry Road / Duncan Street / Lyman Street Noon 19.8 B 20.0 B 6 Sneads Ferry Road / Gonzalez Blvd. Noon 19.4 A 7.1 A 7 McHugh Blvd. / Birch St / Cross Street Noon 10.4 B 11.2 B 8 McHugh Blvd. / Louis Street / N Street Noon 9.0 N/A	Intersection	Technicality	Time	2007 Existing		Alternative 3	
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AM 34.9 C 86.5 F Noon 19.5 B 23.1 C PM 47.0 D 72.8 E AM # F # F PM 40 D 72.8 E AM # F # F PM 38.8 D 55.5 E AM 36.1 D 61.4 E Noon 7.4 A 7.1 A PM 21.3 C 22.6 C Sneads Ferry Road / Duncan Street / Lyman Street Noon 7.4 A 7.1 A PM 16.1 B 25.5 C A MD B 12.0 B PM 16.1 B 12.2				Delay	LOS	Delay	LOS
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Blvd. 10.0 C 20.3 C PM 12.5 B 14.0 B Holcomb Blvd. / Parachute Tower Road ³ AM 211.3 F 737.8 F Noon 27.9 D 41.7 E PM 39.4 F 70.0 F 15 McHugh Blvd. / Duncan Street Noon 15.4 C 19.5 C PM 14.1 B 16.7 C	13	Julian C. Smith Street / Connor Street / Gonzalez	Noon	16.0	C	20.5	C D
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1.5	Blvd.	PM	12.5	B	14.0	B
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AM 22.7 C 38.8 E 15 McHugh Blvd. / Duncan Street Noon 15.4 C 19.5 C PM 14.1 B 16.7 C			PM	39.4	F	70.0	F
15 McHugh Blvd. / Duncan Street Noon 15.4 C 19.5 C PM 14.1 B 16.7 C		McHugh Blvd. / Duncan Street	AM	22.7	С	38.8	Е
PM 141 B 167 C	15		Noon	15.4	С	19.5	С
			PM	14.1	B	16.7	C

 Table 3.8-7 Hadnot Point Area Intersection Capacity Analysis Results

Intersection Number	ection Intersection		200 Exist	7 ing	Altern	native 3
		AM	15.9	В	25.2	С
16	Holcomb Blvd. / Dogwood Street	Noon	27.7	С	33.4	С
		PM	193	R	23.0	С

Table 3.8-7	Hadnot Point Are	a Intersection	Capacity .	Analysis	Results

Notes: N/A – Not Applicable, i.e. movement LOS/Delay could not be reported or was not relevant. *Source*: Dewberry and Davis 2007.

The 2007 traffic analysis based its assumptions that there would be an estimated growth of approximately 6,000 Marines by 2012; under that scenario the area roadway network experienced a degradation of LOS due to the projected growth, 6 out of the 16 intersections failed (Dewberry and Davis 2007). However, the proposed increased number of Marines at MCB Camp Lejeune/MCAS New River under this EIS is approximately 9,100. While originally the 6,000 was considered a conservative estimate at MCB Camp Lejeune, the additional 3,100 Marines above this total represents an increase of approximately 52 percent not considered in the 2007 study; therefore, it is anticipated that the LOS would fail in more than the 6 of 16 intersections analyzed in the Alternative 3 scenario.

While the majority of the intersections would continue to operate at acceptable LOS for the AM, noon, and PM peak hours; it is anticipated that congestion would worsen at Holcomb Boulevard (at Brewster Boulevard), Sneads Ferry Road, Birch Street, and Parachute Tower Road (Dewberry and Davis 2007).

With regard to roadway segments, Alternative 3 would have no change in impacts from what is currently experienced. The important consideration of the segment analysis was the determination of whether a roadways' width is sufficient to carry the traffic without constraint, except for that created by congested intersections. Comparison of the 2007 capacity conditions and Alternative 3, indicate that the roadway segments would operate under capacity but would continue to experience occasional congestion and delays due to the constraint created by intersection limitations (Dewberry and Davis 2007).

The primary entrance into MCB Camp Lejeune is the Main Gate at Holcomb Boulevard which operates 24 hours, 7 days a week. This gate processes the highest volume of traffic entering and exiting the Base and is thus representative of the most critical access issue under Alternative 3. With this alternative, access into the Hadnot Point and surrounding areas through the Main Gate on Holcomb Boulevard would continue to occur using the existing two-lane approach for eastbound NC 24 traffic and a single-lane approach (and overpass) for westbound NC 24 traffic. The current eastbound traffic volumes exceed the field-processing capabilities through this gate creating a large, slow moving queue of vehicles that backs up onto NC 24 in the AM peak hour (Dewberry and Davis 2007). The recorded processing rates for the westbound approach traffic were found to be similar to the eastbound approach but since the overall

demand is much less, queuing issues are not as much of a problem (Dewberry and Davis 2007). Table 3.8-8 presents the AM peak hour vehicular delay estimate for the Holcomb Gate.

noicomb Main Gale						
	Delay (Seconds/Vehicle)					
Scenario	NC 24 Eastbound	NC 24 Westbound				
	Lanes	Lanes				
2007 Existing	182.1	122.8				
Alternative 3	295.9	521.9				

Table 3.8-8 AM Peak Hour Vehicula	r Delay Estimates -		
Holcomb Main Gate			

Source: Dewberry and Davis 2007.

With Alternative 3, the eastbound delay would increase from 182 seconds in 2007 to 296 seconds per vehicle in 2012. The field processing time of approximately 2,200 to 2,400 vehicles per peak hour would continue to be exceeded and worsen (Dewberry and Davis 2007). Westbound approach traffic delays are projected to increase delay time from approximately 123 seconds to 522 seconds per vehicle under Alternative 3 (Dewberry and Davis 2007).

In summary, Alternative 3 does incur several intersection conditions that would be considered significant adverse impacts due to the degradation of LOS, e.g., Holcomb Boulevard and Brewster Boulevard at AM and PM peak hours. Additionally, Alternative 3 does not support the operational needs to interconnect USMC operations on opposite sides of New River and Northeast Creek to Hadnot Point.

Off-Base Impacts

Under Alternative 3, a majority of the projected increase in Marines would live off-Base contributing to the local traffic. Potential impacts off-Base would be similar to those described under the Preferred Alternative. It is anticipated that there is sufficient capacity to handle the increase in traffic associated with the increase in personnel with the understanding that congestion would continue to occur on some occasions. Congestion at the intersection of Western Boulevard and US 17 would continue and worsen with the population increase in the local vicinity. The improvements associated with the new Base road (specifically, a 30 percent reduction in traffic on NC 24 between the Holcomb Boulevard Gate and the new Base road access point) would not be realized.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in
existing facilities and temporary/relocatable buildings already in place. Under this alternative, there would be no improvements to the current transportation network on the installation. The impacts would be the same as those described under Alternative 3. Several intersection conditions that would be considered significant adverse impacts due to the degradation of LOS, e.g., Holcomb Boulevard and Brewster Boulevard at AM and PM peak hours would occur. Additionally, this alternative does not support the operational needs to interconnect USMC operations on opposite sides of New River and Northeast Creek to Hadnot Point.

3.8.2.2 MCAS Cherry Point

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline traffic and transportation systems at MCAS Cherry Point. However, that does not mean that traffic conditions at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected traffic conditions. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). The capacity on Slocum Road would continue to be capped at 10,000 passengers per day due to its proximity to the Ordnance Storage Area. When the cap is exceeded, traffic is rerouted through the City of Havelock, creating additional congestion in the local area and queuing at the Main Gate.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

On-Base Impacts

The Preferred Alternative proposes to re-align approximately 2.1 miles of Slocum Road between US 70 and Slocum Creek and to widen approximately 3.4 miles of Roosevelt Boulevard from the intersection of Cunningham Boulevard (Highway 101) north beyond the Slocum Road and Roosevelt Boulevard intersection. Slocum Road capacity under its current physical design is 72,580 vehicles per day, with an average daily traffic count of 9,020 (Personal communication, Carpenter 2008). However, capacity on Slocum Road is capped to 10,000 passengers per day due to its proximity to the Ordnance Storage Area.

This cap cannot be exceeded or else it would need to meet inhabited building standards for safety associated with the net explosive weight for the stockpiled ordnance.

With the proposed re-alignment of Slocum Road, an additional two-lane bridge would be constructed over Slocum Creek so that there would be two lanes for both east- and west-bound traffic. The impact of the road re-alignment would be beneficial as the newly relocated Slocum Road would be outside the safety zone required by the Ordnance Storage Area, no reduction in stored ordnance would be required, and traffic would not be re-directed into the City of Havelock.

Roosevelt Boulevard would also be widened under the Preferred Alternative to include one additional lane on either side of the roadway. Currently, Roosevelt Boulevard has an available capacity of 56,571 vehicles per day, with an average daily traffic count of 25,029 vehicles per day (Gannett Fleming 2002). The Preferred Alternative would add about 784 active duty Marines and civilians and would not exceed the capacity of Roosevelt Boulevard. Therefore, widening Roosevelt Boulevard would not impact traffic in this area.

Off-Base Impacts

It is estimated that a majority of the Marines and their families would live off the Installation based on a review of current trends in housing. A review of Tables 3.8-3 and 3.8-4 indicates that there is sufficient capacity to handle the increase in traffic associated with this additional personnel arriving and exiting MCAS Cherry Point during peak transportation periods. Due to the proposed beneficial road improvements associated with the Slocum Road realignment, no impacts to the off-Station transportation network from the Grow the Force action is expected. In addition, improvements to the US 70 corridor by NCDOT would further increase the capacity of off-Station roadways (see section 4.0 for further discussion on this project).

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. No traffic or transportation improvements would occur under this alternative.

On-Base Impacts

Alternative 3 would have an adverse impact at the Slocum Road portion of the Station's traffic network. Slocum Road capacity under its current physical design is 72,580 vehicles per day, with an average daily

traffic count of 9,020 (Personal communication, Carpenter 2008). However, capacity on Slocum Road is capped at 10,000 passengers per day due to its proximity to the Ordnance Storage Area. This cap cannot be exceeded or else it would need to meet inhabited building standards for safety associated with the net explosive weight for the stockpiled ordnance. The cap of 10,000 vehicles per day would force traffic to be diverted through the City of Havelock or the amount of ordnance stored in the adjacent Ordnance Storage Area would have to be reduced to maintain safety requirements, neither of which is considered an acceptable option. With minimal traffic growth for this corridor, the 9,020 average daily traffic counts would exceed the network cap. Queuing at the Station's Main Gate would occur but with two guards per lane long delays would typically not occur entering the Station via Roosevelt Boulevard during peak AM hours (Gannett Fleming 2002). No impacts to Gate 6 (Cunningham Gate) would occur with implementation of Alternative 3.

Off-Base Impacts

Alternative 3 would have an adverse impact on local traffic in Havelock if traffic above the 10,000 vehicle per day cap was re-directed through the City of Havelock to the Main Gate at Roosevelt Boulevard. It is probable that the typical experience of not having long delays at the Main Gate would no longer be the case as congestion would occur with long queuing lines for both inbound and outbound traffic. Field observations noted that during the peak PM hour, long delays were observed for outbound traffic at the Highway 101 stoplight and the Roosevelt Boulevard intersection (Gannet Fleming 2002). Outbound traffic prevented from using outbound lanes on Slocum road would lengthen the delays that already occur. The field observations were a delay of approximately 135 seconds without re-directed traffic from an encumbered Slocum Road (Gannet Fleming 2002).

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. No transportation or traffic improvements would occur under this alternative. Impacts to transportation systems on and off the Station would be the same as those described under Alternative 3.

3.8.2.3 Public Transportation Impacts

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline traffic and transportation systems on or in the vicinity of MCB Camp Lejeune, MCAS New River or MCAS Cherry Point. However, that does not mean that traffic and transportation systems in the region have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected traffic and transportation systems. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0). Public transportation systems in place would continue to provide service.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. The Preferred Alternative would result in an increase of about 9,900 Marines and civilians at the three USMC Installations. Regional impacts are expected to be minimal since it is not anticipated that transportation networks between the Installations would be unable to support the limited amount of between-base commuting that might occur. The Military Growth Task Force in North Carolina was organized to evaluate the potential impacts this region might be subject to and transportation networks are part of the evaluation. The Task Force is identifying current and projected service levels, noting shortfalls, and making development recommendations to resolve the issues. Ongoing and continued cooperation between the military and community leaders in this Task Force should assist the communities in responding to this military growth.

AIR TRANSPORTATION IMPACTS

Albert J. Ellis Airport is classified as a non-hub airport by the Federal Aviation Administration (FAA). This designation should not be confused with a "hub" airport, such as Atlanta. The FAA hub classifications are based upon the percentages of enplanements at an airport compared with the total number of enplanements in the United States. A "non-hub" airport is one that enplanes less than 0.24 percent of the nation's enplaned passengers (RSH 2006). The Coastal Carolina Regional Airport also falls into this classification.

All airports derive their customer base from their "primary service area." An airport's primary service area is a defined region for which the airport is the preferred choice amongst prospective customers based upon geographic area (RSH 2006). Although in relative proximity to one another, the airport service area for Albert J. Ellis Airport does not coincide or overlap the Coastal Carolina Regional Airport service area according to the Albert J. Ellis Master Plan (RSH 2006). In terms of busiest airports in North Carolina, Albert J. Ellis Airport is the eighth busiest commercial service airport while the Coastal Carolina Regional Airport is the seventh (RSH 2006). There was a concern expressed during the scoping process that there may be a potential for congestion at either of the airports during the holiday seasons from the increase in personnel associated with the Grow the Force initiative. Fifty percent of the passenger service associated with the Albert J. Ellis Airport is tied to military-related passengers going to or from MCB Camp Lejeune (RSH 2006).

It has been noted in the Ellis Airport Master Plan that airfares and scheduled service have varied widely between 1996 through 2006 (RSH 2006); however, previous studies noted by the Master Plan documented that there was an apparent considerable "leakage" of passengers who could use the Ellis Airport but choose to drive to other airports due to price, service, or schedule availabilities (RSH 2006). It was reported that the Ellis Airport experiences approximately 78 percent leakage to other airports (RSH 2006). Due to the substantially higher fuel costs, than those at the time of the Master Plan update in 2006 and the availability of low-cost airline alternatives at nearby Raleigh Durham International Airport, it is likely that Grow the Force-related passengers would likely either choose or be instructed to select the lowest cost option for airline service to MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point. It is possible that there would be increased congestion at both airports during peak periods of travel such as holidays but it is equally probable those travelers would consider the least cost and more schedule options to travel which the Raleigh Durham International Airport provides.

RAILROAD IMPACTS

With regard to railroad related impacts from either MCB Camp Lejeune/MCAS New River or MCAS Cherry Point, no substantial impacts to the rail system are expected from the Grow the Force initiative. The Norfolk Southern line, in the vicinity of MCB Camp Lejeune, MCAS Cherry Point, and Morehead City is currently operating without constraint and has capacity to meet additional rail service demands for any of the Installations (Personal communication, Moss 2008).

WATER TRANSPORTATION IMPACTS

With regard to water transportation-related affects, there is the potential for limited interruption of recreational use associated with the construction of the bridge over Northeast Creek for the new Base road

at MCB Camp Lejeune or Slocum Creek realignment at MCAS Cherry Point. During construction, barges with equipment, survey boats, and construction crew movements would be working in the vicinity of the new bridge. Since the project involves the construction of a bridge over waters of the U.S., coordination with the U.S. Coast Guard would occur during the permitting process. The project engineers would likely follow similar procedures prescribed by the NCDOT with regard to anchoring and lighting of construction-related vessels and equipment during the construction phase. It is likely that the U.S. Coast Guard would include publication of a Notice to Mariners prior to the construction activities to warn the public about bridge construction. In addition, safety measures marking construction vessels and limited movement of this equipment during construction would incur no substantial impacts to water transportation from either the construction of the bridge at MCB Camp Lejeune or the new bridge at Slocum Creek at MCAS Cherry Point.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. As described in the Preferred Alternative, the Grow the Force initiative would result in an increase of about 9,900 Marines and civilians at the three USMC Installations. The potential impacts to public transportation would be the same as those described under the Preferred Alternative.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. As described in the Preferred Alternative, the Grow the Force initiative would result in an increase of about 9,900 Marines and civilians at the three USMC Installations. The potential impacts to public transportation would be the same as those described under the Preferred Alternative.

3.9 Utilities and Infrastructure

Utilities and infrastructure for this analysis include potable water, wastewater, electricity and telecommunications, and solid waste. Utility system capacity can be identified by the existing infrastructure in place to provide the current utility services, and can be further described in terms of the supply and demand for those utilities.

3.9.1 Affected Environment

The Grow the Force initiative includes an increase in manpower at each of the Installations, which would result in an increase of new residents in the surrounding communities and demand for these resources. On-Base services as well as services within the surrounding counties that could likely receive new residents are addressed. This analysis first focuses on impacts within the boundaries of the Installations then addresses impacts in the surrounding counties associated with a potential increase in residents. This ROI would encompass all or parts of the following counties: Onslow, Carteret, and Craven Counties.

3.9.1.1 MCB Camp Lejeune/MCAS New River

Potable Water

MCB Camp Lejeune/MCAS New River obtains potable water from 69 online groundwater wells on the Installation. These wells pump water from the Castle Hayne Aquifer and supply five water treatment plants (WTPs). In addition, water purchased from the Onslow Water and Sewer Authority (ONWASA) supplies remote areas of the Installation, as well as the Stone Bay/Rifle Ranges distribution system. WTPs analyzed in this EIS include the Holcomb Boulevard WTP, Courthouse Bay WTP, Hadnot Point WTP, Onslow Beach WTP, and the MCAS New River WTP. Existing water lines are present in each of the proposed development areas.

The Holcomb Boulevard WTP has a treatment capacity of 5 million gallons per day (mgd). The estimated average annual demand on the Holcomb Boulevard WTP is 1.5 mgd. The Hadnot Point WTP has a 5 mgd treatment capacity. The estimated average annual demand on the Hadnot Point WTP is 2.15 mgd. The Courthouse Bay WTP has a treatment capacity of 0.8 mgd, and the estimated average annual demand is approximately 0.3 mgd (DoN 2008a). The Onslow Beach WTP is a transient, non-community water system with a 0.25 mgd capacity and an average annual demand of 0.09 mgd. The MCAS New River WTP has a capacity of 3.5 mgd with an average annual demand of 1.0 mgd (DoN 2005). Table 3.9-1 provides a summary of the WTPs and their available capacity.

WTP	Capacity	Current Demand	Available Capacity
Holcomb Boulevard WTP	5 mgd	1.5 mgd	3.5 mgd
Hadnot Point WTP	5mgd	2.15 mgd	2.85 mgd
Courthouse Bay WTP	0.8 mgd	0.3 mgd	0.5 mgd
Onslow Beach WTP	0.25 mgd	0.09 mgd	0.16 mgd
MCAS New River WTP	3.5 mgd	1.0 mgd	2.5 mgd
TOTAL	14.55 mgd	5.04 mgd	9.51 mgd

Table 3.9-1 Available Capacity of WTPs at MCB Camp Lejeune/MCAS New River

Wastewater

Wastewater at MCB Camp Lejeune/MCAS New River is conveyed to the wastewater treatment plant (WWTP) located in the French Creek area. The WWTP's process and sludge handling systems were designed for an average daily flow of 15 mgd, and are currently processing approximately 4 mgd. MCB Camp Lejeune's NPDES permit allows the discharge of up to 15 mgd through a diffuser into the New River. A portion of the wastewater residuals (bio-solids) is applied to approximately 1,700 acres of the Base's forested lands and open areas under MCB Camp Lejeune's Residuals Application Program (DoN 2008a).

Under a separate project (Proposed Wastewater System Modifications and Upgrades), the USMC is constructing a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune (environmental impacts were evaluated in a separate EA; cumulative impacts are assessed in Section 4.0). These upgrades and modifications 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. Additionally, the USMC would construct a new force main from U.S. 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. The USMC also plans to construct a new pump station at the newly established Marine Special Operations Command Complex and near Verona Loop Road. Together these improvements to the wastewater system would improve the efficiency of the existing wastewater collection and treatment system.

MCB Camp Lejeune has approved an agreement to sell excess wastewater treatment capacity to ONWASA, for treatment of off-Base wastewater. Sale of the capacity will occur within the next 12 months; however, at this time ONWASA is still completing necessary infrastructure requirements to tie into MCB Camp Lejeune's wastewater system. The sale of capacity will not exceed 3.5 mgd (Personal communication, Sides 2008).

Electricity and Telecommunications

The Progress Energy Company (formerly Carolina Power and Light Company) is the primary provider of electricity to MCB Camp Lejeune/MCAS New River, with Jones-Onslow Electric Membership Corporation (EMC) as an additional source. Telephone services are provided by Sprint and AT&T (DoN 2008a). MCB Camp Lejeune and MCAS New River currently have a reduced capacity to provide internet and other telecommunications services given the current fiber optic network. The Installations are investigating infrastructure upgrades (i.e., additional conduits) to resolve this issue (Personal communication, Thacker 2008 and DoN 2008a).

Solid Waste

Solid waste that is not reused or recycled is transported to the Base landfill located on Piney Green Road. Solid waste is visually inspected prior to entering the landfill. Waste that can be recycled is diverted to one of several recycling facilities: materials recovery, compost recycling, wood waste recycling, and construction and demolition debris recycling. The rate of solid waste disposal at MCB Camp Lejeune is rather variable, but averages approximately 3,950 tons per month (DoN 2008a).

The permitted capacity of the on-Base landfill is 629,000 cubic yards and covers 11 acres in surface area. The Base landfill is divided into five phases, with each phase expected to provide capacity for 5 years of waste. Phase I of this landfill was used from 1998 to 2004. Phase II has been in operation since 2004 and is expected to close around 2010. Phase III of the landfill is expected to be ready in 2010, and should accommodate another 5 to 6 years of solid waste disposal capacity. Phases IV and V would be constructed when the previous phase nears its capacity. The Base landfill is expected to remain open until roughly 2030 (DoN 2008a).

3.9.1.2 MCAS Cherry Point

Potable Water

MCAS Cherry Point obtains potable water from groundwater wells on the Installation from the Castle Hayne Aquifer. There are 25 separate wells at MCAS Cherry Point and one WTP. The WTP has a treatment capacity of 6 mgd. The estimated average annual demand on the WTP is 3.2 mgd (DoN 2008b).

Wastewater

Wastewater at MCAS Cherry Point is conveyed to an on-Station WWTP that discharges to the Neuse River. The plant's process and sludge handling systems were designed for an average daily flow of 3.5 mgd, and are currently processing approximately 2 mgd. Treated sludge (not to exceed 350 dry tons) from the plant is applied to sites along the runway clear zones at MCAS Cherry Point. Additionally, approximately 5 percent of the WWTP discharge is used to irrigate the golf course. MCAS Cherry Point

recently upgraded the existing WWTP, reducing the level of nitrogen discharged to the Neuse River (DoN 2008b).

Electricity and Telecommunications

The Progress Energy Company provides power directly to MCAS Cherry Point through three feed lines and two delivery substations, one located at Slocum Road and Roosevelt Boulevard and the other located at NC 101. Telecommunication infrastructure on-Station is primarily owned by the Station. MCAS Cherry Point is currently expanding on-Station capacity for telecommunications (DoN 2008b).

Solid Waste

The Facilities Maintenance Department at MCAS Cherry Point is responsible for the collection of waste and recyclables from all the on-Station areas, excluding the housing areas which have been privatized. The BMAKK Corporation is responsible for maintaining a Transfer Station and transporting the waste to the Tuscarora Regional Landfill. This landfill is operated by the Coastal Regional Solid Waste Management Authority and has a conservative, estimated operating capacity until 2020. In 2007, the landfill received approximately 231,000 tons of solid waste, of which 8,216 tons of solid waste was received from MCAS Cherry Point (DoN 2008b).

Recyclables are taken to the Regional Sorting Material Recovery Facility, operated by the East Carolina Vocational Center. In 2007, the Station generated 5,554 tons of recycled materials (DoN 2008b).

3.9.1.3 Off-Base Utilities and Infrastructure

Surrounding counties potentially affected by the Grow the Force initiative include: Onslow, Carteret, and Craven Counties. For the purposes of utilities and infrastructure analysis, the most populated municipalities within each county were chosen to represent the areas most likely to receive additional residents. In addition, some municipalities were identified during scoping and community planning meetings as areas of concern and have been included in the analysis. Table 3.9-2 provides a summary of utilities and infrastructure within the surrounding counties.

Potable Water

Onslow County: Onslow County is provided potable water by ONWASA from two WTPs that draw from the Castle Hayne Aquifer. The City of Jacksonville operates its own WTP which draws from the Upper and Middle Cretaceous Sand Aquifers. None of the WTPs currently have capacity concerns; however, the Jacksonville WTP is in the process of upgrading to 9 mgd by 2010 (Personal communication, Holder 2008). The Jacksonville WTP upgrade will receive water from the Castle Hayne Aquifer.

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		Table 3.9-	-2 Utilities	and Infrastri	ucture within	the ROI			
	Potabl	e Water		Waste	water	Electricity		Solid N	'aste
Counties and Municipalities included in analysis	Source	Average Daily Demand	Capacity	Average Flow Rate	Maximum Capacity	Provider	Capacity Concerns	Landfill	Capacity
Onslow									
County-wide system	Castle Hayne Aquifer	3.3 mgd	10 mgd	0.549 mgd	0.841 mgd				
Half Moon									
Piney Green	On country exertam			On county ex	stam			Onslow	12 to 13
Pumpkin Center				vir vouiny iv	IIIMS	Progess Energy Iones_Onelow FMC	None	County	years
Sneads Ferry						JUIES-CIEROW FINIC		Landfill	(2020)
City of Jacksonville	Upper and Middle Cretaceous Sand Aquifers	4.7 mgd	6.3 mgd	4.7 mgd	6 mgd				
Carteret									
County-wide system	Castle Hayne Aquifer	0.3 mgd	0.697 mgd	no county-w	vide system				
Beaufort	Castle Hayne Aquifer	0.6 mgd	1 mgd	0.7 mgd	1.5 mgd	Ę			
Atlantic Beach	Castle Hayne Aquifer	0.474 mgd	2.5 mgd	Individual s	septic tanks	Frogress Energy Jones-Onslow EMC		Tuscarora	12 years
Emerald Isle	Private source - Bogue Banks Water Corporation	1.48 mgd	2.7 mgd	Individual s	septic tanks	Carteret-Craven Electric Cooperative Tideland EMC	None	Kegional Landfill	(2020)
Morehead City	Castle Hayne Aquifer	1.4 mgd	2.5 mgd	1.3 mgd	1.7 mgd				
Newport	Castle Hayne Aquifer	0.43 mgd	0.9 mgd	0.45 mgd	0.6 mgd				
Craven									
County-wide system	Black Creek Aquifer	1.9 mgd	2.6 mgd	no county-w	vide system	Ę			
City of Havelock	Castle Hayne Aquifer	1.2 mgd	2.8 mgd	1.45 mgd	2.24 mgd	Progress Energy		Tuccontor	
New Bern	Black Creek Aquifer	3.98 mgd	7 mgd	4.5 mgd	6.5 mgd	Carteret-Craven	None	Regional	12 years
River Bend	Castle Hayne Aquifer	0.285 mgd	0.4 mgd	0.185 mgd	0.31 mgd	Electric Cooperation Tideland EMC		Landfill	(2020)
Trent Woods	Service from New Berr			Service fron	n New Bern				

Carteret County: Carteret County obtains its potable water supply from the Castle Hayne Aquifer. There are two county-wide water systems as well as town operated and privatized water systems (Personal communication, Mangold 2008). Beaufort, Atlantic Beach, and Newport each operate their own WTP. Emerald Isle and Indian Head receive water service from a private entity, Bogue Banks Water Corporation. Bogue Banks Water Corporation has a WTP but it is not used since the water is treated at the wells. Morehead City does not have a WTP as the water is also treated at the wells. There are no potable water supply concerns within the county or any of the selected municipalities.

Craven County: Craven County has a county-wide system that obtains water from the Black Creek Aquifer. No WTP is needed since water is treated at the wells (Personal communication, Hayes 2008). The City of Havelock has one WTP which draws from the Castle Hayne Aquifer (Personal communication, Laudat 2008). New Bern draws from the Black Creek Aquifer and water is treated at the wells (New Bern 2008). River Bend draws from the Castle Hayne Aquifer (Personal communication, Masengill 2008). The town of Trent Woods receives potable water service from New Bern (Personal communication, Woolard 2008). There are no capacity issues with the potable water supply in the county or any of the selected municipalities.

Wastewater

Onslow County: County-wide wastewater service is provided by ONWASA which operates four WWTPs. Half Moon, Piney Green, Pumpkin Center, and Sneads Ferry all utilize the county-wide system. The City of Jacksonville has its own WWTP with a current maximum capacity of 6 mgd. Jacksonville has plans to upgrade the WWTP to 9.3 mgd (Personal communication, Powell 2008). ONWASA has an agreement to purchase excess wastewater treatment capacity from MCB Camp Lejeune's WWTP, for an additional 3.5 mgd of capacity. There are currently no capacity concerns with the county-wide system or the system in Jacksonville.

Carteret County: Carteret County does not own or operate a wastewater collection or treatment system. Wastewater disposal and treatment is provided by municipally-owned systems, public or private package treatment systems, and individual septic-tank systems (DoN 2003a). Atlantic Beach and Emerald Isle are on septic tanks or package treatment systems (Personal communication, Brodie 2008). Beaufort, Morehead City, and Newport each have a WWTP. Beaufort and Morehead City are both constructing another facility, although there are currently no capacity concerns.

Craven County: Craven County does not have a county-wide wastewater system. The county relies on individual septic systems or other municipally-operated systems for sewage disposal (Personal communication, Coombs 2008). The Cities of Havelock, New Bern, and River Bend each operate a municipally-owned WWTP. Trent Woods receives wastewater service from New Bern. The City of

Havelock has a WWTP with a maximum capacity of 2.24 mgd, but is only permitted to discharge 1.9 mgd of treated wastewater (Personal communication, Ebron 2008). There are no current capacity concerns.

Electricity and Telecommunications

Progress Energy is the main electrical provider for the State of North Carolina and provides service to all the surrounding counties. Progress Energy also sells power to smaller, local EMCs which then provide energy to residents and commercial businesses. See Table 3.9-2 for specific providers within each county. There are currently no electrical capacity issues with any of the providers (Personal communication, Brooks 2008; Joplin 2008; Williams 2008). Most of the providers prepare long-term and short-term plans in order to continue to provide electricity to all residents and business owners. Telecommunications service is provided by Sprint, Embarq, AT&T, Time Warner, and Charter Communications (Personal communications, Brodie 2008).

Solid Waste

Coastal Regional Solid Waste Management Authority provides solid waste service to Carteret and Craven Counties and operates the Tuscarora Regional Landfill. During FY07, the landfill accepted 231,000 tons of municipal solid waste and construction and demolition debris. The landfill has capacity and is permitted to operate until 2020 (Personal communication, Hardison 2008). Onslow County operates its own landfill and receives approximately 150,000 tons of waste per year. The landfill has 12 to 13 years of capacity remaining (Personal communication, Horne 2008).

3.9.2 Environmental Consequences

This section provides a detailed description of the impacts associated with implementation of the alternatives including the No Action Alternative at each of the Installations as well as within the surrounding communities. The analysis compares current utility usage for applicable functions with anticipated future demands to determine the extent of potential impacts.

3.9.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline utility consumption or demand at MCB Camp Lejeune/MCAS New River. However, that does not mean that utility consumption at MCB Camp Lejeune/MCAS New River has not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be

implemented in the future that have affected utility consumption. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Population changes projected for the Grow the Force initiative were used for forecasting utility demands. The initiative would result in a permanent increase of 7,177 Marines and civilians at MCB Camp Lejeune (does not include transient formal school students) and 1,411 Marines and civilians at MCAS New River. USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of dependents associated with the personnel increase (USMC 2007) (Table 3.9-3). For civilians, the same multipliers were applied to the equivalent civilian grade. Based on a review of recent trends in military personnel living on- and off-Base (Salvetti 2008), the following assumptions were used to project the number of Marines and their dependents living on- and off-Base:

- MCB Camp Lejeune 17 percent of families live in on-Base privatized housing, 83 percent live in off-Base housing.
- MCAS New River 13 percent of families live in on-Station privatized housing, 87 percent live in off-Station housing.

All civilians were evaluated as living off-Base. The proportion of Marines and dependents living on-Base is low because of a current lack of available housing. Table 3.9-3 provides the projected increase of Marines and their dependents at each Installation and the breakdown of those expected to live on and off of the Installations. These estimates were used to determine the potential impacts to utilities.

Potable Water

Using a conservative residential average daily water consumption rate of 80 gallons per day (gpd) per person (Personal communication, Ashton 2009), the additional 2,292 Marines and their dependents (1,983 at MCB Camp Lejeune and 309 at MCAS New River) residing on-Base under the Grow the Force initiative would cumulatively create a demand for an additional 183,360 gpd at MCB Camp Lejeune and MCAS New River.

Under the Preferred Alternative, the Courthouse Bay WTP, Onslow Beach WTP, Hadnot Point WTP, and Holcomb Boulevard WTP would be demolished and replaced with one new WTP with a 12-mgd capacity.

	P	rojected Increas	se	Residing		
	Marines	Dependents	Total	On-Base	Off-Base	
MCB Camp Lejeune						
Active Duty	6,218	5,449	11,667	1,983	9,684	
Civilians	959	1,736	2,695	0	2,695	
Subtotal	7,177	7,185	14,362	1,983	12,379	
MCAS New River						
Active Duty	1,267	1,109	2,376	309	2,067	
Civilians	144	262	406	0	406	
Subtotal	1,411	1,371	2,782	309	2,473	
TOTAL	8,588	8,556	17,144	2,292	14,852	

Table 3.9-3 Projected Increase for Utility Consumption MCB Camp Lejeune/MCAS New River

The new 12-mgd WTP and the MCAS New River WTP would have sufficient capacity to support the current (5 mgd, see Table 3.9-1) and increased demand (183,360 gpd) for potable water. New distribution lines along Marines Road would need to be installed to supply the Onslow Beach and Courthouse Bay water systems. Proper coordination with the NCDENR, Public Water Supply Section would be conducted as needed to obtain a Water Connection Permit.

Wastewater

The impact of the influx of military personnel and family members would be an increased demand for wastewater disposal. The advanced WWTP located in the French Creek area of MCB Camp Lejeune currently processes approximately 4 mgd even though the treatment plant's process and sludge handling systems were designed for an average daily flow of 15 mgd. Assuming that the average quantity of wastewater discharged is 95 percent of the volume of potable water consumed (Water Resources and Environmental Engineering 1979); the additional 2,292 people would discharge approximately 174,192 gpd. This amount of discharge represents 4 percent of the current average daily wastewater discharge to the wastewater treatment plant.

The USMC is planning a series of wastewater system upgrades and modifications (under a separate action) that would further improve the existing wastewater collection and treatment system. These upgrades and modifications would facilitate the ability of MCB Camp Lejeune to meet the increasing demands on the Base wastewater disposal infrastructure resulting from planned population growth.

The proposed new facilities would require connections to the existing force main that transports wastewater to the main treatment plant in French Creek, which services both MCB Camp Lejeune and

MCAS New River. If needed, the Base would coordinate with the NCDENR, Division of Water Quality, Non-Discharge Branch to obtain a Non-Discharge Sewer Extension Permit.

Electricity and Telecommunications

The additional personnel at the Installations would utilize the current electricity and telecommunication systems in place. MCB Camp Lejeune and MCAS New River are currently experiencing capacity issues with respect to telecommunications and internet; however, the Installations have plans to add additional fiber optic conduits (under a separate action). The capacity to provide internet at the new or renovated facilities could be reduced until these upgrades on the Installations are complete. Specific electrical and telecommunications requirements for the proposed facilities have not been determined, but given that MCB Camp Lejeune and MCAS New River are working to identify upgrades to the existing infrastructure, any increase in demand for these services would be expected to be met.

Solid Waste

MCB Camp Lejeune and MCAS New River both dispose of solid waste at the Base landfill on Piney Green Road. According to the USEPA, the national average for waste generation per person is approximately 0.0022 tons (4.4 pounds) of waste per person per day (USEPA 2007). Using this estimate, the increase in solid waste generated for the 2,292 people would be 1,840 tons (3.7 million pounds) per year or 153 tons per month.

Currently, the landfill receives an average of 3,950 tons of waste per month. The projected increase would represent an approximate four percent increase. The Base landfill is divided into five phases, with each phase expected to provide the capacity of 5 years of waste (which would equate to over 237,000 tons according to the current average disposal). The Base is currently operating in Phase II which is expected to reach capacity in 2010. MCB Camp Lejeune is planning for the construction of Phase III which would accommodate another 5 to 6 years of solid waste disposal. Phases IV and V would be constructed when the previous phase nears its capacity. The Base landfill is expected to remain open until approximately 2030 and the projected increase in solid waste would not affect operation of the phases. It is anticipated that the landfill would have sufficient capacity to support the additional solid waste produced (DoN 2008a).

Any demolition materials that are recyclable would be separated out of the waste stream and taken to the construction and demolition debris facility on-Base to be crushed into manageable-sized aggregate and riprap for later use in military construction and maintenance projects. Where it is practicable, tree debris from site clearing would be taken to the wood waste recycling facility where a tub grinder would grind wood into manageable sized wood chips for use in landscaping projects or for sale to private companies as a fuel source.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. The increased demand on the utility systems with respect to the additional Marines and dependents living on-Base would be the same as that described for the Preferred Alternative. Specifically, an additional 183,360 gpd of potable water would be required, approximately 174,192 gpd of wastewater would be discharged, and 1,840 tons of solid waste per year would be generated. The existing utility systems at the Installations would be expected to handle the increased demand. However, improvements to utilities (specifically the demolition of four WTPs and the construction of one new WTP) under the Preferred Alternative would not occur.

Potable Water

The additional demand of 183,360 gpd at MCB Camp Lejeune and MCAS New River would not impact the ability of the Installations to provide potable water. The cumulative available capacity at the Installations (9.51 mgd, see Table 3.9-1) would sufficiently accommodate this increase in demand.

Wastewater

The additional 2,292 people would discharge approximately 174,192 gpd of wastewater. This amount of discharge represents 4 percent of the current average daily wastewater discharge to the wastewater treatment plant. As described under the Preferred Alternative, the USMC is planning a series of wastewater system upgrades and modifications (under a separate action) that would further improve the existing wastewater collection and treatment system. These upgrades and modifications would facilitate the ability of MCB Camp Lejeune to meet the increasing demands on the Base wastewater disposal infrastructure resulting from planned population growth.

Electricity and Telecommunications

The potential impact to electricity and telecommunications would be the same as that described under the Preferred Alternative.

Solid Waste

The increase in solid waste associated with the Grow the Force initiative would be the same as that described under the Preferred Alternative. No impacts to the Installation's ability to meet solid waste service are anticipated.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. The increased demand for utility services would be the same as that described under the Preferred Alternative and Alternative 3. Specifically, an additional 183,360 gpd of potable water would be required, approximately 174,192 gpd of wastewater would be discharged, and 1,840 tons of solid waste per year would be generated. The existing utility systems at the Installations would be expected to handle the increased demand.

3.9.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline utility consumption or demand at MCAS Cherry Point. However, that does not mean that utility consumption at MCAS Cherry Point has not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected utility consumption. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads. The Grow the Force initiative would result in an additional 784 Marines at MCAS Cherry Point as well as their dependents.

Population changes projected for the Grow the Force initiative were used for forecasting utility demands. The initiative would result in a permanent increase of 784 Marines and civilians at MCAS Cherry Point. USMC-wide demographic data representing dependents associated with Marines by grade were used to develop multipliers and calculate an estimated number of dependents associated with the personnel increase (USMC 2007) (Table 3.9-4). For civilians, the same multipliers were applied to the equivalent civilian grade. Based on a review of recent trends in military personnel living on- and off-Station

(Salvetti 2008), the following assumption was used to project the number of Marines and their dependents living on- and off-Station: 30 percent of families live in on-Station privatized housing, 70 percent live in off-Station housing. All civilians were evaluated as living off-Station. Table 3.9-4 provides the projected increase of Marines and their dependents and the breakdown of those expected to live on and off of the Station. These estimates were used to determine the potential impacts to utilities.

	Pr	ojected Increas	se	Resi	ding
	Marines	Dependents	Total	On-Base	Off-Base
MCAS Cherry Point					
Active Duty	565	496	1,061	318	743
Civilians	219	396	615	0	615
TOTAL	784	892	1,676	318	1,358

 Table 3.9-4 Projected Increase for Utility Consumption MCAS Cherry Point

Potable Water

MCAS Cherry Point has one WTP with a treatment capacity of 6 mgd. Using a conservative residential average daily water consumption rate of 80 gpd per person (Personal communication, Ashton 2009), the additional 318 personnel would create a demand for an additional 25,440 gpd at MCAS Cherry Point. The average demand for the WTP is approximately 3.2 mgd and the additional personnel would add less than one percent in additional demand, which could easily be accommodated. An upgrade to the WTP is proposed (core project) that would further alleviate any potential strain on the system.

Existing water lines are present at each of the proposed development areas and have sufficient capacity to serve the proposed facilities for domestic water requirements. Proper coordination with the NCDENR, Public Water Supply Section would be conducted as needed to obtain a Water Connection Permit.

Wastewater

With the influx of military personnel and family members, there would be an increased demand for wastewater disposal. The WWTP at MCAS Cherry Point is permitted to discharge an average of 3.5 mgd to the Neuse River; however, the actual annual average daily discharge flow is approximately 2 mgd. Assuming that the average quantity of wastewater discharged is 95 percent of the volume of potable water consumed (Water Resources and Environmental Engineering 1979); the additional 318 personnel residing at the Station would discharge approximately 24,168 gpd. This amount of discharge represents approximately one percent of the average daily flow of the WWTP at MCAS Cherry Point; therefore, no impacts to wastewater capacity are expected.

The proposed facilities would require connections to the existing force main that transports wastewater to the wastewater treatment plant located on the Station. If needed, MCAS Cherry Point would coordinate

with the NCDENR, Division of Water Quality, Non-Discharge Branch to obtain a Non-Discharge Sewer Extension Permit.

Electricity and Telecommunications

The additional personnel at the Station would utilize the current electricity and telecommunication systems in place. There are currently no capacity issues with the services on-Station and none are expected with the increase in personnel.

The proposed facilities would require connections to the electricity and telecommunications lines in the vicinity of the proposed project areas. Specific electrical and telecommunications requirements for the proposed facilities have not been determined, but given there are currently no issues related to capacity or supply an increase in demand for these services would be met by existing infrastructure.

Solid Waste

The incoming personnel would increase the number of people residing at the Station by 318. The USEPA estimates that the average person generates approximately 0.0022 tons (4.4 pounds) of solid waste per day (USEPA 2007). Using this USEPA estimate, the increase in solid waste would be 255 tons (510,708 pounds) per year. Since there are no known capacity issues regarding the Solid Waste Transfer Station at MCAS Cherry Point or the local Tuscarora Regional Landfill, the additional solid waste generated by the additional personnel and their dependents living on-Station would not be expected to exceed landfill capacities.

Solid waste generated during the construction, operation, and maintenance of the facilities would be disposed of at the Solid Waste Transfer Station before being transferred to the Tuscarora Regional Landfill or the on-Station Land Clearing and Inert Debris Landfill. Several types of materials would be recycled from office operations and would not become solid waste: paper, toner cartridges, compact disks (read-only memory), aluminum cans, glass containers, steel and bi-metal cans, and textiles. Metals and brass from spent ammunition cartridges would be recycled and would not become solid waste from operation of the facilities. Additionally, during the construction phase, any materials from site-grading activities that are recyclable would be separated out of the waste stream.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. The increased demand on the utility systems with respect to the additional Marines and dependents living

on-Station would be the same as that described for the Preferred Alternative. Specifically, an additional 25,440 gpd of potable water would be required, approximately 24,168 gpd of wastewater would be discharged, and 255 tons of solid waste per year would be generated. No capacity issues are anticipated for any of the utility systems with the increased demand. Under this alternative, an upgrade to the WTP is proposed (core project) that would further alleviate any potential strain on the system.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. The increased demand on the utility systems with respect to the additional Marines and dependents living on-Station would be the same as that described for the Preferred Alternative. Specifically, an additional 25,440 gpd of potable water would be required, approximately 24,168 gpd of wastewater would be discharged, and 255 tons of solid waste per year would be generated. No capacity issues are anticipated for any of the utility systems with the increased demand.

3.9.2.3 Off-Base Utilities and Infrastructure

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline utility consumption or demand in the communities surrounding MCB Camp Lejeune, MCAS New River, or MCAS Cherry Point. However, that does not mean that utility consumption in the region has not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected utility consumption. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads on the Installations.

Population changes projected for the Grow the Force initiative were used for forecasting utility demands. The initiative would result in a permanent increase of 7,177 Marines and civilians at MCB Camp Lejeune (does not include transient formal school students), 1,411 Marines and civilians at MCAS New River, and 784 Marines and civilians at MCAS Cherry Point as well as their associated dependents. As discussed with Sections 3.9.2.1 and 3.9.2.2, multipliers were used to project the number of dependents associated with the increased personnel and a breakdown of the Marines and their dependents expected to live on and off the Installations was developed based on a review of recent trends at each Installation (Salvetti 2008). All civilians were evaluated as living off the Installations. Table 3.9-5 provides a summary of the projected increase of Marines and their dependents and the breakdown of those expected to live on and off the Installations.

	Р	rojected Increas	e	Resi	ding
	Marines	Dependents	Total	On-Base	Off-Base
MCB Camp Lejeune					
Active Duty	6,218	5,449	11,667	1,983	9,684
Civilians	959	1,736	2,695	0	2,695
Subtotal	7,177	7,185	14,362	1,983	12,379
MCAS New River					
Active Duty	1,267	1,109	2,376	309	2,067
Civilians	144	262	406	0	406
Subtotal	1,411	1,371	2,782	309	2,473
MCAS Cherry Point					
Active Duty	565	496	1,061	318	743
Civilians	219	396	615	0	615
Subtotal	784	892	1,676	318	1,358
TOTAL	9,372	9,448	18,820	2,610	16,210

Table 3.9-5 Projected Increase for Utility Consumption All Installations

The current distribution of Marines and their dependents residing off-Base by zip code of residence was used to project the number of Marines and dependents relocating to each county under the Grow the Force initiative (Personal communication, Fleming 2008). Standard multipliers (as described in Section 3.9.2.1 and 3.9.2.2) were used to project the amount of potable water that would be used, as well as wastewater and solid waste generated per person (Table 3.9-6).

Location	Percent of Off- Base Increase	Projected Increase Off- Base	Projected Potable Water Usage (gpd)	Projected Waste Water (gpd)	Projected Solid Waste (tons per year)
Onslow County	74.1	12,008	960,669	912,636	9,643
Craven County	20.6	3,339	267,141	253,784	2,681
Carteret County	1.9	311	24,899	23,654	250
Other ¹	3.4	551	44,091	41,886	443
Total ROI	100	16,210	1,296,800	1,231,960	13,017

Table 3.9-6 Projected Estimates for Off-Base Utilities Consumption

Notes:

¹ A small number of Marines and dependents live in ten Other counties throughout North Carolina that are not contiguous with the installations. Since the number of individuals living in each of these counties is so small, detailed analysis was not performed for these counties.

Under the Preferred Alternative there would be an increase in demand for utilities and infrastructure within the surrounding communities. The increase in personnel associated with the Grow the Force initiative would occur as a phased approach over several years; thus allowing local communities to respond as needed to the increase in demand for potable water, wastewater treatment, electricity, telecommunications, and solid waste disposal. Using the assumptions described above, approximately 16,210 additional people would reside within the surrounding communities. This would equate to an additional demand of 1,296,800 gpd of potable water, the discharge of 1,231,960 gpd of wastewater, and the generation of 36 tons of solid waste per day (13,017 tons per year) over the ROI. The projected demand for utilities cannot be broken down into individual municipalities, therefore, as a worst-case scenario each municipality was reviewed for its ability to support the total projected increase for the county (see Table 3.9-2 for individual municipality current demand and capacity data).

With the construction of on-Base housing at MCB Camp Lejeune under the Preferred Alternative, it is likely that as the housing is completed personnel associated with this action would relocate from off-Base housing into on-Base housing thus reducing the demand on the systems in the surrounding counties (specifically Onslow County). The growth on and off-Base would be phased in, allowing utility providers sufficient time to plan and accommodate for the increased demand in service.

Potable Water

An additional demand of 1,296,800 gpd (1.296 mgd) of potable water within the ROI would occur as a result of the Grow the Force initiative. This demand would be spread over the ROI and impacts to an individual county system are not expected. The projected increase in Onslow County would require approximately 14 percent of the remaining capacity of the county-wide system (approximately 6.7 mgd currently available). The projected increase in Craven County would require approximately 38 percent of

the remaining capacity of the county-wide system (approximately 0.397 mgd currently available). The projected increase in Carteret County would require approximately 6 percent of the remaining capacity of the county-wide system (approximately 0.7 mgd currently available). The major municipalities in each of these counties also operate their own WTP providing additional potable water sources within the ROI. The projected increase in demand for potable water was also compared to each of these municipal systems in the same manner as the comparisons to the county-wide systems. With the exception of River Bend in Craven County, each municipal system could support the projected increase for the county. A potential impact on potable water could occur in River Bend if the entire projected increase (3,339 people) moved to this area. However, this is an unlikely scenario. Each of the county-wide systems and all but one of the municipal systems has capacity to accommodate the projected potable water demands and no impacts within the ROI are expected.

Wastewater

Approximately 1,231,960 gpd (1.231 mgd) of additional wastewater would be discharged across the ROI. The projected increase in wastewater discharge for Onslow County (0.912 mgd) would exceed the current available capacity of the county system (approximately 0.292 mgd is available). However, ONWASA has an agreement to purchase excess wastewater treatment capacity from MCB Camp Lejeune's WWTP for an additional 3.5 mgd of capacity. Jacksonville also operates its own WWTP and has plans to upgrade the capacity to 9.3 mgd. With these future changes, the increased demand is not likely to impact wastewater treatment. As with potable water, there is a potential impact to the wastewater system in River Bend (Craven County) if the entire projected increase (3,339 people) moved to this area. This would be an unlikely scenario and an impact is not anticipated. All of the other county and municipal systems could handle the projected additional discharge.

Electricity and Telecommunications

Progress Energy Company is currently the main provider of electricity within the ROI. Each county also has several smaller suppliers who purchase electricity from Progress Energy Company. None of the power providers have existing capacity issues within the ROI and none expect impacts associated with growth in the area. The phased in approach to personnel increases would allow power providers sufficient time to plan and accommodate for the increased demand of service.

Solid Waste

Approximately 36 tons of solid waste per day would be generated from the increase in residents within the ROI. Solid waste within the ROI is taken to Tuscarora Regional Landfill or the Onslow County Landfill. The projected increase in solid waste to the Tuscarora Regional Landfill would represent a 1.5 percent increase. The projected increase in solid waste to the Onslow County Landfill would represent a 6

percent increase. Both landfills currently have 12 to 13 years capacity and these increases are not anticipated to significantly alter capacity or planning at either landfill.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. The increased demand for utility services in the surrounding communities would be the same as described for the Preferred Alternative. Specifically, an additional 1,296,800 gpd of potable water would be required, approximately 1,231,960 gpd of wastewater would be discharged, and 13,017 tons of solid waste per year would be generated. Under this Alternative, additional on-Base housing would not be constructed at MCB Camp Lejeune and the potential impact to wastewater services in Onslow County as described under the Preferred Alternative would likely be long-term.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. The increased demand for utility services in the surrounding communities would be the same as described for the Preferred Alternative. Specifically, an additional 1,296,800 gpd of potable water would be required, approximately 1,231,960 gpd of wastewater would be discharged, and 13,017 tons of solid waste per year would be generated. Also under this Alternative, additional on-Base housing would not be constructed at MCB Camp Lejeune and the potential impact to wastewater services in Onslow County as described under the Preferred Alternative would likely be long-term.

3.10 Hazardous Materials, Toxic Substances, and Hazardous Waste

A hazardous substance is any biological, chemical, or physical item or agent which has the potential to cause harm to humans, animals, or the environment, either on its own or under the influence of other factors. The terms hazardous material, toxic substance, and hazardous waste are used in this section because they are all substances that may present a substantial threat to public health, welfare, and the environment, and because each of these terms is uniquely used in specific Federal regulations.

This EIS analyzes impacts related to hazardous materials, toxic substances, and hazardous waste based on the potential for hazardous materials to be introduced to the Installations during the course of site development and construction activities, for toxic and hazardous wastes to be generated as a result of construction and demolition activities, and for encounter with contaminated media during the course of site preparation and construction/demolition activities.

3.10.1 Affected Environment

Hazardous substances are defined and regulated under the laws administered by the United States Occupational Safety and Health Administration (OSHA), the USEPA, and the United States Department of Transportation (DOT). Each of these agencies incorporates hazardous substance terminology in accordance with its unique Congressional mandate: the OSHA regulations categorize substances in terms of their impacts on employee and workplace health and safety; the DOT regulations categorize substances in terms of their safety in transportation; and the USEPA regulations categorize substances in terms of protection of the environment and the public health.

With regard to environmental impacts, hazardous substances are regulated under several Federal programs administered by the USEPA, including the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act, Toxic Substances Control Act (TSCA), and Resource Conservation and Recovery Act (RCRA). DoD installations are required to comply with these laws along with other applicable Federal, State, and DoD regulations, as well as with relevant Executive Orders.

The OSHA Hazard Communication regulation (29 CFR 1910.1200) defines a hazardous chemical as any chemical which presents a physical or health hazard. The definition includes chemicals which are carcinogens, toxins, toxic agents, irritants, corrosives, and sensitizers; agents which act on the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, flammable, explosive, unstable (reactive), or water-reactive; oxidizers; pyrophorics; and chemicals which in normal use, handling, or storage may produce or release dusts, gasses, fumes, vapors, mists, or smoke that may have any of the previously mentioned characteristics.

Currently, OSHA regulates workplace exposure to approximately 500 substances, including dusts, mixtures, and common materials such as paints, fuels, and solvents (OSHA 2008).

In CERCLA Section 101(14), the USEPA defines the term "hazardous substance" by reference to provisions in other environmental statutes that identify substances as hazardous (e.g., the OSHA definition as described above). The USEPA definition includes any item or chemical which can cause harm to people, plants, or animals when released by spilling, leaking, pumping, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment and any substance for which a reportable quantity is established in 40 CFR 302.4.

The DOT Hazardous Materials Regulation (49 CFR 171) defines a hazardous material as a substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. The DOT definition includes hazardous substances, hazardous wastes, and marine pollutants. For the purposes of this EIS, hazardous materials include chemical products (e.g., pesticides, paints, and solvents), petroleum-derived fuels (e.g., heating oil, gasoline, diesel fuel, propane, kerosene) and lubricants (e.g., engine oil).

The promulgation of TSCA represented an effort by the Federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present unreasonable risk of personal injury or health of the environment, and to effectively regulate these substances and mixtures in interstate commerce. The TSCA *Chemical Substances Inventory* lists information on more than 62,000 chemicals and substances. Toxic chemical substances regulated by USEPA under TSCA include asbestos, lead, and polychlorinated biphenyls (PCBs), which for the purposes of this EIS, are evaluated in the most common forms found in buildings, namely asbestos-containing materials, lead-based paint, and PCB-containing liquids.

In regulations promulgated under RCRA, the USEPA defines hazardous waste as a solid waste which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b) and exhibits any of the characteristics (ignitability, corrosivity, reactivity, toxicity) described in 40 CFR 261; or is listed in 40 CFR 261 Subpart D; or is a mixture containing one or more listed hazardous wastes. Hazardous wastes may take the form of solid, liquid, contained gaseous, semi-solid wastes (e.g., sludges), or any combination of wastes that pose a substantial present or potential hazard to human health or the environment and have been discarded or abandoned. Military munitions used for their intended purposes on ranges or collected for further evaluation and recycling, are not considered waste per the Military Munitions Rule (40 CFR 266.202). For the purposes of this EIS, hazardous wastes include solid wastes that are regulated as hazardous based on either direct listing by USEPA or characteristics (ignitability,

reactivity, corrosivity, toxicity), as well as those contaminants present in environmental media (e.g., soil, groundwater).

The hazards associated with historic ranges include military waste munitions that were improperly disposed and unexploded munitions rounds. The DoN initiated the MRP in response to Defense Environmental Restoration Program guidance released in September 2001. The MRP is designed to clean up discarded military munitions, unexploded ordnance, and their chemical residues at closed historic ranges and munitions disposal sites. The MRP is modeled after the IR Program and is implemented using the process developed for cleanup under the CERCLA legislation. This program must also address the unique explosive safety hazards associated with munitions and explosives and human health risks posed by munitions constituents at Navy and USMC locations not designated as operational ranges.

Through the combined efforts of the Safety Office, the Environmental Management Division (EMD), and the Directorate of Logistics at each Installation, programs have been established at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point to control the entry of hazardous substances to the Installations; to safely manage their handling and transportation within each Installation; 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.

Review of available relevant data indicates that hazardous materials, toxic substances, hazardous wastes, and contaminated sites are known or suspected to be present at or near each of the proposed development areas on MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point. The safety issues related to management of hazardous materials, toxic substances, hazardous wastes, and contaminated sites are also described below.

3.10.1.1 MCB Camp Lejeune/MCAS New River

Hazardous Materials

Hazardous materials and hazardous wastes at MCB Camp Lejeune and MCAS New River are managed in accordance with hazardous materials/hazardous waste planning documents and Base Orders that establish general requirements that apply to all units, organizations, and tenants, as well as command and staff requirements for the implementation of the Hazardous Materials/Hazardous Waste Management Program. Each entity that procures, uses, generates, or otherwise manages hazardous materials/hazardous waste is responsible for conducting all operations and training in compliance with the mandates of environmental law applicable to hazardous materials/hazardous waste (MCB Camp Lejeune 2003).

A wide variety of hazardous materials are used during daily operations at MCB Camp Lejeune and MCAS New River, including petroleum, oils, and lubricants (POLs); batteries; solvents, paints, and thinners; cleaning compounds and surfactants; cooling fluids (e.g., antifreeze); adhesives; acids and corrosives; and pesticides and herbicides. Hazardous waste-generating activities include painting, solvent cleaning and degreasing, mechanical and chemical paint and rust removal, ground vehicle and aircraft maintenance, machining, welding, and soldering.

Personnel involved in any aspect of hazardous materials/hazardous waste management are trained in accordance with the relevant occupational health and safety, transportation, handling, and environmental regulations. The various units and organizations within MCB Camp Lejeune and MCAS New River generally order hazardous materials through the existing Base supply system. Some materials are acquired through local purchase or directly from commercial vendors. Implementation of the Hazardous Material Management System, including the establishment of authorized use lists for individual units/organizations, has helped reduce the quantity of hazardous materials purchased across the two Installations. At MCB Camp Lejeune, excess or expired shelf-life hazardous materials are recycled if possible, or disposed of, mostly through the Defense Reutilization and Marketing Office (MCB Camp Lejeune 2003). At MCAS New River, hazardous materials minimization is accomplished through operation of two Consolidated Hazardous Material Reutilization and Inventory Management Program centers, one at each Marine Aircraft Group located on the Installation (MCAS New River 2008).

Toxic Substances

Regulated toxic substances typically associated with buildings and facilities include lead-based paint, asbestos, and PCBs. MCB Camp Lejeune maintains an Asbestos Management Plan for both Installations, that serves as a guide for the identification, handling, abatement, and management-in-place of asbestos-containing materials and asbestos-related wastes. Contractors responsible for toxic substance management are required to develop and implement compliant work plans for the safe sampling, handling, removal, transportation, and disposal of toxic substances and wastes generated as a result of their work. Both MCB Camp Lejeune and MCAS New River maintain responsibility for wastes generated under contract work by signing waste manifests in accordance with applicable Federal and State regulations.

Hazardous Waste

MCB Camp Lejeune and MCAS New River are Large Quantity Generators of hazardous waste as defined under RCRA, and by Federal law cannot store hazardous waste longer than 90 days. Vehicle and aircraft maintenance are the most significant sources of hazardous waste generation at the Installations. Multiple satellite accumulation areas and less-than-90-day accumulation sites for hazardous waste (one at MCB Camp Lejeune and one at MCAS New River) are located in proximity to hazardous waste generators. Hazardous waste from these sites is collected and transported off the Installations to a RCRA Part B permitted Treatment, Storage, and Disposal Facility (TSDF) as arranged through contracts administered by the Defense Reutilization and Marketing Office.

Contaminated Sites

Due to the number of contaminated sites at MCB Camp Lejeune, the Base has been listed as a National Priority List Site or "Superfund" Site under CERCLA. The MCB Camp Lejeune EMD Installation Restoration Section oversees the IR Program to address suspected or known contamination at both MCB Camp Lejeune and MCAS New River. Areas investigated, remediated, and managed under this program are referred to as IR sites.

MCB Camp Lejeune has been actively involved with environmental investigations and remediation programs since 1983, beginning with the Navy Assessment and Control of Installation Pollutants Program. An Initial Assessment Study completed in 1983 was the first investigation of potentially hazardous sites conducted under this program. This Study identified areas of concern that might potentially cause threats to human health and the environment as a result of past storage, handling, and disposal of hazardous materials. Based on a review of historical records, field inspections, and personal interviews 76 areas of concern were identified. The Initial Assessment Study concluded that while none of the sites posed an immediate threat to human health or the environment, further investigations to assess the potential long-term impacts were warranted at 23 of the 76 sites. Since that time, additional site investigations have identified 19 new sites that have been included in the IR Program bringing the total to 42 sites (MCB Camp Lejeune 2008d).

To properly address the various types of contamination and adhere to their respective regulatory requirements, the MCB Camp Lejeune EMD Installation Restoration Section coordinates the assessment and remediation of contaminated sites that resulted from past disposal practices and spills and leaks of hazardous materials and waste through three separate programs:

- IR Program: This Program seeks to reduce the risk to human health and the environment from historic waste disposal operations and hazardous substance releases (i.e., sites identified prior to 1986). The IR Program adheres to the CERCLA regulatory framework.
- 2) Solid Waste Management Unit (SWMU) Program: The SWMU Program addresses contaminated sites where the process which generated the contamination is still in operation or the contamination is from a recent release. SWMU sites are permitted sites regulated by RCRA corrective action guidelines as described in the Base Hazardous/Solid Waste Amendment permit.

 MRP: This program addresses response actions at sites where munitions and explosives and munitions constituents are present and the Program adheres to the CERCLA regulatory framework.

A fourth remedial action program addresses known and potentially contaminated sites due to underground storage tanks (UST) through the UST Program. This Program is coordinated by EMD and prescribes the manner in which USTs are identified and the processes to undertake for proper removal of petroleum contamination resulting from UST operation.

Several contaminated or potentially contaminated sites are present within the boundaries of the proposed development areas as described below. Table 3.10-1 summarizes the known and potentially contaminated sites located within or in proximity to these proposed development areas; Figures 3.10-1 through 3.10-4 show the locations of these sites. Although the current status of each IR, SWMU, UST, MRP, and range site is not described in detail below, MCB Camp Lejeune maintains a database containing geospatial information about each site and an administrative record containing documents related to the investigation and remediation of each site.

Location	Active IR	Active SWMU	Active UST	Active MRP
Locuiton	Program Sites	Program Sites	Program Sites	Program Sites
Hadnot Point	215 (IR-21), 237 (IR-78), 217 (IR-88), 52 (IR-25) IR-24, IR-94, IR-94, IR-23, IR-28	97, 423, 261, 297, 360, 473, 311	156 (UST-HPFF), 121 (UST-900), 401 (UST-1613), 340 (UST-1601), 399 (UST-1502-2), 364 (UST-1323-3), 244 (UST-25), 177 (UST-333C), 118 (UST-728-2), 360 (UST-1817)	UXO-01, UXO-03, UXO-08, UXO-07, UXO-09
French Creek	210 (IR-1), 195 (IR-28)	269	472 (UST-FC286), 467 (UST-FC40-3) 149 (UST-FC201(E))	UXO-01, UXO-06, UXO-10
Camp Geiger	220 (IR-35), 250 (IR-93), 245 (IR-89), 221 (IR-36), 59 (IR-37)	46, 254, 250, 307	252 (UST-TC942), 251 (UST-STC868), 208 (UST-G480), 184 (UST-TC341) 186 (UST-TC912) 417 (UST-TC501) 162 (UST-M232-36)	UXO-01, UXO-05, UXO-11, UXO-12

Table 3.10-1 IR, SWMU, UST and MRP Sites at MCB Camp Lejeune and MCAS New River

Location	Active IR Program Sites	Active SWMU Program Sites	Active UST Program Sites	Active MRP Program Sites
Courthouse Bay	233 (IR-73), IR-60, IR -90, IR -91, IR-92	474, 470, 233	203 (UST-A47/SA21), 198 (UST-A10/SA26), 201 (UST-A47-3), 199 (UST-A12), 200 (UST-A13/SA2), 143 (UST-BB190) 341 (UST-BB293)	UXO-15
Camp Devil Dog	NA	NA		
P1262 New Base Road	NA	NA		
P1293 Marston Pavilion Annex	NA	NA		
P1043 Water Treatment Facility	NA	NA		
PPV	240 (IR-84)	NA		UXO-04
P1165 Triangle Outpost Gate	NA	NA		
MCAS New River	227 (IR-54), 222 (IR-41), 224 (IR-44), 242 (IR-86), 67 (IR-49), 70 (IR-51), 72 (IR-53), 73 (IR-55), IR-AS113, IR-AS116, IR-AS119	124, 318, 303, 299, 475, 336	130 (UST-AS4159), 455 (UST-RREF(2)), 457 (UST-RREF(2)), 456 (UST-RREF(3)), 481 (UST-AS511-3), 137 (UST-AS843), 409 (UST-AS840(new)), 405 (UST-AS1-4), 157 (UST-AS4141), 157 (UST-AS4141), 147 (UST-CSFF/4151), 414 (UST-JP5), 408 (UST-AS142), 479 (UST-CSFF), 127 (UST-AS410(S)), 126 (UST-AS410(S)), 126 (UST-AS419-21), 131 (UST-AS428), 165 (UST-RREF)	UXO-05, B-12, Baffled Pistol Range; B-14, ABC Warfare Area, B-6, 50 Foot Small Arms Range

Table 3.10-1	IR.	SWMU.	UST	and MRP	Sites	at MCB	Camp	Leieune	and M	ICAS	New	River
<i>I ubic</i> 5.10-1	т,	<i>Sm1nU</i> ,	UDI	unu mm	Ditts		Cump	Lejenne	unu m		1101	MIVEI

Source: Personal communication, Lowder 2008.

Notes: Site identification numbers obtained from MCB Camp Lejeune GIS Data - it is possible that some of the IR sites listed here are areas that are adjacent to, but not within the proposed development areas.

NA = Not Applicable

UXO = Unexploded Ordinance

Additionally, some of the IR sites listed above appear to overlap with the proposed development areas, but may in fact not have an effect on the construction.



Figure 3.10-1 Known Contaminated Sites on MCB Camp Lejeune – Northside



Figure 3.10-2 Known Contaminated Sites on MCB Camp Lejeune – Central



Figure 3.10-3 Known Contaminated Sites on MCB Camp Lejeune – Southside



Figure 3.10-4 Known Contaminated Sites on MCB Camp Lejeune/MCAS New River – Westside
With regard to the proposed development areas identified as Base-wide projects, several IR sites are located on or near these areas. Numerous historic ranges are also located entirely or partially within the proposed site. Table 3.10-2 provides the historic ranges at MCB Camp Lejeune and MCAS New River.

Range	MRP Site	Proposed Development Area	Narrative/Description	
HRNG04009	# N/A	Camp Devil Dog	Impact Area "M"	
HRNG15005	N/A	Camp Devil Dog	K. 22 Practice Hand Granade Course	
HPNG12026		Camp Devil Dog	M 100 Infiltration Pange	
HKN013030		Camp Devil Dog	W-109, Infinitation Range	
HRNG04009	N/A	Camp Devil Dog	Impact Area M	
HRNG15005	N/A	Camp Devil Dog	K-22, Practice Hand Grenade Course	
HRNG13036	N/A	Camp Devil Dog	M-109, Infiltration Range	
HRNG15003	N/A	Camp Devil Dog	M-4, Rifle Grenade Range	
HRNG06040	N/A	Camp Devil Dog	M-5 Artillery Range	
HRNG15004	N/A	Camp Devil Dog	M-5, Practice Rifle Grenade Range	
HRNG06041	N/A	Camp Devil Dog	M-5a Artillery Range	
HRNG10059	N/A	Camp Devil Dog	M-9, Combat Village Area	
HRNG04001	UXO-12	Camp Geiger	1000 Inch Range (Tent Camp Area)	
HRNG08002	UXO-01	Camp Geiger	B-3, Gas Chamber	
HRNG10002	UXO-01	Camp Geiger	B-3, Gas Chamber	
HRNG06002	UXO-01	Camp Geiger	B-3, Gas Chamber	
HRNG08003	UXO-11	Camp Geiger	B-5, Practice Hand Grenade Course	
HRNG08004	See Note	Camp Geiger	B-6, 50 Foot Small Arms Range	
HRNG04002	UXO-05	Camp Geiger	Miniature Anti-Aircraft Range (Tent Camp Area)	
HRNG04004	N/A	Camp Johnson	1000-Inch Range Monford Point	
HRNG08001	N/A	Camp Johnson	A-1, 50 Foot .22 Caliber Range	
HRNG05001	N/A	Camp Johnson	A-1, 50 Foot .22 Caliber Range	
HRNG06001	N/A	Camp Johnson	A-1, 50 Foot .22 Caliber Range	
HRNG20001	N/A	Camp Johnson	A-1, Pistol And Shotgun Range	
HRNG20001	N/A	Camp Johnson	A-1, Pistol And Shotgun Range	
HRNG18001	N/A	Camp Johnson	A-1, Pistol And Shotgun Range	
HRNG10001	N/A	Camp Johnson	A-1, Pistol And Shotgun Range	
HRNG13001	N/A	Camp Johnson	A-1, Pistol And Shotgun Range	
HRNG16001	N/A	Camp Johnson	A-1, Pistol And Shotgun Range	
HRNG04023	UXO-15	Courthouse Bay	1000 Inch Range (Amphibian Base Area)	
HRNG02001	N/A	Courthouse Bay	Anti-Mechanized Range	
HRNG10034	N/A	Courthouse Bay	J-1, 1000 Inch Range	
HRNG16005	UXO-10	French Creek	D-11a, Flame Tank And Flame Thrower Range	
HRNG13005	UXO-10	French Creek	D-11a, Flame Tank And Flame Thrower Range	
HRNG10007	UXO-06	French Creek	D-27, Fortified Beach Assault Area	
HRNG08009	UXO-06	French Creek	D-27, Fortified Beach Assault Area	

 Table 3.10-2 Historic Ranges at MCB Camp Lejeune and MCAS New River

Range	MRP Site	Proposed	Narrative/Description	
HRNG13006	# UXO-06	Development Area	D 27 Fortified Peach Accoult Area	
HPNG16006		French Creek	D 27, Fortified Beach Assault Area	
LIBNC05005		French Creek	D-27, Fortified Beach Assoult Area	
HRING05005		French Creek	D-27, Fortified Beach Assault Area	
HRNG06007	UXU-06	French Creek	D-27, Fortified Beach Assault Area	
HRNG16019	N/A	French Creek	F-13, Flame Thrower Range	
HRNG16014	N/A	French Creek	F-6, Live Hand Grenade Range	
HRNG06013	N/A	French Creek	F-6, Live Hand Grenade Range	
HRNG15014	UXO-01	French Creek	Gas Chamber (2d Mar. Div.)	
HRNG13027	N/A	French Creek	Impact Area "G-10" (Buffer)	
HRNG13027	N/A	French Creek	Impact Area "G-10" (Buffer)	
HRNG02006	N/A	French Creek	Unknown	
HRNG04020	N/A	Hadnot Point	Artillery Firing Points	
HRNG22001	UXO-08	Hadnot Point	Base Cs Chamber And Nbc Training Trail	
HRNG20004	N/A	Hadnot Point	D-29, 50 Foot Small Bore Range	
HRNG20004	N/A	Hadnot Point	D-29, 50 Foot Small Bore Range	
HRNG13007	N/A	Hadnot Point	D-29, 50 Foot Small Bore Range	
HRNG16007	N/A	Hadnot Point	D-29, 50 Foot Small Bore Range	
HRNG18006	N/A	Hadnot Point	D-29, 50-Foot Small Bore Range	
HRNG10008	N/A	Hadnot Point	D-29, 50-Foot Small Bore Range	
HRNG10004	UXO-03	Hadnot Point	D-3, Practice Hand Grenade Course	
HRNG08005	UXO-03	Hadnot Point	D-3, Practice Hand Grenade Course	
HRNG06004	UXO-03	Hadnot Point	D-3, Practice Hand Grenade Course	
HRNG20005	N/A	Hadnot Point	D-30, 50 Foot Small Bore Range	
HRNG13008	N/A	Hadnot Point	D-30, 50 Foot Small Bore Range	
HRNG16008	N/A	Hadnot Point	D-30, 50 Foot Small Bore Range	
HRNG18007	N/A	Hadnot Point	D-30, 50-Foot Small Bore Range	
HRNG18007	N/A	Hadnot Point	D-30, 50-Foot Small Bore Range	
HRNG10009	N/A	Hadnot Point	D-30, 50-Foot Small Bore Range	
HRNG18004	UXO-01	Hadnot Point	D-6, 50 Foot Indoor Small Bore Rifle And Pistol Range	
HRNG22002	UXO-01	Hadnot Point	D-6, 50 Foot Indoor Small Bore Rifle And Pistol Range	
HRNG13004	UXO-01	Hadnot Point	D-6, 50 Foot Indoor Small Bore Rifle And Pistol Range	
HRNG10005	UXO-07	Hadnot Point	D-6, Practice Hand Grenade Course	
HRNG08006	UXO-07	Hadnot Point	D-6, Practice Hand Grenade Course	
HRNG06005	UXO-07	Hadnot Point	D-6, Practice Hand Grenade Course	
HRNG10006	UXO-08	Hadnot Point	D-7, Gas Chamber	
HRNG08007	UXO-08	Hadnot Point	D-7, Gas Chamber	
HRNG06006	UXO-08	Hadnot Point	D-7, Gas Chamber	
HRNG06015	UXO-09	Hadnot Point	F-9, Triangulation Range	
HRNGXX082	N/A	Hadnot Point	Firing Point 5	

Table 3.10-2 Historic Ranges at MCB Camp Lejeune and MCAS New River

Range	MRP Site	Proposed	Narrative/Description	
UNK 5	# UXO-08	Hadnot Point	Leieune Cantonment 2 36"Bazooka Range	
HRNG20002	See Note	MCAS New River	B-12 Baffled Pistol Range	
HRNG20002	See Note	MCAS New River	B-12, Baffled Pistol Range	
HRNG18002	See Note	MCAS New River	B-12, Baffled Pistol Range	
HRNG13002	See Note	MCAS New River	B-12, Baffled Pistol Range	
HRNG16002	See Note	MCAS New River	B-12, Baffled Pistol Range	
HRNG08004	See Note	MCAS New River	B-6 50 Foot Small Arms Range	
HRNG04006	N/A	MCAS New River	Infantry Weapons Demonstration Course	
HRNG05003	N/A	MCAS New River	Infantry Weapons Demonstration Course	
HRNG03001	UXO-05	MCAS New River	Miniature Anti-Tank Range (Tank Battalion Tent	
Indicosoor	0/10/05		Camp)	
HRNG04005	UXO-05	MCAS New River	Miniature Anti-Tank Range (Tank Battalion Tent Camp)	
HRNG15013	See Note	MCAS New River	B-14, ABC Warfare Area	
HRNG21005	UXO-14	Stone Bay/Rifle Range	Gas Chamber (Rifle Range Area)	
HRNGXX124	UXO-16	Stone Bay/Rifle Range	Gun Position 41a	
HRNGXX125	UXO-16	Stone Bay/Rifle Range	Gun Position 41b	
HRNGXX164	N/A	Stone Bay/Rifle Range	Gun Position Owl	
HRNG21006	UXO-14	Stone Bay/Rifle Range	Indoor Pistol Range (Rifle Range Area)	
HRNG08041	N/A	Stone Bay/Rifle Range	L-3, Machine Gun Transition Range	
HRNG08042	N/A	Stone Bay/Rifle Range	L-4, 1000 Inch Range	
HRNG10053	N/A	Stone Bay/Rifle Range	L-4, 1000 Inch Range	
HRNG06038	N/A	Stone Bay/Rifle Range	L-4, 1000 Inch Range	
HRNG12009	N/A	Stone Bay/Rifle Range	L-4, 1000-Inch Range	
HRNG06043	N/A	Stone Bay/Rifle Range	Pistol Range (Rifle Range Area)	
HRNG03003	N/A	Stone Bay/Rifle Range	Pistol Range (Rifle Range Area)	
HRNG12010	N/A	Stone Bay/Rifle Range	Pistol Range (Rifle Range Area)	
HRNG05030	N/A	Stone Bay/Rifle Range	Pistol Range (Rifle Range Area)	
HRNG21004	N/A	Stone Bay/Rifle Range	Pistol Range (Rifle Range Area)	
HRNG26001	N/A	Stone Bay/Rifle Range	Pistol Range (Rifle Range Area)	
HRNG02007	N/A	Stone Bay/Rifle Range	Rifle Range	
HRNG03002	N/A	Stone Bay/Rifle Range	Rifle Range	
HRNG05031	N/A	Stone Bay/Rifle Range	Rifle Range	
HRNG21001	N/A	Stone Bay/Rifle Range	Unknown	
HRNG21002	N/A	Stone Bay/Rifle Range	Unknown	

		<u> </u>	
Range Identifier	MRP Site #	Proposed Development Area	Narrative/Description
HRNG21003	N/A	Stone Bay/Rifle Range	Unknown
HRNG20003	See Note	Wallace Creek/Road	D-9, Skeet Range
HRNG16004	See Note	Wallace Creek/Road	D-9, Skeet Range
HRNG08008	See Note	Wallace Creek/Road	D-9, Skeet Range
HRNG18005	See Note	Wallace Creek/Road	D-9,Skeet Range
HRNG18005	See Note	Wallace Creek/Road	D-9,Skeet Range

Table 3.10-2	Historic Ranges at	MCB Camp	Lejeune and	MCAS New River

Source: Personal communication, Lowder 2008.

Notes: MRP Sites which have not received UXO #'s to date but are in the process of closure. Additionally, a number of the historic range sites listed may be added to the MRP program but have not yet received formal approval.
 NA = Not Applicable

Safety

The requirements at both Installations associated with the safe management of hazardous materials, toxic substances, and hazardous waste are established in applicable Federal, DoD, and DoN regulations, as well as MCOs and Base Orders. The safety requirements associated with the management of contaminated sites are established in the Site-Specific Health and Safety Plan for Remediation Activities at MCB Camp Lejeune (DoN 2003b).

3.10.1.2 MCAS Cherry Point

Hazardous Materials

At MCAS Cherry Point, hazardous materials are managed through the Hazardous Material Control Center using the Hazardous Material Management System, an electronic database for tracking. Hazardous material minimization is accomplished through the return of usable materials for reissue, and the Hazardous Material Control Center also operates a hazardous material recycling center (MCAS Cherry Point 2006). Hazardous materials are purchased, stored, managed, used, and disposed in compliance with applicable health, safety, and environmental regulations and in such a manner as to minimize the potential for spills and impacts to the land and existing facilities.

Toxic Substances

Regulated toxic substances typically associated with buildings and facilities include lead-based paint, asbestos, and PCBs. MCAS Cherry Point maintains an Asbestos Management Plan that serves as a guide for the identification, handling, abatement, and management-in-place of asbestos-containing materials and asbestos-related wastes. Contractors responsible for the management of toxic substances are required to develop and implement compliant work plans for the safe sampling, handling, removal, transportation, and disposal of toxic substances and wastes generated as a result of their work. MCAS Cherry Point takes

responsibility for the wastes generated during this type of work by signing waste manifests in accordance with applicable Federal and State regulations.

Hazardous Waste

MCAS Cherry Point is a Large Quantity Generator of hazardous waste as defined under RCRA and by Federal law cannot store hazardous waste longer than 90 days. Aircraft maintenance is the most significant source of hazardous waste generation at the Station. Multiple satellite accumulation areas and less-than-90-day accumulation sites for hazardous waste are located in proximity to the generators. Hazardous waste from these sites is collected at a RCRA Part B permitted TSDF and transported off-site for treatment or disposal as arranged through contracts administered by the Defense Reutilization and Marketing Office. The Station maintains a Hazardous Waste Management Plan, in which standard operating procedures are outlined for the handling and disposal of hazardous waste in accordance with 40 CFR Parts 260 - 270 and 761, the State of North Carolina Department of Environmental Management's Rules and Regulations for Hazardous Waste Management, and Marine Corps Order 5090.2A, Change 1, *Requirements for Handling, Storage, Transfer, and Disposal of Hazardous Waste*. The MCAS Cherry Point Hazardous Waste Management Program includes the storage, transportation, disposal, and tracking of all hazardous and special wastes generated throughout the Station (MCAS Cherry Point 2008).

Contaminated Sites

Nineteen active SWMU sites, seven tanks or tank farms, and CERCLA Site 01 are located within the boundaries of the proposed development areas at MCAS Cherry Point (Table 3.10-3).

Proposed Development Area	CERCLA Sites	Active SWMU Program Sites	Tanks/Tank Farm Sites
MACS 2 Compound	None 49B, 06		None
North Quadrant None		34, 37, 45B, 49A, 80	None
Ordnance Storage Area	None	67, 67	None
West Quadrant	OU 01	40, 33, 50, 38, 111, 71, 114, 114, CO4, POEI 23	OU07, Site 55, Site 08, Site 09, Site 13, Site NO2, Site 74, Tank Farm C

 Table 3.10-3 CERCLA, Active SWMU, and Tank/Tank Farm Sites at MCAS Cherry Point

Source: MCAS Cherry Point 2008.

Table 3.10-4 lists six historic ranges that are located within or in proximity to the proposed development areas. Figure 3.10-5 shows the locations of contaminated sites and historic ranges on MCAS Cherry Point.

Range Identifier	Study Area	Narrative/Description		
RNGRNG30	Near development area	MB-Skeet3		
RNGRNG33	Near development area	MB-Rifle		
RNGRNG34	Overlaps development area	MB-Pistol		
RNGRNG36	Overlaps development area	MB-Borefam		
RNGRNG46	Near development area	MB-Pistol		
RNGRNG50	Near development area	MB-Pistol		
Source: MCAS Cherry Point 2008				

Table 3.10-4 Historic Ranges at MCAS Cherry Point

Source: MCAS Cherry Point 2008.

Safety

The safety requirements associated with the management of hazardous materials, toxic substances, and hazardous waste are established for MCAS Cherry Point in relevant Federal, DoD, and DoN regulations, as well as MCOs and Base Orders.

3.10.2 Environmental Consequences

This section provides a detailed description of impacts associated with the implementation of the alternatives including the No Action Alternative. The nature and magnitude of potential impacts associated with hazardous and toxic materials and wastes depends on the toxicity, storage, use, transportation, and disposal of these substances. An adverse impact associated with hazardous materials, toxic substances, and hazardous waste is determined if the storage, use, handling, or disposal of these substances substantially increases the risk to human health due to direct exposure, substantially increases the risk of environmental contamination, or violates applicable Federal, State, DoD, and local regulations.

3.10.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline hazardous materials and waste management at MCB Camp Lejeune/MCAS New River.

Under the No Action Alternative, the investigation and remediation of known and suspected contaminated sites would continue; however, the impetus to clean up sites in preparation for development of the proposed facilities and infrastructure identified in Section 2.2 would be lacking. Additional DoD, Navy, and USMC funding (i.e., funding at levels higher than the average annual program budget estimates) to support the investigation and cleanup of contaminated sites would likely not be approved rapidly in the absence of development plans as described under the Proposed Action.



Figure 3.10-5 Known Contaminated Sites on MCAS Cherry Point

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

The implementation of the Preferred Alternative would require an increase in usage, handling, and storage of hazardous materials, toxic substances, and hazardous waste due to construction and demolition activities. However, the increased risk to human health due to direct exposure associated with storage, use, handling, or disposal would be minimal, as would the increase in risk of environmental contamination. The Preferred Alternative would not violate Federal, State, DoD, or local regulations. Potential impacts are discussed in detail below.

Hazardous Materials

The number of sites storing, using, and handling hazardous materials would increase under the Preferred Alternative. With regard to hazardous materials, compliant fuel handling, dispensing, and storage systems to minimize the risk or impact of fuel spills would be implemented. All hazardous materials brought to the Installations would be required to be stored in appropriate, ventilated, and spill-protected structures located on asphalt or an equivalent impervious surface. Volatile materials would be maintained in closed containers. The acquisition of environmentally preferable products, including raw materials and manufactured items, and their packaging, would be considered for inclusion in contract clauses to minimize use of these materials during construction and renovation.

The quantity of POL products, including fuels (diesel fuel, gasoline, heating oil), delivered to and used on the Installations would increase substantially in the short-term as a result of the construction-related activities. Quantities of various fuels in excess of current operating demand would be required for construction due to the use of mobile-power generators and heavy equipment.

The risk of uncontrolled release of hazardous substances would be minimized through the use of industryaccepted methods and by following applicable Federal, State laws and regulations, and USMC policy for storage of fuels (e.g., double-walled above ground storage tanks equipped with leak detection systems) and other hazardous materials (e.g., self-contained storage cabinets with appropriate flammability ratings).

Potential spills from the secondary containment structures associated with above ground storage tanks or spills in uncontained areas would be contained through the use of absorbent materials, portable booms, or

other barriers. Absorbent materials and spill kits are maintained in sufficient quantities at existing oil handling and storage facilities and would be provided at any new oil handling and storage facilities constructed under the Preferred Alternative.

Toxic Substances

With regard to toxic substances, several materials would be prohibited from use in construction and renovation/upgrade projects, including products containing asbestos, urea formaldehyde, PCBs, chlorinated fluorocarbons, and lead (e.g., as a component of finishing products such as rust-proofing and interior/exterior paints and coatings). The material prohibitions would be stated in contract clauses and design specifications developed by MCB Camp Lejeune, other authorized contracting agencies (e.g., DoN and USACE), and selected contractors.

Toxic substances (e.g., asbestos-containing building materials, lead-based paint, and PCBs) identified in and on existing structures proposed for demolition would be removed, packaged for transportation offsite, and disposed of in accordance with relevant Federal, State, and local regulations. Compliance with applicable regulations would be stipulated in contract documents when any or all aspects of the identification, removal, packaging, transportation, and disposal would be managed by a contractor or contractors.

Hazardous Waste

MCB Camp Lejeune and MCAS New River would maintain their status as a USEPA Large Quantity Generator of hazardous waste under the Preferred Alternative. It is expected that during construction activities there would be periodic increases in the quantity of hazardous waste generated and shipped offsite for disposal. Specifically, construction debris and contaminated soils which exhibit any of the characteristics of hazardous waste would be managed as hazardous waste in accordance with applicable Federal, State, local, and DoD regulations. The establishment and implementation of procedures to minimize the quantity of hazardous wastes generated during site development activities would be stated as a requirement in contract clauses and would be enforced by Base/agency contracting personnel. The Hazardous Waste Management Plan would be updated as necessary to address the additional hazardous waste generated as a result of the Preferred Alternative (i.e. construction debris and waste from additional operations and personnel living on the Installation).

Contaminated Sites

With regard to contaminated sites, the proposed projects would take place on or in the vicinity of several IR sites (see Figures 3.10-1 through 3.10-4). The sites would be avoided, by design and implementation, to the greatest extent practicable. Where avoidance is not possible, remediation of any contamination would be completed prior to any site preparation, construction, and demolition activities. In addition,

prescribed management practices would be employed in the handling, removal, and disposal of contaminated media (i.e., soil, groundwater, and investigation-derived waste). USMC and/or USACE contract managers would consult with the appropriate EMD program managers to establish an appropriate course of action for each proposed construction/demolition project to ensure that Federal and State agency notification requirements are met and to arrange for agency consultation as necessary where existing IR sites could be affected. The proposed construction would not include drilling of any new potable water wells.

Safety

The proposed projects would take place on or in the vicinity of several historic ranges, varying in type from small arms (pistol, shotgun) to flamethrower and artillery ranges (see Figures 3.10-1 through 3.10-4). Closed historic ranges would continue to be investigated and remediated in accordance with the MRP. When closure of an operational range occurs, the Operations and Training Division and the Training and Education Command elements evaluate the proposed use of the range and the safety arc associated with it and if it is cleared for development then construction can take place. If reactivation of firing activities on a closed range in proximity to any proposed developed sites were to occur, then the safety arcs would need to be evaluated and if there are conflicts within the proposed area, the range may need to be moved or firing points reconfigured (Personal communication, Lowder 2008).

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Under Alternative 3, management protocols for hazardous materials and waste would be the same as those described under the Preferred Alternative. The proposed development areas and thus the contaminated sites within the vicinity of possible construction activity would be the same. However, since only core projects would be constructed under this alternative, the amount of hazardous materials and waste that would potentially be utilized and/or produced during construction would be less than what would occur under the Preferred Alternative.

For construction, demolition, and renovating activities, hazardous material use, storage, and disposal would be managed in compliance with all applicable USMC, DoN, DoD rules and regulations as well as Federal and State laws. For instance, prior to the start of construction at the Installations, preconstruction meetings would be held to discuss the development of an Environmental Protection Plan. The contractors are required to produce the plan that includes a description of the environmental training program for

construction workers performing work at the specific locations and presents procedures to protect coastal zones, sensitive species and habitat, wetlands, floodplains, surface water, and addresses IR sites, historic ranges, and other known contaminated areas. The Environmental Protection Plan also addresses permitting, monitoring, and quality control procedures. The Hazardous Waste Management Plan would be updated as necessary to address the additional hazardous waste generated as a result of Alternative 3 (i.e. construction debris and waste from additional operations and personnel living on the Installation).

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no new construction or ground disturbance at the Installations under Alternative 4; therefore, minimal impacts with respect to hazardous materials and waste management would occur. The addition of personnel would result in an accompanying minimal increase in hazardous material use and hazardous waste disposal. The Hazardous Waste Management Plan would be updated as necessary to address this increase.

3.10.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, there would be no change to baseline hazardous materials and waste management at MCAS Cherry Point.

Under the No Action Alternative, investigation and remediation of known and suspected contaminated sites would continue; however, the impetus to clean up sites in preparation for development would be lacking. Additional DoD, Navy, and USMC funding (i.e., funding at levels higher than the average annual program budget estimates) to support the investigation and cleanup of contaminated sites would likely not be approved rapidly in the absence of potential construction.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

The implementation of the Preferred Alternative would require an increase in usage, handling, and storage of hazardous materials, toxic substances, and hazardous waste due to construction and demolition activities. However, the increased risk to human health due to direct exposure associated with storage, use, handling, or disposal would be minimal, as would the increase in risk of environmental contamination. The Preferred Alternative would not violate Federal, State, DoD, or local regulations. Potential impacts are discussed in detail below.

Hazardous Materials

The number of sites storing, using, and handling hazardous materials would increase under the Preferred Alternative. With regard to hazardous materials, compliant fuel handling, dispensing, and storage systems to minimize the risk or impact of fuel spills would be implemented. All hazardous materials brought to the Station would be required to be stored in appropriate, ventilated, and spill-protected structures located on asphalt or an equivalent impervious surface. Volatile materials would be maintained in closed containers. The acquisition of environmentally preferable products, including raw materials and manufactured items, and their packaging, would be considered for inclusion in contract clauses to minimize use of hazardous materials during construction and renovation.

The quantity of POL products, including fuels (diesel fuel, gasoline, heating oil), delivered to and used on the Station would increase substantially in the short-term as a result of the construction-related activities. Quantities of various fuels in excess of current operating demand would be required for construction due to the use of mobile-power generators and heavy equipment.

The risk of uncontrolled release of hazardous substances would be minimized through the use of industryaccepted methods and by following applicable Federal, State laws and regulations, and USMC policy for storage of fuels (e.g., double-walled above ground storage tanks equipped with leak detection systems) and other hazardous materials (e.g., self-contained storage cabinets with appropriate flammability ratings).

Potential spills from the secondary containment structures associated with above ground storage tanks or spills in uncontained areas would be contained through the use of absorbent materials, portable booms, or other barriers. Absorbent materials and spill kits are maintained in sufficient quantities at existing oil handling and storage facilities and would be provided at any new oil handling and storage facilities constructed under the Preferred Alternative.

Toxic Substances

With regard to toxic substances, several materials would be prohibited from use in construction and renovation/upgrade projects, including products containing asbestos, urea formaldehyde, PCBs,

chlorinated fluorocarbons, and lead (e.g., as a component of finishing products such as rust-proofing and interior/exterior paints and coatings). The material prohibitions would be stated in contract clauses and design specifications developed by MCAS Cherry Point, other authorized contracting agencies (e.g., DoN and USACE) and selected contractors.

Toxic substances (e.g., asbestos-containing building materials, lead-based paint, and PCBs) identified in and on existing structures proposed for demolition would be removed, packaged for transportation offsite, and disposed of in accordance with relevant Federal, State, and local regulations. Compliance with applicable regulations would be stipulated in contract documents when any or all aspects of the identification, removal, packaging, transportation, and disposal would be managed by a contractor or contractors.

Hazardous Waste

The Station would maintain its status as a USEPA Large Quantity Generator of hazardous waste. It is expected that during construction activities there would be periodic increases in the quantity of hazardous waste generated and shipped off-site for disposal. Specifically, construction debris and contaminated soils which exhibit any of the characteristics of hazardous waste would be managed as hazardous waste in accordance with applicable Federal, State, local, and DoD regulations. The establishment and implementation of procedures to minimize the quantity of hazardous wastes generated during site development activities would be stated as a requirement in contract clauses and would be enforced by Station/agency contracting personnel. The Hazardous Waste Management Plan would be updated as necessary to address the additional hazardous waste generated as a result of the Preferred Alternative (i.e. construction debris and waste from additional operations and personnel living on the Station).

Contaminated Sites

The proposed projects at MCAS Cherry Point would take place on or adjacent to several SWMU, IR, UST, and historic ranges sites (see Figure 3.10-5). The sites would be avoided, by design and implementation, to the greatest extent practicable. Where avoidance is not possible, remediation of any contamination would be completed prior to any site preparation, construction, and demolition activities. In addition, prescribed management practices would be employed in the handling, removal, and disposal of contaminated media (i.e., soil, groundwater, and investigation-derived waste). USMC and/or USACE contract managers would consult with the appropriate EMD program managers to establish an appropriate course of action for each proposed construction/demolition project to ensure that Federal and State agency notification requirements are met and to arrange for agency consultation as necessary where existing IR sites could be affected. The proposed construction would not include drilling of any new potable water wells.

Safety

Contaminated sites, including those associated with USTs, IR sites, and historic ranges, would continue to be addressed under the established MCAS Cherry Point investigation and cleanup programs. Prescribed remediation actions and the disposal of resulting contaminated media (i.e., soil, groundwater, and investigation-derived waste) would be conducted in accordance with relevant Federal, State, and local regulations. Adherence to these regulations and established procedures on the Station would limit the potential for safety impacts.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Under Alternative 3, management protocols for hazardous materials and waste management would be the same as those described under the Preferred Alternative. The proposed development areas and thus the contaminated sites within the vicinity of possible construction activity would be the same. However, since only core projects would be constructed under this alternative, the amount of hazardous materials and waste that would potentially be utilized and/or produced during construction would be less than what would occur under the Preferred Alternative.

For construction, demolition, and renovating activities, hazardous material use, storage, and disposal would be managed in compliance with all applicable USMC, DoN, DoD rules and regulations as well as Federal and State laws. For instance, prior to the start of construction at the Station, preconstruction meetings would be held to discuss the development of an Environmental Protection Plan. The contractors are required to produce the plan that includes a description of the environmental training program for construction workers performing work at the specific locations and presents procedures to protect coastal zones, sensitive species and habitat, wetlands, floodplains, surface water, and addresses IR sites, historic ranges, and other known contaminated areas. The Environmental Protection Plan also addresses permitting, monitoring, and quality control procedures. The Hazardous Waste Management Plan would be updated as necessary to address the additional hazardous waste generated as a result of Alternative 3 (i.e. construction debris and waste from additional operations and personnel living on the Station).

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no new construction or ground disturbance at the Station; therefore, only minimal impacts with respect to hazardous materials and waste management would occur. The addition of personnel would result in an accompanying minimal increase in hazardous material use and hazardous waste disposal. The Hazardous Waste Management Plan would be updated as necessary to address these minor increases.

3.11 NOISE

In this section noise is defined, the existing noise environment at all three Installations is described, potential impacts are analyzed, and then comparisons with baseline noise conditions are presented. Cumulative impacts to the noise environment are presented in Section 4.0.

Not all people are affected the same way by the same sounds. In varying situations, common sounds can interfere with our speech, disturb our sleep, or interrupt a routine task. When this occurs, these sounds become noise. Noise, therefore, is the term used to identify disagreeable, unwanted sound that interferes with normal activities or diminishes the quality of the environment (USACHPPM 2006a). Just as some people find hard rock music annoying, others find it soothing and relaxing; it is that way with sound generated from military activities—some hear the sound of freedom, others find it annoying, while many think of it both ways.

Sound intensity is measured in units called decibels (dB). The dB system of measuring sound provides a simplified relationship between the physical intensity of sound and its perceived loudness to the human ear. The dB scale is logarithmic; therefore, sound intensity increases or decreases exponentially with each dB of change. For example, 10 dB yields a sound level 10 times more intense than 1 dB, while a 20-dB level equates to 100 times more intense, and a 30-dB level is 1,000 times more intense. Table 3.11-1 presents sound levels in dB for typical sounds found in our environment and the reaction that might occur when a person (or receptor) is exposed to this noise.

Source (at a given distance)	Decibel (dB)	Typical	
Source (at a given distance)	Level	Reaction	
	140	Dain	
Civil Defense Air Siren (100 ft)	130	Palli	
Jackhammer (50 ft)	120	Maximum	
Pile Driver (50 ft)	110	Vocal Effort	
Ambulance Siren (100 ft)	100	Very	
Motorcycle (25 ft)	00	Annoying/	
Power Lawnmower	90	Discomfort	
Garbage Disposal (3 ft)	80		
Alarm Clock	80	Intrusive	
Vacuum Cleaner (3 ft)	70		
Normal Conversation (5 ft)	60	Normal	
Dishwasher	00	Speech	
Light Traffic (100 ft)	50	Speech	
Bird Calls (Distant)	40	Orviet	
Soft whisper (5 ft)	30	Quiet	
	20		
	10	Just Audible	
Human Breathing	0		

 Table 3.11-1
 Common Sound Levels Measured in Decibels

The USMC uses a widely accepted metric to measure environmental noise levels for their activities, the day-night sound level (DNL) measurement. This metric is recommended by the USEPA, used by most Federal agencies when defining their noise environment, and applied as a land use planning tool for predicting areas of potential annoyance both inside and outside of an Installation's boundaries. DNL describes the average daily acoustic energy over an entire year—meaning that the whole spectrum of sound, from quiet to loud noises, is averaged across the year. The DNL metric also incorporates a —prealty" for nighttime noise (normally 10:00 p.m. to 7:00 a.m.) when loud sounds are more noticeable and annoying. However, when measuring noise levels from small arms and large caliber sources, weighted noise metrics are used (USACHPPM 2006a).

The weighted measurements screen out the very high- and low-sound frequencies that cannot be heard by humans. A-weighted noise measurements reflect what people hear, noted as dBA or ADNL. A-weighting is typically applied to measuring noise for small arms activities. For low-frequency sounds that can cause vibrations, a C-weighting metric is used; noted as dBC or CDNL. Many find that these lower frequency sounds, like artillery and explosions, are more annoying than other noises so that is taken into account in this metric.

Noise Modeling. To derive the noise level contours, the following software models are used for small arms ranges, large caliber ranges, and airfields:

- Small Arms Range Noise Assessment Model (SARNAM) calculates and displays noise level contours (in dBA of DNL) for firing operations at small arms ranges. It considers the type of weapon and ammunition, number of rounds fired, range attributes such as size and barriers, time of day weapons are used, and the directivity of both muzzle blast and projectile.
- BNOISE2 calculates and portrays noise level contours for C-weighted events for large caliber weapons. It considers the weapon, ammunition, rounds fired, time of day fired, range size, and direction of both the muzzle and projectile.
- NOISEMAP is used to generate noise level contours in DNL around an airfield. This model uses the aircraft type and number; time of operation to depict noise levels at an airfield; and the takeoffs, landings, touch and go, as well as closed patterns (USACHPPM 2006b).

All of these models are used to characterize the noise environment found within and adjacent to these active Installations.

Noise Perception. When hearing the noise, the reactions of people can be affected by a number of variables:

- intensity (how loud the noise is);
- duration (does it last a second or an hour);
- repetition (does it occur every day or once a month);
- abruptness of the onset or stoppage of the noise (does it startle or come about at unpredictable times);
- background noise levels (does the person hearing the noise live in an urban or rural environment);
- interference with activities (does it interrupt phone conversations, listening to the radio or television);
- previous community experience with the noise (some neighbors may be new or have lived there for most of their lives);
- time (does noise occur in the middle of the day or night);
- fear of personal danger from the noise sources (can the noise be associated with ammunition escaping from the Installation boundary); and
- extent that people believe the noise can be controlled (USACHPPM 2006b).

These variables factor into how annoyed the community may feel at any one time when noise is generated at an Installation. To assist the community in land-use planning and zoning, the USMC employs two programs: the Range Air Installation Compatible Use Zone (RAICUZ) (OPNAVINST 3550.1A) for air-to-ground operations, the Air Installation Compatible Use Zone (AICUZ) (OPNAVINST 11010.36A) for airfield operations, and to evaluate ground-to-ground range operations, the USMC uses the Army Range Compatible Use Zone (RCUZ) (Army Regulation 200-1, Chapter 7) modeling parameters because there is no formal guidance regarding such operations from the USMC and DoN. These three programs: 1) help military Installations in determining noise generated by military training and operations, 2) evaluate how the noise of these operations may impact adjacent communities and associated activities, and 3) assist military planners as they plan existing and proposed land uses on an Installation. Just as importantly, these plans are released to the public through the Joint Land Use Study (JLUS) program. MCB Camp Lejeune uses the RCUZ program for evaluating noise generated at its ranges, and MCAS New River and MCAS Cherry Point use the AICUZ program to evaluate aircraft noise within the airfield environs; both programs assist USMC and community planners in developing compatible land uses within and adjacent to these busy Installations.

Once the noise contours are generated, they are then classified into three noise zones corresponding to compatibility with certain types of land use: Zone I, Zone II, and Zone III. The following and Table 3.11-2 present these zones and the types of activities that are considered compatible with sensitive receptors and land use within these zones (USACHPPM 2006b).

- Zone I includes all areas around a noise source in which DNL is less than 65 dBA or 62 dBC. This area is usually suitable for all types of land use activities (e.g., homes, schools, and hospitals). Zone I on maps are simply areas that are neither Zone II nor Zone III.
- Zone II consists of an area where the DNL is between 65 and 75 dBA or 62 and 70 dBC. Exposure to noise within this zone is normally considered incompatible with noise-sensitive land uses and use of the land within the zone should normally be limited to activities such as industrial, manufacturing, transportation, and resource production (e.g., industrial parks, factories, and highways).
- Zone III is an area around the noise source in which the DNL is greater than 75 dBA or 70 dBC. The noise level within this zone is considered incompatible with noise sensitive land uses such as churches, schools, parks, and playgrounds.

Zone	Decibel A-weighted/ C-weighted	Compatibility Level		
Ι	<65 dBA / <62 dBC	Compatible		
II	65 to 75 dBA / 62 to 70 dBC	Normally Incompatible		
III	>75 dBA / >70 dBC	Incompatible		

 Table 3.11-2
 Zone and Compatibility

3.11.1 Affected Environment

For noise, the ROI includes those areas potentially impacted by noise generated at the Installations from small arms, large caliber weapons, and aircraft operations.

3.11.1.1 MCB Camp Lejeune/MCAS New River

The developed areas of MCB Camp Lejeune and MCAS New River are found adjacent to the urban area of the City of Jacksonville. The background noise environment in an urban setting includes noise generated on highways, street traffic, police/ambulance sirens, aircraft, construction activities, railroads, and commercial and industrial activities. In small towns, however, like those found to the west, southwest, and south of the training areas (e.g., Verona, Sneads Ferry, and Holly Ridge), the usual background noise comes from vehicles, lawn mowers, and overflying aircraft. To the north and northeast of the two Installations, noise receptors largely consist of residential homes and farms.



Source: MCB Camp Lejeune 2009a.

Figure 3.11-1 MCB Camp Lejeune Large Caliber Weapons Noise Zones

Noise generated at MCB Camp Lejeune comes from small arms firing, mortar, tank gun and artillery firing and impacts, pyrotechnical devices (e.g., flares), rotary and fixed-wing tactical aircraft, and wheeled and heavy-tracked vehicle operations. Figure 3.11-1 represents the CDNL contours for both large-caliber weapon firing and explosive detonation noise (MCB Camp Lejeune 2009a).

BNOISE2 modeling program was used to develop the large caliber weapons noise contours from average range operational conditions between 2004 and 2006 provided by MCB Camp Lejeune Range Control. Noise emanating from small arms ranges remains within Installation boundaries and wheeled as well as tracked vehicles do not generate noise levels that would affect off-Installation land uses; therefore, they are not included in this analysis. Unlike topographic contours on a map, noise contours are not intended to be precise representations of noise zones. Geographic features, forest canopy, weather conditions, and the receiver's perception of the source, can influence the impact of noise. Noise contours cannot be so precise as to define one side of a noise contour line as clearly compatible and the other as incompatible.

MCB Camp Lejeune. Under existing conditions, no Noise Zone III contours extend into *lands* outside Installation boundaries. Within the Installation, noise levels in Zone III occur over 27,954 acres (Table 3.11-3) with 6,120 land acres found outside Installation boundaries in Zone II. Eleven sensitive noise receptors are impacted by Zone II levels; no sensitive receptors are found within Noise Zone III (Table 3.11-4). In terms of land use compatibility, Table 3.11-5 presents noise zones and the number of acres found within each zone. Under existing conditions, Zone III contours are found entirely within Installation boundaries and off the coastline. Noise Zone II levels impact 1,733 acres of off-Base residential areas, with another 4,364 acres being impacted in commercial, industrial, open, public, and recreational lands. The total off-Base Noise Zone II areas (no Zone III levels are found over lands outside Installation boundaries) impacted represent about 5 percent of the total acreage. Another 19 percent is found over water and 76 percent within Installation boundaries.

Tuble 5.11-5 Duseline MCD Cump Lejeune Moise Zones					
			Over Water-	Over Water-	Total Zone
Zone	On-Base	Off-Base	On-Base	Off-Base	Acres
Zone II	50,254	6,120	9,455	16,703	82,532
Zone III	27,954	0	6,150	6,649	40,753
Total	78,208	6,120	15,605	23,352	123,285

Table 3.11-3 Baseline MCB Camp Lejeune Noise Zones

Table 3.11-4 Noise Sensitive Receptors within Existing Noise
Zones in the Environs of MCB Camp Lejeune

Receptor	Zone II	Zone III	Total
Schools	3	0	3
Churches	7	0	7
Parks	1	0	1

Land Use Category	Zone II	Zone III	Total Acres	Percent Total
Commercial	35	0	35	0.03
Industrial	79	0	79	0.06
Open	4,157	0	4,157	3.37
Public	89	0	89	0.07
Recreational	4	0	4	0.00
Residential	1,733	0	1,733	1.41
Off-Base Water	16,752	6,649	23,374	18.96
Military	59,710	34,104	93,813	76.10
Total	82,532	40,753	123,284	100

MCAS New River. At MCAS New River, aircraft operations are the primary source of noise. NOISEMAP was used to develop noise contours generated at the airfields (Figure 3.11-2); operational data were provided by Aviation Safety and Air Traffic Control Divisions (personal communication, Klein 2008). Under existing conditions, aircraft operational Noise Zone II extends off-Station for 34 acres, no areas off-Station are exposed to Zone III noise levels. No sensitive noise receptors fall within the Noise Zones II or III (Table 3.11-6). There are no sensitive receptors within existing noise zones (Table 3.11-7). In terms of land use compatibility, Table 3.11-8 presents noise zones and the number of acres found within them. Under existing conditions, 34 acres of off-Station residential areas are affected by Zone II levels, with Zone III levels entirely contained within Station boundaries.

At MCAS New River, aircraft operations (including all fixed wing and rotary aircraft found at the Station as of 2001) are the major generator of noise (MCAS New River 2001). NOISEMAP was used to develop noise contours from operational data provided by Aviation Safety and Air Traffic Control Divisions (Figure 3.11-2).

Zone	Zone II	Zone III	Total		
On-Station	2,685	525	3,210		
Off-Station	34	0	34		
Total	2,719	525	3,244		
*The additional acres in Zone II and III are found over water.					

Table 3.11-6 Baseline MCAS New River Noise Zones

While these noise zones represent the average noise levels over a given year, they do not necessarily reflect exactly what is heard on a day-to-day basis; however, use of these metrics is the best measurement of the noise environment over time and provides the USMC and the community with a management tool for land use development.



Source: MCAS New River 2001.

Figure 3.11-2 MCAS New River Noise Zones

Noise Zones in the Environs of MCAS New River						
Receptor	Zone II	Zone III	Total			
Schools	0	0	0			
Churches	0	0	0			
Parks	0	0	0			

Table 3.11-7 Noise Sensitive Receptors within ExistingNoise Zones in the Environs of MCAS New River

MCAS IVEW KIVEF							
Land Use Category	Zone II	Zone III	Total Acres	Percent Total			
Commercial	0	0	0	0			
Industrial	0	0	0	0			
Open	0	0	0	0			
Public	0	0	0	0			
Recreational	0	0	0	0			
Residential	34	0	34	0.5			
Military	2,099	5,225	7,325	99.5			
Total	2.099	5.225	7.359	100			

Table 3.11-8 Land Use Within Noise Zones AroundMCAS New River

To help reduce noise impacts on the community, the two Installations have imposed the following voluntary restrictions per Base Order P3570.1A:

- limiting flights below 1,000 feet over densely populated areas,
- advising pilots to make every effort to fly in such a manner that individuals do not believe they or their property are endangered,
- limiting close-in downwind operations after sunset, and
- restricting night training for certain large-caliber weapons.

A noise complaint system is maintained at the MCB Camp Lejeune Range Control Office via a dedicated complaint hotline staffed between 7:00 a.m. and 5:00 p.m. and recorded on voice mail between 5:00 p.m. and 7:00 a.m. Callers are asked to provide an address and phone number and the Range Control Office investigates all complaints by reviewing the range activity records and noise monitoring equipment to determine whether complaints correlate with specific training events. Whenever possible, range control personnel return calls to discuss the complaint and provide information about MCB Camp Lejeune's noise mitigation procedures.

The MCAS New River Airfield Operations Department maintains a noise complaint system staffed during airfield operating hours. All complaints are logged and information is collected from the caller concerning the time and location of the complaint. The duty officer investigates the complaint by reviewing the information with Air Traffic Control to determine a correlation with training operations in that area. The caller is then contacted by the Operations Department to discuss the complaint and the Air Station's ongoing noise mitigation efforts (Personal communication, Klein 2008).

3.11.1.2 MCAS Cherry Point

At MCAS Cherry Point, aircraft operational Noise Zone II extends off-Station for 31,417 acres (Table 3.11-9 and Figure 3.11-3) (MCAS Cherry Point 2001a). There are 32 sensitive noise receptors underlying Noise Zone II and 6 under Noise Zone III (Table 3.11-10). In terms of land use compatibility, Table 3.11-11 presents noise zones and the number of acres found within these zones both on- and off-Station. While noise generated at Marine Corps Auxiliary Landing Field Bogue, Marine Corps Outlying Landing Field Atlantic, as well as Target Ranges BT-9 and BT-11 fall outside the ROI for this proposed action, operational noise levels (both existing and those anticipated into the future) have been evaluated at these training assets under separate USMC/Navy EAs, and were made available to the public in February 2009. In addition, noise levels associated with the proposed basing of F-35B (Joint Strike Fighters) at MCAS Cherry Point will be evaluated in a separate EIS. However, noise impacts from all of these activities will be included in the impact analyses found within that EIS analyses anticipated to begin in early 2009.

MCAS Cherry I onit and Environs							
	Zone II Zone III					Total	
	65-70	70-75	75-80	80-85	>85	10101	
On-Base	2,214	2,333	1,714	1,427	1,802	9,490	
Off-Base	27,610	3,807	1,512	281	1	33,211	
Total	29,824	6,140	3,226	1,708	1,803	42,701	

 Table 3.11-9 Baseline Noise (DNL) Contours for

 MCAS Cherry Point and Environs

Note: These totals also account for acres overlying water.

Table 3.11-10 Noise Sensitive Receptors within Existing No	nse
Contours in the Environs of MCAS Cherry Point	

Receptor	Zone II	Zone III	Total
Schools	4	2	6
Churches	20	4	24
Parks	10	0	10
Total	32	6	40



Source: MCAS Cherry Point 2001a.

Figure 3.11-3 MCAS Cherry Point Noise Zones

	Zone	e II	Zone III				
Land Use Category	65-70 DNL	70-75 DNL	75-80 DNL	80-85 DNL	> 85 DNL	Total Acres	Percent Total
Commercial	205	94	45	37	0	380	2.1
Industrial	106	217	78	11	0	412	2.3
Open	1,048	1,142	442	43	0	2,675	14.7
Public	1,785	1,854	613	143	1	4,396	24.2
Recreational	12	61	0	0	0	72	0.4
Residential	725	337	75	8	0	1,145	6.3
Military	2,157	2,252	1,609	1,304	1,794	9,116	50.1
Total	6,038	5,956	2,862	1,547	1,795	18,197	100.0

Table 3.11-11 Land Use Within Noise Levels Around MCAS Cherry Po	int
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Noise Zone III levels currently extend off-Station over commercial, industrial, open, public, and residential lands, creating existing incompatible land uses. However, MCAS Cherry Point and the Auxiliary Landing Field Bogue Field have both implemented a number of noise abatement procedures to minimize noise impacts to adjacent communities. These abatement measures include limiting certain noise-producing events that are particularly loud, such as engine maintenance run-ups, touch-and-go operations, and low approaches. Operations are normally restricted during the noise abatement hours which occur between 11:00 p.m. and 7:00 a.m., Monday through Saturday and between 10:00 p.m. and 1:00 p.m. on Sunday. In addition, there is a standing Aircraft Incident/Noise Abatement Committee chaired by the Director of Operations to continually address noise issues and the appropriate handling of community complaints.

Noise complaints are recorded by the Airfield Operations Duty Officer on a Noise Complaint Form, and forwarded to Flight Clearance for further investigation. The investigation may include any or all of the following: review of flight schedules, flight strips and radar tapes, consultation with pilots and controllers on duty. The form is then sent to the Community Plans and Liaison (CP&L) Office, with copies to the Wing Safety Officer and the Director of Operations. The nature and location of the complaint is reviewed. The CP&L Officer notifies the complainant about the investigation findings and actions taken, as appropriate. The complaint forms are maintained in the CP&L Office files for future reference. Noise complaints can arise from a variety of causes, often related to the intensity and frequency of the events as well as the individual sensitivity of the person filing the complaint. The complaints often arise outside the areas depicted by noise contours. This is often due to a single event that is unusual (a loud plane flying over an area not commonly overflown). In some cases, the complaints outside the areas included in the noise contours are due to the fact that noise contours and land use recommendations are based on average

annoyance responses of a population, and some people have greater noise sensitivity than others (MCAS Cherry Point 2001a).

3.11.2 Environmental Consequences

This section provides a detailed description of impacts associated with implementation of the alternatives including the No Action Alternative. Noise impacts result from perceptible changes in the overall noise environment that increase annoyance or affect human health. Annoyance is a subjective impression of noise wherein people apply both physical and emotional variables. To increase annoyance, the cumulative noise energy must increase measurably. Human health effects such as hearing loss and noise-related awakenings can result from noise. For this EIS, noise is evaluated for both construction and operational activities. It is not anticipated that maintenance activities would noticeably contribute to the noise environment due to their intermittent nature and short duration. Factors considered in determining the extent of impacts with respect to noise include:

- The increase of any Zone III (incompatible) noise contours where there are sensitive noise receptors (residences, hospitals, libraries, and etc.) due to operations. This factor is intended to capture areas where there would be —lgh annoyance" effects from operational noise, alongside health effects and complaints.
- Construction noise resulting in an hourly equivalent sound level of 75 dBA (based on USEPA data for construction noise) at a sensitive receptor (such noise exposure would be equivalent to noise Zone III) or *consistent* exposure to noise levels at 85 dBA, over an 8-hour period—the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (NIOSH 2006).

To characterize construction activity noise levels, this analysis used USEPA data (1971). Noise from construction activity varies with the types of equipment used and the duration of use (Figure 3.11-4). During operation, heavy equipment and other construction activities generate noise levels ranging typically from 70 to 90 dBA at a distance of 50 feet. Commonly, use of heavy equipment occurs sporadically throughout the daytime hours.

Under the Proposed Action, construction would occur over a 5- to 6-year time frame, during which time minimal to negligible impacts (both inside the Installations and outside in adjacent communities) from construction noise would result for the following reasons:

п

NOISE LEVEL (dBA) REFERENCED AT 50 FEET						FEET		
		6	0 7	70 8	0	90 1	00 110	
		COMPACTORS (ROLLERS)						
		FRONT LOADERS						
NGINE	VING	BACKHOES						
ION E	H MO	TRACTORS						
BUST	EART	SCRAPERS, GRADERS						
COM		PAVERS						
ERNAI		TRUCKS						
3Y INT	DLING	CONCRETE MIXERS						
RED E	MATERIALS HANI	CONCRETE PUMPS						
POWE		CRANES (MOVABLE)						
MENT		CRANES (DERRICK)						
GUIPI	۲Y	PUMPS						
	IONAI	GENERATORS						
	STAT	COMPRESSORS						
	NT	PNEUMATIC WRENCHES						
APACT	JIPME	JACKHAMMERS AND ROCK DRILLS						
≤	EQI	PILE DRIVERS (PEAKS)						
l	IEK	VIBRATORS						
i	0	SAWS						
NOT SOU	OTE: Based on limited available data samples SOURCE: EPA, 1971 "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances," NTID 300-1.							

- Heavy equipment that would generate the highest noise levels would not be used consistently enough to exceed the hourly equivalent noise level of 85 dBA for more than 1 hour beyond the boundaries of the Installations.
- Outdoor noise levels at the closest off-Base sensitive receptors would be reduced by approximately 20 to 30 dB, respectively, as a result of distance attenuation. Additional attenuation as a result of the terrain would further reduce the effects of construction noise.
- Temporary increases in truck traffic (e.g., dump trucks, fill transports) within and near the construction corridors would produce localized noise for brief periods, but would not create any adverse noise impacts to human health, the neighboring community, or within the Installations.

3.11.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) noise conditions as a result of this alternative would occur. However, that does not mean that the noise environment at MCB Camp Lejeune/MCAS New River has not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected the noise environment. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Implementation of the Preferred Alternative would result in no net changes in the noise environment at MCB Camp Lejeune. Although the noise contours associated with the Installations currently extend outside Installation boundaries, it is not anticipated these contours would change under the Preferred Alternative. The addition of the new Base road would create a new noise source within the housing areas. With the establishment of low speed zones through residential areas, the new road would not have a considerable change to the existing noise environment. Noise levels at MCB Camp Lejeune due to range activities have been evaluated in a separate EA (MCB Camp Lejeune 2009a); it is not anticipated that noise levels would increase to such an extent to cause any adverse impacts.

Currently, MCAS New River is conducting a noise analysis to include the three new helicopter squadrons joining the inventory. It is not anticipated; however, that these squadrons would significantly change the noise contours found today and presented in Figure 3.11-2. For both Installations, the increased potential for incompatibilities within off-Base Noise Zone II areas (or noise levels greater than 72 dBA) would continue as development pressure on adjacent lands grows.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and/or temporary/relocatable buildings already in place.

The potential impacts to the noise environment at MCB Camp Lejeune and MCAS New River associated with the reduced construction activity under Alternative 3 would have similar impacts as described under the Preferred Alternative. No changes to the current noise contours at either Installation are anticipated.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and/or temporary/relocatable buildings already in place.

Under Alternative 4, no additional construction activity would occur. Noise levels at MCB Camp Lejeune due to range activities from the increased personnel have been evaluated under a separate EA (MCB Camp Lejeune 2009a); it is not anticipated that noise levels would increase to such an extent to cause any adverse impacts.

3.11.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) noise conditions as a result of this alternative would occur. However, that does not mean that the noise environment at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have

affected the noise environment. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Although the noise contours associated with MCAS Cherry Point extend off the Station, it is not anticipated these contours would change under the Preferred Alternative; however, the potential for incompatible development within these zones increases with increased development pressure on adjacent lands. The Preferred Alternative is expected to spur growth in local communities and the importance of continuing efforts to work with local governments to plan for compatible development is underscored. Operational noise levels at MCAS Cherry Point training ranges have been evaluated in a separate EA (MCAS Cherry Point 2009) and are included herein by reference, it is not, however, anticipated that noise levels would increase to such an extent to cause any adverse impacts in areas adjacent to these ranges. Existing noise abatement programs would continue to minimize impacts to adjacent communities.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and/or temporary/relocatable buildings already in place.

The potential impacts to the noise environment at MCAS Cherry Point associated with the reduced construction activity under Alternative 3 would have the same impacts as described under the Preferred Alternative. No changes to the current noise contours at the Station are anticipated.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and/or temporary/relocatable buildings already in place.

Under Alternative 4, no additional construction activity would occur. Operational noise levels at MCAS Cherry Point training ranges have been evaluated in a separate EA (MCAS Cherry Point 2009) and are included herein by reference, it is not, however, anticipated that noise levels would increase to such an extent to cause any adverse impacts in areas adjacent to these ranges.

3.12 AIR QUALITY

The air quality analysis for this EIS has evaluated combined baseline conditions at all three Installations. This combined analysis was done to avoid excessive duplication of information that would result due to their proximity (the three Installations are in the same Air Quality Control Region), and similarities with regard to the Proposed Action and its impacts. Additionally, the three Installations have similar emission sources and possess Title V permits. The estimated emissions, however, associated with the Proposed Action are separately presented in the environmental consequences section.

3.12.1 Affected Environment MCB Camp Lejeune/MCAS New River and MCAS Cherry Point

The air quality ROI is defined as the Southern Coastal Plain Intrastate Air Quality Control Region (defined in 40 CFR Part 81.152). This Air Quality Control Region includes the counties of Brunswick, Carteret, Columbus, Craven, Duplin, Greene, Jones, Lenoir, New Hanover, Onslow, Pamlico, Pender, and Wayne—inclusive of the three-county region that has been used throughout this document. The air quality analysis primarily focuses on the impacts to Craven and Onslow Counties since that is where the majority of the construction and operational impacts would be concentrated.

Evaluation of air quality impacts requires knowledge of: 1) applicable regulatory requirements for criteria, hazardous, and toxic air pollutants; 2) types and sources of emissions for stationary sources and the horizontal and vertical extent of emissions from mobile sources such as construction equipment or vehicles; 3) location and context of the ROI associated with the Proposed Action; and 4) baseline conditions.

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

The significance of the pollutant concentration is determined by comparing it to the Federal and State ambient air quality standards. The Clean Air Act (CAA) and its subsequent amendments established the National Ambient Air Quality Standards (NAAQS) for the following "criteria" pollutants: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter less than 10 microns (PM₁₀), less than 2.5 microns (PM_{2.5}), and lead (Pb). These standards (Table 3.12-1) represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. Short-term standards (1-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects. On March 12, 2008,

USEPA promulgated a revision to the 8-hour ozone standard for ground-level ozone, reducing it from 0.08 parts per million (ppm) to 0.075 ppm. This standard became effective on May 27, 2008. In addition to the national standards, the NCDENR has a State standard for total suspended particulates (TSP), also included in Table 3.12-1.

Pollutant ¹	Averaging Time	Primary	Secondary
Ozone (O ₃)	8 Hours	0.075 ppm^2	Same as Primary
Carbon Monoxide (CO)	8 Hours	9.0 ppm	
	1 Hour	35 ppm	None
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.053 ppm	Same as Primary
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	0.03 ppm	None
	24 Hours	0.14 ppm	
	3 Hours		0.5 ppm
Particulate Matter (PM ₁₀)	24 Hours	$150 \ \mu g/m^{3 \ 2}$	Same as Primary
Particulate Matter (PM _{2.5})	Annual	$15 \ \mu g/m^3$	Same as Primary
	24 Hours	$35 \ \mu g/m^3$	
Lead (Pb)	Rolling Three Month Average	$0.15 \ \mu g/m^3$	Same as Primary
North Carolina TSP Standard	Annual Geometric Mean	$75 \ \mu g/m^3$	
	24 Hours	$150 \ \mu g/m^3$	

Table 3.12-1 National and North Carolina Ambient Air Quality Standards

Notes: ¹ These standards, other than for ozone and those based on annual averages, must not be exceeded more than once per year. The ozone standard is attained when the expected number of days per calendar year with a maximum hourly average concentration above the standard is equal to or less than one.

 2 ppm = parts per million by volume, $\mu g/m^3$ = micrograms per cubic meter.

Hazardous Air Pollutants. In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs) which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulate 188 HAPs based on available control technologies.

Some HAPs are associated with diesel and gasoline exhaust. Since these HAPs are emitted from mobile sources, they are called Mobile Source Air Toxics, which include benzene, aldehydes, 1,3-butadiene, and a class of compounds known as polycyclic aromatic hydrocarbons. The USEPA recently promulgated new regulations to reduce the amount of benzene in gasoline and reduce exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees). The reduction in benzene content, from 1 percent to 0.62 percent needs to be implemented by 2011. The USEPA is also requiring new standards to reduce non-methane hydrocarbon exhaust emissions from new gasoline-fueled passenger vehicles. Non-methane hydrocarbons include many mobile source air toxics, such as benzene. The new

standards require a maximum non-methane hydrocarbon emission rate of 0.3 grams/mile for vehicles weighing 6,000 pounds or less and 0.5 grams/mile for vehicles above 6,000 pounds (which include trucks up to 8,500 pounds and passenger vehicles up to 10,000 pounds). The standards phase in between 2010 and 2013 for the lighter vehicles, and between 2012 and 2015 for the heavier vehicles.

Toxic Air Pollutants. North Carolina regulates 105 separate toxic air pollutants (TAPs) under its toxic air pollutant control program. TAPs are compounds that carry the potential for adverse health effects at certain ambient levels established by NCDENR's Scientific Advisory Board. The list of TAPs differs from that of the 188 HAPs. Eighteen TAPS are not included on USEPA's list of HAPs, and 129 HAPs are not considered as TAPs in North Carolina.

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

Recent observed changes due to global warming include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (Intergovernmental Panel on Climate Change 2007). Predictions of long-term negative environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a substantial reduction in winter snow pack. In the affected environment, predictions of these effects include degradation of air quality, a rise in sea level that would displace coastal businesses and residences, damage to marine and terrestrial ecosystems, as well as an increase in the incidence of infectious diseases, asthma, and other human health problems (California Environmental Protection Agency 2006).

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2) , methane (CH_4) , and nitrous oxide (N_2O) , and combustive emission sources are a prime source of these GHG emissions. Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2 , which has a value of one. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equalmass basis. To simplify analyses, total GHG emissions from a source are often expressed as a CO_2
equivalent (CO_{2e}). The CO_{2e} is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

Federal agencies are, on a national scale, addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders, most recently, EO 13423. In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EO 13123 and the Energy Policy Act of 2005, the DoN and USMC have implemented a number of renewable energy projects (Naval Facilities Engineering Command [NAVFAC] 2006). The Marine Corps continues to promote and install new renewable energy projects within the southeast region. The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change.

At the state level, the North Carolina Environmental Management Commission chose to delay the vote on the North Carolina Annual Emissions Reporting Rule (15A NCAC 02Q .0207) until the fall of 2009 (NCEMC 2009). If the Environmental Management Commission votes to adopt the rule, the earliest it could become state effective (following the review by the Rules Review Commission) in a timeframe that would require North Carolina Title V facilities to include GHG emissions with their 2009 inventory (to be submitted by June 30, 2010) (NCEMC 2009).

New Source Review and Prevention of Significant Deterioration. As part of the 1977 CAA Amendments, Congress established the New Source Review program. This program is designed to ensure that air quality is not significantly degraded from the addition of new and modified factories, industrial boilers, and power plants. The New Source Review assures that new or modified emission sources do not have significant adverse impacts on a locality's air quality. In areas with clean air, especially pristine areas like designated Class I areas, New Source Review assures that new emissions do not significantly worsen air quality.

The CAA Amendments also established a national goal of preventing degradation or impairment in any federally-designated Class I area. As part of the Prevention of Significant Deterioration program, mandatory Class I status was assigned by Congress to all international parks, national wilderness areas, memorial parks greater than 5,000 acres and national parks greater than 6,000 acres in existence in 1977. The closest Class I area to MCB Camp Lejeune/MCAS New River and MCAS Cherry Point is Swanquarter Wilderness Area, which is 75 miles (121 kilometers [km]) from MCB Camp Lejeune and 45 miles (72 km) from MCAS Cherry Point.

Under the new Federal Land Manager's Air Quality Related Values Workgroup Final Draft Phase I Report (June 2008), the Workgroup established criteria for sources greater than 50 km from a Class I area. These criteria state that a source located greater than 50 km from a Class I area is considered to have negligible impacts if its total sulfur oxides (SO_x), nitrogen oxides (NO_x), PM_{10} and sulfuric acid (H_2SO_4) annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class 1 area is 10 or less (USFS/NPS/USFWS 2008). As part of the air impacts analysis, the air emissions associated with the Proposed Action are evaluated against this Quantity/Distance (Q/D) threshold.

Attainment Status. Air quality is of concern relative to the Proposed Action because its implementation has the potential to introduce some of the above-described air pollutants to the atmosphere. The current attainment status designations for areas within North Carolina are summarized in 40 CFR Part 81.334. Craven and Onslow Counties are classified as "better than national standards" for total suspended particulates (TSP, also referred to as PM, which includes PM_{10}) and for SO₂. Craven and Onslow counties are designated as "unclassifiable/attainment" for CO, $PM_{2.5}$ and ozone and "cannot be classified or better than national standards" for NO₂.

As per 40 CFR Part 70.2, MCB Camp Lejeune/MCAS New River and MCAS Cherry Point are major sources of both criteria pollutants and HAPs. Potential emissions of criteria pollutants exceed the 100 tons per year threshold at the Installations. Additionally, they exceed the HAP thresholds of 10 tons per year of an individual HAP or 25 tons per year of combined HAPs. Under Title V of the CAA, MCB Camp Lejeune/MCAS New River and MCAS Cherry Point are required to obtain construction and operation permits from the NCDENR Division of Air Quality for certain emission sources and their associated air pollution control equipment. The permit includes a list of the applicable regulations, the emissions limits, and specifies how equipment is to be operated in order to minimize emissions. Types of emission sources found at the Installations include:

- Abrasive blasting
- Boilers
- Coal storage and handling and ash handling
- Developing labs
- Engine test stands
- Fiberglass repair
- Fire training areas
- Fuel dispensing and storage tanks

- Grinding booths
- Internal combustion engines
- Jet engine and auxiliary power unit testing
- Lime storage
- Non-destructive inspection
- Ordnance destruction
- Paint booths
- Paint gun cleaners

- Paint stripping
- Parts cleaners
- Parts ovens
- Remediation
- Shaving/Emergency generators
- Solid waste landfills
- Surface coating
- Water treatment
- Welding
- Woodworking

Installation personnel who operate equipment emitting regulated air pollutants must satisfy monitoring and record keeping requirements of the permit. The air emissions inventory, required on a yearly basis, presents these emission levels to the USEPA and NCDENR who are charged with developing and enforcing the air quality regulations. These agencies also make regular Installation site visits to perform inspections of records and equipment.

3.12.2 Environmental Consequences

The assessment of impacts to air quality is based on comparing baseline use and conditions to proposed changes associated with the Grow the Force initiative. The analysis compares baseline air emissions with projected future emissions, including construction and operations, to determine potential impacts.

Air quality impacts would be significant if emissions would: 1) increase ambient air pollution concentrations above the NAAQS, 2) contribute to an existing violation of the NAAQS, 3) interfere with, or delay timely attainment of the NAAQS, 4) impair visibility within federally-mandated Prevention of Significant Deterioration Class I areas, 5) result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total emissions of any pollutant subject to regulation under the CAA that is greater than 250 tons per year for attainment areas), or 6) for mobile source emissions, the increase in emissions to exceed 250 tons per year for any pollutant.

Pollutants considered in this EIS analysis include the criteria pollutants (excluding lead), HAPs measured by Federal standards, and the TAPs measured by North Carolina standards. Airborne emissions of lead are not included because there are no known significant lead emission sources in the region or associated with any of the alternatives.

Pollutants are generated by numerous sources, including diesel exhaust from construction equipment and operations such as fueling and painting. Additionally, HAPs and TAPs may be present in indoor air due to off-gassing of new materials (i.e., furniture, carpet) and may even be present due to inadequate or improper ventilation in areas where industrial operations are occurring (for example in paint shops, hangars, and vehicle maintenance areas).

In general, Volatile Organic Compound (VOC), CO, NO_x, and SO₂ emissions are primarily generated by diesel-fueled heavy equipment operating in construction areas. Particulate matter emissions, in the form of PM_{10} and $PM_{2.5}$ are primarily due to fugitive dust created by land disturbance activities, which include land clearing; soil excavation, cutting, and filling; trenching; and grading. The fugitive dust emission factor for PM_{10} , which is used as part of the $PM_{2.5}$ calculation (MRI 2005), is assumed to include the effects of typical control measures such as routine site watering for dust control. A dust control effectiveness of 50 percent is assumed, based on the estimated control effectiveness of watering (WRAP)

2004). Other sources of PM_{10} and $PM_{2.5}$ include diesel emissions from heavy construction equipment and tailpipe emissions from construction worker personally owned vehicles operating within the Installation boundaries (see Appendix E for further discussion of technical approach and assumptions) and emissions from commuting vehicles as Marines who live off-Base drive to and from work.

3.12.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. There would be no change to baseline air emissions at MCB Camp Lejeune/MCAS New River under this alternative. However, that does not mean that air quality conditions at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this proposed action that have taken place since FY06 or will be implemented in the future. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted. Table 3.12-2 presents the baseline emissions reported by MCB Camp Lejeune/MCAS New River in the 2006 Air Emission Inventory submitted to the NCDENR and the baseline emissions associated with 40,361 commuters to the Installation.

 Table 3.12-2 Stationary Source and Commuting Mobile Source Emissions for 2006,

 MCB Camp Lejeune and MCAS New River (Tons per Year)

Stationary Source Emissions	VOCs	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
2006 Inventory ¹	33.68	49.87	495.44	778.1	15.83	13.06
Personnel Commuting Emissions	187	2,482	153	2	5	< 5

¹Source: NCDENR 2009

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

In order to assess the air quality impacts of the Preferred Alternative, emissions for both the construction and operational factors (i.e., those associated with facility operations and vehicle/equipment maintenance and repairs) of the action were evaluated on an annual basis. This evaluation involved review of data supplied by the Installations (including Form 1391s, *Military Construction Project Data*, for information on the proposed construction activities) and new sources that would be required as part of the Preferred

Alternative. Appendix E contains the detailed emission calculations prepared to assess the air quality impacts.

This alternative involves a significant, multi-year construction effort at MCB Camp Lejeune and MCAS New River, involving over 1,870 acres and millions of square feet of new buildings. Additionally, as construction phases reach completion, the increase in operations begin to phase in, with resultant operational emissions associated with boilers, emergency generators, commuting workers, and fuel storage, as examples.

Construction. The timeline for construction at MCB Camp Lejeune/MCAS New River is 2010 to 2015. During this time, numerous buildings, roads, and infrastructure improvements would be undertaken to support the Preferred Alternative. Construction-worker vehicle emissions were also included in the analyses for driving within Installation boundaries (entry onto an Installation, lunch break, and exit from Installation). The average number of miles used for each vehicle was 10 miles per day. In addition, it was assumed that construction workers drive individually to the job site. This assumption, which does not address the possibility of carpooling, may be somewhat unrealistic given the recent volatility in gasoline costs and the likelihood that these costs will ultimately increase over the next few years. The impact of construction workers commuting to and from the Installations and their homes was not evaluated based on the assumption that the construction workers are considered permanent residents of the region, and would be driving to work at another construction project if they were not driving to the Installations for construction work. Table 3.12-3 summarizes the estimated annual emissions from construction activities.

						/
Year	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
2010	16.3	68.6	135.0	14.8	156.3	22.0
2011	22.8	98.6	179.7	19.9	186.0	27.8
2012	28.9	122.6	245.6	27.8	190.9	31.2
2013	27.7	121.1	232.3	26.3	152.4	26.7
2014	15.8	71.6	136.0	15.3	77.1	14.3
2015	4.4	24.2	31.5	3.5	18.7	3.5

 Table 3.12-3 Estimated Criteria Pollutant Emissions Due to Proposed Construction at MCB Camp

 Lejeune/MCAS New River 2010 – 2015: Preferred Alternative (Tons per Year)

Construction at MCB Camp Lejeune/MCAS New River, which spans 6 years, is anticipated to be the largest development project in the region. The primary emissions sources are NO_x emissions from diesel-powered heavy equipment and PM_{10} from land-disturbing activities.

A comparison of emissions from construction equipment and construction worker commuting emissions at MCB Camp Lejeune/MCAS New River with baseline emissions for Onslow County is presented in Table 3.12-4. The Onslow County emissions inventory is from USEPA's National Emission Inventory database and includes emissions from County stationary, area, and mobile sources. The maximum

quantity of emissions per criteria pollutant is compared to the County baseline, and the annual maximum is projected to occur in 2012. This comparison identifies whether or not the increase in air emissions for any of the pollutants exceeds 10 percent of the County's total annual air emissions.

Onsion County Linissions Inventory Treferred Auternative (Tons per Tear)								
	VOCs	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}		
Onslow County Baseline*	7,013	42,340	4,729	1,407	3,331	1,282		
Maximum Construction-related Emissions	28.9	122.6	245.6	27.8	190.9	31.2		
% of Baseline Emissions	0.4	0.3	5.2	2.0	5.7	2.4		

Table 3.12-4 Comparison of Maximum Construction Emissions to Onslow County Emissions Inventory – Preferred Alternative (Tons per Year)

Source: *USEPA 2001.

None of the criteria pollutant emissions from construction activities represent 10 percent or more of the Onslow County emissions during the peak construction period. NO_x emissions for 2012, while not exceeding the 250 ton per year mobile source significance criteria threshold, nonetheless are estimated to come very close to the threshold, at 245.6 tons. Because the NO_x emissions are generated by construction equipment, any NO_x reduction strategy will necessarily be focused on this equipment, and further discussion of reduction strategies is provided in Emission Reduction Practices below.

The Q/D threshold calculation indicates that MCB Camp Lejeune/MCAS New River construction incurs a Q/D factor of 5.2 (derived from 624.2/120); therefore, this factor is far below the 10 considered as a threshold indicating further Class I Air Quality Related Values impact analyses (see above New Source Emissions discussion). The short-term construction impacts may impair local air quality on a temporary basis, but not to an extent that degrades regional air quality. Emission-reducing activities are discussed below.

Operations. As facilities become functional and operational, additional boilers and an increase in the number of on-site emergency generators may increase emissions. Some of the new equipment would serve as replacements of aging systems; other new equipment would be required due to the increase in the operational size of the Installation. During the planning phase and before these facilities can come on line, the Installations are required to evaluate new sources and ensure that they are adequately addressed with regard to New Source Review and Prevention of Significant Deterioration regulations, construction permits, and Title V permit amendments or modifications.

Heat for the buildings proposed for construction would be provided through individual heating systems or by connecting to the central heating plant. At this time, it is estimated that 58 percent of new construction would have heat supplied by the existing central heating plant. The remaining new construction would be heated with individual boiler systems burning No. 2 fuel oil (11 percent), natural gas (23 percent), or propane (7 percent). Additionally, one building, a Recreation Center, is planned to be heated using a geothermal system.

Boilers at MCB Camp Lejeune/MCAS New River are classified into three categories:

- Utility: Heat input greater than 100 million British thermal units (MMBtu)/hour (hr);
- Industrial: Heat input between 10 and 100 MMBtu/hr; and
- Commercial: Heat input less than 10 MMBtu/hr.

None of the new boilers proposed for the new construction are to exceed 100 MMBtu/hr heat input; only two of the new boilers would exceed 10 MMBtu/hr. One of these, an 11 MMBTU/hr capacity boiler for a fitness center swimming facility, would burn fuel oil No. 2. The other boiler, projected to have a rated capacity of 19.5 MMBtu/hr, would be used for seven BEQ units, and would use natural gas as fuel. Of the remaining 49 individual boiler systems planned for installation, 13 of these are projected to be rated between 1 and 10 MMBtu/hr and the remaining 36 would have a heat input capacity of less than 1 MMBtu/hr. Thus, 49 of the 51 boilers expected to be installed to provide heat are small units capable of heating under the mild winter conditions typical of MCB Camp Lejeune/MCAS New River and be classified as "insignificant activities because of category" (15A NCAC 2Q .0503). The Installation would need to submit revisions for incorporation into the Title V permit to reflect these new stationary source emissions.

The increase in heating capacity requirements, both for the Central Heating Plant and with the introduction of individual boiler units, would be incremental over the 6-year period as construction is completed and buildings become operational. Thus, the full increase in heating capacity requirements is not expected to take effect until 2016.

Approximately 50 emergency generators would be installed with the new construction. Of these, 43 would have rated power of less than 600 kilowatts (kW) and be classified as "insignificant activities because of size or production rate" (15A NCAC 2Q.0503). The Installation would need to submit revisions for incorporation into the Title V permit to reflect these new stationary source emissions.

Other stationary emission issues include indoor air quality. A reduction in HAPs and TAPs commonly associated with indoor environments is expected as all new vertical construction at the Installations is required to meet LEED Silver Level certification. LEED for new construction offers many benefits including environmental, economic, and occupant-oriented performance and health advantages. LEED-certified projects provide specific air quality benefits through the use of optimized energy performance and conservation features, increased ventilation, low pollutant emitting materials in construction (such as adhesives and sealants, carpeting, etc.), and indoor chemical and pollutant source controls.

In conclusion, emissions generated from the Preferred Alternative are not projected to 1) increase ambient air pollution concentrations above the NAAQS, 2) contribute to an existing violation of the NAAQS, 3) interfere with, or delay timely attainment of the NAAQS, 4) impair visibility within Federallymandated Prevention of Significant Deterioration Class I areas, 5) result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total emissions of any pollutant subject to regulation under the CAA that is greater than 250 tons per year for attainment areas), or 6) for mobile source emissions, increase emissions above 250 tons per year for any pollutant. However, because NO_x emissions are projected close to the 250 tons per year mobile source significance threshold (248.7 tons in 2012 and 245.3 tons in 2013), emission reduction practices can be implemented.

Emission Reduction Practices. Non-road diesel engines can contribute significantly to PM and NO_x emissions. In recent years, the USEPA has set standards for engines used in most new construction equipment. However, because construction equipment can last 25 to 30 years, it will take many years before existing equipment is replaced with new, cleaner equipment. Because the USEPA's regulations (May 2004) only apply to newly-manufactured diesel engines, the USEPA developed the Clean Construction USA program to assist operators of heavy non-road, diesel-powered equipment (including the military) to reduce emissions from the older engines that are in operation today. Emissions reduction methods include:

- *Idle-reduction practices* will save money, reduce emissions, add fuel savings, extend engine life, and provide a safer and better work environment for equipment operators.
- Switching to ultra low-sulfur diesel fuel will reduce engine wear, deposits, and oil degradation.
- *Retrofitting equipment* will reduce emissions.
- *Installing catalysts and filters* verified by the USEPA will ensure the emission reduction and durability of retrofit technologies. Engine upgrade kits are also available and can be installed during routinely scheduled engine rebuilds.

To support emissions reduction, the Installations can request that the newer Tier 2 or Tier 3 engines be prioritized for use and can place that as a stipulation in construction proposals. In addition, an Erosion and Sediment Pollution Control Plan is required under the NPDES for construction activities, and this plan includes requirements for dust control in disturbed areas. Although the emission analysis included the assumption of 50 percent reduction of fugitive dust due to wetting and additional controls, additional measures such as those presented in Table 3.12-5, can be used to ensure fugitive dust is reduced to the maximum extent possible.

Emission Source	Recommended Control Methods(s)
Debris handling	Wet suppression
	Wind speed reduction
Truck transport ^{1,2}	Wet suppression ¹
	Paving
	Chemical stabilization ³
Bulldozers	Wet suppression
Pan scrapers	Wet suppression of travel routes ²
Cut/fill material handling	Wind speed reduction
	Wet suppression
Cut/fill haulage	Wet suppression
	Paving
	Chemical stabilization ³
General construction ⁴	Wind speed reduction
	Wet suppression
	Early paving of permanent roads

Table 3.12-5 Control Options for Open Sources of PM₁₀

Source: WRAP 2004.

Notes:

¹ Dust control plans (prepared by the construction contractor) should contain precautions against watering programs that confound trackout problems.

² Loads could be covered to avoid loss of material in transport, especially if material is transported offsite.

³ Chemical stabilization is usually cost-effective for relatively long-term or semi-permanent unpaved roads.

⁴ Excavated materials may already be moist and not require additional wetting.

Commuter Emissions. Commuting traffic, consisting of active-duty and civilian personnel, was also assessed to quantify changes due to personnel increases. According to current housing market analysis and trends, approximately 83 percent of Marines at MCB Camp Lejeune and 87 percent of Marines at MCAS New River live off-Base (Robert D. Niehaus, Inc 2008). Of the personnel living off-Base, about 74 percent live in Onslow County and approximately 21 percent live in Craven County. The remaining 5 percent live in various other counties throughout North Carolina. Emission estimates for commuting traffic used average round trip distances of 20 miles for MCB Camp Lejeune /MCAS New River personnel. While some personnel may commute from more distant counties and some personnel may live closer to the Installations, 20 miles was determined a reasonable estimate for rural area commutes, with an average commute time of 20 minutes (U.S. Census Bureau 2000). Table 3.12-6 shows the projected increase of emissions from commuter traffic on the Installations. These estimates represent a worst case scenario assuming each individual would drive separately. It is likely that some personnel would carpool, ride share, or use public transportation thereby reducing these projections.

(with MCAS New River) (Tons per Year)									
	VOCs	CO	NO _x	SOx	PM ₁₀	PM _{2.5}			
Projected Commuter Emissions	34	441	27	0	1	< 1			
Onslow County Commuters (74%)	25	326	20	0	0 74	<0.74			

93

6

0

0.21

7

 Table 3.12-6 Alternative 2 Commuter Emissions for MCB Camp Lejeune (with MCAS New River) (Tons per Year)

Craven County Commuters (21%)

< 0.21

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune/MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune/MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

In order to assess the air quality impacts of Alternative 3, annual emissions for both construction and operational factors (i.e., those associated with facility operations, and vehicle/equipment maintenance and repairs) were evaluated using the same methodologies used for the Preferred Alternative. Because Alternative 3 only includes construction of core projects, the total volume of construction is considerably less than that projected for the Preferred Alternative. The core projects, however, still represent a significant multi-year effort that would result in a temporary, short-term emissions increase of criteria pollutants, and to a much lesser extent, HAPs and TAPs.

Construction. The timeline for construction at MCB Camp Lejeune/MCAS New River is 2010 to 2015. Table 3.12-7 summarizes the estimated annual emissions from construction activities.

Camp Lejeune/MCAS New River 2010 – 2015: Alternative 3 (Tons per Year)								
Year	VOC	СО	NO _x	SO _x	PM ₁₀	PM _{2.5}		
2010	6.8	31.5	69.5	7.6	11.2	4.3		
2011	8.8	41.9	81.7	9.0	18.3	6.3		
2012	10.9	45.6	100.0	11.2	50.3	9.8		
2013	14.2	62.1	121.8	137	65.2	12.5		

61.1

12.5

123.2

21.1

13.9

2.4

72.7

14.3

13.3

2.5

Table 3.12-7 Estimated Criteria Pollutant Emissions Due to Proposed Core Construction at MCB

Core project construction at MCB Camp Lejeune/MCAS New River, which spans 6 years, is anticipated to be a significant, if not the largest, development projects in the region. NO_x is the pollutant with the greatest emission quantity, which results from the operation of construction equipment.

A comparison of emissions from construction equipment and construction worker commuting emissions associated with the core construction projects at MCB Camp Lejeune/MCAS New River with baseline emissions for Onslow County is presented in Table 3.12-8. The maximum quantity of emissions per criteria pollutant is compared to the County baseline, and it should be noted that these maximums do not all occur in the same year. For example, the maximum NO_x emissions are projected to occur in 2013 and the maximum CO emissions are projected to occur in 2012. This comparison identifies whether or not the increase in air emissions for any of the pollutants exceeds 10 percent of the County's total annual air emissions.

2014

2015

14.1

2.6

Onsiow County Emissions Inventory – Alternative 3								
	VOCs	СО	NO _x	SOx	PM ₁₀	PM _{2.5}		
Onslow County Baseline*	7,013	42,340	4,729	1,407	3,331	1,282		
Maximum Construction-related Emissions	14.2	62.1	123.2	13.9	72.7	13.3		
% of Baseline Emissions	0.2	0.1	2.6	1.0	2.2	1.0		

 Table 3.12-8 Comparison of Maximum Core Construction Emissions to

 Onslow County Emissions Inventory – Alternative 3

Source: *USEPA 2001.

None of the criteria pollutant emissions from construction activities represent 10 percent or more of the Onslow County emissions during the peak core construction period. None of the pollutants are projected to be emitted at rates that would approach the Prevention of Significant Deterioration significance threshold. NO_x emissions, at a maximum of 123 tons per year, are less than the significance threshold of 250 tons per year.

Operations. As facilities become functional and operational, additional boilers and an increase in the number of on-site emergency generators would increase air emissions. Some of the new equipment would serve as replacements for aging systems; other new equipment would be required due to the increase in the operational size of facilities. As indicated in the Preferred Alternative discussion, the Installation is required to evaluate new sources and ensure that they are adequately addressed with regard to New Source Review and Prevention of Significant Deterioration regulations, construction permits, and Title V permit amendments or modifications prior to bringing any of these systems on line.

As discussed under the Preferred Alternative, heat for the buildings would be provided through individual heating systems or by connecting to the central heating plant. At this time, it is estimated that approximately 30 percent of the new core construction at MCB Camp Lejeune/MCAS New River would have heat supplied by the existing central heating plant. The remaining new construction would be heated with individual boiler systems burning No. 2 fuel oil, natural gas, or propane. None of the new boilers proposed for the new construction would exceed 100 MMBtu/hr heat input, only one would exceed 10 MMBtu/hr, and an 11 MMBTU/hr capacity boiler for a fitness center swimming facility would burn fuel oil No. 2. The remaining boilers would be classified as "insignificant activities because of category" (15A NCAC 2Q.0503). The Installations would need to submit revisions for incorporation into the Title V permit to reflect these new stationary source emissions.

Similar to the Preferred Alternative scenario, the increase in heating capacity requirements, both for the central heating plant and with the introduction of individual boiler units, would be incremental over the 6-year period as construction is completed and buildings become operational. Thus, the full increase in heating capacity requirements is not expected to take effect until 2016.

Approximately 25 emergency generators would be installed with the new construction. Nearly all would have rated power of less than 600 kW and would be classified as "insignificant activities because of size or production rate" (15A NCAC 2Q.0503). The Installations would need to submit revisions for incorporation into the Title V permit to reflect these new stationary source emissions.

As discussed for the Preferred Alternative, there would be an increase in commuters at the Installations. Projected emissions from these commuters would be the same as those described for the Preferred Alternative (see Table 3.12-6).

In conclusion, emissions generated from Alternative 3 would not 1) increase ambient air pollution concentrations above the NAAQS, 2) contribute to an existing violation of the NAAQS, 3) interfere with, or delay timely attainment of the NAAQS, 4) impair visibility within federally-mandated Prevention of Significant Deterioration Class I areas, 5) result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total emissions of any pollutant subject to regulation under the CAA that is greater than 250 tons per year for attainment areas), or 6) for mobile source emissions, increase emissions above 250 tons per year for any pollutant.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

MCB Camp Lejeune/MCAS New River would continue to generate emissions on a similar scale as was found in the 2006 air emissions inventory. Management of stationary air emission sources would continue with no foreseeable changes. New emission sources would result from the increase in commuting traffic at the Installations. These emission estimates would be the same as under the Preferred Alternative (see Table 3.12-6).

3.12.2.2 MCAS Cherry Point

Alternative 1 – No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. There would be no change to baseline air emissions at MCAS Cherry Point. However, that does not mean that air quality conditions at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this proposal that have taken

place since FY06 or will be implemented in the future. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted. Table 3.12-9 presents the baseline emissions reported by MCAS Cherry Point in the 2006 Air Emission Inventory submitted to the NCDENR and the baseline emissions associated with 13,099 commuters to the Installation.

Table 3.12-9 Stationary Source and Commuter Mobile Source Emissions for 2006,MCAS Cherry Point (Tons per Year)

Stationary Source Emissions	VOCs	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
2006 Inventory (Tons/Year) ¹	14.7	76.2	164.4	378.9	23.4	7.9
Personnel Commuting Emissions	35	328	35	0	2	< 2

¹Source: NCDENR 2009

Alternative 2 – Preferred Alternative

Under the Preferred Alternative (Section 2.2.2), Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

In order to assess the air quality impacts of the Preferred Alternative, annual emissions for both the construction and operational factors (i.e., those associated with facility operations, and vehicle/equipment maintenance and repairs) were evaluated. This evaluation included review of data supplied by the Station (including Form 1391s, *Military Construction Project Data*, for information on the proposed construction activities) and identification of new sources that would be needed as part of the Preferred Alternative. Appendix E contains the detailed emission calculations prepared to assess the air quality impacts.

This alternative involves a significant, multi-year construction effort. At MCAS Cherry Point, the new development would encompass 117 acres and over a million-square feet of new buildings. Additionally, as construction phases reach completion, the increase in operations begin to phase in, with resultant operational emissions associated with boilers, emergency generators, fuel storage and refueling activities, and commuting workers, as examples.

Construction. The timeline for construction at MCAS Cherry Point is 2011 to 2014. During this time, buildings, road improvements, and infrastructure upgrades would be undertaken to support the Preferred Alternative. Construction-worker vehicle emissions were also included in the analyses for driving within Installation boundaries (entry onto an Installation, lunch break, and exit from Installation). The average number of miles used for each vehicle was 10 miles per day. In addition, it was assumed that construction workers would drive individually to the job site. Applying the same approach as was used for MCB Camp Lejeune/MCAS New River, the impact of construction workers commuting to and from the Installation

and their homes was not evaluated. Table 3.12-10 summarizes the estimated annual emissions from construction activities.

2011 through 2014 (10ns per Year)									
Year	VOC	CO	NO _x	SOx	PM ₁₀	PM _{2.5}			
2011	2.8	13.3	26.4	2.9	5.1	1.7			
2012	4.0	16.6	25.4	2.9	11.6	2.5			
2013	3.6	16.5	33.9	3.8	4.3	2.1			
2014	0.8	4.1	5.6	0.6	1.0	0.4			

Table 3.12-10 Criteria Pollutant Emissions Due to Proposed Construction at MCAS Cherry Point,2011 through 2014 (Tons per Year)

Construction at MCAS Cherry Point spans 4 years. The primary emissions sources are NO_x and CO from diesel-powered heavy equipment.

A comparison of emissions from construction equipment and construction-worker commuting emissions at MCAS Cherry Point with baseline emissions for Craven County is presented in Table 3.12-11. The Craven County emissions inventory is from USEPA's National Emission Inventory database and includes emissions from County stationary, area, and mobile sources. The maximum quantity of emissions per criteria pollutant is compared to the County baseline, and it should be noted that these maximums do not all occur in the same year. For example, the maximum NO_x emissions are projected to occur in 2013 and the maximum PM₁₀ emissions are projected to occur in 2012. The comparison is used to assess whether or not the increase in air emissions, for any of the pollutants, exceeds 10 percent of the County's total annual air emissions.

	cruven county Linussion inventory (rous per rear)								
Vehicles	VOCs	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}			
Craven County Baseline*	5,989	35,315	4,769	2,352	3,745	1,605			
Maximum Construction-related Emissions	4.0	16.6	33.9	3.8	11.6	2.5			
% of Baseline Emissions	0.1	0.0	0.7	0.2	0.3	0.2			

 Table 3.12-11 Comparison of Maximum Construction Emissions to

 Craven County Emission Inventory (Tons per Year)

Source: *USEPA 2001.

None of the projected construction-related pollutant emissions at MCAS Cherry Point exceed 250 tons for NAAQS in attainment areas, nor do they represent a regional significance by emitting 10 percent or more to the regional area.

The Q/D threshold calculation indicates that for MCAS Cherry Point the Q/D factor is 1.05 (derived from 75.6/72); therefore, this factor is far below the 10 considered as a threshold indicating that further Class I Air Quality Related Values impact analyses would be needed (see above New Source Emissions discussion).

Operations. As facilities become functional and operational, additional boilers and an increase in the number of on-site emergency generators may increase emissions. Some of the new equipment would serve as replacements for aging systems; other new equipment would be required due to the increase in the operational size of the Installation. During the planning phase and before the facilities can come on line, the Installation is required to evaluate new sources and ensure that they are adequately addressed with regard to New Source Review and Prevention of Significant Deterioration regulations, construction permits, and Title V permit amendments or modifications.

Heat for the proposed buildings would be provided through individual heating systems or by connecting to the central heating plant. Most if not all of the boilers that would be installed in new facilities would be classified as "insignificant activities because of category." The Installation would need to submit revisions for incorporation into the Title V permit to reflect these new stationary source emissions. The increase in heating capacity requirements, both for the central heating plant and with the introduction of individual boiler units, would be incremental over the four-year period as construction is completed and buildings become operational. Thus, the full increase in heating capacity requirements is not expected to take effect until 2015.

A small number of emergency generators would be installed with this alternative. Nearly all would have rated power of less than 600 kW and be classified as "insignificant activities because of size or production rate" (15A NCAC 2Q.0503). The Installation would need to submit revisions for incorporation into the Title V permit to reflect these new stationary source emissions.

Other stationary emission issues include indoor air quality. A reduction in HAPs and TAPs commonly associated with indoor environments is expected as all new vertical construction at the Installations is required to meet LEED Silver Level certification. LEED for new construction offers many benefits including environmental, economic, and occupant-oriented performance and health advantages. LEED-certified projects provide specific air quality benefits through the use of optimized energy performance and conservation features, increased ventilation, low pollutant emitting materials in construction (such as adhesives and sealants, carpeting, etc.), and indoor chemical and pollutant source controls.

Commuter Emissions. Commuting traffic, consisting of active-duty and civilian personnel, was also assessed to quantify changes due to personnel increases. According to current housing market analysis and trends, approximately 70 percent of Marines at MCAS Cherry Point live off-Base (Robert D. Niehaus, Inc 2007). Of the personnel living off-Base, about 74 percent live in Onslow County and approximately 21 percent live in Craven County. The remaining 5 percent live in various other counties throughout North Carolina. Emission estimates for commuting traffic used an average round trip distance of 15 miles for MCAS Cherry Point personnel. While some personnel may commute from more distant

counties and some may live closer to the Installation, 15 miles was determined a reasonable estimate for rural area commutes, with an average commute time of 20 minutes (U.S. Census Bureau 2000). Table 3.12-12 shows the projected increase of emissions from commuter traffic on the Station. These estimates represent a worst case scenario assuming each individual would drive separately. It is likely that some personnel would carpool, ride share, or use public transportation thereby reducing these projections.

MCAS Cherry Point								
	VOCs	СО	NO _x	SO ₂	PM ₁₀	PM _{2.5}		
Projected Commuter Emissions	2	19	2	0	0	0		
Onslow County Commuters (74%)	1.48	14.06	1.48	0	0	0		
Craven County Commuters (21%)	0.42	3.99	0.42	0	0	0		

 Table 3.12-12
 Alternative 2
 Commuter Emissions for MCAS Cherry Point (Tons per Year)

In conclusion, emissions generated from the Preferred Alternative would not 1) increase ambient air pollution concentrations above the NAAQS, 2) contribute to an existing violation of the NAAQS, 3) interfere with, or delay timely attainment of the NAAQS, 4) impair visibility within federallymandated Prevention of Significant Deterioration Class I areas, 5) result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total emissions of any pollutant subject to regulation under the CAA that is greater than 250 tons per year for attainment areas), or 6) for mobile source emissions, increase emissions above 250 tons per year for any pollutant.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur as presented in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force infrastructure would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

In order to assess the air quality impacts of Alternative 3, annual emissions for both construction and operational factors (i.e., those associated with facility operations, and vehicle/equipment maintenance and repairs) were evaluated using the same methodologies as described for the Preferred Alternative. Because Alternative 3 only includes construction of core projects, the total volume of construction is considerably less than that projected for the Alternative 2. The core projects, however, still represent a multi-year effort that would result in a temporary, short-term increase in emissions of criteria pollutants, and to a much lesser extent, of HAPs and TAPs emissions.

Construction. The timeline for construction at MCAS Cherry Point is 2012 to 2014. Table 3.12-13 summarizes the estimated annual emissions from construction activities.

MCAS Cherry Point 2012 – 2014: Alternative 5 (Tons per Tear)									
Year	VOC	CO	NO _x	SOx	PM ₁₀	PM _{2.5}			
2012	1.9	10.8	12.3	1.5	7.0	1.5			
2013	1.5	6.9	12.1	1.4	2.4	0.9			
2014	0.1	0.8	0.9	0.1	0.1	0.1			

 Table 3.12-13 Estimated Criteria Pollutant Emissions Due to Proposed Core Construction at MCAS Cherry Point 2012 – 2014: Alternative 3 (Tons per Year)

Core project construction at MCAS Cherry Point, which spans 3 years, would not be considered as regionally significant producers of emissions. NO_x and CO, however, are the pollutants with the greatest emission quantities resulting from construction equipment/vehicle operations.

A comparison of construction-equipment and construction-worker commuting emissions under Alternative 3 with baseline emission for Craven County is presented in Table 3.12-14; maximum emissions quantities per criteria pollutant, which occurs in 2012, is then compared to the County baseline. This comparison identifies whether or not the increase in air emissions for any of the pollutants exceeds 10 percent of the County's total annual air emissions.

 Table 3.12-14 Comparison of Maximum Core Construction Emissions to

 Craven County Emissions Inventory – Alternative 3 (Tons per Year)

	VOCs	СО	NO _x	SO _x	PM ₁₀	PM _{2.5}
Craven County Baseline*	5,989	35,315	4,769	2,352	3,745	1,605
Maximum Construction-related Emissions	1.9	10.8	12.3	1.5	7.0	1.5
% of Baseline Emissions	0.0	0.0	0.3	0.1	0.2	0.1

Source: *USEPA 2001.

None of the criteria pollutant emissions from construction activities represent 10 percent or more of the Craven County emissions during the peak core construction period. All of the pollutants are projected to be emitted at two to three orders of magnitude below the Prevention of Significant Deterioration significance threshold of 250 tons per year.

Operations. As facilities become functional and operational, additional boilers and an increase in the number of on-site emergency generators would increase air emissions. As indicated in the Preferred Alternative discussion, the Installation is required to evaluate new sources and ensure that they are adequately addressed with regard to New Source Review and Prevention of Significant Deterioration regulations, construction permits, and Title V permit amendments or modifications.

As discussed under the Preferred Alternative, heat for buildings proposed for construction would be provided through individual heating systems or by connecting to the central heating plant. The total square footage for core construction at MCAS Cherry Point is estimated at 167,000 square feet. Similar to the Preferred Alternative scenario, the increase in heating capacity requirements, both for the central

heating plant and with the introduction of individual boiler units, would be incremental over the 3-year period as construction is completed and buildings become operational. Thus, the full increase in heating capacity requirements is not expected to take effect until 2015.

A few emergency generators would be installed under Alternative 3. All would have rated power of less than 600 kW and would be classified as "insignificant activities because of size or production rate" (15A NCAC 2Q.0503).

As discussed for the Preferred Alternative, there would be an increase in commuters at the Station. Projected emissions from these commuters would be the same as those described for the Preferred Alternative (see Table 3.12-12).

In conclusion, emissions generated from Alternative 3 at MCAS Cherry Point would not 1) increase ambient air pollution concentrations above the NAAQS, 2) contribute to an existing violation of the NAAQS, 3) interfere with, or delay timely attainment of the NAAQS, 4) impair visibility within federally-mandated Prevention of Significant Deterioration Class I areas, 5) result in the potential for any new stationary source to be considered a major source of emissions as defined in 40 CFR Part 52.21 (total

emissions of any pollutant subject to regulation under the CAA that is greater than 250 tons per year for attainment areas), or 6) for mobile source emissions, increase emissions above 250 tons per year for any pollutant.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point (Section 2.2.4). However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place.

MCAS Cherry Point would continue to generate emissions on a similar scale, as was found in the 2006 air emissions inventory. Management of stationary air emission sources would continue with no foreseeable changes. Commuting traffic, consisting of active-duty and civilian personnel, would be the only new source of emissions under this alternative. These emissions would be the same as those described under the Preferred Alternative (see Table 3.12-12).

3.12.2.3 Regional Impacts

The primary regional impact is the short-term air quality emissions due to simultaneous construction at all three Installations between 2010 and 2015. There would also be a permanent, overall increase in mobile emissions from commuting personnel and in stationary emissions associated with facility and equipment operations are expected as a direct result of the Preferred Alternative. These operational emissions include the increased capacity of the Installations' central heating plants, the addition of new boilers (most of which would be classified as insignificant sources), the addition of new emergency generators (most of which would be classified as insignificant sources), a small number of fuel and other storage tanks to be located with some of the new construction, and increases in mobile source emissions due to the growth in numbers of commuting installation personnel. None of these increases, however, are expected to exceed any criteria pollutant significance thresholds, as discussed in the previous subsections. The Installation permits would require amendment to include the new stationary sources before they are actually brought online.

3.13 Natural Resources

This section includes a discussion of natural and biological resources that could be affected by implementation of the alternatives at MCB Camp Lejeune/MCAS New River and MCAS Cherry Point. The ROI for natural resources includes the areas on the Installations where construction or demolition would occur; areas immediately adjacent to where these activities would occur; and for certain resources, non-construction areas which may be affected by the Proposed Action and alternatives. The layout and topics addressed for each of the Installations (MCB Camp Lejeune and MCAS New River are addressed together as in previous sections of the document) are as follows:

- Terrestrial Communities
 - Vegetation
 - Ecological Classification
 - Wildlife
- Aquatic Communities
 - Aquatic Flora (includes phytoplankton, submerged aquatic vegetation, and emergent aquatic vegetation)
 - Invertebrates (includes zooplankton, bivalves, and crustaceans)
 - o Fish
- Bird/Wildlife Strike Hazard
- Migratory Birds
- Essential Fish Habitat
- Special Status Species (i.e. threatened and endangered species)

3.13.1 Affected Environment

3.13.1.1 MCB Camp Lejeune/MCAS New River

Terrestrial Communities

Terrestrial resources are land-based resources including vegetation types, ecological communities/classification, and wildlife that could be affected by construction or demolition activities.

Vegetation

MCB Camp Lejeune and MCAS New River consist of 142,852 acres of property, of which approximately 95,000 acres are managed commercial forestland. Portions of MCB Camp Lejeune, such as the G-10 and K-2 impact areas, are used exclusively for military training and are not considered commercial forestland. All forested land is managed by the MCB Camp Lejeune's Forest Management Program. The Forest

Management Program staff is responsible for both supporting habitat management for all special need species and timber harvests associated with timber management and construction projects involving the removal of merchantable timber. Annually, the Base conducts five to seven timber sales on an estimated 1,500 to 2,500 acres (MCB Camp Lejeune 2006).

Both natural fires and prescribed burns play a deciding role in the vegetation communities of MCB Camp Lejeune, affecting density and species composition. MCB Camp Lejeune's Forest Management Program conducts prescribed burns for ecosystem restoration, maintenance of threatened and endangered species habitat, maintenance of forage areas for wildlife, reduction of fuel available to wildfires, site preparation for forest regeneration, and reduction in the amount of hardwood brush. Prescribed burns are typically conducted between the first of November and the end of June; during both the dormant and growing season. Approximately 93,000 acres of forest at MCB Camp Lejeune receive fuels management. Prior to conducting prescribed burns, MCB Camp Lejeune coordinates with the North Carolina Division of Forest Resources to ensure smoke management guidelines are followed (MCB Camp Lejeune 2006).

Pure pine, pure hardwood, and mixed pine/hardwood stands are the dominant forested vegetation types found on MCB Camp Lejeune/MCAS New River. Approximately 75 percent of pine species are loblolly pine (*Pinus taeda*), while black gum (*Nyssa sylvatica*) is the abundant hardwood. Within the proposed development areas the landscape is characterized by mixed pine and hardwood species. The most common tree species in these areas is the loblolly pine, along with several species of hardwoods including the black gum, sweet gum (*Liquidambar styraciflua*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), red maple (*Acer rubrum*), and yellow poplar (*Liriondendron tulipifera*). 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 aquininum*), and bluestems (*Schizachyrium* spp.), along with more disturbance tolerant species such as green briar (*Smilax* spp.) and broomsedge (*Andropogon virginicus*) (MCB Camp Lejeune 2006). Figures 3.13-1 and 3.13-2 show the various forest ages within the proposed development areas and Table 3.13-1 provides a brief summary of the general type of forest and production value of the forested areas.

Ecological Classification

Consistent with the National Hierarchical Framework of Ecological Units (Cleland *et al.* 1997), an ecological classification system has been developed for MCB Camp Lejeune and MCAS New River (refer to Figure 3.13-3 and Figure 3.13-4). This system integrates information on climate, geomorphic, and vegetation features from regional to local scales. The acreages of each ecological area potentially affected by the Proposed Action are provided in Appendix F.



Figure 3.13-1 Forest Ages at MCB Camp Lejeune - Eastside



Figure 3.13-2 Forest Ages at MCB Camp Lejeune/MCAS New River - Westside



Figure 3.13-3 Ecological Classifications at MCB Camp Lejeune - Eastside



Figure 3.13-4 Ecological Classifications at MCB Camp Lejeune/MCAS New River - Westside

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Table 3.13-1 F	orest Types and Production	Values for Pr	oposed Develop	ment Areas within MCB Camp Lejeu	ne and MCA	IS New River
Proposed Projects and Development Areas	Dominant Forest Type Within Development Area	Percent Dominant ¹	Forest in Proposed Development Area (acres)	Type of Forest Within Proposed Development Area	Age of Forest (years)	Production Value (in board feet) ²
MCB Camp Lejeune						
Camp Devil Dog	Loblolly Pine	92.5	38	Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods	26-67 65 78-84	400
Camp Geiger	Loblolly Pine	75	61	Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods	5-58 61 64-72	335
Camp Johnson	Loblolly Pine	02	499	Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	6-83 76 73 73	570
Courthouse Bay	Mixed Hardwoods	35	233	Mixed Pine Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	33 28-68 36-73 63-85 54	260
French Creek	Loblolly Pine	32.4	869	Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	28-68 48-87 70-91 63-83	235
Hadnot Point	Mixed Hardwoods	32	378	Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	31-70 48-87 70-100 66-144	335
Wallace Creek	Loblolly Pine/Mixed Hardwoods	49	656	Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	30-51 17-97 71-93 86-93	305

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USMC Grow the Force in North	

Final EIS

Table 3.13-1 F	orest Types and Production	Values for Pi	roposed Develop	ment Areas within MCB Camp Leie	une and MCA	S New River
Proposed Projects and Development Areas	Dominant Forest Type Within Development Area	Percent Dominant ¹	Forest in Proposed Development Area (acres)	Type of Forest Within Proposed Development Area	Age of Forest (years)	Production Value (in board feet) ²
Stone Bay/Rifle Range	Loblolly Pine/Mixed Hardwoods	34	1,020	Longleaf Pine Mixed Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	67-77 58-97 3-73 18-85 33-133 74	370
New Road and Gate	Loblolly Pine	41	137	Longleaf Pine Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	9 5-93 17-97 53-108 75-96	350
Triangle Outpost Gate	Longleaf Pine	100	55	Longleaf Pine	40-68	383
Water Treatment Facility	Loblolly Pine	100	12	Loblolly Pine	65	300
Marston Pavilion	N/A	N/A	0	N/A	N/A	N/A
PPV Phase IV Site	Loblolly Pine	34.7	460	Longleaf Pine Loblolly Pine Loblolly Pine/Mixed Hardwoods Mixed Hardwoods Mixed Hardwoods/Loblolly Pine Mix	2 4-88 30-116 19-98 22-96	385
Total Forest Ac	res within Proposed Developm. MCB C	ent Areas for amp Lejeune	4,247			

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rroposed rrojects and Development Areas	Dominant Forest Type Within Development Area	Percent Dominant ¹	Proposed Development Area (acres)	Type of Forest Within Proposed Development Area	Age of Forest (years)	Productior Value (in board fee
MCAS New River						
				Mixed Pine	32	
Dronorad				Loblolly Pine	20-67	
Liupuscu Davidanmant Araa	Loblolly Pine	38	423	Loblolly Pine/Mixed Hardwoods	22-97	325
Development Area				Mixed Hardwoods	52-93	
				Mixed Hardwoods/Slash Pine Mix	83	
Total Forest A	tcres within Proposed Developn	nent Area for	423			
	MCA	4S New River	Car			
Combined Total Areas for	l Forest Acres within Proposed • MCB Camp Lejeune and MCA	Development 4S New River	4,670			
Source: MCB Camp Lej	jeune 2008f.					

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Notes: ¹Percent dominant refers to the percentage of the dominant forest type per acre of forest. ²Amount of saleable timber from a timber harvest, listed in amount of linear feet of milled boards.

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At the local landscape level, ecological units termed "landtypes" are differentiated on the basis of landforms and topography, soil and geologic features, and vegetation communities. Landtypes are the basic unit of ecological classification used on MCB Camp Lejeune and MCAS New River and can be grouped into four associations: 1) the Onslow Maritime Zone, 2) Bogue-Topsail Coastal Sandridge, 3) New River Dissected Terraces, and 4) Greater Sandy Run Pocosin (MCB Camp Lejeune 2006). Landtypes can be further subdivided into landtype phases, which represent distinct soil and/or vegetation features within landtypes. On MCB Camp Lejeune and MCAS New River, the distribution of landtypes is correlated with patterns of disturbance and the occurrence of rare species and communities. Accordingly, landtype classification is used to identify management considerations that apply to natural resources and continuing use of the land for USMC activities (MCB Camp Lejeune 2006). The following are general descriptions of the landtypes, primarily located within the Greater Sandy Run Training Area of MCB Camp Lejeune, such as Interstream Flats, Pocosin Fringes, Broad Pocosins, and Wet Mesic and Wet Pine Savannas, would not be affected by the Proposed Action. Therefore, these landtypes are not described in this EIS. Additional information regarding these landtypes can be found in the INRMP.

- Inland Tidal Marshes and Tidal Swamps. This landtype occurs on sites influenced by tidal waters adjacent to the New River. Fire suppression in these areas has allowed hardwoods, especially tupelo (*Nyssa* spp.), to expand, reducing the area of marsh that was historically present.
- Small Stream Swamps and Streamhead Pocosins. This landtype comprises seasonally to semipermanently flooded wetlands associated with small to moderately large streams and dominated by trees (swamps) or shrubs (pocosins). They occur in tributaries to the New River and the Atlantic Intracoastal Waterway, and in the swamps of the Greater Sandy Run Area.
- **Drainage Slopes.** This landtype occurs on side slopes along streams and rivers and drainage headlands, on uplands above floodplains. On the Base, it extends along all of the small tributaries of the New River. This land type typically supports a mixed hardwood-pine forest, dominated by loblolly pine (*Pinus taeda*), oaks (*Quercus* spp.), and hickories (*Carya* spp.).
- Mesic Wet Pine Savannas. This land type occurs on upland terraces and flats in generally welldrained soils. It occurs widely throughout MCB Camp Lejeune. Historically, the vegetation was a savanna characterized by longleaf pine, with an understory of wiregrass (*Aristida stricta*) and other grasses and forbs maintained by frequent fire. Fire suppression has resulted in most sites becoming more thickly wooded by loblolly pine and hardwoods, with a dense shrub understory. The majority

of the vegetation types within the proposed development areas evaluated in this EIS would fall within the mesic wet pine savanna landtype.

Wildlife

Wildlife at MCB Camp Lejeune/MCAS New River 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 (*Sciurius carolinensis*), eastern cottontail (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), southern flying squirrel (*Glaucomys volans*), and raccoon (*Procyon lotor*) (DoN 2008a).

Many amphibian species are common on MCB Camp Lejeune and serve an important role as sensitive indicators of environmental change. Surveys have been conducted to determine the presence of amphibians at MCB Camp Lejeune. Fifteen species of frogs and six species of salamanders inhabit the Base (Table 3.13-2); American bullfrog (*Rana catesbeiana*) and southern leopard frog (*Rana sphenocephala utricularia*) are the most abundant. Others known to occur, but not located during the survey, include the gopher frog (*Rana capito*) and oak toad (*Bufo quercicus*) (Personal communication, TenBrink 2008c).

nd Toads
Northern Spring peeper (Pseudacris crucifer crucifer)
Little grass frog (Pseudacris ocularis)
Eastern narrow-mouthed toad (Gastrophryne carolinensis)
Eastern spadefoot (Scaphiopus holbrookii)
American bullfrog (Rana catesbeiana)
Northern Green frog (Rana clamitans melanota)
Ornate chorus frog (Pseudacris ornate)
nanders
Two-toad amphiuma (Amphiuma means)
Broken-striped newt (Notophthalmus viridescens dorsalis)
Eastern lesser siren (Siren intermedia intermedia)

Table 3.13-2	Amphibian	Species	Occurring on	MCB Can	ip Lejeune
1.0000 0010 -	1	~peeres	0 0 0 0 m m g 0 m		

Source: Department of Defense 2001

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*), 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 (MCB Camp Lejeune 2006).

MCB Camp Lejeune conducts annual wildlife surveys of creeks throughout the New River estuary. Observed bird species common to the New River estuary and barrier island marshes include waterfowl such as Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*), green-winged teal (*Anas crecca*), American widgeon (*Anas americana*), northern shoveler (*Anas clypeata*), ruddy duck (*Oxyura jamaicensis*), wood duck (*Aix sponsa*), canvasback (*Aythya valisneria*), lesser scaup (*Aythya affinis*), bufflehead (*Bucephala albeola*), and common merganser (*Mergus merganser*). Wading birds associated with tidal marshes and mudflats include clapper rail (*Rallus longirostris*), Virginia rail (*Rallus limicola*), whimbrel (*Numenius phaeopus*), greater yellowlegs (*Tringa melanoleuca*), short-billed dowitcher (*Limnodromus griseus*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), American egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), and glossy ibis (*Plegadis fulcinellus*) (MCB Camp Lejeune 2006).

Wildlife management at MCB Camp Lejeune and MCAS New River aims to enhance wildlife species, their habitats, and recreational enjoyment of wildlife. The wildlife management strategy focuses on habitats rather than specific species and includes wildlife clearing management, game species, non-game species, and wildlife damage management. This strategy ensures long-term sustainability and viability of wildlife populations on the Installations (MCB Camp Lejeune 2006).

Hunting on the Installations is allowed for upland game birds, small game, big game, furbearers, and migratory waterfowl. Big game includes white-tailed deer, black bear (*Ursus americanus*), and wild turkey (*Melagris gallopavo*). Black bears can mainly be found within the Greater Sandy Run Area, located to the west of the New River and outside of the project areas; however, they have also been found on the Mainside area of the Base east of the New River near remnant pocosin and bottomland hardwood habitats. White-tailed deer and wild turkeys are found throughout the Installations. Through active management, MCB Camp Lejeune has improved habitats and the overall population health of white-tailed deer and wild turkey (refer to Section 3.5, Recreation for additional information). Small game species include web-less migratory birds such as mourning doves, woodcock (*Scolopax minor*), northern bobwhite quail; waterfowl; and small mammals including fox squirrels (*Sciurus niger*), gray squirrels (*Sciurus carolinensis*), rabbits, and other furbearers (MCB Camp Lejeune 2006). Refer to Section 3.5, Recreation, for additional information on the hunting program at MCB Camp Lejeune and MCAS New River.

The New River provides foraging opportunities for migratory and over-wintering waterfowl. The vast forested wetlands and coastal marshes of MCB Camp Lejeune and MCAS New River provide quality

habitat for a variety of waterfowl including black duck (*Anas rubripes*), mallard duck, green-winged teal, blue-winged teal (*Anas discors*), wood duck, American widgeon, redhead (*Aythya americana*), and gadwall. Migratory waterfowl are managed through water-level manipulation at green-tree reservoirs and impoundments, and the maintenance and monitoring of 80 artificial wood duck nest boxes (MCB Camp Lejeune 2006).

At MCB Camp Lejeune and MCAS New River there are a vast number of non-game wildlife including mammals such as opossum, reptiles, birds, and amphibians; many of which are found throughout the Installations. Non-game species are not directly managed for, but derive secondary benefits from the various land management activities that take place within the Installations, such as managing forest openings and prescribed fire. Much of non-game species habitat is protected through association with other protected areas or species, such as wetlands or longleaf pine savannas. Management that does occur includes maintaining habitats, monitoring neotropical birds, and surveys for insects, butterflies, snakes, turtles, and amphibians (MCB Camp Lejeune 2006).

Aquatic Communities

Aquatic resources include plant communities (aquatic flora), invertebrates, and fish that could be affected by proposed construction or demolition activities impacting surface waters, particularly from increased stormwater runoff and construction of the bridge crossings for the proposed new Base road. The focus of the aquatic resources discussion at MCB Camp Lejeune/MCAS New River is on species and communities inhabiting the New River and its tributaries, including Northeast Creek and Wallace Creek.

The New River begins as a narrow freshwater stream in northwestern Onslow County, and opens up past Jacksonville and MCAS New River to a 1 to 2 mile wide tidal estuary. It meanders slowly through swamps and wetland vegetated areas to sparsely marshed habitat upstream of the river's inlet, where it eventually arrives at the Atlantic Ocean (North Carolina Division of Water Quality 1997; MCB Camp Lejeune 2006; NOAA 2008a). Multiple tributaries connect with the river and serve as nursery areas for juvenile fish and invertebrates, and provide some recreational fishing opportunities.

North Carolina was the first state to designate nursery areas within its coastal and inland areas to protect juvenile life stages of important fisheries, and conserve the ecosystem as a whole. The designation prohibits a majority of commercial fishing activities in the area. Three types of nursery areas (Primary, Secondary, and Special Secondary) are designated within the State. Refer to Section 3.4.1.4, Coastal Zone Management for a detailed description of these areas. Primary Nursery Areas are found in upper portions of creeks and bays with typically lower salinity, soft-muddy bottom habitat, and marsh vegetation (Refer to Figures 3.4-11 through 3.4-13 for location of Primary Nursery Areas). Secondary Nursery Areas are

found in lower portions of creeks and bays where high and low salinity exchange occurs between the main river channel and creek/bay inlets. Special Secondary Nursery Areas are nearby Secondary Nursery Areas but closer to the ocean entrance. The New River estuary contains Primary and Special Secondary Nursery Areas. The Primary Nursery Areas designated within the proposed development area include the Upper New River, Northeast Creek, and Southwest Creek. The main channel of the New River, upstream of the Highway 172 Bridge is designated as Special Secondary Nursery habitat (NCDMF 2008a).

Aquatic Flora

Phytoplankton. Phytoplankton is microscopic plant life that floats in the open ocean. Tidal influence and water exchange between the New River and Atlantic Ocean support a diversity of phytoplankton populations. Salinity tolerance combined with photosynthetic capabilities is the main influence as to what species inhabit the area. Abundance of certain species fluctuates throughout the year. Salinity is highest in the river and within the project area during the months of September through November and lowest in February through April (NOAA 1998). Phytoplankton such as dinoflagellates and cryptomonads are most abundant within the New River from March-to-May and July-to-September (DoN 2003c).

Submerged Aquatic Vegetation (SAV). Seagrasses or SAV provide ecologically important habitat, functioning as a nursery and food source for recreational and managed fisheries. The North Carolina Marine Fisheries Commission and Coastal Resources Commission define SAV as "...those habitats in public trust and estuarine waters vegetated with one or more species of submerged vegetation such as eelgrass (*Zostera marina*), shoalgrass (*Halodule wrightii*), and widgeon grass (*Ruppia maritima*)...". SAV includes marine, estuarine and riverine vascular plants rooted in sediment. Habitat for SAV in North Carolina consists of higher salinity estuarine water communities and brackish (a combination of salt and fresh water) communities. These two communities and their habitats also support benthic, drift, and floating forms of macroalgae. Macroalgal species from estuarine habitat include *Ulva, Codium, Gracilaria, Enteromorpha*, and species from freshwater habitats include *Chara* and *Nitella* (Street *et al.* 2005).

Water quality is instrumental in the growth and abundance of SAV populations. In the New River watershed, water quality is compromised by both point and non-point sources. The watershed has been designated as Nutrient Sensitive Water; therefore growth of SAV is limited and sparse. The North Carolina Marine Fisheries Division has obtained aerial photography of the New River, but images have not been digitized for mapping SAV. SAV was noted at the mouth the New River (Personal communication, Carpenter 2009).

Emergent Aquatic Vegetation. Emergent aquatic vegetation that inhabits estuarine and inshore habitats is primarily salt and brackish marsh. Marsh habitat and species diversity are influenced by tide, salinity,

nutrients, and temperature. Like SAV, marsh habitat provides food and nursery habitat for recreational and managed fisheries, as well as function as Essential Fish Habitat (EFH) for some fisheries. In addition, marsh habitat is critical to the health and water quality of an estuary by regulating freshwater, nutrients, and sediment inputs to the system (SAFMC 1998).

Total salt and brackish marsh area in the South Atlantic Region encompasses approximately 894,000 acres. North Carolina has the second largest acreage in the region with approximately 213 acres (SAFMC 1998). The New River is generally a high salinity system peaking at the highest salinity levels in the project area from September through November (NOAA 1998). Because of a wide salinity tolerance, species such as *S. alterniflora* are likely to be present within the waters associated with the proposed bridge crossings for the new Base road.

Invertebrates

Common benthic invertebrates occurring in the New River and associated tributaries include zooplankton, bivalves, and crustaceans. The following sections briefly describe each species within the waters associated with the proposed bridge crossings for the new Base road.

Zooplankton. Zooplankton are small, mostly microscopic, animals such as crustacean and fish larvae that inhabit the water column. Medium-sized zooplankton, large zooplankton, and ichthyoplankton (larval stages of fish species) are likely all represented in the New River. Bottom-dwelling aquatic insect larvae (i.e., stoneflies, mayflies, and caddisflies) are macroinvertebrates likely to be found within the freshwater tributaries of the New River and within the proposed bridge crossings of the new Base road (North Carolina Division of Water Quality 1997).

Bivalves. Hard clams inhabit sandy, vegetated bottoms and are estuarine dependent. They are commercially harvested in the New River and are likely present in areas of the proposed bridge crossings for the new Base road (NCDMF 2001a). American Oyster stocks in North Carolina typically grow in intertidal and subtidal habitat from Albemarle Sound southward to estuaries just before the North Carolina – South Carolina border. In general, oysters have been noted to occur along the subtidal areas of the New River; however there is no survey data available that is site-specific to the project areas (NCDMF 2001b).

Crustaceans. Blue crabs occur in moderately saline estuaries with tidal marsh and soft mud substrate. North Carolina is among the three states with the largest blue crab commercial fishery in the U.S. Blue crabs are fished for both commercially and recreationally within portions of the New River estuary. Site-specific survey data is not available; however, juveniles have a wider distribution within an estuary than adults and are likely to be present within the proposed bridge crossings for the new Base road (NCDMF 2004).

Three panaeid shrimp species (white, brown, and pink) are the most abundant shrimp in North Carolina. Post-larval shrimp are brought in to estuaries through offshore wind and currents where they inhabit creek and river bottoms, and grass beds during a rapid growth cycle. Post-larval brown shrimp enter the estuaries in late winter to early spring; pink shrimp enter during winter; and white shrimp enter March through November. Brown shrimp are the most abundant, followed in order by pink and white (NCDMF 2008b; 2006). Juvenile shrimp are distributed throughout the New River and are likely to be present within the proposed bridge crossings for the new Base road (NCDMF 2008b; 2006).

Fish

The New River and its tributaries are designated as warm water habitats for fish. Warm water is defined as "summer temperatures that generally do not exceed >25 degrees Celsius (>76 degrees Fahrenheit)" (USACE 2003). However, it is important to note that fish presence in a stream is not based on temperature regimes alone; other factors include silt load and channel degradation. In general, common species found in the New River and the associated tidal creeks include catfish, basses (*Paralicthys* spp.), spot, croaker (*Micropogonius undulatus*), weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), and black sea bass (*Centropristes striata*) (DoN 2003c). Particular species likely to occur in the New River from the inlet to areas within the proposed bridge crossings are listed in Table 3.13-3.

	beened the occur perform and more and	
iilla rostrata)	Gizard shad (Dorosoma cepedianum)	Scrawled cowfish (Lactophrys quadricomis)
osa sapidissim)	Green goby (Microgobius thalassinus)	Seaboard goby (Gobiosoma ginsburgi)
Chloroscombrus chrysurus)	Grey snapper (Lutjanus griseus)	Sharptail goby (Oligolepis acutipennis)
ficropogonias undulates)	Guaguanche (Sphyraena guachancho)	Sheepshead minnow (Cyprinodon variegates)
Ω (Trichiurus lepturus)	Gulf flounder (Paralichthys albigutta)	Shrimp eel (Ophichthus gomesii)
(Brevoortia tyrannus)	Halfbeak (Hyporhamphus unifasciatus)	Silver jenny (Eucinostomus gula)
(Strongylura marina)	Hardhead catfish (Arius felis)	Silver perch (Bidyanus bidyanus)
shark (Rhizoprionodon terraenovae)	Harvest fish (Peprilus alepidotus)	Silver sea trout (<i>Cynoscion nothus</i>)
(Menidia menidia)	Hickory shad (Alosa mediocris)	Skilletfish (Gobiesox strumosus)
Uranoscopus scaber)	Highfin goby (Gobionellus oceanicus)	Smooth butterfly ray (Gymnura micrura)
Jasyatis sabina)	Hogchoker (Trinectes maculates)	Smooth puffer (Lagocephalus laevigatus)
Acipenser oxyrhynchus oxyrhynchus)	Horse eye jack (Caranx latus)	Southern flounder (Paralichthys lethostigma)
ing (Opisthonema oglinum)	Inland silverside (Menidia beryllina)	Southern hake (Urophycis floridana)
n (Porichthys plectrodon)	Inshore lizardfish (Synodus foetens)	Southern kingfish (Menticirrhus americanus)
mus fasciatus)	King mackerel (Scomberomorus cavalla)	Southern stingray (Dasyatis Americana)
ia barracuda)	Ladyfish (Bodianus rufus)	Spadefish (Chaetodipterus faber)
oa mitchilli)	Lane snapper (Lutjanus synagris)	Spanish mackerel (Scomberomorus maculates)
hthys spilopterus)	Leatherjacket (Oligoplites saurus)	Speckled worm eel (Myrophis punctatus)
rionotus tribulus)	Leopard searobin (Chelidonichthys spinosus)	Spot (Leiostomus xanthurus)
ias cromis)	Lined seahorse (Hippocampus erectus)	Spotfin butterfly fish (Chaetodon ocellatus)
tropristis striata)	Longnose gar (Lepisosteus osseus)	Spotfin mojarra (Eucinostomus argenteus)
ish (Symphurus plagiusa)	Longspine porgy (Stenotomus caprinus)	Spottail pinfish (Diplodus holbrooki)
us furcatus)	Lookdown (Selene vomer)	Spotted hake (Urophycis regius)
llosa aestivalis)	Marsh killifish (Fundulus confluentus)	Spotted sea trout (<i>Cynoscion nebulosus</i>)
ish (<i>Fistularia commersonii</i>)	Moonfish (Selene setapinnis)	Star drum (Stellifer lanceolatus)
us saltatrix)	Mummichog (Fundulus heteroclitus)	Striped anchovy (Anchoa hepsetus)
triacanthus)	Naked goby (Gobiosoma bosci)	Striped bass (Morone saxatilis)
x reticulatus)	Northern kingfish (Menticirrhus saxatilis)	Striped blenny (Meiacanthus grammistes)
gnathus louisianae)	Northern pipefish (Syngnathus fuscus)	Striped burrfish (Chilomycterus schoepfii)
ja eglanteria)	Northern Puffer (Sphoeroides maculatus)	Striped cusk eel (Ophidion marginatum)
n canadum)	Northern searohin (Prionotus carolinus)	Strined killifish (Fundulus maialis)

Table 3.13-3 Fish Species Likely to Occur Between Jacksonville and the New River Inlet

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Conger eel (Conger oceanicus)	Northern sennet (Sphyraena borealis)	Striped mullet (Mugil cephalus)
Cownose ray (Rhinoptera bonasus)	Ocellated flounder (Pseudorhombus dupliciocellatus)	Striped searobin (Prionotus evolans)
Crevalle jack (Caranx hippos)	Orange filefish (Alutera schoepfii)	Summer flounder (Paralichthys dentatus)
Dart goby (Parioglossus marginalis)	Oystertoad fish (Opsanus tau)	Tarpon (Megalops atlanticus)
Dusky pipefish (Syngnathus floridae)	Permit fish (Trachinotus falcatus)	Tautog (Tautoga onitis)
Fat sleeper (Dormitator maculates)	Pigfish (Orthopristis chrysoptera)	Threadfin shad (Dorosoma petenense)
Feather blenny (Hypsoblennius hentz)	Pinfish (Lagodon rhomboids)	Weakfish (Cynoscion regalis)
Florida pompano (Trachinotus carolinus)	Planehead filefish (Monacanthus hispidus)	White catfish (Ameiurus catus)
Freckled blenny (Hypsoblennius ionthas)	Red drum (Sciaenops ocellatus)	White mullet (Mugil curema)
Freshwater goby (Sicyopus zosterophorum)	Red grouper (Epinephelus morio)	Windowpane flounder (Scophthalmus aquosus)
Fringed flounder (Etropus crossotus)	Rock sea bass (Centropristis philadelphica)	
Gag grouper (Etropus crossotus)	Sailfin molly (Poecilia latipinna)	
	Sand perch (Diplectrum formosum)	
Courses Descond communication Califold 2000		

Source: Personal communication, Schoolfield 2008.

Bird/Wildlife-Aircraft Strike Hazard

Bird/Wildlife-Aircraft Strikes can represent a hazard to aircraft during landing and take-off, and in extreme cases can result in accidents. Migration corridors and other areas where birds congregate (e.g., water bodies) represent the locations with the greatest hazard when birds are present. Based on these potential effects, the USMC devotes considerable attention to avoid the possibility of bird-aircraft strikes. Special purpose permits may be requested and issued that allow for the relocation or transport of migratory birds as necessary to ensure safe aircraft operating procedures. MCB Camp Lejeune requests a depredation control permit for various gull species and Canada geese on an annual basis. This permit allows the Base to take management actions regarding bird/wildlife aircraft strike hazards around airfields. Current Navy and Marine Corps instructions implementing aspects of the Bird/Wildlife-Aircraft Strikes program include MCO 3750.6R, MCO 5090.1B, and Naval Facilities Engineering Command Procedural Manual P-73. MCO 3750.6R (Chapter 4) outlines the procedures for submitting hazard reports for bird and wildlife-Aircraft Strike Prevention Manual discusses the role of Air Traffic Control tower personnel to communicate the current airfield Bird/Wildlife-Aircraft Strike condition via the Automatic Terminal Information System per FAA Order 7110.65

Migratory Birds

The Migratory Bird Treaty Act of 1918 was enacted to conserve migratory birds. The Migratory Bird Treaty Act prohibits the taking, killing, or possessing of migratory birds unless permitted by regulation. This Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and former Soviet Union for the protection of migratory birds. Conservation of migratory birds by Federal agencies and their consideration in the NEPA process is also mandated by EO 13186.

On July 31, 2006, a Memorandum of Understanding was finalized between the DoD and USFWS identifying measures to enhance migratory bird conservation on U.S. military installations. As of February 2007, the Migratory Bird Permit section of 50 CFR Part 21.15 allows for the incidental "take" of migratory birds during military readiness activities except for those ongoing or proposed activities that may result in a significant adverse effect on a population of a migratory bird species. Military readiness activities include all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. An activity has a significant adverse effect if, over a reasonable period of time, it diminishes the capacity of a population of a migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem. If a significant adverse effect on a

population may result, then the Armed Forces must confer and cooperate with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse activities.

The Memorandum of Understanding states that the DoD shall accomplish the following prior to starting any activity that is likely to affect populations of migratory birds:

- 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;
- Assess and document through the project planning process, using NEPA when applicable, the effect of the Proposed Action on species of concern; and
- 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 take of migratory birds.

The Memorandum of Understanding points to several regional reports and plans to identify species of concern. MCB Camp Lejeune biologists have compiled these reports and used them to prepare a list of the species of concern that could potentially occupy the habitat in the MCB Camp Lejeune Range Complex; this list also applies to MCAS New River. There are over 200 species of migratory birds that may occur within the proposed development areas of MCB Camp Lejeune and MCAS New River. This list is provided in Appendix F.

Eastern North Carolina sees a wide array of migratory birds because it is part of the Atlantic Flyway (one of the major North American Migration Flyways). The major migration routes of the Atlantic Flyway follow the Atlantic Coast and Appalachian Mountains. Additionally, within eastern North Carolina, there are 10 National Wildlife Refuges designed to preserve the natural environment. Virtually all birds that occupy MCB Camp Lejeune and MCAS New River throughout the year are protected under the Migratory Bird Treaty Act.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC 1802(10)). EFH for managed fishery resources is designated in the Fishery Management Plans (FMP) prepared by regional Fishery Management Councils. The Fishery Management Councils may also designate Habitat Areas of Particular Concern (HAPC), defined as "subsets of EFH which are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area." The Fishery Management Councils require Federal agencies to consult with National Marine Fisheries Service (NMFS) when any activity proposed to be funded, permitted, or carried out may have an adverse effect on EFH (NMFS 2000).

Fishery resources and associated EFH within the freshwater and estuarine ROI for which FMPs have been prepared by the South Atlantic Fishery Management Council are provided in Table 3.13-4. As described previously, the New River is a State-designated area of importance to managed species and is therefore geographically defined as a HAPC (NMFS 2000).

Special Status Species

The ESA of 1973 and subsequent amendments provide for the conservation of Federally-listed threatened and endangered animal and plant species, and the habitats in which they are found. The ESA prohibits jeopardizing endangered and threatened species or adversely modifying critical habitats essential to their survival. Section 7 of the Act requires consultation with the NMFS and the USFWS to determine whether any Federally-listed endangered or threatened species under their jurisdiction may be affected by the Proposed Action (MCB Camp Lejeune 2006). The USMC ensures that consultations are conducted as required with the 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, MCO P5090.2A.

State listed species are not protected under the Federal ESA; however, they are protected on State land under North Carolina's Plant Protection Conservation Act and North Carolina's Endangered Species Act. Installations cooperate with State authorities in efforts to conserve these species. Other species of conservation concern include State species of special concern, rare species, unusual species, or a watch-list species. The focus of the analysis in this section is on the Federally- and State-listed or candidate threatened and endangered species, per USMC NEPA regulation (MCO P5090.2a, Change 1). Other species of conservation concern are addressed, but are not analyzed to the same level of detail as the species listed by the USFWS as threatened or endangered.

All marine mammals are protected under the Marine Mammal Protection Act of 1972. The Marine Mammal Protection Act makes it illegal to "take" a marine mammal. The definition of take refers to the harassing, injuring or killing of any marine mammal, or the possessing of any marine mammal or part of a marine mammal, without authorization. Some marine mammals are listed under the Marine Mammal Protection Act as strategic. The definition of strategic refers to a stock of marine mammals that is being negatively impacted by human activities and may not be sustainable. When a population or stock has fallen below optimum sustainable levels, it is considered depleted. A stock may be considered depleted

Management Plan	Species	EFH	Location within ROI
Coastal Migratory	King mackerel, Spanish	Primary Nursery Areas	New River and tributaries
Pelagics FMP	cobia, and little tunny	Nursery Areas	frew River and tributaries
		Tidal palustrine forested areas	Freshwater habitat adjacent to the creeks that flow into the New River
Red Drum FMP	Red drum	Estuarine emergent wetlands (e.g., intertidal marshes)	Salt marsh habitats along the New River
		SAV	Observed in areas of the New River
	William into the second	Estuarine emergent wetlands (e.g., intertidal marshes)	Salt marsh habitats along the New River
Shrimp FMP	seabob, royal red, and rock shrimp	Tidal palustrine forested areas	Freshwater habitat adjacent to the creeks that flow into the New River
		SAV	Observed in areas of the New River
Snapper/Grouper	Includes 73 species consisting of snappers, groupers, porgys,	Estuarine emergent wetlands (e.g., intertidal marshes)	Salt marsh habitats along the New River
Complex FMP	triggerfish, jacks, tilefish, grunts, spadefish, wrasses, and sea basses	SAV	Observed in areas of the New River

Table 3.13-4 Fishery Management Plans and EFH Potentially in the MCB Camp Lejeune/MCAS New River ROI

Source: SAFMC 1998

when the mortality in multiple units exceeds the Potential Biological Removal identified for the species. All marine mammal species listed under the ESA of 1973 are considered depleted.

MCB Camp Lejeune/MCAS New River's threatened and endangered species program focuses on protection, management, and monitoring of Federally-listed species found at the Installations. The first line of defense for endangered species, and the most important tool to avoid "take," is protection of threatened and endangered species (individuals and populations) and their habitats from impacts due to training development or other actions that may affect the species. For most threatened and endangered species on-Base, this protection comes in the form of restricted access to a particular area, or restrictions on the type of activities that may occur within a given area. Areas where activity is restricted due to the presence of threatened or endangered species will be clearly delineated with signs, paint, or other obvious markings (MCB Camp Lejeune 2006).

Table 3.13-5 lists the Federal and State listed species that are known to occur or potentially occur at the Installations. Several species could potentially occur within the proposed development areas based on an analysis of habitat type and are indicated as such in Table 3.13-4. No designated critical habitat exists on MCB Camp Lejeune or MCAS New River. Surveys have been conducted and confirm that there are no listed species within the proposed development areas. The species descriptions provided below focus on Federal threatened and endangered species that could potentially be found within the proposed project planning areas.

Golden Sedge (Carex lutea) is typically found in very wet to periodically shallowly inundated soils. The species prefers the ecotone (narrow transition zone between two diverse ecological communities) between the pine savanna and adjacent wet hardwood or hardwood/conifer forest. Most plants occur in the partially shaded savanna/swamp where occasional to frequent fires favor an herbaceous ground layer and suppress shrub dominance. Other species with which this sedge grows include tulip poplar (*Liriodendron tulipifera*), pond cypress (*Taxodium ascendens*), red maple (*Acer rubrum* var. *trilobum*), wax myrtle (*Myrica cerifera* var. *cerifera*), colic root (*Aletris farinosa*), and several species of beakrush (*Rhynchospora* spp.) (USFWS 2008c). Golden sedge has not been found at MCB Camp Lejeune/MCAS New River, although suitable habitat may be present in the proposed areas of development (MCB Camp Lejeune 2006).

Rough-leaved Loosestrife (Lysmachia asperulifolia) typically occurs at the ecotone between savanna or flatwoods and pocosins, where the water table is near the surface during winter and early spring. Plants do best in habitat where shrubby vegetation is kept low by frequent natural or prescribed fires. Rough-leaved loosestrife is managed on MCB Camp Lejeune and MCAS New River through the application of prescribed burns at a return treatment interval of 2 to 3 years. Fire management may be supplemented by mowing of shrubby vegetation with a brush mower in the winter, when rough-leaved loosestrife is dormant. Additionally, beneficial silvicultural measures, such as commercial thinning harvest treatments that remove up to 25 percent of the canopy cover on rough-leaved loosestrife-occupied sites, may be employed to improve habitat conditions. Approximately 25 acres of habitat are currently occupied by rough-leaved loosestrife at MCB Camp Lejeune.

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Tvne	Latin Name	Common	Federal	State	Hahitat	Potentially at Pronosed
~d.c.+		Name	Listing	Listing		Sites (Y/N)
Plants	Amaranthus pumila	Seabeach amaranth	T^{1}	E^{1}	Seabeach amaranth habitat is comprised of beaches on barrier islands.	N
	Asplenium heteroresiliens	Carolina Spleenwort	FSC^{1}	н	Carolina Spleenwort habitat is comprised of small depressions on vertical or high angle faces of marl outcrops in the Coastal Plain.	Y
	Carex lutea	Golden Sedge	Е	Е	Golden Sedge prefers the ecotone between the pine savanna and adjacent wet hardwood or hardwood/conifer forest.	Υ
	Calopogon multiflorus	Many-flower Grass Pink	FSC	Е	Many-flower grass pink habitat is comprised of sandy, relatively dry pine savannas and grasslands.	Y
	Cystopteris tennesseenisis	Tennessee Bladder-fern	NA^{1}	Е	Tennessee Bladder-fern is found on stream terraces or in deep soils.	Ν
	Dichanthelium hirstii	Hirsts' Panic Grass	C ¹	Е	Hirst's panic grass grows in areas that are periodically inundated with water under a sparse tree canopy.	Y
	Lophiola aurea	Golden Crest	ΝA	Е	The golden crest inhabits savannas.	Υ
	Lysmachia asperulifolia	Rough-leaved Loosestrife	E	E	Rough-leaved loosestrife generally occurs in the ecotones between longleaf pine uplands and pond pine pocosins on moist to seasonally saturated sands and on shallow organic soils overlaying sand. Occurs on MCB Camp Lejeune.	Y
	Muhlenbergia torreyana	Pinebarren Smokegrass	NA	Е	Pinebarren Smokegrass inhabits moist, peaty pine barrens and meadows.	Y
	Myriophyllum laxum	Loose Watermilfoil	FSC	Τ	Loose Watermilfoil habitat includes limesink ponds and rarely other freshwater pools.	N
	Parnassia caroliniana	CarolinaGrass- of-Parnassus	ΥN	Е	Carolina Grass-of-Parnassus inhabits savannahs of the lower Coastal Plain.	Υ
	Plantago sparsiflora	Pineland Plantain	FSC	Е	Pineland Plantain habitat is in wet savannas and occasionally along roadsides and ditches over calcareous substrates.	Y
	Platanthera integra	Yellow Fringeless Orchid	NA	Т	Yellow Fringeless Orchid habitat includes savannahs, swamps, and wet flatwoods of the coastal plain.	Υ
	Rhexia aristosa	Awned Meadow- beauty	FSC	Т	Awned Meadow-beauty habitat is clay-based Carolina bays, depression meadows, and limesink ponds, but it may also be found in savannahs and low pinelands.	Y
	Solidago pulchra	Carolina Goldenrod	NA	E	Carolina Goldenrod prefers habitat adjacent to coastal wetlands	Υ

Table 3.13-5 Federal and State-listed Species Known to Occur or Potentially Occurring at MCB Camp Lejeune and MCAS New River

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Type	Latin Name	Common Name	Federal Listing	State Listing	Habitat	Potentially at Proposed Sites (Y/N) ¹
	Solidago verna	Spring- flowering Goldenrod	FSC	SR	Spring-flowering goldenrod habitats include pine savannas, pocosins, and pine barrens.	Y
	Solidago villosicarpa	Coastal Goldenrod	FSC	SC	Coastal goldenrod prefers habitat adjacent to coastal wetlands.	Υ
	Thalictrum cooleyi	Cooley's Meadowrue	Щ	Щ	Cooley's Meadowrue grows in fire-maintained, moist to wet bogs and savannas, roadside ditches, power line rights-of-way, and clearings in forests that are vegetated by grasses.	Y
	Utricularia olivacea	Dwarf Bladderwort	ΝA	Τ	Dwarf Bladderwort habitat consists of ponds.	Υ
Fish	Acipenser brevirostrum	Shortnose Sturgeon	Щ	Щ	Shortnose sturgeon inhabits rivers and estuaries.	Υ
Birds	Aimophila aestivalis	Bachman's Sparrow	FSC	SC	Bachman's Sparrow inhabits open, grassy pine or oak woods.	Υ
	Charadrius melodus	Piping plover	Т	Т	Piping plover habitat is comprised of intertidal wash zones with adjacent foraging areas.	N
	Haliaeetus leucocephalus	Bald Eagle ²	NA	Γ	Bald eagles live near rivers, lakes, and marshes.	Υ
	Mycteria americana	Wood Stork	Э	Ц	Wood storks nest in colonies, especially in forested swamps. They feed in farm ponds, flooded pastures, tidal pools, or anywhere with shallow water where small fish may be concentrated	Υ
	Passerine ciris	Painted Bunting	FSC	NA	The Painted Bunting is found in thickets, woodland edges and brushy areas, along roadsides, in suburban areas, and gardens.	Υ
	Picoides borealis	Red-cockaded Woodpecker	Щ	Щ	Red-cockaded woodpecker habitat is comprised of open pine stands with trees that are at least 60 years old. Occurs on MCB Camp Lejeune.	Y
	Ryncops niger	Black Skimmer	NA	SC	Black skimmers nest on open sandy beaches, inlets, sandbars, offshore islands, and dredge disposal islands that are sparsely vegetated and contain shell fragments.	N
	Sterna nilotica	Gull-billed Tern	NA	T	Gull-billed Terns forage over marshes, pastures, farms, and other open coastal areas. They nest and breed on gravelly or sandy beaches and islands, and winters in salt marshes, estuaries, lagoons, and plowed fields; less frequently along fresh-water areas	Z
	Calidrus canutus	Red Knot	Candidate for listing	NA	During the non-breeding season, Red knots are found in intertidal, marine habitats, especially near coastal inlets, estuaries, and bays that support horseshoe crabs. Breeding occurs in arctic habitats.	Z

and MCAS Now River Table 3-13-5 Federal and State-listed Species Known to Occurs or Potentially Occursing at MCR Count Leioune

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Ľ	I atin Namo	Common	Federal	State	Hakitoot	Potentially
Type	LAUII Маше	Name	Listing	Listing	LIAULUAL	at Froposed Sites (Y/N)
Mammals	Balaena glacialis	Northern right whale	Э	NA	Northern right whales prefer subtropical to subpolar waters on the continental shelf edge and slope worldwide.	Z
	Balaenoptera borealis	Sei whale	Э	NA	Sei whales prefer subtropical to subpolar waters on the continental shelf edge and slope worldwide.	Z
	Balaenoptera physalus	Fin whale	Ц	NA	Fin whales are found in all the world's major oceans, in waters ranging from the polar to the tropical	Z
	Corynorhimus rafinesquii	Rafinesque's Big-eared Bat	FSC	Т	Rafinesque's Big-eared Bat habitat includes hollow trees, caves, and abandoned buildings along river systems and other permanent bodies of water, particularly in regions associated with old growth forests.	Y
	Megaptera novaeangliae	Humpback whale	Ц	NA	Humpback whales live at the surface of the ocean, both in the open ocean and shallow coastline waters.	Z
	Neotoma floridana floridana	Eastern Woodrat	NA	Т	The eastern woodrat prefers deciduous forests. In the Coastal Plain, the eastern woodrat may be found in lowland forests, swamps, marshes, grasslands, and abandoned buildings.	Y
	Puma concolor couguar	Eastern Cougar	Е	Е	Eastern cougar habitat is comprised of trees, bluffs, and shrubs.	Z
	Physeter catodon	Sperm whale	E	ΝA	Sperm whales tend to inhabit areas with a water depth of 1968 feet (600 m) or more, and are uncommon in waters less than 984 feet (300 m) deep.	Z
	Tichecehus manatus	Manatee	Э	Щ	Manatees can be found in shallow, slow-moving rivers, estuaries, saltwater bays, canals and coastal areas. Occurs within the New River	Y
Amphibians	Rana capito capito	Carolina Gopher Frog	FSC	Т	Carolina gopher frogs inhabit scattered localities in the Sandhills and southeastern Coastal Plain. They depend on fishless ponds for breeding. Occurs within New River tributaries.	Y
Reptiles	Alligator mississippiensis	American alligator ³	$T(S/A)^{1}$	Т	American alligators live in wetlands.	Υ
	Caretta caretta	Loggerhead sea turtle	Τ	Т	Loggerhead sea turtle habitat is comprised of oceanic zones, shallow or coastal waters, and beaches and been observed nesting on MCB Camp Lejeune and in the mouth of the New River.	Y
	Chelonia mydas	Green sea turtle	Τ	Т	Green sea turtles habitat is comprised of oceanic zones and beaches and been observed nesting on MCB Camp Lejeune and in the mouth of the New River	Y
	Crotalus adamanteus	Eastern Diamondback Rattlesnake	NA	Щ	Eastern Diamondback Rattlesnake habitat includes pine flatwoods, brushy fields along forest margins, and drier pocosins.	Y

Table 3.13-5 Federal and State-listed Species Known to Occur or Potentially Occurring at MCB Camp Lejeune and MCAS New River

E		Common	Federal	State		Potentially
Type	Latin Name	Name	Listing	Listing	Habitat	at Proposed Sites (Y/N)
	Crotalus horridus	Timber Rattlesnake	NA	SC	Timber rattlesnake habitat includes rocky hillsides, fields along forests, river valleys and swamps, low pinewoods, and pocosins.	Υ
	Dermochelys coriacea	Leatherback turtle	Е	E	Leatherback sea turtle habitat is composed of open ocean and beaches.	Υ
	Eretmochelys imbricata	Atlantic hawksbill turtle	Е	E	Occur in the waters off the coast.	Υ
	Heterodon simus	Southern Hognose Snake	FSC	SC	Southern Hognose Snakes inhabit xeric communities with coarse sands or porous loamy soils including sandhills and pine and wiregrass flatwoods.	Υ
	Lepidochelys kempii	Kemp's Ridley turtle	Е	E	Occur in the waters off the coast.	Υ
	Malaclemys terrapin centrata	Carolina Diamondback Terrapin	FSC	SC	The Carolina Diamondback Terrapin is found in tidal channels of sounds and estuaries that are bordered primarily by <i>Spartina</i> spp	Υ
	Micrurus fulvius	Eastern Coral Snake	NA	Е	Eastern Coral Snake habitat includes sandy flatwoods, maritime forests, and sandhills with pines, scrub oaks, and wiregrass.	Υ
	Ophisaurus mimicus	Mimic Glass Lizard	FSC	SC	Mimic Glass Lizard habitat includes longleaf pine savannas and wooded areas that are dominated by pines.	Υ
	Sistrurus miliarius	Pygmy Rattlesnake	NA	SC	Pygmy Rattlesnake habitat is composed of pine flatwoods and sandy, open woodlands with pines, wiregrass, and scrub oaks, and is frequently near cypress ponds and other bodies of water.	Υ
Sources:	MCB Camp Lejeune 2006, Ni $\overline{T} - \overline{T}$	OAA 2008b, Persons	al communicat	ion TenBrin	r 2008a, USFWS 2008a, USFWS 2008b, USFWS 2008c, USFWS 2008d.	

Table 3.13-5 Federal and State-listed Species Known to Occur or Potentially Occurring at MCB Camp Lejeune and MCAS New River

Notes

¹ E = Endangered, T = Threatened, T(S/A) = Threatened/Similarity of Appearance, SC = Special Concern, SR = State Rare, NA = Not Applicable, FSC = Federal Species of Concern (These species are not protected under the ESA but have declining numbers that warrant monitoring), Y = Yes, N = No. ² Bald eagles would only likely occur as a transient species, if present within the proposed development 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 2006). Bald eagles are no longer Federally listed.

³ Although still listed as Federally threatened, the American alligator is considered recovered.

Rough-leaved loosestrife sites on MCB Camp Lejeune are protected through the application of land restrictions for specific training, management and construction activities. Rough-leaved loosestrife sites are buffered and marked with signs identifying the area as a rough-leaved loosestrife site, and stating prohibited activities (i.e., No digging, No vehicles, No Bivouacs). The protective buffer for rough-leaved loosestrife extends 100 feet from the most peripheral individual plants. In total, the marked buffers protect approximately 75 acres of habitat.

Any management activity within rough-leaved loosestrife sites is conducted with minimal soil disturbance. Skid trails, mechanical site prep and mechanical treatments to control competition are prohibited within rough-leaved loosestrife sites and buffer zones. Also, except in cases where a wildfire endangers life or property, fire containment lines will not be placed in buffer areas, or in a way that would alter hydrology (DoN 2008a).

Cooley's meadowrue occurs on soils in grass-sedge bogs, wet pine savannahs, and savannah like areas, with a neutral pH. It may also grow along fire plow lines, in roadside ditches, woodland clearings, and powerline rights-of-way. Cooley's meadowrue needs some type of disturbance such as fire or mowing to maintain its open habitat. Plants often found growing with Cooley's meadowrue include tulip poplar (*Liriodendron tulipifera*) growing with bald cypress (*Taxodium distichum*) and/or Atlantic white cedar (*Chamaecyparis thyoides*). The presence of Cooley's meadowrue at MCB Camp Lejeune and MCAS New River has not yet been confirmed, although suitable habitat may be present in the proposed areas of development (USFWS 2008b).

Shortnose sturgeon (Acipenser brevirostrum) historically was distributed in major rivers along the Atlantic seaboard, with the northern limit near the St. John River in Canada, and the southern limit near the Indian River in central Florida. This species is known to spawn in freshwater rivers, and feed and overwinter in both freshwater and marine habitats; however, its occurrence in the marine environment is less common. Adults are generally thought to be estuarine anadromous in southern rivers. Shortnose sturgeon were listed as an endangered species in 1967, and remained listed with the passing of the ESA of 1973. A recovery plan was completed for shortnose sturgeon in hopes to delist and recover populations depleted by habitat loss, fishing, and incidental fisheries bycatch. Nineteen populations of shortnose sturgeon have been identified throughout their distribution. Although the species can be found in several rivers throughout the southern states, the largest and most viable population south of Cape Hatteras, North Carolina resides in the Altahama River in Georgia (NMFS 1998). Population dynamics information is virtually non-existent for most southern populations due to the small number of individuals recorded in surveys. Due to the habitat present, it is possible that the shortnose sturgeon would occur in the ROI,

specifically the New River, but there is no recent evidence of their occurrence, and past sightings are unconfirmed (DoN 2008a).

Wood storks (Mycteria Americana) typically nest in the upper branches of black gum (*Nyssa biflora*) or cypress (*Taxodium distichum*) trees that are in standing water. Standing water deters mammalian predators and is an essential element of colony sites. Storks require open access to nest trees and are frequently found in trees adjacent to open water areas. Installation-wide, there has been a trend towards the use of manmade wetlands as colony sites in recent years as these sites are not totally dependent on rainfall for water. Wood storks are tactile feeders, which frequently feed in large groups in open wetlands where prey species are available and water depths are less than 20 inches. Forested riverine floodplain habitats are frequently used, but a variety of ponds, ditches and diked marsh impoundments are important habitats. Use of these habitats is enhanced by receding water. While suitable habitat may be present in proposed areas of development, no sightings have occurred (SCDNR 2008).

Bald eagles (Haliaeetus leucocephalus) typically inhabit areas near rivers, lakes and marshes. The first recorded bald eagle nest at MCB Camp Lejeune occurred in 2000. This nest is located at the junction of Sneads Creek and the New River, and remains active, with eagles observed every year since 2000. MCB Camp Lejeune has established three protective buffer zones around the nest site that are approximately 750, 1,000, and 1,500 feet in diameter. These buffer areas restrict ground and air-use activities to minimize disturbance to the nesting pair. Natural resource managers follow habitat management guidelines established by the USFWS for bald eagles to protect the nest site (MCB Camp Lejeune 2006).

Red-cockaded woodpecker (Picoides borealis) inhabits stands of large, old pines, especially longleaf pine, in which it excavates nesting and roosting cavities. These cavity tree clusters host family groups that consist of a breeding pair and a variable number of helpers that are typically male offspring of the breeding pair. Logging and fire suppression have resulted in the widespread replacement of longleaf pine by loblolly pine and hardwoods, to the detriment of the red-cockaded woodpecker populations. MCB Camp Lejeune has an active forest management program geared toward re-establishing stands of longleaf pine and protecting established stands that are known to, or could in the future, support the red-cockaded woodpecker nesting (MCB Camp Lejeune 2006).

Foraging habitat for red-cockaded woodpeckers includes areas of very little hardwood encroachment that support mature pines with an open canopy. Because red-cockaded woodpeckers need cavity trees and foraging habitat to be within open stands with little to no hardwood over- or under-story, fire suppression has been a main cause for cluster abandonment (MCB Camp Lejeune 2006).

MCB Camp Lejeune supports 88 red-cockaded woodpecker nesting tree clusters. MCB Camp Lejeune manages approximately 36,000 acres of red-cockaded woodpecker forage areas, as well as areas designated as future red-cockaded woodpecker habitat (Figure 3.13-5). Forage areas typically have active red-cockaded woodpecker clusters, while future habitat does not yet support a cluster. The Base has worked closely with the USFWS to create and implement their own Red-cockaded Woodpecker Recovery Plan. The plan consists of restoring and enhancing red-cockaded woodpecker habitat through forest management practices, such as prescribed burning of hardwood encroachment areas, and processes to restore populations of longleaf pine, the preferred habitat for red-cockaded woodpecker. In addition, the Base has implemented a monitoring plan to aid in continued growth of red-cockaded woodpecker clusters on MCB Camp Lejeune, as well as management practices (i.e., 200-foot buffer zones and posting signs) to reduce effects from military activities. Monitoring and management for red-cockaded woodpecker populations on MCB Camp Lejeune began in 1986 and has since lead to a successful increase in the population by 161 percent, with a consistent average of over 9 percent growth per year (MCB Camp Lejeune 2006).

Florida manatee (Tichecehus manatus) is a subspecies of the West Indian manatee and is listed as endangered under the ESA. It is also considered depleted and strategic under the Marine Mammal Protection Act. More recent analysis of the current population status and risk of extinction of the Florida manatee have prompted the USFWS to recommend a reduction in status to threatened. Critical habitat was established in 1976 in Florida for the Florida manatee and includes about a third of Florida's known manatee habitat (50 CFR Part 17.95(a)) (MCB Camp Lejeune 2006). However, critical habitat has not been established for the Florida manatee in North Carolina.

Conservation measures recommended thus far have resulted in a decrease of manatee mortality due to watercraft collisions, and populations in Florida are experiencing increases (MCB Camp Lejeune 2006). In general, manatees favor shallow grass beds immediately adjacent to deep channels. Such areas comprise warm freshwater areas, estuarine areas, rivers and streams, canals, bays, and lagoons. Preferred water depth ranges from 5 to 20 feet. Manatees also frequent artificial freshwater areas, notably near warm water discharges from power plants. These discharges, coupled with the introduction of exotic aquatic plants, have actually increased the manatee's range to the north along the Atlantic coast (MCB Camp Lejeune 2006).

Many manatees are year-round residents of certain areas and simply congregate in warm water springs when the water gets colder in winter. For the remainder of the year, they are generally solitary, except for mothers with calves. Subadults sometimes wander considerable distances during summer and early fall, when the water is warmest. Manatees do not regularly venture beyond extremely nearshore waters.



Figure 3.13-5 Red-cockaded Woodpecker Foraging Areas at MCB Camp Lejeune/MCAS New River

They have been reported occasionally along the Atlantic Intercostal Waterway, inside the barrier islands of the North Carolina coast, and on a few occasions, off the beaches and nearshore banks. Manatees are occasionally sighted near the New River inlet, with one sighting occurring within the New River (MCB Camp Lejeune 2006).

American alligator (Alligator mississippiensis) is Federally listed as threatened due to its similarity of appearance to the endangered American crocodile. However, the USFWS now considers the American alligator recovered, and actions that may affect it do not trigger Section 7 consultation with the USFWS. MCB Camp Lejeune conducts annual surveys for the American alligator. Nighttime spotlight surveys are conducted on several tidally influenced tributaries of the New River (Southwest Creek, Wallace Creek, French's Creek, Duck Creek, Mill Creek, and Stone Creek) during summer of each year. The surveys document the alligator's approximate size and the water body in which it was sighted. The species has been seen in the vicinity of the location where the proposed new bridge over Northeast Creek would be constructed. Since monitoring began in 1980, the population appears to be stable or slightly increasing (MCB Camp Lejeune 2006).

Dolphins are protected under the Marine Mammal Protection Act of 1972. The bottlenose dolphin (*Tursiops truncatus*) could potentially occur within the ROI. The western Atlantic population of bottlenose dolphin (coastal morphotype) consists of offshore and coastal morphotype stocks; only the latter is likely to occur in the ROI. The population structure of the coastal morphotype of bottlenose dolphin is extremely complex, consisting of residents, seasonal residents, and migratory or transient animals. To differentiate between the various substocks, the coastal stock has been broken into seven management units. Collectively, these units are considered depleted and strategic under the Marine Mammal Protection Act. Of particular interest to this project are the southern North Carolina, northern North Carolina, and northern migratory management units, all of which may overlap at one time or another near or at the project sites (DoN 2002; 2003c).

The North Carolina units include animals that occur in sounds and inlets, and along shallow coastal waters. Both the southern and northern North Carolina management units are identified further as estuary or oceanic stocks for survey purposes. The winter population of the southern and northern North Carolina, and the northern migratory stock units is 16,913. The occurrence of coastal bottlenose dolphins is common within the ROI (DoN 2002; 2003c).

Sea turtles that occur in the U.S. are Federally listed as either threatened or endangered. No critical habitat has been established for sea turtles in the U.S. Two species, the green sea turtle (*Chelonia mydas*) and the loggerhead sea turtle (*Caretta caretta*), are listed as threatened and nest at MCB Camp Lejeune on Onslow Beach from May through September. Three additional endangered species, the

Atlantic hawksbill turtle (*Eretmochelys imbricata*), the Atlantic leatherback turtle (*Dermochelys coriacea*), and the Kemp's ridley turtle (*Lepidochelys kempii*) occur in the waters off the coast of MCB Camp Lejeune. Four species have been reported nesting on North Carolina beaches: 1) loggerhead, 2) green, 3) Kemp's ridley, and 4) leatherback (MCB Camp Lejeune 2006). The Atlantic hawksbill turtle does not nest in the ROI, but may transit North Carolina waters seasonally. This species is considered extremely rare in the ROI (DoN 2003c).

The nearshore waters are generally most attractive to sea turtles because they provide food, cover, and rest areas. In fall, many turtles either head south toward warmer water or seaward toward the Gulf Stream, and migrate back in the spring. In some cases, availability of food during the colder water months is also a factor (DoN 2002, 2003c).

In the vicinity of MCB Camp Lejeune, sea turtles are typically sighted on Onslow Beach and in estuarine and open waters. Sea turtles are not known to occur up the New River; however, there have been reports of dead, washed up sea turtles near the inlet of the river and as far inland as Sneads Ferry Road/NC Highway 172 (TenBrink 2008b).

Loggerhead sea turtles are the most abundant type of sea turtle in U.S. waters and are the most commonly sighted sea turtles in North Carolina. Nearshore estuarine waters are important for the juvenile phase of loggerhead sea turtles and adults who are foraging between nesting sessions. Juveniles and adults feed mostly on benthic invertebrates, and are found year-round south of Cape Hatteras. In the spring and fall, they are concentrated off Raleigh and Onslow Bays. Although most loggerheads travel north of Cape Hatteras in summer, some females remain in North Carolina to nest from April through September. Most loggerheads leave during the winter, either heading south or to the warm edges of the Gulf Stream along the west wall (DoN 2002, 2003c).

Green turtles primarily use three types of habitat: 1) oceanic beaches (for nesting), 2) convergence zones in the open ocean, and 3) benthic feeding grounds in coastal areas. After emerging from the nest, hatchlings swim to offshore areas, where they are believed to live for several years, feeding close to the surface on a variety of pelagic plants and animals. Juveniles transition from pelagic habitats to nearshore foraging grounds once they reach a certain age/size range. Once they move to these nearshore benthic habitats, adult green turtles are almost exclusively herbivores, feeding on sea grasses and algae (NOAA 2008c).

Globally, Kemp's ridley is considered the most endangered of all sea turtles. These sea turtles apparently inhabit oceanic realms as post-hatchlings and young juveniles. As they mature, they venture into

nearshore waters and begin feeding on benthic prey. The nearshore waters of North Carolina are considered an important developmental habitat for this species (DoN 2002, 2003c).

Unlike other sea turtles, leatherbacks are more dependent upon prey and reproductive requirements than temperature with regard to distribution. Leatherbacks are able to regulate their internal temperature more than the other four turtles discussed here; therefore, leatherbacks range from the tropics into cool temperate waters. Leatherback nesting activities in North Carolina have been confirmed during the years 1998, 2000 and 2002 and suspected on occasion in years past. One nest was confirmed at Cape Lookout, while six others were confirmed at Cape Hatteras; however, no leatherback nests have been reported at MCB Camp Lejeune (DoN 2002, 2003c).

3.13.1.2 MCAS Cherry Point

Terrestrial Communities

Terrestrial resources include the vegetation types and communities and wildlife that could be affected by any construction or demolition activities that would take place on land.

Vegetation. MCAS Cherry Point is located within the Atlantic Coastal Plain and includes pine forest communities, lower slope mixed hardwoods, inland floodplain swamp forests, freshwater marshes, coastal fringe forests, and grasslands. Loblolly pine *(Pinus taeda)* dominates much of the forested land on the broad inter-stream at MCAS Cherry Point. Land cover at MCAS Cherry Point includes six community types, as described below.

- **Pine Forest:** Loblolly pine forest represents the dominant forest community type. Timber management practices are conducted to maintain and enhance these areas. The forest is burned by prescription on 3- to 5-year cycles to facilitate military training, reduce wildfire danger, improve wildlife habitat, and promote native plant communities. Some of the prescribed burning is done during the growing season. These management practices produce an open mid-canopy and promote the dominance of grasses and herbaceous species at the ground layer (MCAS Cherry Point 2001b).
- Mesic Mixed Hardwood: Located in the lower slopes and the important canopy components of this community include sweetgum (*Liquidambar styraciflua*), white oak (*Quercus alba*), pignut hickory (*Carya glabra*), and beech (*Fagus grandifolia*). The major small trees found in the mixed hardwood forest are American holly (*Ilex opaca*) and flowering dogwood (*Cornus florida*) (MCAS Cherry Point 2001b).
- Blackwater Swamp: Dominates the inland floodplains of the tributary streams. Important components of this community include swamp tupelo (*Nyssa biflora*), bald cypress (*Taxodium*)

distichum), red maple (*Acer rubrum*), sweetgum, and a variety of oaks. The mid-canopy of the swamp forest is dominated by ironwood (*Carpinus caroliniana*) (MCAS Cherry Point 2001b).

- Freshwater Marsh: Forms a fringe along the edges of the Neuse River, Slocum Creek, Hancock Creek, and their larger tributaries. Important components of this community include big cordgrass *(Spartina cynosuroides),* black needlerush *(Juncus roemerianus),* sawgrass *(Cladium jamaicense),* and broad-leaved cattail *(Typha latifolia)* (MCAS Cherry Point 2001b).
- Coastal Fringe Forest: Low upland terraces along the larger tidal creeks support the coastal fringe forest. Important components of this forest include loblolly pine, live oak (*Quercus virginiana*), diamond leaf oak (*Quercus hemisphaerica*), yaupon (*Ilex vomitoria*), and Spanish moss (*Tillandsia usneoides*) (MCAS Cherry Point 2001b).
- **Grasslands:** Occur mainly around the existing runways and are the result of annual mowing activities to maintain the runway clear zones (MCAS Cherry Point 2001b).

The majority of the proposed development areas have been previously developed or disturbed; however, for two of the proposed project sites, pine forests (consisting of loblolly pines) comprise the dominant vegetative communities. Figure 3.13-6 shows the ecological classification types at MCAS Cherry Point. Table 3.13-6 provides a brief summary of the general type of forest and production value of the forested areas located within the proposed development areas. Additionally, the acreages of each ecological area potentially affected is provided in Appendix F.

Wildlife. Wildlife at MCAS Cherry Point is typical of that found in the southeastern Coastal Plain of North Carolina. Mammals commonly found within the pine and hardwood forests include white-tailed deer (*Odocoileus virginianus*), gray fox (*Urocyon cinereoargenteus*), opossum (*Didelphis virginiana*), and gray squirrel (*Scirus carolinensis*). Floodplain forested swamps and marshes at the Station provide habitat for beaver (*Castor canadensis*), muskrat (*Ondatra zibethica*), raccoon (*Procyon lotor*), and eastern cottontail rabbit (*Sylvilagus floridanus*), as well as various species of reptiles and amphibians (MCAS Cherry Point 2001b).

Birds common to the area include many species of waterfowl such as black ducks (*Anas rubripes*), wood ducks (*Aix sponsa*), Canada geese (*Branta canadensis*), and mallards (*Anas platyrhynchos*). Birds found within the pine and hardwood forests include bobwhite quail (*Colinus virginianus*) and numerous species of songbirds. Floodplain forested swamps and marshes provide habitat for wood ducks and raptors. Large numbers of diving ducks such as ruddy ducks (*Oxyura jamaicensus*), scaup (*Aythya spp.*), canvasback(*Aythya valisineria*), and ringneck ducks (*Aythya collaris*) use the open waters of Slocum and Hancock creeks and the Neuse River during the winter months (MCAS Cherry Point 2001b).



Figure 3.13-6 Ecological Classification Types at MCAS Cherry Point

Proposed Development Areas	Dominate Forest Type Within Proposed Development Area	Percent Dominant	Forest in Proposed Development Area (acres)	Type of Forest Within Proposed Development Area	Age of Forest (years)	Production Value (in board feet)
MCAS Cherry Point Pro	posed Development Areas					
Ordnance Storage Area	Pine	9 <i>L</i>	764	Pine, Pine/Hardwood, Hardwood	Unknown	Unknown
West Quadrant	Pine	80	60	Pine, Pine/Hardwood, Hardwood	Unknown	Unknown
North Quadrant	Pine	60	107	Pine, Pine/Hardwood	Unknown	Unknown
MACS 2 Compound	Pine	100	3	Pine	Unknown	Unknown
Total A	cres Within Proposed Develo at MCAS	pment Areas Cherry Point	933			
Matas: NA - Nat Amiliable						

 Table 3.13-6
 Forest Types and Production Values for Proposed Development Areas within MCAS Cherry Point

Notes: NA = Not Applicable. *Source:* MCB Camp Lejeune 2008f. Chapter 3: Affected Environment December 2009

Aquatic Communities

The focus of the aquatic resources discussion at MCAS Cherry Point is on species and communities inhabiting Slocum Creek, as this area could potentially be affected by the proposed construction activities. Slocum Creek is a tidal creek and tributary to Neuse River and connects with the river on the northwest side of MCAS Cherry Point. Similar to MCB Camp Lejeune, the waters serve as nursery areas for juvenile fish and invertebrates, as well as provide some recreational fisheries. Slocum Creek has been designated as an inland Primary Nursery Area by the North Carolina Wildlife Resources Commission (MCAS Cherry Point 2007a). Aquatic flora, invertebrates, and fish are the same as discussed for MCB Camp Lejeune/MCAS New River.

Bird/Wildlife-Aircraft Strike Hazard

Migration corridors and other areas where birds congregate (e.g., water bodies) represent the locations with the greatest hazard when birds are present. Based on these potential effects, the USMC devotes considerable attention avoiding possible bird-aircraft strikes. Special purpose permits may be requested and issued allowing for the relocation or transport of migratory birds for management purposes.

MCAS Cherry Point Air Station Order 3000.2B established the Bird Hazard Working Group, which is tasked with collecting, compiling, and reviewing data on bird strikes; identifying and recommending actions to reduce hazards; recommending changes in operational procedures; preparing informational programs for aircrews; and serving as a point of contact for off-Base bird/wildlife-aircraft strikes.

The DoN, in conjunction with the U.S. Department of Agriculture (USDA), has conducted several studies in Eastern North Carolina to study bird migrations, bird flight patterns, and past strikes to develop predictions of where and when bird/wildlife-aircraft strikes might occur, and how to avoid them (USDA/Animal and Plant Health Inspection Service/Wildlife Services 2007). Current Navy and Marine Corps instructions implementing aspects of the Bird/Wildlife-Aircraft Strike program include OPNAVINST 3750.6R, OPNAVINST 5090.1B, and NAVFAC Procedural Manual P-73. OPNAVINST 3750.6R (chapter 4) outlines the procedures for submitting hazard reports for bird and wildlife strikes. The DoN's draft OPNAVINST concerning the Bird/Wildlife-Aircraft Strike Prevention Manual discusses the role of Air Traffic Control tower personnel to communicate the current airfield Bird/Wildlife-Aircraft Strike Hazards condition via the Automatic Terminal Information System per Federal Aviation Administration Order 7110.65. These procedures are in place for the airfields on the main Station and on the Station's auxiliary properties.

Migratory Birds

As previously discussed for MCB Camp Lejeune and MCAS New River, the Migratory Bird Treaty Act of 1918 was enacted to conserve migratory birds, and a Memorandum of Understanding was enacted between the DoD and USFWS to identify measures to enhance migratory bird conservation on U.S. military installations. The list of migratory and non-migratory birds compiled by MCB Camp Lejeune also applies to MCAS Cherry Point and the birds that are potentially found within the proposed development areas can be found in Appendix F.

Essential Fish Habitat Assessment

Specific portions of the ROI were identified that are considered EFH and/or HAPCs as designated by the Fishery Management Councils. Fishery resources within the freshwater and estuarine ROI for which FMPs have been prepared by the South Atlantic Fishery Management Council are provided in Table 3.13-7.

Management Plan	Species	EFH	Location within ROI
Red Drum FMP	Red drum	Estuarine and marine emergent wetlands (e.g., intertidal marshes)	Salt marsh habitats along Slocum Creek
		Sandy-Silty clay Unconsolidated Bottom	Slocum Creek and its tributaries
	White pink brown seabob	Estuarine and marine emergent wetlands (e.g., intertidal marshes)	Salt marsh habitats along Slocum Creek
Shrimp FMP	royal red, and rock shrimp	Tidal palustrine forested areas	Tidal fresh and freshwater areas along Slocum Creek and its tributaries
Snapper/Grouper	Includes 73 species consisting of snappers, groupers, porgys,	Estuarine and marine emergent wetlands (e.g., intertidal marshes)	Salt marsh habitats along Slocum Creek
Complex FMP	triggerfish, jacks, tilefish, grunts, spadefish, wrasses, and sea basses	Sandy-Silty clay Unconsolidated Bottom	Slocum Creek and its tributaries
Spiny Lobster FMP	Spiny Lobster	Sandy-Silty Clay Unconsolidated Bottom	Slocum Creek and its tributaries

 Table 3.13-7 Fishery Management Plans and EFH Potentially in the MCAS Cherry Point ROI

Sources: SAFMC 1998, MCAS Cherry Point 2007a

Special Status Species

MCAS Cherry Point addresses 14 threatened and endangered species in accordance with its INRMP (MCAS Cherry Point 2001b) (see Table 3.13-8). Studies conducted by the North Carolina Natural Heritage Program during 1992 and 1993 and subsequent surveys determined rare species and special-interest areas of MCAS Cherry Point (MCAS Cherry Point 2001b).

Table 3.13-8 includes the Federal and State listed species that could potentially be found at MCAS Cherry Point and within the proposed development areas. Following is a description of the Federally-listed threatened and endangered species that could be located within or in the vicinity of the proposed development areas based on similar habitat type.

American alligator is Federally listed as threatened due to its similarity of appearance to the endangered American crocodile. However, as discussed under MCB Camp Lejeune special status species, the American alligator is considered recovered, and actions that may affect it do not trigger Section 7 consultation with the USFWS. A breeding population occurs in Hancock and Slocum Creeks. Nests have been identified in Jack's Branch (MCAS Cherry Point 2001b).

Dolphins are discussed in detail under MCB Camp Lejeune special status species (Section 3.13.1.1). The bottlenose dolphin occurs in the Neuse River and has been observed in Slocum Creek. The species is not listed under the Endangered Species Act, but is protected by the Marine Mammal Protection Act (MCAS Cherry Point 2001b).

Florida manatees are discussed in detail under MCB Camp Lejeune special status species (Section 3.13.1.1). The manatee could potentially occur in Slocum Creek.

Rough Leaved Loosestrife is discussed in detail under MCB Camp Lejeune special status species (Section 3.13.1.1). This species is not known to occur on MCAS Cherry Point; however, there is some potential for it to occur in areas of the Station that have suitable soils and appropriate forestry operations (MCAS Cherry Point 2001b).

Spring-flowering Goldenrod (Solidago verna). There are only 12 known populations of spring-flowering goldenrod on MCAS Cherry Point (MCAS Cherry Point 2001b). This species normally occurs in open or sparsely wooded areas on Rains soils where competition has been reduced by burning or mowing. The populations of spring-flowering goldenrod occur in isolated patches in various, known areas of MCAS Cherry Point.

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	Scientific Name	Common Name	Federal Listing	State Listing	Habitat	Potentially at Proposed Sites (Y/N) ¹
Plants	Solidago verna	Spring-flowering Goldenrod	FSC^{1}	T^{l}	Spring-flowering goldenrod habitats include pine savannas, pocosins, and pine barrens.	Υ
	Lysimachia asperulifolia	Rough-leaved Loosestrife	Ε ¹	Щ	Rough-leaved loosestrife generally occurs in the ecotones between longleaf pine uplands and pond pine pocosins on moist to seasonally saturated sands and on shallow organic soils overlaying sand.	Υ
	Aeschynomenic virginica	Sensitive Jointvetch	Т	Е	Sensitive joint-vetch grows in the intertidal zone where plants are flooded twice daily.	Ν
	Carex chapmanii	Chapman's Sedge	NA^{1}	$W1^{1}$	Chapman's sedge inhabits wet, sandy, acidic soils, sometimes over limestone, under deciduous or mixed deciduous-evergreen forests.	Z
Fish	Acipenser brevirostrum	Shortnose Sturgeon	Е	Е	Shortnose sturgeon inhabits rivers and estuaries.	Z
Birds	Halieetus leucocephalus	Bald Eagle	NA^{1}	Т	Bald eagles live near rivers, lakes, and marshes.	Υ
	<i>Picoides</i> <i>borealis</i>	Red-cockaded Woodpecker	Е	Е	Red-cockaded woodpecker habitat is comprised of open pine stands with trees that are at least 60 years old.	Z
Mammals	Tichecehus manatus	Manatee	Е	Е	Manatees can be found in shallow, slow-moving rivers, estuaries, saltwater bays, canals and coastal areas.	Υ
Reptiles	Malaclemys terrapin centrata	Carolina Diamondback Terrapin	FSC ¹	SC	The Carolina diamondback Terrapin is found in tidal channels of sounds and estuaries that are bordered primarily by <i>Spartina</i> spp	Ν
	Alligator mississippiensis	American Alligator ²	$T(S/A)^{1}$	Т	American alligators live in wetlands. Occurs on MCAS Cherry Point.	Υ
	Sistrurus milarius	Carolina Pygmy Rattlesnake	NA	SC	Pygmy rattlesnake habitat is composed of pine flatwoods and sandy, open woodlands with pines, wiregrass, and scrub oaks, and is frequently near cypress ponds and other bodies of water.	Y
	Caretta caretta	Loggerhead sea turtle	Т	Τ	Loggerhead sea turtle habitat is comprised of oceanic zones, shallow or coastal waters, and beaches.	Z
	Chelonia mydas	Green sea turtle	Т	Т	Green sea turtles habitat is comprised of oceanic zones and beaches.	Ν
	Lepidochelys kempii	Kemp's Ridley turtle	Е	Е	Occur in the waters off the coast.	Z
Sources	:: MCAS Cherry Poi	int 2001b.				

Table 3.13-8 Federal and State Listed Threatened or Endangered Species Occurring or Potentially Occurring at MCAS Cherry Point

Notes:

¹ E = Endangered, T = Threatened, T(S/A) = Threatened/Similarity of Appearance, SC = Special Concern, FSC = Federal species of concern (These species are not protected under the ESA but have declining numbers that warrant monitoring), SC = State species of concern, SR = State Rare, W1 = North Carolina Watch List; rare, but relatively secure, NA = Not Applicable, Y = Yes, N = No. ² Although still listed as Federally threatened, the American alligator is considered recovered.

Carolina Pygmy Rattlesnake (Sistrurus milarius). The Carolina pygmy rattlesnake is a State-listed species of concern. Pygmy rattlesnake habitat is composed of pine flatwoods and sandy, open woodlands with pines, wiregrass, and scrub oaks. It is also frequently found near cypress ponds and other bodies of water.

Bald Eagle. Bald eagles are discussed under MCB Camp Lejeune special status species (Section 3.13.1.1) and inhabit a variety of habitats, but are usually found near rivers, lakes, and marshes. They are occasionally observed in the vicinity of MCAS Cherry Point during migration and summer, but are not known to nest in the area (MCAS Cherry Point 2001b).

3.13.2 Environmental Consequences

This section provides a detailed description of the impacts to natural resources from implementation of the alternatives, including the No Action Alternative. The factors used to determine the extent of impacts included:

- Substantial loss or degradation of habitat or ecosystem functions (natural features and processes) essential to the persistence of native plant and animal populations;
- Substantial loss or degradation of a sensitive habitat that supports high concentrations of special status species or migratory birds;
- Disruption of a Federally-listed species, its normal behavior patterns, or its habitat; or
- Substantial loss of population or habitat for a State-protected species or non-listed but specialstatus species, increasing the likelihood of Federal-listing action to protect species in the future.

3.13.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) natural resource conditions would result from this alternative. This alternative would not involve any construction; therefore, there would be no impacts to terrestrial communities, aquatic communities, and special status species; however, natural resources at MCB Camp Lejeune/MCAS New River have changed since FY06 due to actions not connected with this proposed action. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow

the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include new construction of and improvements to buildings, housing, utility/communication lines, and roads.

The Preferred Alternative would result in a major construction effort (approximately 1,877 acres of proposed disturbance from new construction) in the proposed development areas throughout the Installations. Impacts to natural resources under the Preferred Alternative are described below.

Terrestrial Communities

Vegetation. Implementation of the Preferred Alternative would involve many construction, development, and maintenance projects, resulting in clearing or other disturbance of upland vegetation within the proposed planning areas on MCB Camp Lejeune and MCAS New River. Within MCB Camp Lejeune, the construction project footprints are estimated to be approximately 1,717 acres and approximately 160 acres for MCAS New River, for a total of approximately 1,877 acres. However, the amount of forest that would be lost due to the proposed construction is approximately 1,542 acres (1,503 acres at MCB Camp Lejeune and 39 acres at MCAS New River). This acreage represents a worst case disturbance area for MCB Camp Lejeune as the exact site locations for many projects have not been defined within the overall development areas. Therefore, the amount of forest loss would likely decrease once conceptual designs are finalized. Project locations for MCAS New River have been identified; thus, the estimated forest loss is more precise. Disturbance at both Installations would include the development footprint, as well as areas used for construction staging, foot traffic, vehicle storage, range impacts, and incidental ground disturbance. Construction within previously developed areas would result in localized impacts. New buildings and infrastructure in previously undisturbed areas would involve clearing of vegetation and substantial ground disturbance within the proposed project footprints.

A majority of the impacts would involve the disturbance or conversion of forested areas to developed areas. Of the removed vegetation, merchantable timber would be sold via a timber sale contract controlled by MCB Camp Lejeune's Forest Management Section. Any remaining non-commercial vegetative debris would be cleared and disposed of under a separate slash removal contract in accordance with all applicable Federal, State, and local rules and regulations.

The loss of the existing native vegetation during the construction, operation, and maintenance of the proposed projects would result in a change in both species composition and abundance within the proposed development areas, and may delay other planned forest management actions. Clearing land and changing land use would lead to altered plant species assemblages. Plant species that typically thrive in the forested area, for example, would diminish and species that thrive in more open areas would flourish, including certain invasive species (NCHRP 2002). Edge effects from both wildlife and plant species may

encroach into once forested habitats and isolate large tracts of undisturbed land (Wilkin *et al.* 2007; NCHRP 2002; Saunders *et al.* 2002).

The proposed construction projects may affect the fire regime, as some proposed development areas fall within or near high priority prescribed burning areas. The fire frequency near buildings, roads, cantonment areas, and facility compounds may decrease due to a diminished vegetative cover, and additional fire-protection strategies employed to protect property and additional personnel. Under the Preferred Alternative, controlled burns and wildfires would be contained at smaller sites because of the additional roadways and facilities distributed throughout the Installation. A decreased fire frequency would favor oaks, hickories, and other encroaching hardwoods.

The 1,542 acres of forestland, potentially lost from implementing the Preferred Alternative, represents 1.6 percent of the existing vegetative communities at MCB Camp Lejeune and MCAS New River. Since exact project locations and designs are not known within the proposed development areas at MCB Camp Lejeune, the estimate used for potential vegetation disturbance is a worst case scenario and would likely decrease once conceptual designs are finalized. The persistence of each ecological group at the Installations would not be threatened. Loblolly pine and mixed hardwood forest types would be the most extensively affected ecological groups.

Wildlife. As discussed previously, the Preferred Alternative could result in the loss or degradation of up to approximately 1,542 acres of terrestrial, forested habitats within the proposed development areas based on construction footprints and the amount of available forested habitat. Construction activities associated with the Preferred Alternative would displace upland wildlife from suitable habitat in the immediate vicinity of the construction footprints. Displacement would occur due to soil disturbance, removal of vegetation, vehicle traffic, range impacts, and incidental human activity. Noise and activity during construction would result in disturbance to wildlife primarily within the construction footprints, but habitat fragmentation and edge effects would extend into adjacent habitat (NCHRP 2002). The Preferred Alternative is expected to affect some wildlife species that inhabit forest and woodland areas due to habitat removal.

Reptiles and amphibians that occur in the affected areas would be especially vulnerable to direct mortality and displacement during construction and use of the areas. Animals that are displaced or flee would be vulnerable to vehicle traffic while searching for new territory. Unless suitable habitat is nearby, the displaced individuals are unlikely to survive. The total acreage of wildlife habitat subject to removal and disturbance would be substantial and expected to result in reduced wildlife populations, particularly among interior forest and woodland species. Some species are likely to disappear from local habitat patches that become too small, disturbed, or isolated to sustain them (Wilkins *et al.* 2007; NCHRP 2002; Saunders *et al.* 2002).

With the increase in noise and activity there would be a corresponding increase in potential disturbance to wildlife. Ambient and impulse noise levels would increase over large areas of the Installations and in adjoining off-Base areas to the north and northeast. However, the increase in noise and construction activity would be a short-term impact.

New sources of noise and activity would be concentrated and most intense within the footprints of removed and degraded habitats described above. Hence, the impact on wildlife populations is largely accounted for by the affected acreage. The extent to which noise originating from distant sources would impact wildlife through startle responses, interference with communication, and short- to long-term hearing impairment, or in otherwise unaltered habitat areas is difficult to estimate, but would presumably be minor due to the rapid attenuation of sound with distance from the source and the masking effect of the vegetation and topography. Wildlife that reside immediately adjacent to new sources of noise and activity to which they are unaccustomed are most likely to be affected, and could abandon those areas. In the long term; however, wildlife in the surrounding areas can be expected to coexist with military noise as long as other important habitat features are retained; no adverse long-term impacts are anticipated (Department of the Army 2007).

The proposed new Base road would have short-term and long-term impacts to local wildlife and habitat. Construction would temporarily increase noise and disturb local wildlife in the area. Smaller, less mobile animals would experience direct mortality during these activities, but larger mammals and birds would temporarily avoid the area until construction was complete. The proposed four lane highway would permanently remove and fragment forest habitat on the Installation (i.e., dissect larger contiguous habitat areas). Fragmentation of habitat would disrupt wildlife movements and migration, divide existing wildlife populations, and prohibit access to the New River for some animals residing east of the proposed road (Jackson 2000). In addition to mortality, elevated noise from highways has been shown to have adverse impacts on call effectiveness on breeding song birds and certain species of amphibians (Bee and Swanson 2007; Dooling and Popper 2007). In the long-term, the new road would create a new mortality danger area for those animals needing to cross the road to access other habitat areas or water (Boarman and Sazaki 2006; Erritzoe et al. 2003; Saunders et al. 2002). In addition to the actual road construction, the new Base road would need fill material; borrow pits, or areas that are excavated to provide fill material for construction projects, have been identified (see Figure 2.2-15) to provide this material. The Preferred Alternative would likely result in the construction of either one large or two to three smaller borrow pits. Depending on the borrow pits' depth and configuration, they can fill with water (groundwater or rain water) and eventually become sustainable wildlife habitat, especially for species that favor small, aquatic areas.

Examples of best management practices for natural resources associated with road and bridge construction are compiled by the Federal Highway Administration (FHWA 2008). Measures that could be utilized for minimizing the impacts to natural resources from the new road at MCB Camp Lejeune could include:

- Constructing higher side rails on the bridge to prevent birds from flying into traffic.
- Constructing longer bridge spans over wetlands and marsh habitat to allow for wildlife crossing underneath in these heavily utilized areas.
- Constructing wildlife bridges in forest areas for safe wildlife crossing.
- Installing low fencing and culverts to direct reptiles and amphibians, as well as small mammals, under the new road instead of over it.
- Adding reflectors to the road to discourage deer crossing.
- Less frequent mowing along road sides to allow for greater foliage height, thus promoting increased biodiversity.
- Creating natural berms that can act as wildlife and sound barriers to the roadway.

MCB Camp Lejeune and MCAS New River personnel closely follow the preventative measure outlined in Marine Corps Order 3750.6R and the draft DoN Marine Corps Order (OPNAVINST [Chapter 6]) Bird/Wildlife-Aircraft Strike Prevention Manual. Under normal conditions when a low-level flight is planned, aircrews make adjustments to planned routes during mission planning and briefings to avoid areas known to support high densities of bird populations such as lakes, rivers, and wetlands. When the bird/wildlife-aircraft strike hazard potential is moderate or higher, all aircrews are directed to increase overflight altitudes, avoid particular low-level segments, or not fly specific low-level routes entirely to minimize the risk of bird collision. Under the Preferred Alternative, the USMC would continue to employ bird/wildlife-aircraft strike hazard avoidance procedures that have proved successful in the past.

Aquatic Communities and Essential Fish Habitat

Proposed facility upgrades and construction would predominantly occur in upland areas and would have no effect on aquatic species occurring within the vicinity of the project areas. However, the proposed bridge that is part of the new Base road would cross over Wallace Creek, Northeast Creek, and Bearhead Creek. The lower sections of the creeks are likely utilized by aquatic species as nursery and adult habitat, particularly shrimp, blue crab, and many fish species that are Federally managed. Northeast Creek is a State-designated Primary Nursery Area and the main channel of the New River is a designated Special Secondary Nursery Area for protection of juvenile species. The proposed action, including bridge construction over the waterways at MCB Camp Lejeune, would have minimal effects on EFH. The Marine Corps has determined that these overall effects do not reduce the quality and/or quantity of essential fish habitat, and thus do not require consultation with NMFS. These effects would arise from bridge construction proposed as part of the new base road. Pilings associated with the bridge would require a small amount of structural fill placement in the water, and a small area of water would be shaded from the bridge expanses. Specific details from the preliminary design work are provided below.

Fifteen piers would be placed in Northeast Creek to span the creek. These piers would be placed 127.5 feet apart, and the total area of the pilings in contact with the substrate would be 1,500 square feet, occupying approximately 0.9 percent of the substrate in the proposed corridor across Northeast Creek. The proposed 2,040-foot long bridges over Northeast Creek would be constructed from barges and temporary work bridges. Barge construction would occur in areas of Northeast Creek where the water depth is greater than 5 feet deep. This area is approximately 800 feet wide along the center of the creek. The remaining portions of bridge construction would occur from temporary bridges extending from both north and south shorelines approximately 620 feet into the creek. These work bridges would be built approximately 6 feet above the surface of the water and would be approximately 40 feet wide. The work bridges would be constructed of steel piles with wood or steel deck and removed upon completion of bridge construction, resulting in temporary impacts to EFH. The work bridges are required to avoid dredging for this project. No dredging activities (to accommodate the barges or for other reasons) are anticipated to be associated with this project (Conger 2009).

Approximately 3.6 acres of the substrate in Northeast Creek would be shaded as a result of bridge construction. SAV and oyster beds were not observed in the proposed project corridor during snorkeling surveys conducted in both Northeast and Wallace Creeks on July 14, 2009. Therefore shading would have no negative impacts on these potential habitats for fish. It is expected that the pilings and shade the bridge provides might actually serve as an attractant to fish species in the area and may enhance the habitat in Northeast Creek.

Seven bents would be placed in Wallace Creek to span the creek. These bents would be placed 49.75 feet apart, and the total area of the bents in contact with the substrate would be 187 square feet, occupying approximately 0.8 percent of the substrate in the proposed corridor across Wallace Creek. Construction of the bridge would occur using "top-down" techniques, meaning bridge construction would start on land and as each section is built, equipment is moved out onto that section to complete the next section. As a result, the impacts due to project construction would be limited to the footprints of the pilings themselves.

Approximately 0.6 acre of the substrate in Wallace Creek would be shaded as a result of bridge construction. SAV and oyster beds were not observed in the proposed project corridor, so the shading would not have negative impacts on these potential habitats for fish. It is expected that the pilings and shade the bridge provides might actually serve as an attractant to fish species in the area and may enhance the habitat in Wallace Creek.

Bridge crossings at Northeast Creek and Wallace Creek would span from high ground to high ground. Effects to the managed species known to occur in the project vicinity would include the placement of pilings and shade resulting from bridge construction. The placement of pilings would have a variable effect to the managed species. Pilings would ultimately result in a beneficial effect to species that prefer such structure as habitat, such as cobia, gray snapper, and sheepshead. The permanent impact of the placement of pilings in estuarine emergent and scrub/shrub wetlands along Northeast and Wallace Creek would result in effects to species that prefer such wetlands as habitat, such as blacktip shark, gag grouper, gray snapper, lane snapper, and penaeid shrimp; however, these effects would be minimized because the emergent and scrub/shrub wetlands in the project vicinity are located outside of the ordinary high water mark. As discussed previously the placement of pilings, and the shading effects of the bridge expanses, would have some effects on the waterway. However, impacts to fin fish and shellfish populations would be minimal.

A majority of the activity would require upland development with the exception of the bridge construction. As described under impacts to wildlife, borrow pits could eventually fill with water and provide small aquatic habitat areas to support some aquatic species.

Any in-water work required for construction of the bridge would be conducted in a manner to reduce erosion and sedimentation; the introduction of oils or other hazardous materials would ultimately affect aquatic communities. An approved Storm Water Pollution Prevention Plan would be in place to accommodate management of new impervious surfaces with long-term stormwater controls to: 1) treat and remove nutrients from stormwater before it enters receiving waters, or 2) prevent it from entering receiving waters. Therefore, impacts to aquatic communities (flora, invertebrates, fish, and EFH) would be minimized.

Special Status Species

As discussed previously, the only known Federally-listed species within any of the proposed development areas is the red-cockaded woodpecker; however, several other species have the potential to occur within the proposed development areas based on similar habitat type. Following is a brief discussion of the potential impacts to those species. Overall, the USMC concluded that the Preferred Alternative would not affect any terrestrial Federally-listed threatened or endangered species and may affect, but not not likely

to adversely affect manatees. The USFWS concurred with this conclusion; see Appendix H as well as Section 5.0 for consultation correspondence and requirements, respectively.

Golden Sedge. Golden sedge, which is a Federally-listed endangered species, has not been found at MCB Camp Lejeune/MCAS New River, but suitable habitat may be present in the proposed development areas. A survey of threatened and endangered species has been completed and there is no evidence of golden sedge within the proposed development area.

Rough-leaved Loosestrife. Rough-leaved loosestrife, a Federally-listed endangered species, is not known to occur within any of the proposed development areas. A survey of threatened and endangered species has been completed and there is no evidence of rough-leaved loosestrife within the proposed development area.

Cooley's Meadowrue. Cooley's meadowrue is listed by State and Federal agencies as an endangered species. There have been no documented cases of Cooley's meadowrue at MCB Camp Lejeune or MCAS New River; however, suitable habitat could exist within the proposed development areas. A survey of threatened and endangered species has been completed and there is no evidence of Cooley's meadowrue within the proposed development area.

Shortnose Sturgeon. Shortnose sturgeon is listed by State and Federal agencies as an endangered species. Suitable habitat for shortnose sturgeon is present within the waters associated with the proposed development areas. A survey of threatened and endangered species has been completed and there is no evidence of shortnose sturgeon within the proposed development area.

Wood Stork. The wood stork is listed by State and Federal agencies as an endangered species. The proposed development areas at MCB Camp Lejeune and MCAS New River may include suitable wood stork habitat; however, there are no known occurrences at MCB Camp Lejeune/MCAS New River. A survey of threatened and endangered species has been completed and there is no evidence of wood stork within the proposed development area.

Bald Eagle. The bald eagle is listed as threatened by the State of North Carolina, and is protected under Federal law. Bald eagles are monitored and managed for at MCB Camp Lejeune/MCAS New River, and it is unlikely that a nest site would occur within one of the proposed development areas. However, if a nest were located within a proposed development area, or in close proximity to proposed construction, activities would cease, and the Director of Environmental Management would be notified.

Red-cockaded Woodpeckers. The red-cockaded woodpecker is listed by State and Federal agencies as an endangered species and is known to occur within the proposed development areas. The Triangle Outpost Gate would likely remove a small amount of existing red-cockaded woodpecker foraging areas. MCB

Camp Lejeune does not expect the Grow the Force action to limit the Base's red-cockaded woodpecker protection plan or ability to maintain sufficient foraging habitat to meet the recovery goal of 173 active red-cockaded woodpecker clusters. The Preferred Alternative is not expected to substantially impede the Installation's ability to either avoid jeopardy or conserve and recover the species (including violating Section 9 of the ESA). It is likely that the areas of proposed development would remain viable foraging areas. The proposed development area for the Triangle Outpost Gate indicates that approximately 55 acres of red-cockaded woodpecker foraging habitat are located in the project area including partition #72 and #90. MCB Camp Lejeune previously coordinated with the USFWS on this project with an estimated impact of approximately 2.5 acres (see Appendix F). Based on current designs, this project is expected to affect 1 acre of red-cockaded woodpecker foraging habitat. MCB Camp Lejeune has also designated certain areas of the Base as future habitat areas. The Grow the Force action could impact approximately 219 acres of future habitat, including 145 acres at Courthouse Bay, 27 acres at Wallace Creek, 26 acres at Stone Bay/Rifle Range, 12 acres at Camp Devil Dog, 8 acres for the new Base road and 1 acre for the Triangle Outpost Gate. These numbers are based upon the estimated construction footprint, not the total amount of habitat located within the larger proposed development area, since it is unrealistic that all of the existing habitat within the proposed development areas would be affected.

Manatee. Manatees are considered a Federal- and State-listed endangered species. Although rare to have Manatees this far north, they have been seen in the New River and due to habitat suitability, it is possible that the proposed development area for the bridge crossings for the new Base road includes manatee habitat. The new Base road crosses Northeast Creek, Wallace Creek, and Bearhead Creek. Negative impacts would be limited to bridge pilings and increased boat/barge activity during construction. Protective measures would include stopping work in the area if a manatee is spotted, avoiding contact with the animal, and using low watercraft speeds in shallow waters. As noted above, the USFWS concurred with the USMC that the manatees may be affected, but not likely adversely affected.

American Alligator. American alligators are a Federally-listed threatened species. The proposed development areas for bridge crossings associated with the new Base road include potential American alligator habitat. The species has been seen in the vicinity of the location where the proposed new bridge over Northeast Creek would be constructed. A survey of threatened and endangered species has been completed and there is no evidence of alligators within the proposed development area.

Dolphins. Bottlenose dolphins are present in the New River and commonly sighted. Dolphins are regularly seen in the New River and due to habitat suitability, it is possible that the proposed bridge crossings for the new Base road include dolphin habitat. The new Base road, which crosses Northeast

Creek and Wallace Creek, could affect surface waters in which dolphins, or other whale species could be present. Creek disturbances would be limited to pilings for a bridge and increased boat/barge activity.

Sea Turtles. Sea turtles are not regularly sighted in the New River and are not known to travel up the New River towards the location for proposed bridge crossings for the new Base road. Additionally, sea turtles nest on the beaches of Onslow County and not in the vicinity of the proposed development areas. Therefore, impacts to sea turtles are highly unlikely under the Preferred Alternative.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur as described in Section 2.2.3. Only core projects as identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Impacts to natural resources would be similar to those described under the Preferred Alternative, but on a much smaller scale.

The following is a discussion of the potential impacts to natural resources under Alternative 3, including impacts to terrestrial communities and special status species. Impacts to aquatic species are not discussed because none of the core projects have the potential to affect aquatic species or their habitat (the new Base road is not a core project). As discussed under the Preferred Alternative, Alternative 3 would result in a loss of some forested vegetation, but it is not expected to result in population changes to native plant and animal populations on the Installations, or migratory birds. Surveys of threatened and endangered species have been completed and there is no evidence of listed species within the proposed development areas.

Terrestrial Communities

Vegetation. Implementation of Alternative 3 would involve many construction, development, and maintenance projects, but on a smaller scale than what is proposed under the Preferred Alternative. Alternative 3 would result in clearing or other disturbance of upland vegetation within the proposed development areas on MCB Camp Lejeune and MCAS New River. Within MCB Camp Lejeune, the construction project footprints are estimated to be approximately 358 acres and approximately 89 acres for MCAS New River, for a total of approximately 447 acres. However, the amount of forest that would be lost due to the proposed construction is approximately 301 acres (300 acres at MCB Camp Lejeune and 0.6 acres at MCAS New River). This acreage represents a worst case disturbance area for MCB Camp Lejeune as the exact site location for many projects have not been defined within the overall development areas; therefore, the amount of forest loss would likely be smaller once conceptual designs are finalized. Since project locations have been identified for MCAS New River, the anticipated forest

loss is more precise. Disturbance would include the development footprint, as well as areas used for construction staging, foot traffic, vehicle storage, range impacts, and incidental ground disturbance. Construction within previously developed areas would result in localized impacts. New buildings and roadways in previously undisturbed areas would involve clearing of vegetation and substantial ground disturbance within the proposed project footprints.

Wildlife. As discussed previously, Alternative 3 could result in the loss or degradation of up to approximately 301 acres of terrestrial, forested habitats within the proposed development areas based on construction footprints and the amount of available forested habitat. Impacts to wildlife would be similar to those described under the Preferred Alternative, but on a smaller scale. Under Alternative 3, the USMC would continue to employ bird/wildlife-aircraft strike hazard avoidance procedures that have proven successful in the past.

Special Status Species

Impacts to Federally-listed threatened and endangered species would be similar to impacts described under the Preferred Alternative, but on a much smaller scale, since the amount of construction disturbance proposed under Alternative 3 is approximately one-third of what is proposed under the Preferred Alternative. Overall, the USMC has concluded that Alternative 3 would not adversely affect terrestrial or aquatic Federally-listed threatened or endangered species.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point; however, neither the Grow the Force nor core infrastructure improvements and construction projects would be implemented. Marine personnel increases would impact natural resources due to their training activities; however, by sustaining existing land uses, observing conservation measures to sustain natural resources, and adhering to established management and operational procedures, in accordance with the INRMP, sensitive species and their habitats would be protected if this alternative were implemented.

3.13.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) natural resource conditions as a result of this alternative would occur. This alternative would not involve any construction; therefore, there would be no impacts to terrestrial communities, aquatic communities, and special status species as a result of this alternative. However, that does not mean that natural

resources at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this proposed action that have taken place since FY06 or will be implemented in the future. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted.

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the incremental increase of permanent Marines would occur at MCAS Cherry Point as described in Section 2.2.2. Also under the Preferred Alternative, additional infrastructure and facilities to support the additional Marines and their dependents would be constructed. These projects would include those specifically developed to support Grow the Force, as well as other core projects.

The following is a discussion of the potential impacts to natural resources under the Preferred Alternative, including impacts to terrestrial communities, aquatic communities and EFH, and special status species. The Preferred Alternative would result in a loss of predominantly forested vegetation, but it is not expected to result in population changes to native plant and animal populations on the Installation, or migratory birds.

Terrestrial Communities

Vegetation. Approximately 117 acres of construction are proposed at MCAS Cherry Point. Most of the construction would occur within previously developed areas; however, some of the Ordnance Storage Area (with the realignment of Slocum Road), a small forested area within the North Quadrant, and forested areas adjacent to Roosevelt Boulevard have the potential to be cleared. While implementation of the Preferred Alternative is consistent with surrounding land use, the action would result in the irretrievable change in forest adjacent to the proposed facilities from managed forest to administrative/industrial areas. Approximately 69 acres of forest could be lost under this Alternative.

Although some land would be cleared to accommodate the proposed development areas, the scale of land clearing in comparison to the current extent of managed forest on the Station or the amount of forest remaining for management after project construction would be minor. After construction, mitigation measures would include planting grass along roadsides and around buildings, and the addition of native shrubs, trees, and mulching in select areas.

Since a large portion of the proposed development areas would be located within already disturbed areas, the proposed action would not result in adverse impacts from forest habitat fragmentation. There are sufficiently large tracts of forested areas surrounding the proposed development areas that movement of wildlife species would not be impeded due to a loss of contiguous habitat. Potentially, implementing the Preferred Alternative may enhance wildlife movement patterns at MCAS Cherry Point because the loss of
forested habitat associated with construction of the proposed facilities would limit the presence of large animals such as deer near the north-south runway at the Station.

Wildlife. The removal of loblolly pine forested habitat within the proposed development areas would cause forest dwelling birds, mammals, reptiles, and amphibians to be permanently displaced once the land is cleared. Less mobile species at the project area would experience direct mortality. Wildlife residing in the periphery of the construction sites may be temporarily displaced as a result of the noise and activity of construction.

MCAS Cherry Point personnel closely follow the preventative measure outlined in MCO 3750.6R and the draft DoN Marine Corps Order (OPNAVINST [Chapter 6]) Bird/Wildlife-Aircraft Strike Prevention Manual. Under normal conditions when a low-level flight is planned, aircrews make adjustments to planned routes during mission planning and briefings to avoid areas known to support high densities of bird populations such as lakes, rivers, and wetlands. When the bird/wildlife-aircraft strike hazard potential is moderate or higher, all aircrews are directed to increase overflight altitudes, avoid particular low-level segments, or not fly specific low-level routes entirely to minimize the risk of bird collision. Under the Preferred Alternative, the USMC would continue to employ bird/wildlife-aircraft strike hazard avoidance procedures that have proven successful in the past.

Aquatic Communities and Essential Fish Habitat

Proposed facility upgrades and construction at MCAS Cherry Point would predominantly occur in upland areas and would have no effect on aquatic species occurring within the vicinity of the project areas. However, the upgrades to Slocum Road include a bridge over Slocum Creek. Aquatic species likely utilize Slocum Creek, a designated nursery area, as a nursery and adult habitat, particularly shrimp and many fish species that are Federally managed. As previously discussed, EFH is identified within Slocum Creek for four South Atlantic Managed fisheries, and portions of the creek are designated as a HAPC for South Atlantic Managed Species that utilize the creek and specific habitats within EFH. Impacts to aquatic communities at MCAS Cherry Point are expected to be similar to impacts described for MCB Camp Lejeune.

Special Status Species

The Preferred Alternative would not adversely affect any Federally-listed threatened or endangered species. The only Federally-listed species that could occur within the proposed development areas are the alligator, dolphin, rough-leaved loosestrife, spring flowering goldenrod, Carolina pygmy rattlesnake, and bald eagle. Potential impacts to these species are described below; however, through informal consultation with the USFWS, the Service concurred that Alternative 2 may affect, but would not likely

adversely affect manatees. See Appendix H as well as Section 5.0 for consultation correspondence and requirements, respectively.

American Alligator. The proposed areas of development include potential American alligator habitat. The proposed areas of development may require a survey of suitable habitat for American alligator. If during construction and site grading this species is discovered, work would immediately cease, and the Director of Environmental Management notified.

Manatee. Improvements to Slocum Road, which include a bridge over Slocum Creek, could affect surface waters in which manatees could be present. Negative impacts would include pilings for the bridge and increased boat/barge activity during construction. The possibility of any marine mammal species (such as the Manatee) utilizing the Slocum Creek area exists; however, except for dolphins, this would be considered a rare event. As noted above, the USFWS concurred that manatees may be affected, but would not likely be adversely affected.

Dolphin. The bottlenose dolphin has been observed in Slocum Creek, and due to habitat suitability, it is possible that the proposed area of development includes dolphin habitat. Improvements to Slocum Road, which include a bridge over Slocum Creek, could affect surface waters in which dolphins or other marine mammal species could be present. Negative impacts would include pilings for the bridge and increased boat/barge activity during construction. The possibility of any marine mammal species utilizing the Slocum Creek area exists; however, except for bottlenose dolphins, this would be considered a rare event.

Rough-Leaved Loosestrife. This species has potential to occur on MCAS Cherry Point especially in areas that have been managed by forestry operations, which includes some of the proposed development areas. If during construction and site grading this species is discovered, work would immediately cease, and the Director of Environmental Management would be notified.

Spring-flowering Goldenrod. There is potential for this species to occur in proposed development areas; however, this is unlikely since most areas that support spring-flowering goldenrod are documented at MCAS Cherry Point and could be avoided. If, however, during construction and site grading this species is discovered, work would immediately cease, and the Director of Environmental Management notified.

Carolina Pygmy Rattlesnake. There is some potential for the Carolina pygmy rattlesnake to occur in proposed development areas. If the Carolina pygmy rattlesnake is encountered during construction and site grading, work would immediately cease, and the Environmental Affairs Officer would be notified.

Bald Eagle. Even though the bald eagle has been documented at MCAS Cherry Point, there are no known nesting pairs. The potential does exist for nesting in proposed development areas, since suitable habitat is

nearby. If a nesting pair is discovered in the vicinity of construction, construction would immediately cease, and the Director of Environmental Management notified.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place.

The following is a discussion of the potential impacts to natural resources under Alternative 3, including impacts to terrestrial communities and special status species. Alternative 3 would not be expected to affect aquatic communities. Alternative 3 would result in a loss of predominantly forested vegetation, but it is not expected to result in population changes to native plant and animal populations on the Installation, or migratory birds.

Terrestrial Communities

Vegetation. Approximately 40 acres of construction are proposed at MCAS Cherry Point under this Alternative. Most of the construction would occur within previously developed areas; however, some forested areas have the potential to be cleared. Impacts would generally be similar as described previously for the Preferred Alternative, but of a much smaller magnitude. Approximately 21 acres of forest could be lost under this alternative.

Wildlife. Impacts of Alternative 3 on wildlife at MCAS Cherry Point would be similar to the impacts described under the Preferred Alternative, but of a smaller magnitude. The removal of loblolly pine forested habitat within the proposed development areas would cause forest dwelling birds, mammals, reptiles, and amphibians to be permanently displaced once the land is cleared. Less mobile species at the project area would experience direct mortality. Wildlife residing in the periphery of the construction sites may be temporarily displaced as a result of the noise and activity of construction.

MCAS Cherry Point personnel closely follow the preventative measure outlined in MCO 3750.6R and the draft DoN Marine Corps Order (OPNAVINST [Chapter 6]) Bird/Wildlife-Aircraft Strike Prevention Manual. Under normal conditions when a low-level flight is planned, aircrews make adjustments to planned routes during mission planning and briefings to avoid areas known to support high densities of bird populations such as lakes, rivers, and wetlands. When the bird/wildlife-aircraft strike hazard potential is moderate or higher, all aircrews are directed to increase overflight altitudes, avoid particular low-level segments, or not fly specific low-level routes entirely to minimize the risk of bird collision. Under the

Preferred Alternative, the USMC would continue to employ bird/wildlife-aircraft strike hazard avoidance procedures that have proven successful in the past.

Special Status Species

The rough-leaved loosestrife, spring flowering goldenrod, Carolina pygmy rattlesnake, and bald eagle could occur within the proposed core project areas at MCAS Cherry Point. Potential impacts to these species would be the same as those described for the Preferred Alternative. It is not likely that any of the proposed core projects would affect threatened or endangered species.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point; however, neither the Grow the Force nor core infrastructure improvements and construction projects would be implemented. Marine personnel increases would impact natural resources due to their training activities; however, by sustaining existing land uses, observing conservation measures to sustain natural resources, and adhering to established management and operational procedures, in accordance with the INRMP, sensitive species and their habitats would be protected if this alternative were implemented.

3.14 Earth Resources

Earth resources refer to the composition of the earth's surface and elements of variation and change. For this analysis, the relevant aspects of earth resources include geology, topography, and soils.

3.14.1 Affected Environment

The ROI for geology, topography, and soils are the proposed development areas at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point.

3.14.1.1 MCB Camp Lejeune/MCAS New River

Geology and Topography

Geology is characterized in terms of physiographic divisions that are based on terrain texture, rock type, geologic structure, and history. The terms soil and rock refer to unconsolidated and consolidated material, respectively. Geological resources can also include mineral deposits, significant landforms, tectonic features, and paleontological remains (i.e., fossils).

MCB Camp Lejeune/MCAS New River lies in the Atlantic Coastal Flatlands and the predominant landform in this area is a flat, weakly dissected alluvial plain. The movement of the earth's crust along with glacial events has resulted in the areas near the coast being alternately exposed and submerged. Thus marine deposits have been lain down and have contributed to the formation of this alluvial plain. Three primary geomorphic surfaces are identified at MCB Camp Lejeune (MCB Camp Lejeune 2006). These are the Pamlico terrace, the Wicomico terrace, and the Talbot terrace. The Pamlico terrace has elevation from 0 to 25 feet in narrow strips along the Intracoastal Waterway, the New River, and its tributaries. The Wicomico terrace is found in a few areas south of Jacksonville and has elevations between 45 and 75 feet. The Talbot terrace which lies underneath much of mainside MCB Camp Lejeune has elevations ranging between 25 and 45 feet.

The topography of the area is relatively flat with some areas of gently rolling terrain. Elevations are at their greatest between the New River and U.S. 17 reaching 72 feet. Areas east of the New River are characterized by flatlands that range in elevation between 25 and 45 feet (MCB Camp Lejeune 2006).

Soils

There are 38 different soils found within the boundaries of MCB Camp Lejeune and MCAS New River. Many of these individual soils cover less than one percent of the land area. Both hydric and non-hydric soils can be found on the Installation. Hydric soils are those soils that are sufficiently wet in the upper horizon to develop anaerobic conditions during the growing season. The presence of a hydric soil confirms that wetland hydrology has been present for an extended period in the past (see Section 3.15, Water Resources for further information on wetlands). Within the proposed development areas at MCB Camp Lejeune and MCAS New River the following soil groups exist: Alpin, Baymeade, Bohicket, Craven, Dorovan, Goldsboro, Kureb, Longshoal, Lenoir, Leon, Marvyn, Muckalee, Murville, Newhan, Norfolk, Onslow, Pactolus, Pantego, Pits, Rains, Stallings, Torhunta, Urban land, Wando, and Woodington. For most of the soils, permeability ranges from moderate to very rapid, but for Bohicket silty clay the permeability is very slow. Similarly, the shrink-swell potential for most soils is moderate to low, but it is high for Bohicket silty clay. Most of the soils on MCB Camp Lejeune are composed of sand and loam. Bohicket soil, however, is composed of silt, clay, and loam. Dorovan muck is also present within the proposed development areas. Some of the soils in the area are partly, or completely, Urban land. Urban land is soil that cannot be directly observed since more than 85 percent of the surface is covered with asphalt, concrete, and/or other structures. Specific soil characteristics for all soils within the proposed development areas are provided in Table 3.14-1. Also included for each soil is whether or not the soil is considered Prime or Unique Farmland. Prime Farmland is land that has the best combination of physical and chemical characteristics for producing agricultural crops with minimum inputs such as fertilizer, pesticides, and labor. Unique Farmland is land other than Prime Farmland that could be used for the production of specific high value crops. Figures 3.14-1 through 3.14-4 depict the soil types in the vicinity of proposed development areas at MCB Camp Lejeune and MCAS New River.

Soil Name	Prime/Unique Farmland	Drainage Class	Erosion Potential	Flooding Potential	Acres
Alpin Fine Sand 1-6% slope	No	Excessively well drained	Slight	Slight	4
Baymead-Urban land complex 0- 6% slope	No	Well drained	Slight	Slight	1,964
Baymead fine sand 0-6% slope	No ¹	Well drained	Slight	Slight	2,952
Bohicket silty clay loam	No	Very poorly drained	Slight	Very severe	35
Craven fine sandy loam 1-4% slope	Yes	Moderately well drained	Slight	Moderate	206
Craven fine sandy loam 4-8% slope	No ¹	Moderately well drained	Slight	Moderate	37
Dorovan muck	No	very poorly drained	Very severe	Very severe	14
Goldsboro fine sandy loam 0-2% slope	Yes	Moderately well drained	Slight	Moderate	27
Goldsboro urban land complex 0-5% slope	No	Moderately well drained	Slight	Moderate	643
Kureb fine sand 1-6% slope	No	Excessively well drained	Slight	Slight	139

 Table 3.14-1 Soils Within the Proposed Development Areas at

 MCB Camp Lejeune/MCAS New River

WICD Camp Lejeune/WICAS New Kiver					
Soil Name	Prime/Unique Farmland	Drainage Class	Erosion Potential	Flooding Potential	Acres
Lenoir Loam	No	Somewhat poorly drained Slight		Moderate	81
Leon fine sand	No ¹	Poorly to very poorly drained	Slight	Severe	108
Longshoal muck	No	Very poorly drained	Very severe	Very severe	9
Lynchburg fine sandy loam	No	Somewhat poorly drained	Slight	Slight	0.6
Marvyn loamy fine sand 6-15% slope	No ¹	Well drained	Slight	Slight	1,351
Muckalee loam	No	Poorly drained	Slight	Severe	640
Murville fine sand	No ¹	Very poorly drained	Slight	Moderate	8
Newhan fine sand, dredged, 0-30 % slope	No	Excessively drained	Slight	Slight	23
Norfolk loamy fine sand 0-2% slope	Yes	Well drained	Slight	Slight	49
Norfolk loamy fine sand 2-6% slope	Yes	Well drained	Slight	Slight	78
Onslow loamy fine sand	Yes	Moderately well drained	Slight	Moderate	594
Pactolus fine sand	No	Moderately well to somewhat poorly drained	Slight	Moderate	138
Pantego mucky loam	Yes	Very poorly drained	Slight	Severe	12
Pits	No	Moderately well to very poorly drained	Slight to moderate	Moderate	37
Rains fine sandy loam	Yes	Poorly drained	Slight	Severe	78
Stallings loamy fine sand	No ¹	Somewhat poorly drained	Slight	Moderate	116
Torhunta fine sandy loam	Yes	Very poorly drained	Slight	Moderate	35
Urban land	No	Well drained	Slight to moderate	Slight	809
Wando fine sand1-6% slope	No	Well drained	Slight	Slight	220
Woodington loamy fine sand	No ¹	Poorly drained	Slight	Moderate	121

Table 3.14-1 Soils Within the Proposed Development Areas at
MCB Camp Lejeune/MCAS New River

Source: USDA 2008, DoN 2008a, MCB Camp Lejeune 2006.

Notes: ¹ These soils do not meet the criteria for Prime or Unique Farmland but are designated as Farmland of statewide importance. Generally, this land includes soils that nearly meet the requirements for Prime Farmland and that could economically produce high yields of crops when treated and managed according to acceptable farm practices.



Figure 3.14-1 Soil Associations within Proposed Development Areas at MCB Camp Lejeune - Northside



Figure 3.14-2 Soil Associations within Proposed Development Areas at MCB Camp Lejeune – Central



Figure 3.14-3 Soil Associations within Proposed Development Areas at MCB Camp Lejeune - Southside



Figure 3.14-4 Soil Associations within Proposed Development Areas at MCB Camp Lejeune/MCAS New River - Westside

3.14.1.2 MCAS Cherry Point

Geology and Topography

The land surface of MCAS Cherry Point is part of the Talbot Terrace Plain, formed of unconsolidated marine sediment deposits. This terrace lies on the passive continental margin where the continent and ocean floor are of the same crustal plate. The sediments on the Talbot Terrace were deposited and reshaped during several cycles of coastal emergence and submergence due to climate changes dating back to the Cretaceous Period (MCAS Cherry Point 2001b).

Between the mainland and the barrier islands is an extensive flat coastal plain known as the Pamlico Terrace. This terrace transitions into the continental shelf east of the barrier islands. The Suffolk Scarp, which is an ancient shoreline, separates the terrace in the west from the higher elevations in the interior (MCAS Cherry Point 2001b).

Broad, flat terraces between the major stream valleys characterize the land surface. The terraces slope rather abruptly to stream and tributary valleys, tending to be steeply sloped near outlets and more shallowly sloped inland. Elevation ranges from near sea level along the shores of the Neuse River, Slocum Creek, and Hancock Creek, to 25 to 33 feet above sea level on the terraces between the stream systems (MCAS Cherry Point 2001b).

Soils

The soil groups found within the proposed development areas are Autryville, Bragg, Goldsboro, Lynchburg, Lenoir, Masontown and Muckalee, Norfolk, Onslow, Rains, Seabrook, Suffolk, Udorthents, and Urban land. Both hydric and non-hydric soils can be found within these areas. Hydric soils are those soils that are sufficiently wet in the upper horizon to develop anaerobic conditions during the growing season. The presence of a hydric soil confirms that wetland hydrology has been present for an extended period in the past. Wetlands are discussed in detail in Section 3.15. The permeability of the soils ranges from moderate to rapid and the shrink-swell potential for all the soils is low. The soils are comprised mostly of loam and sand; however, some of these soils are part of Urban land. Urban land is soil that cannot be directly observed since more than 85 percent of the surface is covered with asphalt, concrete, and other structures. Specific soil characteristics of all the soils within the proposed development areas are provided in Table 3.14-2 and illustrated in Figure 3.14-5. Also included for each soil type is whether or not the soil is considered Prime or Unique Farmland. Prime Farmland is land that has the best combination of physical and chemical characteristics for producing agricultural crops with minimum inputs such as fertilizer, pesticides, and labor. Unique Farmland is land other than Prime Farmland that could be used for the production of specific high value crops.

Soil Name	Prime and Unique Farmland	Drainage Class	Erosion Potential	Flooding Potential	Acres
Autryville loamy sand, 0–6% slopes	No ¹	Well drained	Slight	None	189
Bragg, 0–8% slopes	No	Well drained	Moderate	None	107
Goldsboro loamy fine sand, 0–2% slopes	Yes	Moderately well drained	Slight	None	135
Goldsboro-Urban land complex, 0–2% slopes	No	Moderately well drained	Slight	None	163
Lenoir silt loam	No ¹	Somewhat poorly drained	Slight	None	3
Lynchburg fine sandy loam	Yes	Somewhat poorly drained	Slight	None	174
Masontown mucky fine sandy loam	No	Very poorly drained	Slight	Frequent	31
Norfolk loamy fine sand,0–2% slopes	Yes	Well drained	Slight	None	57
Norfolk loamy fine sand, 2–6% slopes	Yes	Well drained	Moderate	None	227
Norfolk-Urban land, 0–6% slopes	No	Well drained	Slight	None	69
Onslow loamy sand	Yes	Moderately well drained	Slight	None	120
Rains fine sandy loam	Yes	Poorly drained	Slight	None	328
Seabrook loamy sand	No	Moderately well drained	Slight	Rare	7
Suffolk loamy sand, 10–30% slopes	No	Well drained	Severe	None	38
Udorthents, loamy	No	Well drained	Slight	None	7
Urban land	No	No classification	Not rated	None	563

Source: USDA 2008, DoN 2008b.

Notes: ¹ These soils do not meet the criteria for Prime or Unique Farmland but are designated as Farmland of statewide importance. Generally, this land includes soils that nearly meet the requirements for prime farmland and that could economically produce high yields of crops when treated and managed according to acceptable farm practices.



Figure 3.14-5 Soil Associations within Proposed Development Areas at MCAS Cherry Point

3.14.2 Environmental Consequences

This section provides a detailed description of impacts associated with implementation of the alternatives including the No Action Alternative. Factors considered in evaluating the extent of impacts to earth resources include the following:

- Geological impacts: geological conditions that could result in structural damage on- or off-site (e.g., inadequate foundation, sinkhole formation, etc.).
- Soil and topography changes to the extent that the soil can no longer support native plant vegetation, and/or where erosion causes detrimental effects to aquatic life in adjacent waters.

3.14.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) earth resource conditions as a result of this alternative would occur. This alternative would not involve any construction; therefore, there would be no impacts to topography, geology, or soils as a result of this alternative. However, that does not mean that earth resources at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this proposed action that have taken place since FY06 or will be implemented in the future. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted.

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include new construction of and improvements to buildings, housing, utility/communication lines, and roads.

The Preferred Alternative would result in a major construction effort (approximately 1,877 acres of proposed disturbance from new construction) in the proposed development areas throughout the Installations. Impacts to earth resources under the Preferred Alternative are described below.

Geology and Topography

Minor impacts to geologic or topographic conditions would be expected under the Preferred Alternative. Prior to the construction of buildings and other facilities proposed under this alternative, minor leveling and grading would be required to prepare each specific site for building. As shown in Section 2.2.2, six borrow pit locations are being considered to provide fill dirt for the new Base road. Borrow pits are areas that are excavated to provide fill material for a construction project. Borrow pits can vary in size and depth and would alter topography in a much localized manner. The underlying geology would not be appreciably affected. Since the groundwater table is at an average of 175 feet (see Section 3.15, Water Resources), the borrow pits would likely not be infiltrated by groundwater. However, groundwater infiltration is possible since the aquifer ranges from 5 feet to approximately 954 feet in thickness. The Preferred Alternative would likely result in either one large borrow pits can fill with water (groundwater or rain water) and eventually become recreational areas or sustainable wildlife habitat (see Section 3.13, Natural Resources and Section 3.15, Water Resources for additional discussion). Construction of and future uses of the borrow pits for the new Base road would be in accordance with all applicable regulations and permits.

Soils

Over both Installations, the projects proposed under the Preferred Alternative would introduce 1,877 acres of facility construction. In addition, the new Base road would require construction of borrow pits to provide fill material. Preliminary estimates show that approximately one million cubic yards of fill material would be needed. The physical impacts to soils that would occur as a result of site preparation from facility construction would include soil compaction, and disturbed and modified soil layers. Soil productivity, the capacity of the soil to produce vegetative biomass, also would decline in disturbed areas and be completely eliminated for those areas within the footprint of paved or other hardened areas and new structures. Impacts to soils from construction and/or demolition activities occurring in areas that are currently or previously developed would be minimal given the fact that these soils have been previously disturbed or modified and, in some areas, are already covered by structures, concrete, or other surfaces.

After these initial physical impacts occur, the rate of soil erosion could differ between areas within the Installation, based on differences in soil erodibility between the different soil associations. Soils high in clay have a low potential for erosion because they are resistant to detachment. Coarse textured soils, such as sandy soils, have a low potential for erosion because of low runoff even though these soils are easily detached. Medium textured soils, such as the silt loam soils, have a moderate potential for erosion because they are moderate potential for erosion because they are moderate runoff. Soils having high silt content are the most erodible of all soils. They are easily detached, tend to crust, and produce high rates of runoff. The Craven fine sandy loam and Goldsboro fine sandy loam have the highest potential for erosion within the proposed development areas. The potential for erosion of the remaining

soils represents the soils in their natural condition and indicates how management or misuse of a soil increases its erodibility. In those areas where the subsoil is exposed, the organic matter has been depleted, and/or the soil's structure destroyed or soil compaction has reduced permeability; the erosion potential would be increased regardless of soil type (USDA 2003). Other factors affecting erodibility include soil slopes, total exposure time, and slope length. As these soils become disturbed, the erodibility of each of these specific soil associations likely would increase. Table 3.14-3 below provides a general percentage of the amount of area of the proposed development areas covered by a specific soil association and its erosion potential.

Soil Name	Erosion Potential	Percent Soil Coverage	
Alpin fine sand	Slight	0.03	
Baymeade fine sand	Slight	28.0	
Baymeade-Urban land complex	Slight	18.6	
Bohicket silty clay loam	Slight	3.3	
Craven fine sandy loam, 1 to 4 percent slopes	Slight	1.9	
Craven fine sandy loam, 4 to 8 percent slopes	Slight	0.35	
Dorovan muck	Very severe	0.13	
Goldsboro fine sandy loam	Slight	0.26	
Goldsboro-Urban land complex	Slight	6.1	
Kureb fine sand	Slight	1.3	
Longshoal muck	Very severe	0.08	
Leon fine sand	Slight	1.0	
Lenoir Loam	Slight	0.77	
Lynchburg fine sandy loam	Slight	0.01	
Marvyn loamy fine sand	Slight	12.8	
Muckalee loam	Slight	6.1	
Murville fine sand	Slight	0.08	
Newhan fine sand	Slight	0.22	
Norfolk loamy fine sand, 0 to 2 percent slopes	Slight	0.47	
Norfolk loamy fine sand, 2 to 6 percent slopes	Slight	0.74	
Onslow loamy fine sand	Slight	5.6	
Pactolus fine sand	Slight	1.3	
Pantego mucky loam	Slight	0.11	
	Slight to	0.35	
Pits	Moderate	0.55	
Rains fine sandy loam	Slight	0.74	
Stallings loamy fine sand	Slight	1.1	
Torhunta fine sandy loam	Slight	0.33	
	Slight to	77	
Urban land	Moderate		
Wando fine sand	Slight	2.1	
Woodington loamy fine sand	Slight	1.2	

 Table 3.14-3 Coverage of Soil Associations per Total Proposed Development Area

 at MCB Camp Lejeune/MCAS New River

Source: MCB Camp Lejeune 2008f.

Increased travel to and within ranges and training areas, especially as vehicles and equipment exit the training areas and ranges and access the travel routes, would result in vehicles potentially disturbing soil on the side of paved or unpaved roads. Equipment disturbing soils in ranges and training areas resulting in exposed disturbed soils could increase the potential for erosion.

Construction and demolition activities may result in the migration of airborne or waterborne soil particles onto adjacent lands and streams, which could contribute to sedimentation of off-site areas. During the construction process, any construction exits would use existing access roadways to the landings, or the established maintenance/motor pool area, which would result in less earth moving and vegetation removal.

The Preferred Alternative would result in a short-term increase in construction vehicles and activity and a long-term increase in training and maintenance vehicles operating within the ranges and training areas. Prior to construction, all required permits would be obtained, implemented, and applied for; an appropriate Erosion and Sedimentation Control Plan would be developed and all appropriate site-specific BMPs and mitigation measures would be implemented. As part of the required NPDES permits, an Erosion and Sedimentation Control Plan for each specific development area would also be developed describing appropriate site-specific BMPs that would be used to minimize adverse impacts from increased runoff and soil erosion during site construction. Site-specific BMPs would be developed based on proper design, run-off calculation, slope factors, soil type, topography, construction activities involved, and proximity to water bodies. Examples of BMPs that could be utilized include, but are not limited to:

- erosion control matting;
- channel stabilization;
- silt fencing;
- brush barriers;
- storm drain outlet protection;
- stone check dams;
- rock filter dams;
- construction exits;
- temporary and permanent seeding; and
- application of mulch.

The application of any or all of these BMPs depends upon precise, specific ground conditions in the areas disturbed by construction.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Impacts to earth resources would be similar to those described under the Preferred Alternative, but at a much smaller scale. Over both Installations, the projects proposed under Alternative 3 would introduce 447 acres of facility construction and infrastructure improvements. Since this alternative would not include construction of the new Base road, there would be no impacts from construction of borrow pits as discussed under the Preferred Alternative. Prior to construction, all required permits would be obtained, implemented, and applied for; an appropriate Erosion and Sedimentation Control Plan would be developed and all appropriate site-specific BMPs and mitigation measures would be implemented. As part of the required NPDES permits, an Erosion and Sedimentation Control Plan for each specific development area would also be developed describing appropriate site-specific BMPs that would be used to minimize adverse impacts from increased runoff and soil erosion during site construction.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would still occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no additional ground disturbance and no impact to earth resources.

Increased travel to and within ranges and training areas, especially as vehicles and equipment exit the training areas and ranges and access the travel routes, would result in vehicles potentially disturbing soil on the side of paved or unpaved roads. Equipment disturbing soils in ranges and training areas resulting in exposed disturbed soils could increase the potential for erosion.

3.14.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) earth resource conditions as a result of this alternative would occur. This alternative would not involve any

construction; therefore, there would be no impacts to topography, geology, or soils as a result of this alternative. However, that does not mean that earth resources at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this proposed action that have taken place since FY06 or will be implemented in the future. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted.

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include new construction of and improvements to buildings, housing, utility/communication lines, and roads.

The Preferred Alternative would result in a large construction effort (approximately 117 acres of proposed disturbance) in the proposed development areas throughout the Station. Impacts to earth resources as a result of implementing the Preferred Alternative are described below.

Geology and Topography

Minor impacts to geologic or topographic conditions would be expected under the Preferred Alternative at MCAS Cherry Point. Prior to the construction of buildings and other facilities proposed under this alternative, minor leveling and grading would be required to prepare each specific site for building.

Soils

Under the Preferred Alternative, 117 acres of facility construction and infrastructure improvements is expected. Impacts to soils from the proposed construction activities would be minimized by appropriate site-specific BMPs detailed within each site-specific Erosion and Sedimentation Control Plan. Table 3.14-4 provides a general percentage of the amount of area of the proposed development areas covered by a specific soil association.

Soil Name	Erosion Potential	Percent Soil Coverage
Autryville loamy sand	Slight	8.5
Bragg soils, 0 to 8 percent slopes	Moderate	4.8
Goldsboro loamy fine sand, 0 to 2 percent slopes	Slight	6.1
Goldsboro-Urban land complex, 0 to 2 percent slopes	Slight	7.3
Lenoir silt loam	Slight	0.14
Lynchburg fine sandy loam	Slight	7.8
Masontown mucky fine sandy loam	Slight	1.4
Norfolk loamy fine sand, 0 to 2 percent slopes	Slight	2.6
Norfolk loamy fine sand, 2 to 6 percent slopes	Moderate	10.2
Norfolk-Urban land complex, 0 to 6 percent slopes	Slight	3.1
Onslow loamy sand	Slight	5.4
Rains fine sandy loam	Slight	14.8
Seabrook loamy sand	Slight	0.32
Suffolk loamy sand, 10 to 30 percent slopes	Severe	1.7
Udorthents, loamy	Slight	0.32
Urban land	Not rated	25.4

 Table 3.14-4 Coverage of Soil Associations per Total Proposed Development

 Area at MCAS Cherry Point

Physical impacts to soils would occur and soil productivity would decrease as a result of site preparation. Physical impacts include soil compaction, disturbance, and modification of soil layers. Impacts to soils from construction and/or demolition activities occurring in areas that are currently or previously developed would be minimal, given the fact that these soils have been previously disturbed or modified and in some areas are already covered by structures, concrete, or other surfaces.

After these initial physical impacts occur, the rate of soil erosion could differ between areas within the Installation, based on differences in soil erodibility between the different soil associations. Soils high in clay have a low potential for erosion because they are resistant to detachment. Coarse textured soils, such as sandy soils, have a low potential for erosion because of low runoff even though these soils are easily detached. Medium textured soils, such as the silt loam soils, have a moderate potential for erosion because they are moderate soils, such as the silt loam soils, have a moderate potential for erosion because they are moderately susceptible to detachment and they produce moderate runoff. Soils having high silt content are the most erodible of all soils. They are easily detached, tend to crust, and produce high rates of runoff. The Bragg soils and Norfolk loamy fine sand have the highest potential for erosion (moderate). At MCAS Cherry Point the potential for erosion of the remaining soils represents the soils in their natural condition and indicates how management or misuse of a soil increases its erodibility. In those areas where the subsoil is exposed, the organic matter has been depleted, and/or the soil's structure destroyed or soil compaction has reduced permeability; the erosion potential would be increased regardless of soil type (USDA 2003). Other factors affecting erodibility include soil slopes, total exposure

time, and slope length. As these soils become disturbed, the erodibility of each of these specific soil associations likely would increase.

Erosion impacts would be temporary and would be minimized by employing BMPs for soil erosion and sedimentation control at the construction sites, such as silt fencing, sediment traps, application of water sprays, and re-vegetating disturbed soils with native plants. Most of the affected soils would eventually be covered with impervious surfaces or vegetation, preventing long-term erosion. Prior to construction, approval would be obtained from the NCDENR on all erosion and sedimentation control plans for the activities proposed under the Preferred Alternative. Site-specific BMPs would be developed based on proper design, run-off calculation, slope factors, soil type, topography, construction activities involved, and proximity to water bodies. Examples of BMPs that could be utilized include, but are not limited to:

- erosion control matting;
- channel stabilization;
- silt fencing;
- brush barriers;
- storm drain outlet protection;
- stone check dams;
- rock filter dams;
- construction exits;
- temporary and permanent seeding; and
- application of mulch.

The application of any or all of these BMPs depends upon precise, specific ground conditions in the areas disturbed by construction.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. This alternative would result in approximately 40 acres of new facility construction and infrastructure improvements. Impacts to earth resources would be similar to those described under the Preferred Alternative, but at a much smaller scale. Prior to construction, all required permits would be obtained, implemented, and applied for; an appropriate Erosion and Sedimentation Control Plan would be developed and all appropriate site-specific BMPs and mitigation measures would be implemented. As part

of the required NPDES permits, an Erosion and Sedimentation Control Plan for each specific development area would also be developed describing appropriate site-specific BMPs that would be used to minimize adverse impacts from increased runoff and soil erosion during site construction.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would still occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no additional ground disturbance and no impact to earth resources.

3.15 Water Resources

The following sections provide a summary of the general condition and character of water resources at MCB Camp Lejeune/MCAS New River and MCAS Cherry Point in the vicinity of the proposed development areas. The section discusses general regulatory requirements and water resources specific to the Installations. Water resources for this analysis include surface water, stormwater, groundwater, wetlands, and floodplains.

3.15.1 Affected Environment

The Clean Water Act of 1977 (PL 95-217), the Safe Drinking Water Act of 1972 (PL 93-523) and Amendments of 1986 (PL 99-339), and the Water Quality Act of 1987 (PL 100-4) are the primary Federal laws protecting the nation's waters including lakes, rivers, aquifers, and wetlands.

In addition to the overarching Federal laws, several applicable regulations and permits are in place to protect the quantity and quality of water resources in the U.S. These include: NPDES Construction Activity General Permit (40 CFR 122-124); NPDES Industrial Permit and NPDES Municipal Separate Storm Sewer System Permit; USEPA, Subchapter D-Water Programs (40 CFR 100-145); and USEPA, Subchapter N-Effluent Guidelines and Standards (40 CFR 401-471). All bridge construction is permitted by the U.S. Coast Guard (33 CFR 114, 33 CFR 115) under the authority of several Acts, including Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946 (USCG 1999).

3.15.1.1 MCB Camp Lejeune/MCAS New River

Surface Water

Surface water includes streams, rivers, lakes, and reservoirs. Water bodies that do not meet their intended uses are included on the impaired waters list, referred to as the 303(d) list, and are required to have a Total Maximum Daily Load (TMDL) evaluation for the water quality constituent(s) in violation of the water quality standard. The TMDL process establishes the allowable pollutant loadings or other quantifiable parameters for a water body based on the relationship between pollutant sources and instream water quality conditions. This allows water quality based controls to be developed to reduce pollution and to restore and maintain water quality.

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 saltwater and are suitable for shell fishing and any of the uses specified for SB and SC classifications. The intermediate rating for tidal saltwater is Class SB, waters suitable for primary recreation and other uses as specified by the SC classification. Class SC saltwaters are suitable for aquatic life propagation and survival, fishing, wildlife, and secondary recreation. In addition to these principal

water quality classifications, the 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 (North Carolina Division of Water Quality 2008).

MCB Camp Lejeune is located entirely within the New River sub-basin which is contained within the White Oak River Basin; part of the North Carolina Coastal Plain physiographic region. Major water bodies located in the vicinity of the proposed development areas include New River, Scales Creek, Northeast Creek, Wallace Creek, Bearhead Creek, Beaverdam Creek, Cogdels Creek, French Creek, Courthouse Bay, Southwest Creek, Stick Creek, Edwards Creek, and Brinson Creek. Water Resources for MCB Camp Lejeune/MCAS New River are further described below and illustrated on Figures 3.15-1 through 3.15-4.

New River. The New River is 50 miles long and flows southeast where it becomes a tidal estuary in the areas associated with MCB Camp Lejeune/MCAS New River (Figures 3.15-1 through 3.15-4). The New River estuary is a series of broad shallow lagoons containing a catchment of 892 square miles. The New River is classified by the State of North Carolina as SC. It is also a nutrient sensitive water (North Carolina Division of Water Quality 2008).

Monitoring programs conducted from 1998-2006 established that the salinity in the river ranges from 30 parts per thousand (ppt; polyhaline), at the mouth, to one ppt (oligohaline) at the head waters (Mallin 2006). The unique sets of ecological conditions that are characteristic of the New River make the system both dynamic and varied. Water quality in the New River was heavily degraded as a result of poor agricultural practices upstream and discharges from out-of-date wastewater treatment plants in the City of Jacksonville and MCB Camp Lejeune. However, its condition has improved greatly in the last decade with changes in agricultural practices and replacement/upgrades of city and military wastewater treatment plants (Mallin 2005).

Scales Creek. Scales Creek is located on the eastern side of Camp Johnson and extends north of the proposed development area (Figure 3.15-1). The system is comprised of small unnamed tributaries extending into Camp Johnson. Scales Creek confluences with Northeast Creek near the New River. Scales Creek is not listed as impaired. It is classified under the North Carolina surface water classification as SC. This creek is also considered a nutrient sensitive water and a high quality water (North Carolina Division of Water Quality 2008).



Figure 3.15-1 Water Resources at MCB Camp Lejeune – Northside



Figure 3.15-2 Water Resources at MCB Camp Lejeune – Central



Figure 3.15-3 Water Resources at MCB Camp Lejeune – Southside



Figure 3.15-4 Water Resources at MCB Camp Lejeune/MCAS New River – Westside

Northeast Creek. Northeast Creek is a tributary of the New River (Figure 3.15-1). It is located to the south of Camp Johnson and is listed by North Carolina Division of Water Quality as being impaired due to elevated mercury concentrations in areas north of MCB Camp Lejeune through Highway 24. The intended use of Northeast Creek is for fishing and is classified as SC surface water. The creek is considered nutrient sensitive and qualifies as a high quality water (North Carolina Division of Water Quality 2008).

Wallace Creek. Wallace Creek is located south of Northeast Creek and drains into the Morgan Bay section of the New River (Figure 3.15-2). The creek flows through MCB Camp Lejeune through Hadnot Point. Wallace Creek is not listed as impaired. The North Carolina Division of Water Quality lists Wallace Creek as SB and a nutrient sensitive water (North Carolina Division of Water Quality 2008).

Bearhead Creek. Bearhead Creek runs through the Wallace Creek section of MCB Camp Lejeune and is a direct tributary of Wallace Creek (Figure 3.15-2). It is classified as SB, and as part of the New River Basin, it is considered nutrient sensitive (North Carolina Division of Water Quality 2008).

Beaverdam Creek. Beaverdam Creek, a tributary to Wallace Creek, is comprised of two main branches (Figure 3.15-2). The northern branch crisscrosses the border between the southern boundary of Wallace Creek and the northern boundary of Hadnot Point. The southern branch drains the Hadnot Point area. Beaverdam Creek is not listed as impaired. It is classified under the North Carolina surface water classification as SB and nutrient sensitive (North Carolina Division of Water Quality 2008).

Cogdels Creek. Cogdels Creek, a tributary to New River, meanders along the border of French Creek and Hadnot Point (Figure 3.15-2). The system is comprised of three main branches that drain both French Creek and Hadnot Point. The majority of the system is located on French Creek. Cogdels Creek is not listed as impaired. It is classified under the North Carolina surface water classification as SC and nutrient sensitive (North Carolina Division of Water Quality 2008).

French Creek. French Creek, a tributary to the New River, makes up the southern border of the French Creek proposed development area (Figure 3.15-2). The system is primarily on the southern boundary of French Creek, but the creek bends south and away from the French Creek proposed development area at the confluence with a tributary of Cowhead Creek. French Creek is not listed as impaired. It is classified under the North Carolina surface water classification as SC and nutrient sensitive (North Carolina Division of Water Quality 2008).

Courthouse Bay. Courthouse Bay is located in the western portion of the Courthouse Bay proposed development area and nearly bisects the area (Figure 3.15-3). Much of the land surrounding Courthouse Bay is developed. Courthouse Bay has several small unnamed tributaries that pass through the proposed

development area before entering the New River. The Bay is impaired and classified as SA and qualifies as a high quality water (North Carolina Division of Water Quality 2008).

Southwest Creek. Southwest Creek, a tributary of the New River, is located northeast of Camp Devil Dog (Figure 3.15-4). The creek is considered a nutrient sensitive water and qualifies as a high quality water. The North Carolina surface water classification for Southwest Creek is C (North Carolina Division of Water Quality 2008). This classification meets the same criteria as described for SC but is used for freshwater sources.

Stick Creek. Stick Creek is situated on the east side of MCAS New River (Figure 3.15-4). The headwaters of Stick Creek originate in a residential neighborhood east of Camp Geiger before flowing east where it joins with the New River. It is classified under the North Carolina surface water classification as SC and is nutrient sensitive. It also qualifies as a high quality water (North Carolina Division of Water Quality 2008).

Edwards Creek. Edwards Creek is located on the eastern side of the Camp Geiger proposed area of development and drains the residential area of Camp Geiger (Figure 3.15-4). From Camp Geiger, Edwards Creek meanders east and joins with Brinson Creek immediately before flowing into the New River. Edwards Creek is not listed as impaired. It is classified under the North Carolina surface water classification as SC, nutrient sensitive, and a high quality water (North Carolina Division of Water Quality 2008).

Brinson Creek. Brinson Creek, a tributary of the New River Estuary, is located northeast of Camp Geiger and west of Camp Johnson (Figure 3.15-4). The water in Brinson Creek is impaired for aquatic life by a high pH and chlorophyll-a violation. For fish consumption, the water is impaired due to elevated mercury concentrations and classified as SC surface water (North Carolina Division of Water Quality 2008).

Groundwater

Groundwater refers to subsurface hydrologic resources that are used for domestic, agricultural, and industrial purposes. Groundwater is stored in natural geologic formations called aquifers.

All of Onslow County, including MCB Camp Lejeune/MCAS New River, falls within the freshwater portion of the Castle Hayne aquifer. This aquifer is surficial or unconfined, as it overlies deeper aquifers confined by clay sediments. The Castle Hayne aquifer ranges from 5 to 954 feet in thickness, with an average depth of 175 feet. Composed of limestone, sandy limestone, and sand, it is the most productive aquifer in North Carolina, with wells typically producing 200 to 500 gallons per minute (DoN 2008a).

Stormwater

Stormwater runoff, the part of the precipitation, snow melt, or irrigation water that appears in uncontrolled surface streams, rivers, drains or sewers, can affect surface water quality by depositing sediment, minerals, or contaminants into surface water bodies. Stormwater runoff is influenced by meteorological factors such as rainfall intensity and duration, and physical factors such as vegetation, soil type, and topography.

Current stormwater requirements by the State of North Carolina were established in 1989 under 15A NCAC 02H.1000, which was revised in 1995. The regulatory process is initiated when more than an acre of land is disturbed, in which case an Erosion and Sedimentation Control Plan must be implemented. The North Carolina Division of Water Quality updated the Coastal County Stormwater Rule in 2008 to require permits for projects that exceed 10,000 square feet of Built Upon Area within the 20 coastal counties. The update of the rule went into effect on 1 October 2008. The strengthening of the regulation was in response to increased development along North Carolina's coast and subsequent impacts on the environment.

The stormwater infrastructure at MCB Camp Lejeune/MCAS New River includes: drainage ditches and swales, piping networks, curb and gutter conveyance features, and stormwater retention ponds. The NCDENR, Division of Water Quality is the NPDES permitting authority. The Base received its NPDES Phase I Stormwater permit in August 2004. The Base manages stormwater in compliance with its permit under a Stormwater Pollution Prevention Plan and an Outfall Monitoring Plan (DoN 2008a). The Stormwater Pollution Prevention Plan identifies and maps potential pollutant sources that may be reasonably expected to alter the composition of stormwater discharges. These sources include areas of outdoor industrial activity and processes, materials storage areas, loading and unloading areas, construction sites, and waste disposal practices that are exposed to stormwater. Under the Phase I NPDES permit, 66 industrial outfalls were identified. All outfalls are visually inspected and seven are periodically analyzed for constituents (Personal communication, Whited 2008).

The stormwater management program utilizes management practices to prevent material exposure to stormwater. Enhancing existing inspection, operation, and maintenance programs are recommended to improve the effectiveness of ongoing pollution abatement practices; an organizational structure is outlined by a Pollution Prevention Committee. Responsibilities of the committee include on-going preventive maintenance, personnel training, spill response, and implementation of BMPs.

The application for a stormwater permit under NPDES Phase II has been submitted and approval is expected in 2009. To prepare for the NPDES Phase II Program, MCB Camp Lejeune developed a comprehensive Stormwater Management Plan to serve as a planning tool (DoN 2008a).

Wetlands and Floodplains

Wetlands serve as the transition between terrestrial habitats and aquatic habitats, and are defined by the USACE as areas characterized by a prevalence of vegetation adapted to saturated soil conditions (USACE 1987). Wetlands can be associated with groundwater or surface water, and are identified based on specific soil, hydrology, and vegetation criteria defined by the USACE. Wetlands generally have low oxygen soil conditions, which make them inhospitable to most terrestrial plants; however, there are plants which are adapted to living in wetland areas.

Floodplains are often closely associated with wetlands; therefore, they are discussed together in this analysis. EO 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. The EO specifies that, in situations where alternatives are impractical, the agency must minimize potential harm to or within the floodplain and take appropriate steps to notify the public. This order was issued in furtherance of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Floodplains typically are described as areas likely to be inundated by a particular flood. For example, a flood that has a one percent chance of occurring in any one year is the 100-year flood.

MCB Camp Lejeune and MCAS New River have over 1,400 acres of wetlands in or near the proposed development areas (MCB Camp Lejeune 2008f). Due to the location of the Installations on the lower coastal plain of North Carolina, there is little topographic relief, which results in generally low-lying lands; therefore, floodplains and flood hazard areas are significant environmental factors affecting existing and future development in the region.

The USFWS classification scheme serves as the national standard for wetland classification. Wetlands are broadly classified into five systems: 1) Marine, 2) Estuarine, 3) Riverine, 4) Lacustrine, or 5) Palustrine. They are further classified by subsystems and classes which are based on substrate material and flooding regime, or vegetation.

- **Marine System** open Ocean overlying the continental shelf including high energy shorelines such as beaches and rocky headlands.
- Estuarine System Deepwater and wetland areas that are usually semi-enclosed with an opening to the ocean and in which there is some mixing of fresh and sea water.
- **Riverine System** Freshwater rivers and their tributaries along with most associated wetlands.
- **Palustrine System** All non-tidal freshwater wetlands dominated by trees, shrubs, and persistent emergent vegetation.

• Lacustrine System – Open freshwater wetlands situated in topographic depressions with less than 30 percent vegetative cover and greater than 20 acres in size.

Most of MCB Camp Lejeune/MCAS New River has been delineated for wetlands. Ongoing surveys associated with this Proposed Action occur within the specific proposed development areas. The wetland acreages presented for each proposed development area include a combination of data for those jurisdictional wetlands (those officially designated and approved by USACE) and data from the USFWS National Wetland Inventory where survey data is not yet available (Table 3.15-1). Wetlands and floodplains for each of the proposed development areas are discussed in the following sections and were illustrated in Figures 3.15-1 through 3.15-4.

Proposed Development Area	Wetlands within Development Area (acres)	Wetland System Classification	Floodplains within Development Area (acres)
Camp Johnson	78	Estuarine, Riverine, Palustrine	32
Wallace Creek	215	Estuarine, Riverine, Palustrine	137
Hadnot Point	122	Estuarine, Riverine, Palustrine	101
French Creek	174	Palustrine	235
Courthouse Bay	62	Estuarine, Palustrine	124
Stone Bay/Rifle Range	110	Estuarine, Palustrine	56
Camp Geiger	16	Palustrine	0
Camp Devil Dog	0.2	Palustrine	0
Base-wide Project Areas	48	Palustrine	10
MCB Camp Lejeune Total	825		696
MCAS New River Total	85	Palustrine	50

 Table 3.15-1 Wetlands and Floodplains on MCB Camp Lejeune/MCAS New River

Camp Johnson. Approximately 78 acres of wetlands and 32 acres of floodplain exist within the proposed development area at Camp Johnson. This area contains estuarine intertidal emergent wetlands, palustrine forested, palustrine scrub-shrub, and riverine wetlands. Primary wetland systems are associated with Scales Creek, Northeast Creek, and New River. A large isolated palustrine forested and scrub-shrub wetland is located in the center of the proposed development area (MCB Camp Lejeune 2008f). Floodplains are associated with the New River and Scales Creek (USFWS 2008e).

Wallace Creek. Approximately 215 acres of wetlands and 137 acres of floodplains exist within the proposed development area at Wallace Creek. The Wallace Creek area includes three wetland systems: 1) estuarine, 2) riverine, and 3) palustrine. The majority of the delineated wetlands are palustrine forested and occur along the floodplain of Wallace Creek and in association with stream tributaries of Bearhead Creek and Beaverdam Creek (MCB Camp Lejeune 2008e,f).

Hadnot Point. There are approximately 122 acres of wetlands and 101 acres of floodplains within the proposed development area at Hadnot Point. This area is highly developed and the wetlands in this area are primarily associated with Cogdels Creek in the southern border and Wallace Creek and Beaverdam Creek in the north. Some palustrine forested wetlands are associated with the New River and its tributaries in the western boundary of Hadnot Point. Wetland systems within this area consist of palustrine, riverine, and estuarine (MCB Camp Lejeune 2008f).

French Creek. Approximately 174 acres of wetlands and 235 acres of floodplains exist within the proposed development area at French Creek. Wetlands in this area are entirely composed of palustrine forested wetlands associated with Cogdels Creek, the New River, French Creek, and their tributaries (USFWS 2008e).

Courthouse Bay. Approximately 62 acres of wetlands and 124 acres of floodplains exist within the proposed development area at Courthouse Bay. The wetland systems within this area consist of estuarine emergent, estuarine scrub-shrub, and palustrine forested wetlands. The area surrounds Courthouse Bay in the northwest, and is bordered by the New River in the south. Wetland systems and the 100-year floodplain are associated with these primary water sources (MCB Camp Lejeune 2008f; USFWS 2008e).

Stone Bay/Rifle Range. Approximately 110 acres of wetlands and 56 acres of floodplains exist within the proposed development area of Stone Bay/Rifle Range. Wetland systems and 100-year floodplains in the northern portion are associated with Stone Creek and its tributaries. Smaller wetlands are scattered throughout the proposed development area. The primary wetland systems include estuarine emergent, estuarine forested, and palustrine forested. Several isolated palustrine forested wetlands are located in the uplands in the central portion of the site (MCB Camp Lejeune 2008f; USFWS 2008e).

Camp Geiger. Approximately 16 acres of wetlands and no floodplains exist within the proposed development area of Camp Geiger. The wetland system in Camp Geiger consists of palustrine forested wetlands associated with Edwards Creek on the east side of the proposed development area (MCB Camp Lejeune 2008f).

Camp Devil Dog. Approximately 0.2 acre of wetlands and no floodplains are present within the proposed development area at Camp Devil Dog. The palustrine wetland is associated with Mill Run in the southern area of Camp Devil Dog (USFWS 2008e).

Base-wide Project Areas:

Of the proposed Base-wide projects, the following have wetlands associated with the proposed development area:

New Base Road (P1262). The proposed alignment for the new Base road would cross Northeast Creek, Wallace Creek, smaller tributaries and associated wetlands, and their associated 100-year floodplains. There are palustrine forested wetlands located along the length of the proposed route for the road.

PPV Housing Area. There are approximately 43 acres of wetlands located adjacent to the proposed development area for the PPV housing. The palustrine forested wetland is between the existing housing area and the new proposed area (MCB Camp Lejeune 2008f). There are approximately 2 acres of floodplains.

MCAS New River. Approximately 85 acres of wetlands are located throughout the proposed development area on MCAS New River. However, there is less than one acre (0.81 acre) within the proposed project footprints. The primary wetland system on the Station is palustrine. The largest inland wetland is located northeast of the developed area adjacent to the runway. Most other wetland areas are associated with small tributaries of the New River including Southwest Creek, Edwards Creek, and Stick Creek (MCB Camp Lejeune 2008f).

3.15.1.2 MCAS Cherry Point

Surface Water

MCAS Cherry Point is located within the Neuse River Basin. Major surface waters in the vicinity of the proposed development areas on MCAS Cherry Point include Neuse River, Slocum Creek, Hancock Creek, Jacks Branch, and other unnamed tributaries and drainage ditches. All of the water bodies in Craven County are subject to the updates in the Coastal Stormwater Rule, as they are located in the North Carolina Coastal Zone. Water Resources on MCAS Cherry Point are described further in the following sections and illustrated in Figure 3.15-5.

Neuse River. The Neuse River is 275 miles long, originating northeast of Durham, North Carolina by the junction of Flat, Eno, and Little rivers. It flows generally southeast through Falls Lake reservoir and passes to the east of Raleigh, flows past Smithfield, Goldsboro, Kinston, and New Bern where it widens into an estuary 5 miles wide that extending 40 miles east to Pamlico Sound. The Neuse River flows from


Figure 3.15-5 Water Resources at MCAS Cherry Point

the North Carolina Piedmont to the coastal plain physiographic province. All waters of the Neuse River Basin have been classified as nutrient sensitive waters; a nutrient management strategy has been implemented to address excess nutrients in the river (DoN 2008b). The portion of the Neuse River adjacent to MCAS Cherry Point is also classified by North Carolina as SB, surface water that is used for primary recreation, including frequent or organized swimming and all SC uses.

Slocum Creek. Slocum Creek is located along the western perimeter of MCAS Cherry Point. Slocum Creek is classified as nutrient sensitive water, waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation. Slocum Creek is also 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. Also, Slocum Creek is listed as an impaired water body due to elevated pH (North Carolina Division of Water Quality 2008).

Hancock Creek. Hancock Creek is located along the eastern perimeter of MCAS Cherry Point. Hancock Creek is also 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. The creek is considered a nutrient sensitive water (North Carolina Division of Water Quality 2008).

Jacks Branch. The southern portion of Jacks Branch is located adjacent to one proposed project area. This tributary is classified as SC and a nutrient sensitive water (North Carolina Division of Water Quality 2008).

Drainage Ditches and Unnamed Tributaries. Several drainage ditches and unnamed tributaries are present near the proposed project areas. The drainage ditches are intermittent streams and do not have any special classification assigned to them. The unnamed tributaries also do not have any special classification.

Groundwater

MCAS Cherry Point falls within the same Castle Hayne Aquifer as MCB Camp Lejeune/MCAS New River. See Section 3.15.1.1 for information on this aquifer.

Stormwater

The stormwater infrastructure at MCAS Cherry Point includes vegetated drainage swales and stormwater retention and detention ponds. The Station is operating under a NPDES Phase I Stormwater permit which expired on 30 September 2006. An application for a stormwater permit under NPDES Phase II has been submitted. Direction from the North Carolina Division of Water Quality is for MCAS Cherry Point to

continue operating under the terms and conditions of the expired permit until a new permit is received (DoN 2008b).

As part of the permit program, MCAS Cherry Point operates under a Storm Water Pollution Prevention Plan to control stormwater discharges from the Station that may adversely impact the water quality in the Neuse River Basin. The plan identifies potential sources of water contamination and presents BMPs that are used to prevent or minimize pollutant exposure to stormwater (DoN 2008b).

Wetlands and Floodplains

Floodplains are often closely associated with wetlands; therefore, they are discussed together in this analysis. Due to the location of the Station on the lower coastal plain of North Carolina, there is little topographic relief, which results in generally low-lying lands; therefore, floodplains and flood hazard areas are significant environmental factors affecting existing and future development in the region.

The proposed development areas at MCAS Cherry Point have previously undergone wetland delineations. Acreages of wetlands and floodplains within these areas are provided in Table 3.15-2 and were illustrated in Figure 3.15-5.

Proposed Development Area	Wetlands within Proposed Development Area (acres)	Wetland System Classification	Floodplains within Proposed Development Area (acres)
MACS 2 Compound	0	N/A	0
North Quadrant	6	Palustrine	0
Ordnance Storage Area	86	Estuarine and Palustrine	75
West Quadrant	19	Palustrine	16
MCAS Cherry Point Total	111		91

Table 3.15-2 Wetlands and Floodplains on MCAS Cherry Point

MACS 2 Compound. There are no wetlands or floodplains within the MACS 2 Compound (MCB Camp Lejeune 2008f).

North Quadrant. Approximately 6 acres of palustrine wetlands are located within the North Quadrant area. There are no floodplains in this area. The wetland systems are associated with an unnamed tributary to Mill Creek (MCB Camp Lejeune 2008f).

Ordnance Storage Area. Approximately 86 acres of wetlands and 75 acres of floodplains are located within the Ordnance Storage Area. The wetlands can be classified as estuarine and palustrine. The estuarine wetland systems are primarily contiguous with Slocum Creek and located within the 100-year floodplain. The palustrine wetlands are associated with the headwaters of an unnamed tributary to Sandy

Run and the headwaters of Alligator Gut and the associated reservoir. The 100-year floodplain extends into the Ordnance Storage Area at Alligator Gut and several unnamed tributaries to Slocum Creek. The remaining on-site 100-year floodplain is contiguous with Slocum Creek (MCB Camp Lejeune 2008f).

West Quadrant. Approximately 19 acres of wetlands and 16 acres of floodplains are located within the West Quadrant. The wetlands can be classified as palustrine. The wetland systems are associated with unnamed tributaries to Slocum Creek. The 100-year floodplain extends into the West Quadrant in the southern portion of the proposed area of development from the East Prong of Slocum Creek. The 100-year floodplain also extends into the West Quadrant in the northern portion of the site contiguous with Hunters Branch and Mill Creek (MCB Camp Lejeune 2008f).

3.15.2 Environmental Consequences

This section provides a detailed description of impacts associated with implementation of the alternatives. Factors considered in the analysis to determine the extent of impacts to water resources include: longterm impacts (chemical, physical, or biological) that would alter the historical baseline or standard water quality conditions; and impacts to a water body currently considered impaired under the Clean Water Act.

3.15.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) water resource conditions as a result of this alternative would occur. This alternative would not involve any construction; therefore, there would be no impacts to surface water, ground water, wetlands, or floodplains as a result of this alternative. However, water resources at MCB Camp Lejeune/MCAS New River have changed since FY06, as other actions, not connected with this proposed action, have taken place since that time. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted.

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include new construction of and improvements to buildings, housing, utility/communication lines, and roads.

Personnel increases would result in increased development in the surrounding counties. The additional impervious surfaces would increase stormwater outputs and could indirectly impact water quality in surrounding waters. New development would be regulated by the county and local authorities through the building permit process. Compliance with the North Carolina Coastal Stormwater Rules would decrease detrimental stormwater impacts for all construction and building designs. Compliance practices could include:

- 1. Collecting rooftop run-off into properly sized cisterns or rain barrels and construct all uncovered driveways, walkways, patios, and parking areas out of permeable pavement or pervious materials.
- 2. Installing any other stormwater BMP that meets the requirements of 15A NCAC 2H.1008 to control and treat the stormwater runoff from the built-upon areas of the site.

Existing management plans, regulations, and guidelines would further protect this resource. The counties within the ROI have established guidelines in their land use plans for controlled growth. Protecting the natural resources of the county, such as water, are primary goals of the individual plans.

In addition, potential impacts to water resources could result from construction of new facilities, roads, and bridges, as well as operation and maintenance of new facilities throughout the Installations. During the construction phase, projects would need to comply with the Best Management Practices Manual that requires monitoring of runoff and implementation of BMPs that can mitigate possible sedimentation. An Erosion and Sedimentation Control Plan is necessary to indicate which measures would be taken to decrease the risk of loading sediment in surrounding water bodies. Increasing impermeable surfaces throughout MCB Camp Lejeune/MCAS New River pose a potential threat to surrounding water quality. Rooftops, roads, and parking lots do not allow for natural infiltration of rain water to occur and under the Preferred Alternative, these impacts would occur, though not appreciably. Smaller tributaries are more susceptible to negative impacts due to volume and flow. Adherence to existing management plans, NPDES permit requirements, and BMPs as described below would minimize the potential impacts.

Associated with project P1269, the USMC is also considering options for installation of a new potable water line to serve Base areas west of the New River. One option would install the new line via directional boring under the New River, another would install a water tank. Neither option is expected to impact water quality or navigability within the New River.

Surface Water

The Preferred Alternative would require coverage under NPDES for construction activities that disturb greater than an acre of previously undisturbed land. An Erosion and Sedimentation Control Plan would be required prior to any land disturbances. Construction activities would temporarily increase runoff, ultimately increasing sediment loading and turbidity in nearby surface waters. Local water quality would be slightly degraded until sediment resettled and conditions returned to normal. Indirect impacts to surface water quality and quantity from the Preferred Alternative could occur with improper management of stormwater.

Construction of a bridge over Northeast Creek, Wallace Creek, and Bearhead Creek as part of the proposed Base road project poses a threat to the quality of those resources. The construction of the bridges and/or culverts would have direct, short-term effects on the water quality. Increases in turbidity and total suspended solids are anticipated as a result of any necessary pile driving activities, and operation of barges or other watercraft supporting construction. Water quality in Northeast Creek is listed as impaired due to elevated mercury concentrations. Bridge construction would have to adhere to TMDLs established for this creek. The final design for the new base road is yet to be complete; however, preliminary designs indicate that fill in surface waters would be minimal and would be due to pilings. Shading impacts from bridges would total approximately 1,775 linear feet on Northeast and Wallace Creeks (personal communication, Conger 2009). Construction techniques and final bridge design would not limit flow through the creek, would decrease these impacts.

Bridge or culvert construction in the creeks would be designed such that it does not cause any further stress on the systems, to the extent practicable. During construction and continued operation and maintenance of the bridge and associated road, BMPs in accordance with those outlined by the North Carolina Department of Transportation would be utilized to protect surface waters. These could include maintaining vegetated buffers between drainage channels and road embankments, avoiding ditching and channelization through wetlands, silt fencing, seeding newly exposed soils, directing sheet flow toward vegetation buffers, and filtering all material from excavated bridge footing areas prior to discharge into the waterway (North Carolina Department of Transportation 1997).

A permit (per 33 CFR 115) from the U.S. Coast Guard is required for all new or renovated bridges. Through the permit application process, the U.S. Coast Guard ensures that environmental issues are given careful consideration and imposes any necessary conditions relating to the construction, maintenance, and operation of these bridges in the interest of public navigation. The U.S. Coast Guard is obligated to consult with Federal agencies with legal jurisdiction or special interest concerning any environmental issues associated with bridge construction. They have final authority on the location and design for new bridges over navigable waters (USCG 1999). A permit is also required from the USACE for the discharge of fill material into waters of the U.S. under Section 404 of the Clean Water Act. If necessary, specific mitigation measures for constructing the bridge would be developed in coordination with the U.S. Coast

Guard, USACE, and NCDENR to minimize the potential impacts to surface waters and associated wetlands (see Mitigation Measures, Section 3.17).

Stormwater

Management of stormwater during construction activities would be covered under the NPDES Phase I General Permit and would also require the development and implementation of a site-specific Erosion and Sedimentation Control Plan. As part of the NPDES permit, the existing Stormwater Pollution Prevention Plan would be updated or amended to include projects in the planning stages of construction and operation as needed in instances of notable change in site design, construction, or maintenance operations throughout the life of the project. Compliance with the Best Management Practices Manual, the most stringent of the stormwater guidance, would encompass all the future and present regulations for MCB Camp Lejeune/MCAS New River. Compliance with emerging regulations, such as the North Carolina Coastal County Stormwater Rule, would occur as each regulation comes into effect (Personal communication, Whited 2008).

As the site-specific Erosion and Sedimentation Control Plan is developed, BMPs designed to minimize pollution (through source control) would be developed. BMPs may be either structural, such as the need to provide secondary containment of aboveground storage tanks; or nonstructural, such as the need to enhance existing hazardous material management standard operating procedures. Manufactured BMPs are essentially portable structures, such as containment pallets, that may be employed to reduce the pollution potential of stored material. Specific BMPs for construction activities may include rock check dams, rock channels, sediment basins, diversions, and the placement of silt fencing and other erosion control practices.

Other applicable management practices that may be used to help reduce and/or maintain the average annual sediment loads include:

- Utilizing established Natural Resources Conservation Service practices;
- Adopting proper unpaved road maintenance practices; and
- Mitigating and preventing stream bank erosion due to increased stream flow velocities caused by urban runoff.

In addition to these management practices, Low Impact Development would be applied to stormwater systems. To minimize environmental impacts, the Navy issued guidance promoting the application of Low Impact Development practices for facilities construction on Navy Installations (DoN 2008c). One of the goals of the Navy guidance is to maintain natural hydrology. Implementing Low Impact Development procedures would be more cost effective than other methods for mitigating poor water quality (such as establishing TMDLs, or remediating contamination). MCAS New River stormwater systems would all be

constructed using Low Impact Development procedures by FY09 (Personal communication, Whited 2008). Utilizing Low Impact Development for stormwater management would satisfy green building requirements under the LEED rating system.

Compliance with the North Carolina Coastal County Stormwater Rule would decrease detrimental stormwater impacts for all construction and building designs. Compliance practices could include:

- 1. Collecting rooftop run-off into properly sized cisterns or rain barrels and construct all uncovered driveways, walkways, patios, and parking areas out of permeable pavement or pervious materials.
- 2. Installing any other stormwater BMP that meets the requirements of 15A NCAC 2H.1008 to control and treat the stormwater runoff from the built-upon areas of the site.

Groundwater

The Preferred Alternative does not increase the risks to groundwater quality greater than existing conditions. Following hazardous waste management practices and utilizing spill contingency plans greatly decreases the potential for contaminant intrusion into the Castle Hayne aquifer (refer to Section 3.10.1.1 for hazardous waste management). Borrow pits would be required to provide fill material for the new Base road. Groundwater infiltration is unlikely due to the average depth of the aquifer, but in some areas the Castle Hayne aquifer is close to the surface. The Installations would follow all necessary guidelines, regulations, and permits in the design and construction of the borrow pits to avoid impacting groundwater.

Wetlands and Floodplains

At MCB Camp Lejeune/MCAS New River several of the proposed development areas have wetlands and 100-year floodplains within or near the site boundaries. The layout of the proposed development would be designed to avoid and minimize direct and indirect impacts to wetland and floodplain areas to the greatest extent practicable. Layout and design of most of the proposed projects has not yet occurred and exact wetland impacts cannot be predicted at this time. However, estimated impacts to wetland areas within the proposed development areas were developed based on the location of the wetlands within the areas; potential locations for projects based on master planning concepts and functionality of the project; and the feasibility to avoid or likelihood of construction near wetland areas. Table 3.15-3 provides the potential impact to wetlands within the proposed development areas.

		1 nici nun ve		
Proposed Development Area	Wetlands within Development Area (acres)	Wetland System Classification within Development Area	Estimated Wetland Impact ¹	Projects Potentially Affecting Wetlands
Camp Johnson	78	Estuarine, Riverine, Palustrine	15 acres or less (all permanent)	P1319 P1320 P1340 P003
Wallace Creek	215	Estuarine, Riverine, Palustrine	10 acres or less (all permanent)	P1298
Hadnot Point	122	Estuarine, Riverine, Palustrine	None	None
French Creek	174	Palustrine	30 acres or less (25 acres permanent, 5 acres temporary)	P1265 P1035 P1267 P1317
Courthouse Bay	62	Estuarine, Palustrine	40 acres or less (15 acres permanent, 25 acres temporary)	P1266
Stone Bay/Rifle Range	110	Estuarine, Palustrine	5 acres or less (all permanent)	P1286
Camp Geiger	16	Palustrine	None	None
Camp Devil Dog	0.2	Palustrine	None	None
New Base Road	5	Palustrine	25 acres or less (all permanent, includes shade impacts)	P1262
MCB Camp Lejeune Total	825		125 acres	-
MCAS New River Total	85	Palustrine	1 acre or less	P311 P688 P683 P687 P706 P707

Table 3.15-3	3 Potential Wetland Impacts at MCB Camp Lejeune/MCAS New River for the	Preferred
	Alternative	-

Source: Personal communication, Sylvester 2009

Note:

¹ Temporary impacts are those associated with utility upgrades and improvements in which wetlands would be disturbed during construction, but no fill or permanent alteration of hydrology would occur. Permanent impacts would result from the location of a building, road, or associated feature that would require filling the wetland area. Some of these permanent impacts are associated with road projects in which the road would bridge a wetland as opposed to fill.

Since wetlands are present throughout all the sites, protective measures would be used to avoid indirect impacts. Construction activities in the vicinity of wetlands could cause short-term impacts, such as siltation of surface water due to increased erosion from clearing and grading activities. Erosion and siltation would be avoided through implementation of BMPs (such as use of silt fences and stormwater management structures) in accordance with an approved Erosion and Sedimentation Control Plan. Additionally the Proposed Action would increase the amount of impermeable surfaces, which could

increase the stormwater flows, possibly leading to erosion and damage to wetlands and streams. The Installations would implement BMPs to avoid these potential impacts.

Table 3.15-3 provided a worst-case estimate for potential wetland impacts. These impacts would be refined as project details and footprint locations mature. With regard to unavoidable impacts to wetlands or waters of the U.S. at the proposed development areas (i.e., wetlands cannot be avoided based on the results of the 2008 Wetlands Study and the final site design of the facility), MCB Camp Lejeune/MCAS New River would obtain the appropriate State Section 401 and Clean Water Act Section 404 permits from the USACE prior to construction, and implement mitigation as required by wetland permit conditions (Section 3.17). The USACE would provide a provisional permit initially based on preliminary design. Once final designs are completed and Coastal Consistency concurrence has been obtained, the USACE would then issue the final permit. Should the design change significantly resulting in estimated impacts to wetlands or water resources greater than what was initially presented, a revised permit would need to be issued.

The following 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" 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)
- 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)

Additionally, borrow pits would be constructed in accordance with all applicable regulations and permits to ensure that proper setbacks from wetlands are implemented.

Final site design of proposed facilities would avoid construction within the 100-year floodplain where practicable. If floodplains cannot be avoided (specifically for the new Base road which would cross three creeks and their associated wetlands and floodplains), all structures would be built in accordance with Federal Emergency Management Agency guidelines to minimize potential impacts to the structure in the event of a 100-year flood.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Impacts to water resources would be similar to those described under the Preferred Alternative, but at a much smaller scale.

Over both Installations, the projects proposed under Alternative 3 would introduce 447 acres of facility construction and infrastructure improvements. Under this Alternative, less than 3 acres of wetlands at MCB Camp Lejeune and 0.6 acre of wetlands on MCAS New River may be impacted based on current project design estimates and master planning concepts (Table 3.15-4). As discussed under the Preferred Alternative, unavoidable impacts to wetlands or waters of the U.S. at the proposed development areas (i.e., wetlands cannot be avoided based on the results of the 2008 Wetlands Study and the final site design of the facility), MCB Camp Lejeune/MCAS New River would obtain the appropriate Clean Water Act Section 404 permit from the USACE prior to construction, and would implement mitigation, as required by wetland permit conditions (Section 3.17).

Proposed Development Area	Wetlands within Development Area (acres)	Wetland System Classification within Development Area	Estimated Wetland Impact	Projects Potentially Affecting Wetlands
Camp Johnson	78	Estuarine, Riverine, Palustrine	2 acres or less	P003
Wallace Creek	215	Estuarine, Riverine, Palustrine	Estuarine, Riverine, None Palustrine	
Hadnot Point	122	Estuarine, Riverine, Palustrine	Estuarine, Riverine, None None	
French Creek	174	Palustrine	1 acre or less	P1035
Courthouse Bay	62	Estuarine, Palustrine	None	None
Stone Bay/Rifle Range	110	Estuarine, Palustrine	None	None
Camp Geiger	16	Palustrine	None	None
Camp Devil Dog	0.2	Palustrine	None	None
MCB Camp Lejeune Total	825		3 acres	-
MCAS New River Total	85	Palustrine	Less than 1 acre	P311 P688 P683 P687

 Table 3.15-4 Potential Wetland Impacts at MCB Camp Lejeune/MCAS New River for Alternative 3

Source: Personal communication, Sylvester 2009.

Construction of core facilities would increase the impervious surfaces on the Installations; thereby, increasing stormwater runoff. Adherence to the BMPs in the Stormwater Pollution Prevention Plan would minimize these concerns, as was described under the Preferred Alternative.

Personnel increases would result in increased development in the surrounding communities. The additional impervious surfaces would increase stormwater outputs and could indirectly impact water quality in surrounding waters. New development would be regulated by the county and local authorities through the building permit process. Compliance with the North Carolina Coastal Stormwater Rules would decrease detrimental stormwater impacts for all construction and building designs. Compliance practices could include:

- 1. Collecting rooftop run-off into properly sized cisterns or rain barrels and construct all uncovered driveways, walkways, patios, and parking areas out of permeable pavement or pervious materials.
- 2. Installing any other stormwater BMP that meets the requirements of 15A NCAC 2H.1008 to control and treat the stormwater runoff from the built-upon areas of the site.

Existing management plans, regulations, and guidelines would further protect this resource. The counties within the ROI have established guidelines in their land use plans for controlled growth (see Section 3.4). Protecting the natural resources of the county, such as water, are primary goals of the individual plans.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would still occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no additional ground disturbance and no impact to water resources.

3.15.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) water resource conditions, as a result of this alternative, would occur. This alternative would not involve any construction; therefore, there would be no impacts to surface water, ground water, wetlands, or floodplains as a result of this alternative. However, water resources at MCAS Cherry Point have changed since FY06 due to other actions not connected with this proposed action since that time. These impacts are presented in cumulative (Section 4.0) and their associated NEPA documentation noted.

Alternative 2 - Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include new construction of and improvements to buildings, housing, utility/communication lines, and roads.

Personnel increases would result in increased development in the surrounding counties. The additional impervious surfaces would increase stormwater outputs and could indirectly impact water quality in surrounding waters. New development would be regulated by the county and local authorities through the building permit process. Compliance with the North Carolina Coastal Stormwater Rules would decrease detrimental stormwater impacts for all construction and building designs. Compliance practices could include:

- 1. Collecting rooftop run-off into properly sized cisterns or rain barrels and construct all uncovered driveways, walkways, patios, and parking areas out of permeable pavement or pervious materials.
- 2. Installing any other stormwater BMP that meets the requirements of 15A NCAC 2H.1008 to control and treat the stormwater runoff from the built-upon areas of the site.

Existing management plans, regulations, and guidelines would further protect this resource. The counties within the ROI have established guidelines in their land use plans for controlled growth. Protecting the natural resources of the county (i.e. water) are primary goals of the individual plans. In addition, potential impacts to water resources could result from the construction of new facilities, roads, and a bridge at MCAS Cherry Point. Prior to construction, the appropriate State Section 401 permit and Clean Water Act Section 404 permit would be obtained from South Carolina DENR and USACE, respectively. Erosion and Sedimentation Control Plan would be necessary to indicate which measures would be taken to decrease the risk of loading sediment in surrounding water podies. Increasing impermeable surfaces throughout the Station poses a potential threat to surrounding water quality. Rooftops, roads, and parking lots do not allow for natural infiltration of rain water to occur and under the Proposed Action these impacts would occur, though not appreciably. Smaller tributaries are more susceptible to negative impacts due to volume and flow. Adherence to existing management plans, NPDES permit requirements, and BMPs would minimize the potential for impacts.

Surface Water

The Preferred Alternative at MCAS Cherry Point includes a variety of facility construction, road expansions, and a new bridge crossing Slocum Creek. A NPDES Phase II permit has not yet been awarded to MCAS Cherry Point. Following guidance described in that document, once issued, would decrease potential impacts to surrounding water quality. Slocum Creek should be taken into special consideration, as its already degraded water quality would be further set back by elicit discharges. Permit requirements and BMPs associated with bridge construction would be similar to those described for MCB Camp Lejeune for the new Base road. Neuse River stream buffer variances are set at 50 feet. Should all guidance, future or present, be applied to construction considered under the Preferred Alternative, then appreciable impacts on surface water resources would not occur.

Stormwater

The possibility for stormwater impacts at MCAS Cherry Point would be associated with the increased amount of impervious surfaces from the construction of new buildings and the long-term maintenance of the buildings. The existing Stormwater Pollution Prevention Plan would be updated to include the proposed projects in the planning stages of construction and operation, and amended as needed in instances of notable change in site design, construction, or maintenance operations throughout the life of the project.

A site-specific Erosion and Sedimentation Control Plan would be developed and include BMPs designed to minimize pollution through source control. Specific BMPs for construction activities under this Proposed Action may include rock check dams, rock channels, sediment basins, diversions, and the placement of silt fencing. In addition to BMPs, other applicable management practices that may be used to help reduce and/or maintain the average annual sediment loads include:

- Utilizing established Natural Resources Conservation Service practices;
- Adopting proper unpaved road maintenance practices; and
- Mitigating and preventing streambank erosion due to increased stream flow velocities caused by urban runoff.

Use of Low Impact Development and BMPs, as described in Section 3.15.2.1 for MCB Camp Lejeune/MCAS New River, would be the most effective way to avoid direct impacts from stormwater discharges. MCAS Cherry Point would also comply with new stormwater rules as described in the 2008 update of the North Carolina Coastal County Stormwater Rule (Personal communication, Whited 2008). Utilizing Low Impact Development for stormwater management would satisfy green building requirements under the LEED rating system.

Groundwater

The Preferred Alternative does not increase the risks to groundwater quality greater than the baseline. Following hazardous waste management practices and utilizing spill contingency plans greatly decreases the potential for contaminant intrusion into the Castle Hayne aquifer.

Wetlands and Floodplains

Wetlands and floodplains exist within the proposed development areas. Construction activities in the vicinity of wetlands could cause short-term impacts to adjacent wetland areas. Siltation of surface water, due to increased erosion from clearing and minor grading activities, and pile driving activities in Slocum Creek, could degrade water quality within surface waters and wetland areas and impact wetland vegetation and other dependent biological systems. Erosion and sedimentation would be minimized through implementation of BMPs (i.e., use of silt fences and stormwater management structures and specific BMPs for bridge construction) in accordance with an approved Erosion and Sedimentation Control Plan.

The proposed projects would be designed to avoid existing wetland areas where practicable. Based on preliminary design of project site locations, approximately 14.5 acres of wetlands would be affected by the proposed construction at MCAS Cherry Point (Table 3.15-5). The majority of this acreage (11.06 acres) is associated with the larger planning area for the Slocum Road realignment (P134). The exact impact to wetlands would likely be less.

Proposed Development Area	Wetlands within Proposed Development Area (acres)	Wetland System Classification	Wetlands within Project Footprint	Projects Potentially Affecting Wetlands
MACS 2 Compound	0	N/A	N/A	None
North Quadrant	6	Palustrine	1.62 acres	P173 P176
Ordnance Storage Area	86	Estuarine and Palustrine	11.74 acres	P167 P601 P134
West Quadrant	19	Palustrine	1.14 acres	P193 P177
MCAS Cherry Point Total	111		14.5 acres	-

Table 3.15-5 Potential Wetland Impacts on MCAS Cherry Point for Preferred Alternative

Unavoidable impacts to wetlands or waters of the U.S. would likely occur along the Roosevelt Boulevard expansion and the Slocum Road realignment and bridge construction. MCAS Cherry Point would obtain the appropriate State Section 401 and Clean Water Act Section 404 permits from the USACE prior to construction, and implement mitigation as required by wetland permit conditions (Section 3.17). The USACE would provide a provisional permit initially based on preliminary design. Once final designs are

completed and Coastal Consistency concurrence has been obtained, the USACE would then issue the final permit. Should the design change significantly resulting in estimated impacts to wetlands or water resources greater than what was initially presented, a revised permit would need to be issued.

The following 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" 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)
- 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)

Final site design of proposed facilities would avoid construction within the 100-year floodplain where practicable. If floodplains cannot be avoided, all structures would be built in accordance with Federal Emergency Management Agency guidelines to minimize potential impacts to the structure in the event of a 100-year flood.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Impacts to water resources would be similar to those described under the Preferred Alternative, but at a much smaller scale. This alternative would result in approximately 0.71 acre of wetland impacts (Table 3.15-6). The projects proposed under Alternative 3 would introduce 40 acres of facility construction and infrastructure improvements.

Proposed Development Area	Wetlands within Proposed Development Area (acres)	Wetland System Classification	Wetlands within Project Footprint	Projects Potentially Affecting Wetlands	
MACS 2 Compound	0	N/A	N/A	None	
North Quadrant	6	Palustrine	None	None	
Ordnance Storage Area	86	Estuarine and Palustrine	0.7 acre	P167 P601	
West Quadrant	19	Palustrine	0.02 acre	P193	
MCAS Cherry Point Total	111		0.71 acre	-	

 Table 3.15-6 Potential Wetland Impacts on MCAS Cherry Point for Alternative 3

The construction of core facilities would increase the impervious surfaces on the Installation and in turn increase stormwater runoff. Adherence to the BMPs in the Stormwater Pollution Prevention Plan would minimize these concerns.

Personnel increases would result in increased development in the surrounding communities. The additional impervious surfaces would increase stormwater outputs and could indirectly impact water quality in surrounding waters. New development would be regulated by the county and local authorities through the building permit process. Compliance with the North Carolina Coastal County Stormwater Rule would decrease detrimental stormwater impacts for all construction and building designs. Compliance practices could include:

- 1. Collecting rooftop runoff into properly sized cisterns or rain barrels and construct all uncovered driveways, walkways, patios, and parking areas out of permeable pavement or pervious materials.
- 2. Installing any other stormwater BMP that meets the requirements of 15A NCAC 2H.1008 to control and treat the stormwater runoff from the built-upon areas of the site.

Existing management plans, regulations, and guidelines would further protect this resource. The counties within the ROI have established guidelines in their land use plans for controlled growth (see Section 3.4). Protecting the natural resources of the county, such as water, are primary goals of the individual plans.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would still occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. There would be no additional ground disturbance and no impact to water resources.

3.16 Cultural Resources

Cultural resources are prehistoric or historic sites, buildings, structures, objects, or other physical evidence of human activity that are considered important to a culture or community for scientific, traditional, religious, or any other reasons.

3.16.1 Affected Environment

Section 106 of the National Historic Preservation Act of 1966, as amended, and as implemented by 36 CFR Part 800, requires Federal agencies to consider the effects of their actions on historic properties before undertaking a project. A historic property is defined as any cultural resource that is included in, or eligible for inclusion in, the NRHP. The NRHP, administered by the National Park Service, is the official inventory of cultural resources that are significant in American history, prehistory, architecture, archaeology, engineering, and culture.

The SHPO is responsible for reviewing projects involving Federal actions to ensure their compliance with Section 106. The SHPO designates cultural resources as archaeological and architectural resources. Archaeological resources are sites where human activity measurably altered the earth or left deposits of physical remains. Sites may include evidence of cultures from prehistory (before European contact) and history (post-contact). The material cultural remains may consist of artifacts (e.g., fragments of tools, arrow points, ceramic vessels), features (e.g., remnants of foundations, hearths, midden), or other materials (e.g., ecological remains). Sites may contain both surface and subsurface elements.

Architectural resources are buildings, structures (bridges, canals, dams, ships), or objects (monuments, mileposts, statuary) of historical or architectural significance. Architectural resources may also include sites such as designed landscapes, cemeteries, trails, or ceremonial sites.

The area of potential effect, or ROI, for cultural resources in this EIS includes areas throughout MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point where the proposed construction projects would occur. It would include areas subject to direct effects from ground disturbance as well as historic buildings or districts that are subject to direct effects from demolition or modification. In addition, indirect effects include changes in the visual setting of historic buildings or districts. No Native American tribes have been identified with ancestral land ties to the Installations, therefore, traditional cultural properties or other resources of interest to Native Americans are not included in the affected environment.

Research Methodology: The significance of a cultural resource is evaluated according to NRHP eligibility criteria (36 CFR Part 60.4). To qualify for listing in the NRHP, archaeological and architectural resources generally must be at least 50 years old. However, more recent resources, such as Cold War era

military buildings, may be considered eligible for the NRHP if they are of "exceptional importance." The significance of cultural resources is evaluated by applying one of four criteria. A property need only meet one criterion to be eligible for listing on the NRHP. These criteria are:

- Criterion A: Association with events that have made a significant contribution to the broad patterns of our history;
- Criterion B: Association with the lives of persons significant in our past;
- Criterion C: Embodiment of the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D: Have yielded, or may be likely to yield, information important in prehistory or history.

Cultural resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (i.e., its important physical features must be present and visible).

Assessment of Archaeological Sensitivity: Typically, predictive modeling in archaeology is used to identify both the areas that are likely to contain sites and those areas unlikely to contain sites; such modeling is based on the analysis of relevant environmental and cultural variables.

Through the use of predictive models and previous field surveys and in consultation with the North Carolina SHPO, MCB Camp Lejeune/MCAS New River and MCAS Cherry Point have identified all the areas within the Installation boundaries, including the proposed development areas, with high probability archaeologically sensitive soils.

Management of Historic Properties: MCB Camp Lejeune/MCAS New River and MCAS Cherry Point manage a variety of historic and prehistoric cultural resources in accordance with their respective ICRMPs. The ICRMPs at all Installations provide guidance and establish standard operating procedures as defined by MCO 5090.2A (Chapter 8). In addition, Base Order 5090.8 is used for the management of culturally significant resources at the MCB Camp Lejeune/MCAS New River. These documents include a summary of the Installation's history, mission, and known prehistoric and historic resources. The ICRMPs also contain compliance procedures relating to Native American concerns, consultation procedures, and Section 106 review guidelines. The ICRMP for MCB Camp Lejeune/MCAS New River is currently being updated and expected to be completed by the end of 2009 (Personal communication, Richardson 2009). The ICRMP for MCAS Cherry Point was completed in 2008 (USMC 2008).

Cultural Context: To provide a regional context and to assess whether resources could be found in areas not previously surveyed, a summary of the prehistory and history of the region are provided as a reference in Appendix G. Information in Appendix G was compiled from the Installation's respective ICRMPs (USACE 2002, USMC 2008).

3.16.1.1 MCB Camp Lejeune/MCAS New River

This section includes a brief description of the archaeological and architectural resources located at MCB Camp Lejeune and MCAS New River including those that are located within the proposed development areas.

Archaeological Resources

A total of 1,269 archaeological sites have been identified within MCB Camp Lejeune/MCAS New River (Personal communication, Richardson 2008). They include prehistoric and historic archaeological sites ranging from the Early Archaic period (8000 BC) to early European colonization and later settlement (MCB Camp Lejeune 2007b). Of these sites, 21 have been determined eligible for listing on the NRHP while 221 require further evaluation to determine NRHP eligibility. Approximately 81 percent of all recorded archaeological sites (1,027 sites) at the Installations have been determined ineligible (Personal communication, Richardson 2008).

Cultural resources surveys (Phase I and/or II) have been conducted in all proposed development areas. These surveys were not conducted specifically for the Grow the Force initiative but for other past projects or modeling activities requiring compliance with Section 106 or Section 110 of the National Historic Preservation Act. These surveys occurred concurrent with, or prior to the initiation of this EIS (Personal communication, Richardson 2009). No archaeological sites that are eligible for listing in the NRHP or sites requiring further evaluation to determine eligibility have been identified as occurring within the Hadnot Point, Wallace Creek, French Creek, Stone Bay/Rifle Range, Camp Devil Dog, Camp Geiger, Camp Johnson, or MCAS New River development areas. The following is a description of NRHP eligible or currently unassessed archaeological sites which may be affected by the proposed construction.

Courthouse Bay: Site 31ON308/308** (surveyed 1988) and Site 31ON379 (surveyed 2003) are NRHPeligible sites located within the Courthouse Bay development area. Site 31ON308/308** is located on the landform known as Jarrett Point that protrudes into the New River. The entire site covers an area of approximately 70 acres; however, only a portion of the site is located within the proposed development area (Personal communication, Richardson 2008). Prehistoric activity at this site spanned the Middle through Late Woodland periods. Additionally, the site is representative of Early Colonial and Antebelleum occupations (Loftfield 1981). Site 31ON379 occupies a majority of the peninsula of Courthouse Bay and covers an area of approximately 38 acres (Personal communication, Richardson 2008). This site was originally recorded by Loftfield in 1981 during an archaeological and historic reconnaissance of MCB Camp Lejeune (Loftfield 1981) and later revisited by TRC Garrow and Associates in 2003 (Millis *et al.* 2003). Prehistoric activity at the site spanned the Early Woodland through Late Woodland periods. The site also has a 19th through 20th century component and is thought to be the location of the historic community of Marines, North Carolina (Loftfield 1981).

Base-wide Projects: Site 31ON536 (surveyed 1994) is an NRHP-eligible site located marginally outside of the proposed center line for the new Base road. This site is located on a broad, slightly sloping terrace bounded on the south and southeast by Northeast Creek and on the west by Frenchman's Creek and covers an area of approximately 18 acres. Prehistoric activity at this site spanned the Early Woodland through Late Woodland periods (Polglase 1996 and Outlaw *et al.* 1993).

Architectural Resources

There are no historic districts located at MCAS New River. MCB Camp Lejeune manages eight historic districts comprised of 188 contributing buildings (including the USO building located in Jacksonville, North Carolina) which have been determined eligible for inclusion in the NRHP by MCB Camp Lejeune and the North Carolina SHPO (Table 3.16-1). These historic architectural properties were identified in a three-phase architectural investigation of World War II construction at MCB Camp Lejeune (USACE 2002).

Property Name	Contributing Resources
Assault Amphibious Base Historic District	2
Camp Geiger	1
Regimental Area Number 3/Command Services Historic District	45
Montford Point Camp Number 1 Historic District	53
Montford Point Camps Number 2 and 2A Historic District	39
Naval Hospital/Surgeons Row Historic District	7
Parachute Training Historic District	3
Stone Bay Rifle Range Historic District	37
USO Building	1

 Table 3.16-1 Historic Architectural Properties at MCB Camp Lejeune

Source: Personal communication, Richardson 2008.

There are no historic districts located within the French Creek or Camp Devil Dog development areas. The projects that are considered "Base-wide" would also not affect any historic districts. The following is a description of historic districts that may be affected by activities under the Proposed Action. The historic districts are shown in Figures 3.16-1 through 3.16-3.

Camp Johnson: The Montford Point Camp 1 Historic District and the Montford Point Camp 2 and 2A Historic Districts are located within the proposed Camp Johnson development area. All three of the camp areas are significant because they demonstrate the fashion in which segregation of African American Marines was carried out in training for World War II. Montford Point Camps 1 and 2 were "separate but equal" training facilities built to train African American soldiers (USACE 2002). Montford Point Camp 2A was built for white officers and special enlisted personnel. This strict segregation of soldiers was required at that time to limit potential racial problems (USACE 2002). The Montford Point Camp 1 Historic District includes 53 structures and the Montford Point Camp 2 and 2A Historic District includes 39 structures (see Figure 3.16-1).

Camp Geiger: The Camp Geiger Historic District is located within the proposed Camp Geiger development area. The Camp Geiger Historic District is significant for its association with the training of Marines for the military build-up preceding the United States entry to World War II (criterion A) (USACE 2002). Building TC601 (Chapel) is the only contributing building to the District (see Figure 3.16-1).

Hadnot Point: The Regimental Area Number 3/Command Services Historic District is located within the proposed Hadnot Point development area. The Regimental Area Number 3/Command Services Historic District is significant for its reflection of the military command hierarchy and basic division and regimental unit organization (USACE 2002). The District includes 45 structures (see Figure 3-16.2). Contributing structures to the Regimental Area Number 3 were used to house and train personnel in MCB Camp Lejeune during World War II (criterion A). The Command Services area of the District houses an assortment of buildings that exemplify the way in which architecture reinforced the leadership roles of the individuals who lived and worked within them to ensure the operation of MCB Camp Lejeune (criterion C). Because of these two facets of the District, it is eligible for listing in the NRHP as a "Training Unit," under the context of "Marine Mobilization and Training" as well as listing as a "Service/Support Facility" within the historical context of "Command Services" (USACE 2002). As discussed in section 2.2.2.1, exact facility design plans have not yet been determined.

Wallace Creek: The Parachute Training Historic District is located within the proposed Wallace Creek development area. The Parachute Training Historic District is significant for its association with the paratroop training mission of MCB Camp Lejeune during World War II (criterion A) and for embodying the distinctive characteristics of a specialized building developed by the military for the training of its personnel in particular skills (criterion C) (USACE 2002). The District consists of three non-contiguous contributing resources: PT-4, PT-5, and PT-6 (see Figure 3-16.2). These structures are the only extant

resources of MCB Camp Lejeune's parachute training facilities, which were established in mid-1942 (USACE 2002).

Courthouse Bay: The Assault Amphibian Historic District is located within the proposed Courthouse Bay development area. The Assault Amphibian Historic District is significant for its association with the training of personnel for amphibious landings during World War II (criterion A) and for embodying the distinctive characteristics of a specialized building developed by the military for the training of its personnel in particular skills (criterion C) (USACE 2002). The District includes two buildings A-1 (Carpenter's Shop) and A-2 (Machine Shop) (see Figure 3.16-3). These buildings served to maintain and repair amphibious landing craft and tractors used for the training of Marines in amphibious landing which was essential to success in the battles of the Pacific theatre during World War II (USACE 2002).

Stone Bay: The Stone Bay Rifle Range Historic District is located within the proposed Stone Bay Rifle Range development area. The Stone Bay Rifle Range Historic District is significant for its association with the training of all Marines who passed through MCB Camp Lejeune in World War II (criterion A) and for embodying the distinctive style that was used to construct the rest of the buildings at MCB Camp Lejeune (criterion C) (USACE 2002). The District includes 37 structures (see Figure 3.16-3) and is considered to be an excellent demonstration of the way in which space was used by the military to maintain order in training units based on battalion groups (USACE 2002).



Figure 3.16-1 Architectural Resources MCB Camp Lejeune/MCAS New River – Northside



Figure 3.16-2 Architectural Resources MCB Camp Lejeune/MCAS New River – Central



Figure 3.16-3 Architectural Resources MCB Camp Lejeune/MCAS New River – Southside

3.16.1.2 MCAS Cherry Point

Archaeological Resources

A total of 94 archaeological sites have been identified at MCAS Cherry Point and administered properties (USMC 2008). They include prehistoric and historic archaeological sites ranging from the Middle Archaic period (6000 BC) to early European colonization and later settlement (USMC 2008). Of these sites, 5 have been determined eligible for listing on the NRHP while 17 require further evaluation to determine NRHP eligibility. Approximately 77 percent of all recorded archaeological sites (72 sites) at the Installation have been determined ineligible (USMC 2008). All high probability archaeological sensitive soils located within the MACS 2 Compound, West Quadrant, and Ordnance development areas have been surveyed. No archaeological sites that are eligible for listing in the NRHP or currently unassessed sites have been identified as occurring within these proposed development areas. As part of a separate NEPA effort, MCAS Cherry Point consulted on the construction of interim beddown facilities at MCAS Cherry Point which included all high probability soils located within the proposed North Quadrant development area (DoN 2008b). New construction within the North Quadrant resulting from implementing the Proposed Action would not extend to undeveloped/forested areas or areas not previously disturbed by the interim beddown facilities (Personal communication, Lombardo 2008).

Architectural Resources

Architectural investigations at MCAS Cherry Point were conducted in 1994, 1995, and 1998. The Officer's Housing Historic District is the only architectural property eligible for listing in the NRHP on the main Station (USMC 2008). The District encompasses 57 two-story Colonial Revival dwellings and 46 associated garages. The 200-acre residential subdivision was built between 1942 and 1944 as accommodations for officers. It is associated with the development of MCAS Cherry Point during World War II. The District is located in the northeast portion of the Station, between Roosevelt Boulevard and the Neuse River, in an area designated for housing and community facilities. The District is not located within the boundaries of the proposed development areas for MCAS Cherry Point.

3.16.2 Environmental Consequences

This section provides a detailed description of the impacts associated with implementation of the three alternatives and the No Action Alternative. Criteria set forth in 36 CFR Part 800 are used to evaluate the effects of an undertaking on historic properties (i.e., those listed or eligible for listing in the NRHP). The regulation defines an effect as an action that alters characteristics of a significant cultural resource that qualify it for inclusion in the NRHP. Analysis of potential impacts to significant cultural resources considers both direct and indirect impacts. Impacts may be the result of physically altering, damaging, or destroying all or part of a resource, introduction of visual, atmospheric, or audible elements that are out of

character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed.

3.16.2.1 MCB Camp Lejeune/MCAS New River

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) cultural resource conditions as a result of this alternative would occur. There would be no construction; therefore, there would be no potential to disturb architectural or archaeological resources as a result of implementing this alternative. However, that does not mean that cultural resources at MCB Camp Lejeune/MCAS New River have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected cultural resources. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Archaeological Resources

Under the Preferred Alternative, impacts to archaeological resources may occur. Site 31ON308/308** located in the Courthouse Bay area would be affected during proposed utility upgrades. However, these impacts would not be expected to have an adverse effect on this site. The Marine Corps has consulted with the North Carolina SHPO and on 22 September 2009 they concurred with the USMC conclusion that these resources would not be adversely affected by the Preferred Alternative (see Appendix H, page H-58).

The northern edge of site 31ON536 is located within the proposed Base road development area. Construction of the new Base road would not be able to completely avoid this archaeological site based on current designs. These road related impacts are expected to occur on less than 100 ft of this site, in an area where there are no longer intact site deposits. Therefore, impacts from road construction would not be expected to have an adverse effect on this site.

If any cultural resources are discovered during construction and site grading activities within any of the proposed development areas, work would immediately cease and the Base Archaeologist would be notified using the procedures for inadvertent discovery outlined in the ICRMP.

Architectural Resources

Under the Preferred Alternative, impacts to architectural resources could occur. No new building construction is proposed to occur in the Montford Point Camp 1, 2, or 2A Historic Districts (Camp Johnson), the Camp Geiger Historic District, the Hadnot Point Historic District, or the Assault Amphibious Historic District (Courthouse Bay), but utility improvements and upgrades within these districts are proposed. However, these improvements would not be expected to have an adverse effect on the district; the Marine Corps has consulted with the North Carolina SHPO and they have concurred with the USMC conclusion that the district would not be adversely affected by the Preferred Alternative (see Appendix H, page H-58).

The Preferred Alternative includes the re-use of PT-4 and PT-5 in the Parachute Training Historic District (Wallace Creek). In accordance with 36 CFR 800, the Marine Corps has consulted with the North Carolina SHPO and they have concurred with the USMC conclusion that the historic district would not be adversely affected by the Preferred Alternative (see Appendix H, page H-58).

Proposed project P1286 would occur within the Stone Bay Rifle Range Historic District. This project would construct a BEQ for the Weapons Training Battalion. Current master planning efforts and design plans indicate that this construction would be best placed in the area of Rifle Range 9 (a historic structure within the Stone Bay Rifle Range Historic District). Rifle Range 9 has numerous structural problems and would not be economical to rehabilitate to current BEQ standards. Demolition of this site is preferred, due to the limited development potential of the land surrounding the Stone Bay Rifle Range Historic District (e.g. wetlands, steep topography, and current use for training). A Programmatic Agreement exists for this area under previous consultations, and mitigation measures outlined therein would be used to minimize adverse impacts. The SHPO was consulted regarding this proposed project and concurs that there would be no adverse impacts to this historic district (see Appendix H, page H-58).

Alternative 3

Under Alternative 3, the permanent, incremental increase of permanent Marines would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.3. Only core projects identified by MCB Camp Lejeune and MCAS New River Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing

facilities and temporary/relocatable buildings already in place. There would be no impact to archaeological or architectural resources at any of the proposed development areas.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCB Camp Lejeune and MCAS New River as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. No new development would occur at MCB Camp Lejeune or MCAS New River; therefore, there would be no impact to cultural resources.

3.16.2.2 MCAS Cherry Point

Alternative 1 - No Action Alternative

Under the No Action Alternative, the permanent, incremental increase of Marines associated with the Grow the Force initiative would not be implemented. Therefore, no changes to the baseline (FY06) cultural resource conditions as a result of this alternative would occur. There would be no construction; therefore, there would be no potential to disturb architectural or archaeological resources as a result of implementing this alternative. However, that does not mean that cultural resources at MCAS Cherry Point have not changed since FY06. There are other actions not connected with this Proposed Action that have taken place since FY06 or will be implemented in the future that have affected cultural resources. These impacts and their associated NEPA documentation are presented in cumulative impacts (Section 4.0).

Alternative 2 – Preferred Alternative

Under the Preferred Alternative, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.2. In support of this alternative, Grow the Force and core infrastructure construction and improvement projects would be implemented. Alternative 2 projects include construction of and improvements to buildings, housing, utility/communication lines, and roads.

Under the Preferred Alternative, impacts to archaeological resources are not anticipated. All high probability archaeological sensitive soils have been surveyed and no archaeological sites that are eligible for listing in the NRHP or require further evaluation to determine NRHP eligibility have been identified as occurring within MACS 2 Compound, West Quadrant, and Ordnance development areas. New construction within the North Quadrant resulting from implementing the Preferred Alternative would not extend to undeveloped/forested areas or areas not previously disturbed by the interim beddown facilities.

If during construction and site grading any cultural resources are discovered, work would immediately cease and the Environmental Affairs Officer would be notified using the procedures for inadvertent discovery outlined in the ICRMP.

There would be no impact to architectural resources.

Alternative 3

Under Alternative 3, the permanent, incremental increase of Marines would occur at MCAS Cherry Point as described in Section 2.2.3. Only core projects identified by MCAS Cherry Point Planners would be implemented; no Grow the Force projects would be constructed. The additional Marines and their dependents would be supported in existing facilities and temporary/relocatable buildings already in place. Impacts to archaeological resources are not anticipated. All high probability archaeological sensitive soils have been surveyed and no archaeological sites that are eligible for listing in the NRHP or require further evaluation to determine NRHP eligibility have been identified as occurring within MACS 2 Compound, West Quadrant, and Ordnance development areas. If during construction and site grading any cultural resources are discovered, work would immediately cease and the Environmental Affairs Officer would be notified.

There would be no impact to architectural resources.

Alternative 4

Under Alternative 4, the permanent, incremental increase of Marines associated with the Grow the Force initiative would occur at MCAS Cherry Point as described in Section 2.2.4. However, neither the core nor the Grow the Force infrastructure improvements and construction projects would occur. As with Alternative 3, additional Marines and their dependents would be accommodated in existing facilities and temporary/relocatable buildings already in place. No new development would occur at MCAS Cherry Point; therefore, there would be no impact to cultural resources.

3.17 Mitigation Measures

For purposes of this EIS, mitigation measures are those above and beyond those already required under regulation and the permitting processes. It is assumed that use of North Carolina State regulation BMPs, application of activities prescribed in existing natural and cultural resource management plans, implementation of construction permit requirements, and adherence to State, Federal, and local regulations will continue to apply for the Grow the Force initiative since they are part of existing USMC management actions to minimize impacts. Therefore, these regulatory and permit minimization/mitigation efforts are not considered as extraordinary mitigation measures requiring additional funding under the Proposed Action and are described under each of the specific resource categories in Section 3.0.

Despite planning efforts, some projects proposed at MCB Camp Lejeune would disturb wetlands. The Greater Sandy Run Mitigation Bank, located in the Greater Sandy Run area within Onslow County, was built to meet the mitigation needs of MCB Camp Lejeune. The bank was acquired in 1992 by MCB Camp Lejeune for the purpose of on-site mitigation and planning was started in 1994. The land was previously utilized for timber harvesting activities; as a result the land had been drained through a network of ditches. The bank is approximately 1,250 acres; Big Shakey Swamp (143.4 acres of enhanced bottomland hardwoods), Burned Pine Plantation (220.3 acres, including 84.8 acres of enhanced bottomland hardwoods and 135.5 acres of enhanced pine flatwoods), and Pocosin (886.8 acres of restored Pocosin wetlands). All areas within Big Shakey Swamp have been approved to grant credits, and a portion of Pocosin has been approved. The USACE, Wilmington District, USEPA, USFWS, NMFS, and NCDENR signed the Wetland Mitigation Banking Instrument in 2002, which lays out the successful criteria for ensuring that the bank will be acknowledged as a mitigation bank. The USACE, Wilmington District, after consultation with the appropriate State and Federal agencies, shall make all final decisions concerning the amount and type of compensatory mitigation to be required for unavoidable permitted wetland impacts and whether the use of credits is appropriate to offset those impacts. If the mitigation bank is deemed a feasible option, mitigation credit ratios from the bank used to offset authorized wetland impacts shall be 1.5 credits for every acre of Pocosin or pine plantation impacted and 3.0 credits for every acre of bottomland hardwood impacted (USACE 2008). The bank may not be a feasible option if the governing agencies decide that due to geographical location that the type of wetlands being disturbed and mitigation wetlands are not in kind (i.e., estuarine wetlands may be disturbed but the bank may only credit freshwater) (personal communication, Korenek 2008). If this happens, other options would be explored, such as purchasing credits from a private mitigation bank.

CHAPTER 4 CUMULATIVE IMPACTS

4.0 CUMULATIVE IMPACTS

The approach taken in the analysis of cumulative impacts follows the objectives of NEPA of 1969, CEQ regulations, and CEQ guidance. Cumulative impacts are defined as (40 CFR 1508.7):

The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

To determine the scope of environmental impact statements, agencies shall consider[c]umulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

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

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

Based on the guidance, the USMC has determined the following types of cumulative impacts need to be examined—those that cause impacts that are either *countervailing*, where adverse cumulative impacts are compensated for by beneficial effects, or *synergistic*, where the total effect is greater than the sum of effects taken independently. However, the analysis of cumulative effects may go beyond the scope of project-specific direct and indirect effects to include expanded geographic and time boundaries and a focus on broad resource sustainability. The true geographic range of an action's effect may not be limited to an arbitrary political or administrative boundary. Similarly, the effects of an action may continue beyond the time the action ceases. This big picture approach is becoming increasingly important as growing evidence suggests that the most significant effects result not from the direct effects of a particular action, but from the combination of individual, often minor, effects of multiple actions over time. The underlying issue is whether or not a resource can adequately recover from the effect of an action before the environment is exposed to a subsequent action or actions.

For the purposes of determining cumulative effects in this chapter, the USMC reviewed all environmental documentation regarding known current and past federal and non-federal actions associated with the

resources analyzed in Chapter 3. Projects in the planning phase were also considered; including reasonably foreseeable (rather than speculative) actions that have the potential to interact with the proposed USMC action (see Sections 4.1.1 through 4.1.3). For the region of influence, specific emphasis was placed on projects in and adjacent to each of the three Installations and within the three counties. The level of information available for these different projects varied; therefore, the best available data were used in this analysis. Descriptive information was used in place of quantitative measures when specific numbers and values were unavailable.

4.1 MCB Camp Lejeune/MCAS New River

4.1.1 Cumulative Action Evaluation

Numerous projects, related to training improvements, residential developments, and general mission readiness are being undertaken at MCB Camp Lejeune and MCAS New River. These projects are not dependent on the Grow the Force initiative and have been or will be implemented regardless of the decision taken for this proposal. Table 4.1-1 summarizes actions that were evaluated for potential cumulative impacts analysis at the two Installations, the level and status of NEPA documentation associated with each action (as applicable), and the rationale for including the action in the cumulative impacts analysis. Sections 4.1.2 and 4.1.3 provide brief description of the actions. The justification for inclusion of most of these actions centers on the overall personnel growth in recent years. Other projects located at MCB Camp Lejeune/MCAS New River that do not have the potential to add or interact incrementally over time or geographically within the ROI are not addressed in this EIS.

Action	Level and Status of NEPA	Decision Document Signed	Justification for or Against Including in Analysis	Significance and/or Magnitude of Resource Impacts
Recent Past Actions	-	_		
4th MEB Complex (Actions took place in FY04-05)	EA Completed	FONSI October 2004	Included because it resulted in personnel growth at MCB Camp Lejeune; impacts could be additive to transportation/traffic, air quality, noise, and hazardous materials and waste.	Magnitude of impacts was determined not significant in the EA.
Force Structure Review Group Initiatives (Actions took place in FY05-06)	EA Completed	FONSI August 2005	Included because it resulted in personnel growth and construction at MCB Camp Lejeune; impacts could be additive to transportation/traffic, air quality, noise, infrastructure/ utilities, and natural resources.	Magnitude of impacts was determined not significant in the EA.

 Table 4.1-1 MCB Camp Lejeune/MCAS New River Cumulative Action Evaluation
Iune	4.1-1 MCD Camp	Lejeune/MCAS	New River Cumulative Action L	
Action	Level and Status of NEPA	Decision Document Signed	Justification for or Against Including in Analysis	Significance and/or Magnitude of Resource Impacts
Marine Special Operations Command Complex (Actions took place in FY08)	EA Completed	FONSI August 2007	Included because personnel growth and construction at MCB Camp Lejeune; impacts could be additive to air quality, noise, and natural resources.	Magnitude of impacts was determined not significant in the EA.
Temporary Beddown of Proposed Increase in End Strength (Actions taking place in FY08-09)	EA Completed	FONSI June 2008	Included because personnel growth and construction at MCB Camp Lejeune and MCAS New River; impacts could be additive to land use, air quality, noise, and natural resources.	Magnitude of impacts was determined not significant in the EA.
Wastewater System Upgrades and Modifications (Actions taking place in FY08-09)	EA Completed	FONSI August 2008	Included infrastructure improvements and construction at MCB Camp Lejeune; impacts could be additive to natural resources	Magnitude of impacts was determined not significant in the EA.
Security Gate Upgrades, Road Improvements, Landfill Expansion, and Relocation of Skeet Range (Actions taking place in FY08-09)	EA Completed	FONSI July 2008	Included infrastructure/utilities upgrades and construction at MCB Camp Lejeune; impacts could be additive to land use, transportation/traffic, and natural resources.	Magnitude of impacts was determined not significant in the EA.
Wallace Creek Regimental Area Complex (Actions taking place in FY08-09)	EA Completed	FONSI August 2008	Included construction at MCB Camp Lejeune; impacts could be additive to land use, socioeconomics, community utilities and public services, transportation/ traffic, air quality, natural resources, and hazardous materials and waste management.	Magnitude of impacts was determined not significant in the EA.
Phase I Privatization of Military Family Housing (Actions took place in FY04-05)	EA Completed	FONSI August 2005	Included infrastructure/utilities upgrades and construction at MCB Camp Lejeune; impacts could be additive to cultural resources.	Adverse impact to cultural resources was mitigated and determined insignificant in the EA.
Phase II Privatization of Family Housing (Actions took place in FY05-06)	EA Completed	FONSI September 2006	Included infrastructure/utilities upgrades and construction at MCB Camp Lejeune; impacts could be additive to cultural resources.	Adverse impact to cultural resources was mitigated and determined insignificant in the EA.
Phases III and IV Privatization of Family Housing (Actions taking place in FY08-09)	EA Completed	FONSI August 2008	Included infrastructure/utilities upgrades and construction at MCB Camp Lejeune; impacts could be additive to land use and socioeconomics.	Magnitude of impacts was determined not significant in the EA.

Table 4.1-1 MCB Camp Lejeune/MCAS New River Cumulative Action Evaluation

Action	Level and Status of NEPA	Decision Document Signed	Justification for or Against Including in Analysis	Significance and/or Magnitude of Resource Impacts
Present and Foreseeable	Future Actions			
Demolition of Target Sheds and Heads at Stone Bay (Actions taking place in FY09)	EA Completed	FONSI February 2009	Included infrastructure/utilities upgrades and construction at MCB Camp Lejeune; impacts could be additive to cultural resources.	Adverse impact to cultural resources was mitigated and determined insignificant in the EA.
Range Operations (Actions taking place in FY09 and beyond)	EA Completed	FONSI February 2009	Included range and training area upgrades and training operations at MCB Camp Lejeune and MCAS New River; impacts could be additive to land use, natural resources, cultural resources, noise, and air quality.	Magnitude of impacts was determined not significant in the EA.
Infantry Platoon Battle Course (Action taking place in FY09)	EA completed	FONSI February 2009	Included construction at MCB Camp Lejeune training area; impacts could be additive to natural resources, noise, air quality, and water resources.	Magnitude of impacts was determined not significant in the EA.
Range and Training Area Transformation Plan for 2020	Identified by individual projects. Some completed and some underway	NEPA documentation ongoing	Phased plan to improve training quality and reduce impact footprint by realigning, improving, and relocating some existing ranges, training and maneuver areas at MCB Camp Lejeune; impacts could be additive to soils, water resources, natural resources, wetlands, coastal zones, and noise.	Magnitude and/or significance of long-term adverse impacts due to training would be reduced.
G-10 Ranges	EA completed	FONSI April 2009	Includes realigning ranges and involves construction at MCB Camp Lejeune; impacts could be additive to soils, water resources, natural resources, wetlands, coastal zones, and noise.	Magnitude and/or significance of long-term adverse impacts due to training would be reduced.
Atlantic Fleet Active Sonar Training	Final EIS published December 2008	ROD January 2009	Off-shore Navy vessel training in waters off the East Coast; no land disturbance in the ROI included in action, therefore, impacts are not considered additive.	Magnitude of impacts were mitigated/minimized to reduce impacts to marine mammals to non-adverse.
Navy Cherry Point Range Complex	Draft EIS published August 2008	ROD June 2009	Off-shore range training in waters off the North Carolina coast; no land disturbance in the ROI included in action, therefore, impacts are not considered additive.	Magnitude of impacts were mitigated/minimized to reduce impacts to marine mammals to non-adverse.
Undersea Warfare Training Range	Draft EIS published September 2008	ROD anticipated in Summer 2009	Off-shore Navy training in waters off the East Coast; no land disturbance in the ROI included in action, therefore, impacts are not considered additive.	Magnitude of impacts were mitigated/minimized to reduce impacts to marine mammals to non-adverse.

Table 4.1-1 MCB Camp Lejeune/MCAS New River Cumulative Action Evaluation

As specified in Navy/USMC NEPA implementing regulations, categories of actions that are excluded from further analysis have been identified (32 CFR 775.6(f)) and MCB Camp Lejeune and MCAS New River have an established process for determining and documenting the basis for categorical exclusions. Categorical exclusions are generally applied to certain routine and administrative items, classroom training, building renovation/additions, modifications to existing systems or equipment, real estate actions, new construction and demolition that is similar to existing land uses, relocation of personnel that does not involve a substantial change affecting the supporting infrastructure, and routine military training. Specifically, 32 CFR 775.6(f) paragraphs 14, 34, 35, and 39 include the following activities that may be categorically excluded:

14) Alteration of and additions to existing buildings, facilities, structures, vessels, aircraft, and equipment to conform or provide conforming use specifically required by new or existing applicable legislation or regulations (e.g., hush houses for aircraft engines, scrubbers for air emissions, improvements to storm water and sanitary and industrial wastewater collection and treatment systems, and installation of firefighting equipment).

34) New construction that is similar to existing land use and, when completed, the use or operation of which complies with existing regulatory requirements (e.g., a building within a cantonment area with associated discharges/runoff within existing handling capacities).

35) Demolition, disposal, or improvements involving buildings or structures when done in accordance with applicable regulations including those regulations applying to removal of asbestos, PCBs, and other hazardous materials.

39) Relocation of personnel into existing Federally-owned or commercially-leased space that does not involve a substantial change affecting the supporting infrastructure (e.g., no increase in vehicular traffic beyond the capacity of the supporting road network to accommodate such an increase).

At MCB Camp Lejeune, categorically excluded projects over the past 5 years included the construction of several child development centers, Marine Corps Combat Service Support School training facilities, 2nd Intelligence Battalion Operations Complex, the relocation of Base Military Police working dogs, and an addition/alteration to the Naval Hospital. At MCAS New River, this included the construction of a BEQ, parking for a post office, and a postal facility.

4.1.2 Past Action Descriptions

4th MEB Complex-This EA evaluated the impacts of constructing approximately 365,833 sf of facilities to accommodate 1,032 new military personnel at MCB Camp Lejeune; a FONSI was signed in October 2004. The 4th MEB was disestablished before the complex was constructed; however, the personnel increases associated with this action did occur. The personnel were absorbed into the 9th Marines and no new complex was needed (MCB Camp Lejeune 2004).

Force Structure Review Group Initiatives-The EA assessed impacts of constructing 617,900 sf of new construction and modification of several facilities to accommodate 2,100 incoming military personnel at MCB Camp Lejeune. These personnel comprised two new infantry battalions, a new light armored reconnaissance company, and a new reconnaissance company and platoon. A determination of a FONSI was decided and facilities are currently under construction (MCB Camp Lejeune 2005a).

Marine Special Operations Command Complex-An EA was prepared for this complex proposed in the MCB Camp Lejeune Stone Bay/Rifle Range planning area. This Command will be composed of approximately 1,750 personnel by 2010. About half of these personnel would transfer from existing units at the Installation, while the remaining half would represent personnel from other Installations. The complex would disturb roughly 544 acres through construction activities, with nine buildings and structures being demolished. Training would be conducted at existing MCB Camp Lejeune ranges and training areas. The analysis in the EA resulted in a FONSI determination (MCB Camp Lejeune 2007a).

Temporary Beddown of Proposed Increase in End Strength-An EA was prepared for the proposed accommodation of immediate Grow the Force increases in Marines at MCB Camp Lejeune and MCAS New River. These Marines would be accommodated in a combination of existing facilities and newly erected, relocatable facilities until the decision on the status of Marines is made in association with this EIS. Four project areas encompassing approximately 177 acres were analyzed for disturbance that would occur on only 52 of these acres. The EA resulted in a FONSI determination (DoN 2008a).

Wastewater System Upgrades and Modifications-An EA was prepared to construct a series of upgrades and modifications to the existing wastewater collection and treatment system at MCB Camp Lejeune. Specifically, improvements would provide a backup system while maintaining sufficient wastewater capacity to support existing Installation operations as well as future needs. The project would provide parallel force main river crossings and three new pump stations. The EA resulted in a FONSI determination (MCB Camp Lejeune 2008i).

Security Gate Upgrades, Road Improvements, Landfill Expansion, and Relocation of Skeet Range-An EA evaluated security upgrades to the Main and Piney Green Gates, associated road improvements to Old

Saw Mill Road and Piney Green Road, construction of Phase III of the Municipal Solid Waste Landfill Facility, and relocation of the existing skeet range at MCB Camp Lejeune. The EA analyses resulted in a FONSI determination in July 2008 (MCB Camp Lejeune 2008g).

Wallace Creek Regimental Area Complex-In 2008, an EA was prepared evaluating the construction, operation, and maintenance of a four-battalion regimental complex that would accommodate about 2,100 incoming personnel to MCB Camp Lejeune. Twenty-one military construction projects, disturbing about 300 acres, were analyzed in the EA. Results of the analyses indicated that a FONSI determination was applicable (MCB Camp Lejeune 2008e).

Privatization of Family Housing at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point-This EA evaluated potential of the USMC Public Private Venture (PPV) to provide much needed new military family housing at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point. The PPV offsets costs associated with operating and maintaining existing and future military housing units to include development, construction, demolition, renovation, replacement, maintenance, and day to day management of the housing units. The privatization process is taking place over three phases and includes demolition of 2,936 housing units, renovation of 2,171 housing units, and construction of 2,656 new housing units. The resulting analyses supported a FONSI determination (DoN 2005).

Phase II Privatization of Family Housing-A supplemental EA evaluated the potential impacts associated with changes to Phase II of the PPV initiative at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point. Phase II changes included additional demolition, construction, and renovation activities. The Supplemental EA resulted in a FONSI determination (DoN 2006).

Phase III and IV Privatization of Family Housing-An EA was prepared evaluating impacts of constructing approximately 850 family housing units for enlisted military personnel and two DoD Dependent Schools at MCB Camp Lejeune. The EA also included impact evaluations of building approximately 110 family housing units for officers at MCAS New River. Family housing unit construction at MCB Camp Lejeune would disturb approximately 978 acres of largely undeveloped land to build the 850 housing units. At MCAS New River approximately 34 acres of predominantly developed/previously disturbed land would be developed to support the 110 new family housing units (MCB Camp Lejeune 2008j).

4.1.3 Present and Reasonably Foreseeable Action Descriptions

Demolition of Target Sheds and Heads at Stone Bay-An EA was prepared evaluating demolition of several buildings and construction of three, target storage sheds at the MCB Camp Lejeune Stone Bay planning area. MCB Camp Lejeune, in consultation with the North Carolina SHPO, determined that the

Proposed Action constituted an adverse effect to the NHRP-eligible Stone Bay/Rifle Range Historic District where the nine buildings slated for demolition are found. An agreement of mitigation for the adverse effect was reached with the North Carolina SHPO and mitigation tasks were performed to arrive at the resulting FONSI decision (MCB Camp Lejeune 2009e).

Range Operations- As part of the Range and Training Area Transformation Plan for 2010 (discussed below), an EA was prepared for Range Operations at MCB Camp Lejeune/MCAS New River. This EA assessed the potential environmental consequences from current and projected training operations conducted by both Installations within areas controlled by and managed under USMC range standard operating procedures. The EA also addressed increases in training commensurate with potential personnel increases associated with the Grow the Force initiative. Analyses in the EA concluded that a FONSI was applicable (MCB Camp Lejeune 2009a).

Infantry Platoon Battle Course-An EA was prepared for the construction and operation of an Infantry Platoon Battle Course (P032) in the MCB Camp Lejeune Greater Sandy Run Training Area. The proposed battle course would support combat-ready training for all direct-fire weapons used by USMC infantry battalions. Following the assessment, it was determined that a FONSI was applicable (MCB Camp Lejeune 2009f).

Range and Training Area Transformation Plan for 2020-The MCB Camp Lejeune Operations and Training Department developed this plan to assess existing ranges and training area assets, and to identify their deficiencies. The Plan outlines a strategy to address these deficiencies and includes relocation and realignment of training ranges and maneuver areas as needed to meet current and emerging training requirements, and to reduce existing noise impacts. MCB Camp Lejeune is implementing the Plan in phases through a number of projects and over an extended timeframe. MCB Camp Lejeune has and will continue to prepare individual NEPA documents (e.g., Range Operations EA, G-10 Ranges EA) to assess potential for impacts from these projects.

G-10 Ranges-An EA is being prepared for the realignment and construction of ranges to consolidate livefire weapons and tactics training at MCB Camp Lejeune's Greater Sandy Run Area. Live-fire weapons and tactics training would include small arms, machine guns, maneuvers, an Urban Close Air Support Facility, and an Engineering Training Complex.

Atlantic Fleet Active Sonar Training-The Navy prepared an EIS analyzing potential impacts of designating areas along the East Coast and within the Gulf of Mexico where the majority of Atlantic Fleet active sonar training would be conducted. This area would support mid- and high-frequency active sonar and explosive source sonobuoy training, maintenance, and research, development, testing, and evaluation activities would occur. Training exercises occur out at sea and involve surface ships, submarines, and

aircraft using a number of active and passive sonar systems, as well as other training devices for antisubmarine warfare, mine warfare, and related active sonar training. The No Action Alternative was chosen as the Navy's Preferred Alternative in their ROD (January 2009). Under this decision, the Navy would continue sonobuoy training within and adjacent to Operating Areas along the East Coast and the Gulf of Mexico rather than designate active sonar areas. Because this proposal does not overlap in time or occur within the ROI, it is not anticipated that there would be interactive cumulative impacts.

Navy Cherry Point Range Complex EIS/Overseas EIS-This Navy complex is a three-dimensional area that includes sea space, undersea space, and Special Use Airspace to provide training opportunities essential for the safety and readiness of military personnel and the success of the military mission for nearly six decades. The Navy EIS/Overseas EIS evaluated effects of current and future Naval training activities within the Cherry Point Range Complex. Three alternatives, including the No Action Alternative, were analyzed. The No Action Alternative constitutes the current training and testing operations (i.e., existing conditions). The Preferred Alternative (Alternative 2) includes all the training and testing operations under existing conditions, plus a 10 percent increase in most training operations, plus changes in the type and quantity of operations, and eliminating all use of high-explosive bombing exercises. This alternative would also include an enhanced mine warfare training capability in the range complex. The ROD was issued in June 2009 announcing the Navy's decision to implement the Preferred Alternative. Because this proposal does not overlap in time or occur within the ROI, it is not anticipated that there would be interactive cumulative impacts.

Navy Undersea Warfare Training Range (USWTR) EIS/Overseas EIS-The Navy is proposing to establish an instrumented undersea warfare training range off the East Coast of the U.S. for anti-submarine warfare training; a Draft EIS/Overseas EIS was published in September 2008. The USWTR would cover 500 square nautical miles of the ocean and enable the Navy to train effectively in a shallow-water environment. The Range would be equipped with undersea cables and sensor nodes, and be connected by a single trunk cable to a landside cable termination facility. Siting of the USWTR offshore of northeastern Florida is the Navy's Preferred Alternative. Other alternative Range sites evaluated in the EIS included a range offshore of southeastern North Carolina, offshore of central South Carolina, and offshore of northeastern Virginia. Because this proposal does not overlap in time or occur within the ROI, it is not anticipated that there would be interactive cumulative impacts.

4.2 MCAS Cherry Point

4.2.1 Cumulative Action Evaluation

Projects related to training improvements, residential developments, and general mission readiness are being undertaken at MCAS Cherry Point. These projects are not dependent on the Grow the Force initiative and have been or will be implemented regardless of the decision taken for this proposal. Table 4.2-1 summarizes actions that were evaluated for potential cumulative impacts analysis at MCAS Cherry Point, the level and status of the NEPA documentation associated with each action (as applicable), and the rationale for including the action in the cumulative impacts analysis. Sections 4.2.2 and 4.2.3 provide brief descriptions of these actions. The justification for inclusion of most of these actions centers on the overall personnel growth that has occurred at MCAS Cherry Point in recent years. Other projects that do not have the potential to add or interact over time or geographically with the ROI are not addressed in this EIS.

Action	Level and Status of NEPA	Decision Document Signed	Justification for or Against Including in Analysis	Significance and/or Magnitude of Resource Impacts
Recent Past Actions				
Phase I Privatization of Military Family Housing (Actions took place FY05-06)	EA completed	August 2005	Included infrastructure/utilities upgrades and construction at MCAS Cherry Point; impacts could be additive to cultural resources.	Adverse impact to cultural resources was mitigated and determined insignificant in the EA.
Phase II Privatization of Family Housing (Actions took place FY06 and beyond)	EA Completed	September 2006	Included infrastructure/ utilities upgrades and construction at MCAS Cherry Point; impacts could be additive to cultural resources.	Adverse impact to cultural resources was mitigated and determined insignificant in the EA.
Combat Vehicle Operators Training Course (Actions taking place in FY07-08)	EA Completed	June 2007	Included construction at MCAS Cherry Point training area; impacts could be additive to soils and natural resources.	Magnitude of impacts was determined not significant in the EA.
Temporary Beddown of Proposed Increase in End Strength (Actions taking place in FY08- 09)	EA Completed	FONSI June 2008	Included personnel growth and construction at MCAS Cherry Point; impacts could be additive to land use, air quality, noise, and natural resources.	Magnitude of impacts was determined not significant in the EA.
Proposed Military Operations Areas in Eastern North Carolina	EA Completed	FONSI January 2008	No land disturbance in the ROI included in action; therefore, impacts are not considered additive.	Magnitude of impacts was not adverse or significant.

 Table 4.2-1 MCAS Cherry Point Cumulative Action Evaluation

Action	Level and Status of NEPA	Decision Document Signed	Justification for or Against Including in Analysis	Significance and/or Magnitude of Resource Impacts		
Present and Foreseeable Future Actions						
Range Operations (Actions taking place in FY09 and beyond)	EA Completed	FONSI February 2009	Included range and training area upgrades and training operations at MCAS Cherry Point; impacts could be additive to land use, natural resources, cultural resources, noise, and air quality.	Magnitude of impacts was determined not significant in the EA.		
Introduction of the F/A- 18 Super Hornet (Actions to take place in FY09 and beyond)	Final EIS published August 2003	ROD September 2003	Included personnel growth and construction at MCAS Cherry Point; impacts could be additive to land use, air quality, noise, socioeconomics, infrastructure/ utilities, natural resources, water resources, and hazardous materials and waste.	Magnitude of impacts was mitigated/minimized to reduce impacts to non- adverse.		
USMC F-35B East Coast Basing	EIS Underway	ROD anticipated in December 2010	Includes personnel increases, construction, and increased numbers of aircraft at MCAS Cherry Point; impacts could be additive to land use, soils, water resources, noise, utilities, socioeconomics, community public services, transportation/ traffic, air quality, natural/cultural resources, and hazardous materials and waste management.	Magnitude of impacts has not yet been determined.		
EA-6B Basing	NEPA evaluation complete	Categorical Exclusion signed June 2009	Includes basing a Fleet Readiness Squadron of 7 aircraft and personnel associated with the operation and maintenance of these aircraft. They join the existing squadrons of EA-6Bs at the Air Station.	Magnitude of impacts not adverse or significant		

Table 4.2-1	MCAS Cherry	Point Cumu	lative Action	Evaluation
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The categorically excluded projects at MCAS Cherry Point include establishing the Marine Aviation Support Squadron Detachment, the MACS Air Traffic Control Detachment, construction of an interim armory compound, and improvements to Roosevelt Boulevard. These projects involved minor renovations and/or additions to existing facilities as well as routine activities to improve existing infrastructure.

4.2.2 Past Action Descriptions

Phase I Privatization of Family Housing at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point-Refer to Section 4.1.1.1 for a description of the action.

Phase II Privatization of Family Housing at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point-Refer to Section 4.1.1.1 for a description of the action. *Combat Vehicle Operators Training Course*-The EA evaluated the potential impacts of constructing and operating a Combat Vehicle Operators Training course on a 20-acre portion of Training Area 5. The course consists of a network of built up roads, berms, simulated ditch and canal crossings, and other obstacles to provide a tactical training environment for driving and maneuvering armored vehicles. Analyses in the EA resulted in a FONSI determination (MCAS Cherry Point 2007b).

Temporary Beddown of Proposed Increase in End Strength-An EA was prepared for the proposed accommodation of immediate Grow the Force increases in Marines at MCAS Cherry Point. These Marines would be accommodated in a combination of existing facilities and newly erected, relocatable facilities until the decision on the status of the Marines is made in association with the EIS. Use of existing and temporary facilities would expedite the placement and accommodation of incoming new Marines in response to the 2007 Presidential mandate. The EA evaluated projects that would disturb approximately 14 acres. The analyses found that a FONSI was warranted as a determination (DoN 2008b).

Proposed Military Operations Area in Eastern North Carolina-The Proposed Action would create a functionally independent Special Use Airspace that would enhance existing and future training opportunities for the 2nd MAW and other aircraft operating out of MCAS Cherry Point. The final EA was completed in 2003 (DoN 2003d). Due to delays, a written reevaluation of impacts was prepared in 2007 and a FONSI was consequently signed on January 29, 2008.

4.2.3 Present and Reasonably Foreseeable Action Descriptions

Range Operations-This EA was prepared to assess the potential environmental consequences from current and projected future training operations conducted at the Cherry Point Range Complex within areas controlled by and managed under USMC range standard operating procedures. The EA also addressed increases in training commensurate with potential increases in Marines associated with the Grow the Force initiative (MCAS Cherry Point 2009). The EA resulted in a FONSI determination in February 2009.

Introduction of the F/A-18 Super Hornet-An EIS was prepared to evaluate the basing and operation of the F/A-18 Super Hornet on the East Coast to replace the F-14 and earlier model F/A-18 C/D aircraft. The ROD established that two F/A-18E/F squadrons (24 aircraft) would be based at MCAS Cherry Point. Increased off-Station noise levels within the 65-DNL exposure area would impact about 230 more people when compared to baseline conditions. In addition, an increase in emissions for all criteria air pollutants was predicted, but levels would be below the threshold considered potentially significant (DoN 2003a).

The influx of personnel associated with this action was estimated at 701 persons, including 677 active duty and 24 civilians in FY11 (Brewer 2007).

F-35B Joint Strike Fighter Beddown-The USMC is in the early stages of preparing an EIS that addresses potential environmental consequences that may result from basing the Marine Corps variant of the Joint Strike Fighter (or F-35B) on the East Coast. The F-35B distinguishes itself from other JSF variants by being the world's first operational supersonic, short takeoff, vertical landing aircraft. At either of the alternative locations, the basing action would involve personnel changes, facility construction and modifications, and aircraft training operations. The USMC is also preparing an EIS for the beddown of F-35B aircraft on the West Coast. Since both actions are in the early stages of analysis, evaluation of cumulative effects would be speculative at best and, therefore, cumulative effects will be presented in the EISs associated with these actions.

EA-6B Beddown at MCAS Cherry Point. The USMC evaluated the feasibility of basing a Fleet Readiness Squadron of seven EA-6B aircraft at the Station. This electronic warfare aircraft would join existing squadrons in late 2010. The NEPA evaluation found no adverse or significant impacts associated with the action and a categorical exclusion was signed on June 25, 2009.

4.3 ROI Actions

4.3.1 Cumulative Action Evaluation

As was stated earlier, to have reasonable assurances that there would be cumulative effects to projects when considered together or incrementally, the projects need to occur within similar timeframes and within a geographic area coinciding with the Proposed Action. For purposes of this analysis the following are being considered and occur within the three-county ROI. Table 4.3-1 provides a summary of the actions which are described more fully following the table (Sections 4.3.2 and 4.3.3).

Action	Level and Status of NEPA	Decision Document Signed	Justification for or Against Including in Analysis	Significance and/or Magnitude of Resource Impacts
Highway 70 Corridor	Anticipate environmental documentation at the State level	Anticipated in 2015 to 2016	Included due to corridor expansion on the highway within Carteret and Craven counties.	While no analyses have been prepared to date, it can be assumed that there would be impacts to land uses, natural and cultural resources, air and water quality, and transportation network.
Off-Base Access and Interchange	EA anticipated	Anticipated late 2010	New interchange accessing MCB Camp Lejeune that is reasonably foreseeable to be constructed.	While no analyses have been prepared to date, it can be assumed that there would be impacts to land uses, natural resources, air quality, and transportation network.
Slocum Road/U.S. Highway 70 access	Feasibility Study Underway, NEPA documentation to be done by NCDOT	NEPA Decision Document anticipated Summer 2010	Action would improve intersection of Slocum Road and U.S. Highway 70. Would most likely involve wider turning lanes at the intersection.	Magnitude of impacts has not yet been determined.
BSH Home Appliance Facility Expansion	NA	NA	Facility located in New Bern near MCAS Cherry Point.	The expansion will provide 225 additional jobs to the community and economic gains from construction activities.

Table 4.3-1 Off-Base Cumulative Action Evaluation

4.3.2 Present and Reasonably Foreseeable Action Descriptions

Highway 70 Corridor Project-The Super 70 Corridor project expands U.S. Highway 70, making it a major freeway from Interstate 95 to the North Carolina coast. Namely, this project directly affects the ROI in Craven and Carteret counties. Currently, U.S. Highway 70 serves as a major route used by tourists traveling to the beaches in the summer, and in event of an oncoming storm, by citizens as a hurricane evacuation route. Traffic volumes along the corridor vary, but are highest in the Clayton and Goldsboro areas. MCAS Cherry Point is located directly off the existing U.S. Highway 70 bypass.

The main artery of the corridor project will run from Raleigh to Morehead City with construction anticipated to occur from 2009 to 2015 (NCDOT 2009). The overall expected goals from U.S. Highway 70 expansion include improving safety, reducing travel time, and attracting and retaining commercial activity along the corridor, leading to increased employment opportunities in the area. Local governments are actively involved in the planning process to ensure compatibility with established communities and local development plans. In Carteret and Craven County, NCDOT is conducting feasibility studies for

several bypasses that would be built around Havelock and travel east to link with Highway 70 to Morehead City (see figure below) (Super70Corridor 2009). The Havelock Bypass is 9 miles long and NCDOT anticipates acquisition of rights of way starting in 2010, with construction planned to start in 2015. Current plans indicate that existing route 70 would be improved, widened to 4-lanes where needed, restrict access and egress, and change or remove stop lights to better traffic flow along the highway. The estimated cost for this effort is \$157 million. The Beaufort Bypass is 2.2 miles long; acquisition of rights of way is underway. NCDOT estimates costs at \$105 million with construction planned to begin in 2015. The North Carteret Bypass is still unfunded but would be 33 miles long and cost about \$180 million. No



environmental documentation has been produced for these projects since they are either still in the planning stages or unfunded; however, it can be assumed that the bypasses would be constructed on lands that support crop production, forests, wetlands, coastal zones, and waters of the U.S.

Off-Base Access and Interchange-This North Carolina Department of Transportation project would involve constructing a flyover interchange to connect NC 24 with the new Base road proposed in this EIS. The project would be completed via the Defense Access Road Program and North Carolina Department of Transportation would need to acquire rights of way and about 16 to 20 acres of land in the area of the proposed interchange. In addition, environmental documentation, consultation, and permitting of this new interchange would need to be completed prior to any ground-disturbing activities. Associated NEPA analysis has not officially commenced yet.

BSH Home Appliance Facility Expansion-In 2007 BSH Home Appliances announced expansion of a manufacturing facility in New Bern, North Carolina, located in Craven County. Over the next 5 years, 225 jobs will be created and an investment of over \$11 million will be made into the local economy. With

this expansion, BSH Appliances will eventually supply over 1,000 jobs to the local community. The expansion was made possible by a State Job Development Investment Grant which will pay out over the course of 10 years. Over the life of the grant, the North Carolina Department of Commerce estimates the project will: a) generate a cumulative gross State product value of almost \$404.37 million; b) produce a positive, cumulative net State revenue impact of \$10.7 million; and c) contribute almost \$521,000 to the State's Industrial Development Fund for infrastructure improvements in rural and economically-distressed areas of North Carolina (North Carolina Office of the Governor 2006).

Slocum Road/U.S. Highway 70 Intersection. A feasibility study is currently being conducted to determine design alternatives for the intersection of Slocum Road at U.S. Highway 70. Options include constructing additional turning lanes and/or traffic signals to improve entry and exit from Slocum Road to the highway. MCAS Cherry Point is conducting a feasibility study for the on-Station portion of this project; however, NCDOT will do the NEPA analysis for this intersection. A decision document is anticipated in summer of 2010.

Eastern North Carolina Military Growth Task Force-Under the auspices of North Carolina's Eastern Region (an economic development organization), a Military Growth Task Force was organized in October 2007. This Task Force is addressing impacts from military growth on a regional level. This group includes leaders from Carteret, Craven, Duplin, Jones, Onslow, Pamlico and Pender counties, as well as representatives from regional USMC installations. The Military Growth Task Force is tapping Federal grants for addressing community planning and infrastructure development needs spurred by the arrival of Marines, their spouses and children, as well as the in-migration of civilian personnel and their families. The Task Force has received funding from the Office of Economic Adjustment to evaluate how schools, roads, public services and infrastructure can absorb incoming Marines, their families, and support staff (North Carolina's Eastern Region 2007). Currently, the Task Force is overseeing a comprehensive regional growth impact study that addresses impacts of growth; completion of this study is anticipated by 2010.

Onslow Bight Conservation Forum (Encroachment Partnering Program)- In 2002, the Marine Corps and The Nature Conservancy jointly established the Onslow Bight Conservation Forum to address encroachment issues and protect the natural heritage of coastal North Carolina. Subsequently, many other partners joined the multi-party, multi-county (nine coastal North Carolina counties) forum, representing land managers and conservation advocates who are working to increase land protection, promote appropriate land management, create habitat corridors and reach out to local communities to encourage their involvement. In addition to MCB Camp Lejeune and The Nature Conservancy, the forum now includes MCAS Cherry Point, the North Carolina Coastal Land Trust, North Carolina Coastal Federation,

other non-governmental organizations, North Carolina Wildlife Resources Commission, North Carolina Department of Natural Resources, the U.S. Fish and Wildlife Service, Natural Resources Conservation Service, and the U.S. Forest Service. As of 2007, over \$60 million in state trust funds and over \$15 million in federal dollars have been awarded to projects sponsored by the Onslow Bight Conservation Forum, which has protected over 40,000 acres of diverse, ecologically important habitat while preserving the military mission.

North Carolina Housing Coalition. In general, the counties included in the ROI do not have official plans to address affordable housing needs, but there is a deficit of such housing in the ROI. The North Carolina Housing Coalition is a private, non-profit membership organization working for decent, safe, and affordable housing that promotes self-determination and stable communities for low-income North Carolinians. This group has some general initiatives in place, but no official strategic plan has been developed that specifically addresses conditions in the ROI.

4.4 Discussion of Cumulative Impacts Relative to Alternatives

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the projects, these data are not available and a qualitative analysis was undertaken. In addition, since an analysis of potential environmental effects for future actions (Sections 4.1.3, 4.2.3, and 4.3.2) has not been completed or even initiated, assumptions were used.

Resources were evaluated for potential cumulative impacts in combination with the Proposed Action. The threshold criteria for cumulative impacts are the same as those described in the corresponding impact section of Chapter 3. The three action alternatives addressed in this EIS include full implementation of the Grow the Force initiative with respect to increases in personnel numbers and varying degrees of infrastructure construction. The different alternatives (Alternatives 2, 3, and 4) would have varying degrees of construction as summarized below:

- Alternative 2 (Preferred Alternative) includes all Grow the Force projects as well as other core projects at all three Installations. This would result in approximately 1,700 acres of disturbance at MCB Camp Lejeune, 160 acres at MCAS New River, and 120 acres of disturbance at MCAS Cherry Point.
- Alternative 3 includes the same personnel increases as found under the Preferred Alternative; however, only core projects at all three Installations would be constructed. This would result in approximately 360 acres of disturbance at MCB Camp Lejeune, 90 acres at MCAS New River, and 40 acres at MCAS Cherry Point. Personnel increases would be accommodated at existing facilities and temporary/relocatable buildings already in place.

• Alternative 4 – includes the personnel increases presented in the Preferred Alternative; however, no Grow the Force or core projects would be constructed at any of the Installations. The increased personnel would be accommodated in existing facilities and temporary/relocatable buildings already in place.

For most resource areas, the cumulative impacts of Alternative 2 (Preferred Alternative) combined with other recent past, present, or reasonably foreseeable projects are presented since this alternative introduces the largest construction footprint of all three alternatives. Any notable differences for the other two Alternatives (3 and 4) are provided where necessary.

4.4.1 Land Use and Coastal Zone Management

Development has framed the modern land use pattern for the ROI. At the three military Installations, this includes military reservations to support classroom, administrative, maintenance, and billeting facilities; dismounted and mounted maneuver areas, weapons firing ranges, ground-to-ground and air-to-ground training areas; infrastructure providing power, waste/potable water, communications, and heat; and a transportation network for privately-owned, government-owned, and tactical vehicles. For the threecounty ROI, the trend of increasing urbanization over the past 10 years has resulted in development pressures in a largely rural and agricultural area. In response, counties have instituted comprehensive development plans to help guide this growth. Long-standing relationships between the communities and the Marines and civilian personnel who are stationed or work at the Installations, remain strong because many Marines and civilians live off Base, with their dependents attending the local schools, families depending on local emergency and protection services, and using local roads, power, communications, and water systems. Programs such as the Military Growth Task Force and Onslow Bight Conservation Forum are working with USMC representatives to ensure that growth is directed and that plans are in place to support logical and sustainable development. Cumulative changes in land use would occur within the ROI due to the Preferred Alternative and past, present, and reasonably foreseeable actions, but by implementing USMC Master Plans within Installation boundaries, following Comprehensive Plans for development outside the military reservations, and continued participation in conservation programs, it is anticipated that there would be countervailing factors that could avoid adverse cumulative impacts to land use within the ROI.

In terms of North Carolina's coastal zone impacts, although increased development would result in some impacts to the coastal zone due to Grow the Force and other past, present, and reasonably foreseeable actions, all permit requirements and mitigation measures (as needed), will be fulfilled and implemented per Federal, State, and local regulations to minimize incremental adverse impacts to the coastal zone. Additionally, through continued participation in the Onslow Bight Conservation Forum and adherence to

the coastal consistency determination process there would be countervailing factors that would mitigate coastal zone degradation.

Under the No Action Alternative, actions since FY06 have introduced land use and coastal zone changes within and outside the Base and Air Stations' boundaries. While there have been impacts to these resources since that time, and are predictable due to present and future actions, it is not anticipated that adverse impacts would occur. As found under the Preferred Alternative (as well as the other two action alternatives) all permit requirements and mitigation measures (as needed), have been and will be fulfilled and implemented per Federal, State, and local regulations to minimize incremental adverse impacts to land uses and coastal zones. Additionally, through continued participation in the Onslow Bight Conservation Forum and adherence to the coastal consistency determination process there would be countervailing factors that would mitigate coastal zone degradation.

4.4.2 Recreation and Visual Resources

The Preferred Alternative (as well as the two other action alternatives), when considered incrementally with other on-Base/Station actions, would contribute to population growth in the three counties. In addition, it is anticipated that regional growth (exclusive of military growth) would be similar to what was presented in Section 3, thus increasing pressures on recreational facilities within the ROI. In Onslow County, the City of Jacksonville operates a system of trails and greenways near and along MCB Camp Lejeune and MCAS New River boundaries. The planned Lejeune Boulevard Greenway and a Rails to Trails Greenway (City of Jacksonville 2003) along NC 24 would potentially be affected by construction of a new interchange and entry along NC 24. Portions of these greenways may be lost or the route may need to be altered depending on the final design and layout of the new gate. Other recreational services such as parks and playing fields should be able to accommodate population growth with implementation of Comprehensive Community Plans and through the efforts of the Military Growth Task Force. Although there could be cumulative impacts from loss of or increased demand for certain recreational resources, such increased demands would be offset by local communities and adverse cumulative impacts are not anticipated for recreational resources.

According to USMC directives and instructions, past, present, and reasonably on-Base/Station foreseeable actions involving facility construction have been and will continue to be designed consistent with the aesthetic quality of the military reservations. To the greatest extent practicable, the USMC has retained wildlife habitats, natural buffers, and forest cover along the Installations' boundaries to lessen visual impacts to adjacent communities. Within all three Installations viewsheds would incrementally change over time where undeveloped land is converted to developed land but would continue to be consistent with what would be expected for a military reservation. Adjacent community visual impacts could be

affected by development and overhead lighting for security and traffic purposes; however, it is anticipated that there would be only minor, cumulative impacts. This conclusion would be supported by ensuring that natural areas and forest cover are continued to be used for buffers on the three installations, thereby obscuring on-Base development and security illumination.

Likewise, increased development and urbanization of the surrounding ROI communities would alter the viewshed in these counties over time. Continued growth in these areas would result in developing undeveloped land, and adding infrastructure and commercial service facilities (shopping centers, etc.). Development within the surrounding areas would be controlled by the county and municipal development plans and introduces countervailing factors that minimize and avoid adverse cumulative impacts.

Under the No Action Alternative, actions since FY06 have introduced recreational and visual changes within and outside the Base and Air Stations' boundaries. While there have been impacts to these resources since that time, and are predictable due to present and future actions, it is not anticipated that adverse impacts would occur because there would be no additional Marines from the Grow the Force action.

4.4.3 Socioeconomics

For past, present, and future actions at the USMC Installations, Table 4.4-1 shows the additive gains from USMC personnel (active duty, civilians, and military school students) anticipated under the Grow the Force initiative, establishment of the Marine Special Operations Command complex at MCB Camp Lejeune (MCB Camp Lejeune 2007a), and basing two F/A-18E/F fleet squadrons at MCAS Cherry Point (DoN 2003a). The total 11,477 gain is a 17.5 percent gain in military personnel (including military formal school students). The total cumulative population of the military and civilian personnel at the three Installations would total 77,037, which equates to 17.8 percent of the ROI population. This is an increase from the FY06 baseline share of the population, which is 14.4 percent without the military formal school students and 15.1 percent when the military formal school students are included. Over time, a commensurate increase in veteran and military/Federal civil service retiree populations would be expected.

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Installation	FY06 Baseline	Total Gain	% Increase from Baseline				
MCB Camp Lejeune							
Active Duty	36,823	7,093	19.3				
Military School Students	**	529	N/A				
Civilians	4,509	959	21.3				
MCB Camp Lejeune Subtotal	41,332	8,581	20.8				
MCAS New River			•				
Active Duty	6,487	1,267	19.5				
Civilians	474	144	30.4				
MCAS New River Subtotal	6,961	1,411	20.3				
MCAS Cherry Point			•				
Active Duty	8,420	1,242	14.8				
Civilians	5,368	243	4.5				
MCAS Cherry Point Subtotal	13,788	1,485	10.8				
North Carolina			•				
Active Duty	51,730	9,602	18.6				
Military School Students	**	529	N/A				
Civilians	10,351	1,346	13.0				
USMC North Carolina Totals	62,081	11,477	18.5				

 Table 4.4-1 Projected Cumulative Increases in USMC Forces¹

Note: 1. Projected numbers include the increased end force from the Grow the Force initiative at all three Installations, the establishment of Marine Special Operations Command complex at MCB Camp Lejeune (MCB Camp Lejeune 2007a), and basing two F/A-18E/F fleet squadrons at MCAS Cherry Point (DoN 2003a).

** Baseline MCB Camp Lejeune Formal School Students covered in baseline MCB Camp Lejeune Active Duty.

Source: Brewer 2008b.

The cumulative impacts from USMC growth from past, present, and reasonably foreseeable actions, when added to the Preferred Action increases, are interactive with other growth within the ROI and represented an incremental share of the overall regional growth.

This population growth would also equate to additive economic gains for direct, indirect, and induced employment and income. Additional taxes would accrue to the Federal, State (North Carolina), and local governments as a result of this cumulative economic activity. These gains would be additive and interactive with other economic activities in the ROI and represent a positive gain for the economy.

Growth on the Installations is being met with construction of military housing and barracks to house personnel. Off-Base housing needs would be expected to increase, particularly in rental units within the range of the Basic Allowance for Housing for lower ranking Marines. Residential land use development is regulated by local land use plans, policies, and controls which address items such as zoning for singleand multi-family residences, housing density, and providing for affordable housing. With adherence to such controls and involvement by the Eastern North Carolina Military Growth Task Force, there would not be significant adverse cumulative impacts to housing. Actions taken by the North Carolina Housing Coalition would be countervailing factors helping to offset negative affordable housing impacts within the ROI.

If the off-Base interchange were constructed, there is an automotive parts business that would need to be relocated. Should the business not relocate, an individual loss would occur but when compared to the ROI as a whole, this loss would not cause an adverse cumulative effect to the region. Land acquisition may be necessary; business taxes from the relocated business would still be expected to be captured within the ROI, but any future business potential and tax income from such businesses would be precluded at the site. The Federal government makes some payments in lieu of taxes to local governments (such as Section 8002; 20 U.S.C. §7702, which assists local school districts that have lost a portion of their local tax base because of Federal ownership of property).

Positive economic cumulative impacts by implementing Alternatives 3 and 4 would be the same as described above. Under Alternatives 3 and 4, however, there would be reduced (Alternative 3) or no construction-related regional economic impacts (Alternative 4). The additive gains for direct, indirect, and induced employment and income would be less than expected when compared to the Preferred Alternative, as would the additional taxes.

While difficult to predict, there could be adverse cumulative impacts disproportionately affecting lowincome or minority populations when considering the incremental effects of the Preferred Alternative and other actions in the ROI. The Affordable Housing Coalition, as well as existing laws and regulations, would assist in minimizing adverse impacts to these populations but may not be able to keep pace with the growth. It is not anticipated; however, that children would be introduced to increased health or safety risks on a cumulative, incremental basis when this proposal is considered along with present and reasonably foreseeable projects.

For the No Action Alternative, there would be no incremental, permanent increases in Marine personnel associated with the Grow the Force action. Other past actions have temporarily accommodated the Grow the Force Marine personnel and dependents; however, the communities have regionally planned for a marked permanent increase in military personnel and have undertaken local and regional construction projects and programs to meet the expected growth. If this alternative was the chosen option, then it could be anticipated there would be negative demographic and economic impacts within the ROI.

4.4.4 Community Services and Facilities

Cumulative impacts of the Preferred Alternative and other growth in the ROI would increase demands on community services and facilities, particularly schools. The Eastern North Carolina Military Growth Task Force has as one of its goals to develop a plan to alleviate pressures on local school systems. Local school districts are also planning and programming for new or expanded facilities and taking actions such as redistricting. As described in the EIS, Onslow County schools were almost all over capacity during the FY06 baseline school year. As of FY08, approximately 50 percent of the projected increase addressed in this EIS has already occurred under temporary status and impacts were already being felt in local communities. Therefore, enrollment has continued to increase in these schools over the last few years. Two new elementary schools opened recently, Meadowview Elementary and Stateside Elementary, providing space for another 1,342 students. This additional capacity alleviated some of the current strain on the school system, but with the Grow the Force initiative, along with other growth on the Installation, the Onslow County School system would continue to have capacity concerns. Continued PPV construction of on-Base housing at all three Installations would occur and it is anticipated that some families living off Base would move back when housing becomes available. Under this program, once 500 houses are constructed a new school is built. This, along with families moving back on Base would minimize pressure on area schools. In summary, under all action alternatives, there could be adverse cumulative impacts to school districts if development plans are not implemented and PPV housing construction is discontinued.

Under the No Action Alternative, there would be continued strains on the local school districts since these conditions existed in FY06.

Cumulative impacts to community services (i.e., health, emergency, and protection services) under the Preferred Alternative (as well as the other two action alternatives) would be adverse if demand is not met. However, the Military Growth Task Force is undertaking a comprehensive evaluation of potential impacts and will be making recommendations to alleviate potential negative impacts to services. If funding is not made available, however, to support these recommendations, then there could be negative cumulative impacts to community services under any of the three action alternatives.

If the No Action Alternative were chosen, then the permanent Grow the Force increases in Marine personnel would not be implemented. Increases due to other past, present, and reasonably foreseeable actions; however, would still occur and it is anticipated that community services and facilities are capable of meeting the demands.

4.4.5 Transportation and Traffic

The impacts of USMC growth due to the Preferred Alternative to traffic would be additive to other growth within the Installations and in the region as well as interactive with ongoing local plans for transportation improvements. The cumulative impacts which might result from the relevant past, present, and reasonably foreseeable future actions, both on the Installations or off, have the potential to be

collectively significant in the ability to support increased traffic along roadway segments of NC 24 and US 17. Information provided by the City of Jacksonville MPO noted that NC 24 in the vicinity of MCB Camp Lejeune/MCAS New River occasionally operates at LOS F. With an estimated 7,365 of additional Marines and civilian personnel expected to reside in Onslow County, along with their families, cumulative impacts to the ROI transportation network would be expected. The City of Jacksonville MPO is preparing an update to its Long Range Transportation Plan that would help identify and prioritize roadway improvements needed in the system. The localized reduction of approximately 30 percent of on-Base MCB Camp Lejeune/MCAS New River traffic captured by the proposed new interior road would be beneficial but is not likely to benefit the ROI transportation network. With the projected number of additional military and civilian personnel at MCB Camp Lejeune/MCAS New River compared to the projected population of 205,320 (derived from a growth factor of 3.2 percent used by NCDOT [Gannett Flemming 2002]) in 2012 for the same Housing Market Area serving the Installation, the total percent of the increase is slightly over 4 percent (Niehaus 2008). If existing road improvement plans were not funded and a new Base interchange and entry point were not constructed, than cumulatively it is anticipated there would be negative impacts to traffic along segments of NC 24 and 17.

With regard to MCAS Cherry Point, the improvements proposed for U.S. Highway 70 would be a cumulative benefit to the ROI. When considered together, the Preferred Alternative on Station, Slocum Road realignment, and improvements to Roosevelt Boulevard, along with future plans to improve the intersection at Slocum Road and U.S. Highway 70, would be alleviate congestion both at the MCAS Cherry Point Main Gate and exiting and entering Slocum Road during peak hours. However, if the No Action Alternative were implemented, traffic congestion at Slocum Road would still occur at U.S. Highway 70.

4.4.6 Utilities and Infrastructure

Based on the permanent gains of military and civilian population under any of the action alternatives, along with actions in the past, present, and future, estimated utility demands would increase both on and off Base/Stations (refer to Tables 4.1-1 and 4.2-1). Power, communication, and potable water service capacities are, however, anticipated to handle the increase in demand within the ROI. In terms of wastewater discharged in Onslow County, there could be adverse cumulative impacts because demand would exceed capacity. With the agreement for ONWASA to buy an additional 3.5 mgd of capacity from MCB Camp Lejeune's WWTP, the potential impact would be either eliminated or reduced when considering the Preferred Alternative with past, present, and reasonably foreseeable actions. No adverse impacts are anticipated at MCAS Cherry Point or within the ROI, capacity to meet changes in demands are available within existing utility and infrastructure systems.

If the No Action Alternative were selected for implementation, utility and infrastructure conditions would change due to past, present, and future actions from those found in FY06. It is anticipated that local utilities and infrastructure systems can meet these incremental changes in demands if the permanent increase in Marine personnel associated with the Grow the Force action was not implemented.

4.4.7 Hazardous and Toxic Materials and Waste

Impacts for this resource were evaluated in terms of the systems' ability to absorb the additional materials, substances, and waste that would be generated in combination with all the other present and future projects. Implementation of the Alternative 2 would include construction of maintenance facilities, motor pools, communication shops, heavy equipment staging areas, and other infantry/squadron related increases in tactical equipment, and the associated unavoidable increases of hazardous material use and hazardous waste generation. Multiple construction projects within or near contaminated areas (i.e. IR sites, MRP, and underground storage tanks) would also increase the potential risk for health and safety. With any increase in handling or storage of hazardous material, there is an inherent increase in hazardous waste generation and general increase in risk to human health; however, local MCOs, Base/Station Orders, shop-level standard operating procedures, and other related regulatory guidance governing the storage, handling, and management of hazardous materials and hazardous wastes would continue to be enforced via the Base/Stations EMD, Environmental Compliance Branch, thereby minimizing cumulative adverse impacts. It is anticipated that local disposal areas for these types materials would continue to have the capacity to accept wastes generated in the ROI when projects both on and off Base are considered incrementally.

Under the other two action alternatives (3 and 4), hazardous materials used and waste generated would be less because either the construction projects would decrease in number or would not be built at all on the Installations. As described under the Preferred Alternative conditions, there would be no adverse cumulative impacts to hazardous materials or wastes.

If the No Action Alternative were selected for implementation, hazardous and toxic materials and waste conditions would change due to past, present, and future actions from those found in FY06. It is not anticipated that hazardous and toxic material use and storage would change remarkably (when evaluated on a cumulative and incremental basis to other on- and off-Base/Stations actions) to cause any adverse impacts in the ROI. In terms of waste, regional disposal sites that can accept these materials would be able to meet changes in demands if the permanent increase in Marine personnel associated with the Grow the Force action was not implemented.

4.4.8 Noise

Implementation of the Preferred Alternative, when combined on an incremental basis with present or reasonably foreseeable actions would have a negligible impact to the noise environment both on and off the Installations. On-Base/Station noise associated with Grow the Force construction activities and similar activities in the ROI would be short-term and not adverse. The long-term operational impacts to this resource would not be adverse. Increased population growth in the ROI, spurred by USMC growth and other factors, could result in increased populations affected by off-Base/Station noise if development occurs immediately adjacent to Installation boundaries. However, these impacts would be offset by continued implementation of RCUZ, RAICUZ, and AICUZ suggestions, coordination with community planners, as well as encroachment partnering. Once the on-going noise studies are completed for MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point, impacts will be revaluated for their cumulative effects and these findings presented in the Final EIS. Cumulative construction impacts to the noise environment would occur but to a lesser degree due to the decreases in the number of construction projects under the two other action alternatives. Operationally, the Marines would still need to train so there would be no changes to the noise environment found at MCB Camp Lejeune ranges/training areas and within MCAS New River and Cherry Point airfields.

If the No Action Alternative were selected for implementation, the noise environment would not noticeably differ from what would occur under the Preferred Alternative. While there would not be any increases in personnel associated with Grow the Force action, there would still be past and present actions that require Marine training at the ranges/training areas and for aircraft operations within the airfields. Therefore, no adverse impacts would occur to the noise environment on or off Base/Station under the No Action Alternative when considered along with other past and present actions.

4.4.9 Air Quality

As discussed previously in Chapter 3, Air Quality, the primary impact is the short-term emissions generated during simultaneous construction at all three Installations from 2010 through 2015. Cumulatively, increases in emissions are expected as a direct result of development at the Installations and in surrounding communities, along with increases in overall population. Actions that have long-term permanent, but minor emission increases include the F/A-18 basing, BSH expansion, and establishment of community infrastructure and facilities to meet USMC growth. Short-term, major emissions increases would be generated by U.S. Highway 70 improvements and the new Base interchange construction. The incremental increases from these actions, however, are not expected to be large enough to have an impact on the attainment status of the region when considered along with the Preferred Alternative. In addition, there would be a short-term, adverse (but not regionally significant) degradation of air quality unless

minimization efforts are taken to reduce the amount of fugitive dust generated by land-disturbing activities and construction equipment mobile emissions from regional development. The long-term impacts of military facility, vehicle, and equipment construction and operation; increases in commuting personnel; and indirect growth of vehicle use in the three-county ROI would cumulatively result in increases in emissions but again, not to the point where the regional attainment status would be affected.

If the No Action Alternative were selected for implementation, regional air quality would not noticeably change from what was presented under the Preferred Alternative. While there would not be increases in personnel or any construction-related activities associated with Grow the Force action, there would still be past, present, and future actions that would require both on-Base/Station improvements and off-Base/Station development. However, it is not anticipated that regional attainment status would be affected.

Greenhouse Gases. The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale. Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions. Formulating such thresholds is problematic, as it is difficult to determine what level of proposed emissions would substantially contribute to global climate change. However, the marine Corps is serious about global warming as illustrated by the Marine Corps' Commandant Facilities Energy and Water Management Program Campaign Plan (USMC 2009). In this Plan the Commandant declared that energy conservation is "an issue of combat readiness." The Commandant issued his Commander's intent to implement measures to conserve energy, supporting "our Nation's pledge to reduce green house gas emissions and dependence on foreign oil." The Plan identifies long-term goals to reduce energy intensity and increase the 1 percentage of renewable electrical energy consumed. He mandated that all "acquisitions of relevant products will meet ENERGY STAR and Federal Energy Management Program (FEMP) requirements." He directed "an integrated approach to optimize energy performance to meet Federal building performance requirements and achieve a LEED rating of silver for new construction and major renovation projects." The Commandant called for his Base Commanders to "evaluate the effectiveness of incorporating emerging technologies" including integrated photovoltaics, cool roofs, day lighting, ground source heat pumps, heat recovery ventilation, high efficiency chillers, occupancy sensors, premium efficiency motors, radiant heating, solar water heating, and variable air volume (VAV) systems. "The Marine Corps is committed to taking a leadership position in on-site renewable power development with the assistance of private sector financing and development expertise." Marine Corps installation

commanders are to "use energy management and control systems (EMCS) to monitor building conditions, perform diagnostics, and optimize system performance." Geospatial Information System capabilities will be applied to management of metered data for energy consumption. Personnel awareness programs will emphasize conservation.

4.4.10 Natural Resources

Cumulative impacts to vegetation, wildlife, and protected species would occur on Base/Station due to increased habitat disturbance resulting from population growth, additional housing, expanded commercial areas, and increased number of roads, recreational activities pursuit, and training. The impacts would be dispersed in time and place, but would have a collective effect in changing the natural landscape at MCB Camp Lejeune, MCAS New River, and MCAS Cherry Point.

Table 4.4-3 and Table 4.4-4 quantify impacts to natural resources and wetlands for USMC projects that have been recently completed at the Installations. As the tables show, the Preferred Alternative in combination with past actions would result in the loss of nearly 4,000 acres of forest at MCB Camp Lejeune/MCAS New River (or 4 percent of the total commercial timber acreage) and about 100 forested acres at MCAS Cherry Point (or 1 percent of the total commercial timber acreage). Additional forest would be lost with future projects as well. Approximately 390 acres of red-cockaded woodpecker foraging habitat (including areas designated by MCB Camp Lejeune as future foraging habitat) would be lost. Although the focus of this analysis is on cumulative impacts of the Proposed Action in combination with past projects at the Installations, preliminary estimates of ongoing and near future projects show that past, present, and future projects and development activities (refer to Table 4.1-1) at MCB Camp Lejeune could cumulatively result in the loss of approximately 647 acres of red-cockaded woodpecker habitat. This would result (when these projects are implemented) in the loss of four existing partitions and one future partition that is as of yet unoccupied but that is counted towards MCB Camp Lejeune's future redcockaded woodpecker recovery goal. Additionally these lost acres have or will impact other partitions, but not to the extent that these partitions would no longer provide sufficient habitat. MCB Camp Lejeune has consulted with the USFWS for these impacts, and performed all required mitigation.

Estimation of vegetation removal due to off-Base development (i.e., U.S. Highway 70 improvements and new Base interchange) would be speculative since the Highway is still in the planning process and the interchange would need to be funded. It is anticipated that the construction of U.S. Highway 70 would result in some habitat fragmentation. Fragmentation of habitat would disrupt wildlife movements and migration and divide existing wildlife populations (Jackson 2000).

Action	Forest	Wetlands	RCW Habitat
4th Marine Expeditionary Brigade Complex (FY04-05)	80 acres	0 acres filled, wetland crossings required	0
Force Structure Review Group Initiatives (FY05-06)	16.3 acres	0 acres, but road crossing of a wetland required	0
Marine Special Operations Command Complex (FY08)	220 acres	3.59 acres non-riparian wetlands/1.04 acres riparian wetlands. Also, adverse effects to 2,789 linear feet of intermittent streams	1 (future RCW habitat partition). Loss of 135.5 acres of future habitat.
Temporary Beddown of Proposed Increase in End Strength	38 acres (may decrease based on final layout)	Unknown until project designs available. 13 acres within the planning areas.	10 acres of future habitat potentially lost
Wastewater System Upgrades and Modifications	32 acres disturbed, not cleared	4.6 acres wetlands in project area, no impacts anticipated	4.2 acres of RCW foraging habitat
Security Gate Upgrades, Road Improvements, Landfill Expansion, and Relocation of Skeet Range	81.5 acres disturbed, not cleared	0 acres	Loss of 19 acres of foraging habitat for one cluster. Will not affect ability to meet recovery goals.
Wallace Creek Regimental Area Complex	158 acres	0.22 acres	0 acres
Privatization of Military Family Housing	89 acres	0 acres	0 acres
Phase II Privatization of Family Housing	200 acres affected; up to 75% cleared (150 acres)	4.6 acres in project area; no impacts anticipated.	0 acres
Phase III and IV Privatization of Family Housing	408 acres	0 acres	0 acres
Demolition of Target Sheds and Heads at Stone Bay	0 acres	0 acres	0 acres
Range Operations	0 acres	0 acres	0 acres
Infantry Platoon Battle Course	274 acres clearcut, 165 acres to be thinned.	Up to 230 acres disturbed (from vegetation clearing), depending upon alternative chosen. Preferred alternative would avoid impacts to wetlands.	Depending upon alternative, approximately 1,041 acres of future habitat lost, but 633 acres of the total would be replanted, providing habitat in the long-term.
Grow the Force	Up to 1,542 acres at both Installations. Most likely much less based on final design.	Up to 5 acres at MCB Camp Lejeune from known project locations (such as new Base road). Up to 0.81 acres at MCAS New River. A further 825 acres within planning areas could be affected; however, final design is unknown at MCB Camp Lejeune.	1 acre foraging habitat; 219 acres future habitat
TOTALS	3,702 acres includes acres that would be disturbed and cleared	10 acres (does not include acres within planning area; only anticipated impacts)	1 partition lost. 20 acres foraging habitat lost. 369 acres future habitat lost.

Table 4.4-2 Past/Prese	ent Actions at MCB C	amp Lejeund	e and MCAS New	v River – I	Natural Resource I	mpacts

Action	Forest	Wetlands	RCW Habitat
Temporary Beddown of Proposed Increase in End Strength	5 acres	0 acres	0 acres
Combat Vehicle Operators Training Course	20 acres	0 acres	0 acres
Privatization of Military Family Housing	0 acres	Development areas with delineated wetlands avoided during design	0 acres
Phase II Privatization of Family Housing	0 acres	0 acres	0 acres
Proposed Military Operations Areas in Eastern North Carolina	0 acres	0 acres	0 acres
Introduction of the F/A-18 Super Hornet	3 acres	0 acres	3 acres, no known RCW presence, but is suitable habitat
Range Operations	0 acres	0 acres	0 acres
Grow the Force	Up to 69 acres, depending on Alternative	Up to 14.5 acres, depending on Alternative, anticipated to be much less	0 acres
Total	97 acres	14.5 acres	3 acres

Table 4.4-3 Past/Present	Actions at MCAS	Cherry Point –	- Natural Resource	<i>Impacts</i>
				· · · · · · · · ·

In addition to mortality, elevated noise from highways has been shown to have adverse impacts on call effectiveness on breeding song birds and certain species of amphibians (Bee and Swanson 2007; Dooling and Popper 2007). In the long-term, the new road would create a new mortality danger area for those animals needing to cross the road to access other habitat areas or water (Boarman and Sazaki 2006; Erritzoe *et al.* 2003; Saunders *et al.* 2002). However, efforts such as the Onslow Bight Conservation Forum, as well as proper land use planning within the surrounding ROI would introduce countervailing factors to offset some of these losses over the long term through preservation of land and growth management.

Duke University is conducting an ongoing scientific study (—Chang Analysis") to quantitatively and graphically document the change in land cover at MCB Camp Lejeune since the 1980s (see Figures 4.4-1 and 4.4-2). For the dates 1984 through 2007 the land cover data analysis showed that 1,746 patches of at least 1.1 acres in size had significant green vegetation reduction between 1984 and 2007. This represents



Figure 4.4-1 Change in Forest Cover at MCB Camp Lejeune/MCAS New River - Basewide



Figure 4.4-2 Change in Forest Cover – Proposed Development Areas

an area of 35,580 acres, or about 25 percent of the area of MCB Camp Lejeune. The study then determined if the loss of green vegetation was due to forest being converted to developed areas, or whether it was vegetated areas becoming less vegetated (but still remaining vegetated areas). Using their analysis, the authors of the study determined that 7,720 acres of MCB Camp Lejeune has been converted from a vegetation cover type to human impacted, developed land. This is 5.4 percent of all of MCB Camp Lejeune.

The definition of _developed land' is subjective, but for this study, developed land includes human impacted uses (i.e., residential, commercial, industrial) as well as barren land. Developed does not necessarily mean that structures are present but simply that it has been disturbed by human impact in some way. Further analysis was conducted on the Duke University study data to classify the location of the change areas in order to see if the change area occurs in the cantonment area or in the training areas at MCB Camp Lejeune. Areas of development occurring in the cantonment area would imply construction of buildings and infrastructure for residential, commercial or industrial uses, while areas of change occurring in the training areas would imply area that has been cleared for, or because of training activities. The data shows that 1,343 acres (0.93 percent of the total area of the Installation) of the change to developed area has occurred in the cantonment area and 6,377 acres (4.46 percent of the total area of the Installation) of the change to developed area has occurred in the training areas and 5.8 percent of the training areas was converted from vegetated to developed lands between 1987 and 2001.

As a potential beneficial impact, the study also identifies areas that have become more _green[•] over time. These areas mostly occur in the Greater Sandy Run Area of MCB Camp Lejeune. In 1984, this area was owned by a paper company. As a result of a change in ownership from industrial to government, forest management practices have changed. Since being acquired by MCB Camp Lejeune, timber harvesting has been reduced in Greater Sandy Run Area with the result being that forests in that area have become more <code>-green."</code> Despite the fact that there has been an increase in recent development at the Installations, particularly MCB Camp Lejeune, the Duke University study shows that overall land cover at the Installation has changed over time but that as vegetation is lost, other areas have been preserved.

In addition to local changes in forest habitat at the Installations, regional changes in forest habitat have occurred. Between the years 1992 and 1997 North Carolina ranked sixth in the contiguous United States for conversion of non-Federally owned –undeveloped" land to –dveloped" lands. Along with an increasing development of rural lands, there is also a trend toward smaller and smaller tracts of private land ownership, especially as lands are located nearer to urban areas. Smaller, less contiguous tracts of land can cause different environmental pressures, such as fragmentation, as individual pieces of land are

developed. Also, smaller tracts (less than 50 acres) are not well suited for current forest management strategies. This situation can lead to further fragmentation, and mismanagement of small forest tracts making them of poor quality for harvesting for forest products, for wildlife, or for recreational pursuits. One other issue affecting forests surrounding more developed and urbanized areas is that these forests shift in value from that of being able to produce forestry products through harvest and replanting, to having more value for aesthetic and recreational reasons. Recreational forest use introduces completely different pressures to the forest ecosystem, and can range from hunting, wildlife observation, camping, and all of the possible human influenced interactions that can result. Southeastern North Carolina is a projected –hot spot" for development and urbanization, and all of these possible stresses to the forest should be taken into account for long term sustainment (USDA 2002).

The U.S. Department of Agriculture, Forest Service has conducted some studies across the U.S. to assess the effects of increased housing development on private forests. In the —**b**rest Edge Project" an interdisciplinary team of specialists used Geographic Information System techniques to identify watersheds across the U.S. containing private forests that are projected to experience increased housing density by 2030 (USDA 2005). The area surrounding the Installations is identified as a —**red**ium change" area (housing density increases projected to occur on private forests across 5 to 20 percent of a watershed) (USDA 2005). The Preferred Alternative, in combination with other past, present and reasonably foreseeable future projects would contribute to this change in the ROI and would result in the greatest potential for cumulative impacts to natural resources because of the large amount of construction that would occur.

In terms of on-Base/Station wetlands, the cumulative, incremental impacts that could be anticipated from implementing both the Preferred Alternative and other present and reasonably foreseeable projects would represent disturbance to less than 1 percent of total wetlands (55,000 acres) at MCB Camp Lejeune/MCAS New River and less than 1 percent of total wetlands (1,600 acres) on MCAS Cherry Point.

All other action alternatives, cumulatively, would contribute to forest loss, but at varying, lesser degrees (see Section 3.13, Natural Resources). Under the No Action Alternative there would be no incremental, permanent increases in Marine personnel or construction activities associated with the Grow the Force action. Other past actions since FY06, as well as present and reasonably foreseeable actions, however, have or will occur both on and off Base/Station to impact forests, wetlands, and sensitive species and habitat. On and off Base/Station it is expected that impacts would be incurred, however, to a lesser degree than those found under the Preferred Alternative.

4.4.11 Earth Resources

Impacts to geology, topography, and soils are site-specific and are not affected by development in the region. Cumulative impacts to the geology or topography within or immediately adjacent to the ROI are expected to be minor. The cumulative impacts to soils would be additive to those of the Proposed Action and would include soil compaction, and disturbed and modified soil layers.

Exposed soils would become more susceptible to erosion, and soil productivity, (i.e., the capacity of the soil to produce vegetative biomass) would also decline in disturbed areas, and be completely eliminated for those areas within the footprint of paved or other hardened areas and new structures. Impacts to soils from construction and/or demolition activities occurring in areas that are currently or previously developed would be minimal, given the fact that these soils have been previously disturbed or modified, and in some areas are already covered by structures, concrete, or other appropriate surfaces. Structural and non-structural BMPs would be implemented in accordance with State approved erosion and sedimentation control plans to reduce erosion.

The soil disturbance anticipated with the Preferred Alternative, when incrementally considering impacts of past, present, and future actions, could result in cumulative adverse impacts to soils if projects do not employ adequate mitigation measures to minimize adverse impacts to soil resources. However, all projects funded with State or Federal monies must adhere to regulatory requirements that minimize impacts of erosion and soil productivity and cumulatively should not introduce adverse impacts to soil resources. The other two action alternatives, cumulatively, would contribute to soil disturbance, but at lesser, varying degrees (see Section 3.14, Earth Resources).

Under the No Action Alternative there would be no incremental, permanent increases in Marine personnel or construction activities associated with the Grow the Force action. Other past actions since FY06, as well as present and reasonably foreseeable actions, however, have or will occur both on and off Base/Station to impact soil resources. On and off Base/Station it is expected that impacts would be incurred, however, to a lesser degree than those found under the Preferred Alternative.

4.4.12 Water Resources

Cumulative impacts to water resources would occur from population growth and construction activities. Tables 4.4-3 and 4.4-4 quantify impacts to wetlands from recently completed projects at all three Installations. As shown in the tables, approximately 25 acres of wetlands could be affected by the Preferred Alternative in combination with recently completed projects at all three Installations.

Secondary impacts from growth in the community would lead to additional wetland removal and stormwater runoff. Cumulative impacts to stormwater and groundwater could be minimized with the

implementation of BMPs, adherence to NPDES permit requirements and North Carolina's Coastal Stormwater Rules, and guidelines established in the stormwater management plan. Within the ROI, the potential for cumulative adverse impacts to wetland areas and waterways would be mitigated through the adherence to existing USMC, Federal, and State policies and recommendations by NCDENR to reduce and/or maintain point and non-point sediment; complying with NPDES permit limits and requirements; adopting Natural Resources Conservation Service conservation practices; following guidance in the wetland permitting process; implementing Soil Erosion Control Plans; and applying BMPs. The Preferred Alternative, when considered in combination with the other projects would result in the greatest potential for impacts to water resources because of the large amount of construction that would occur; however, if the laws, regulations, and permitting requirements to avoid and minimize impacts were adhered to, then adverse impacts could be avoided. Implementing either of the two other action alternatives would contribute cumulatively to water resources impacts, but at lesser, varying degrees.

There would be no incremental, permanent increases in Marine personnel or construction activities associated with the Grow the Force action if the No Action Alternative were implemented. Other past actions since FY06, as well as present and reasonably foreseeable actions, however, have or will occur both on and off Base/Station to impact water resources. On and off Base/Station it is expected that impacts would be incurred, however, to a lesser degree than those found under the Preferred Alternative.

4.4.13 Cultural Resources

For cultural resources, projects under the Preferred Alternative, when considered along with projects implemented off-Base in the ROI, could potentially affect cultural resources where ground disturbance exposes any pre-historic or historic undocumented/unknown cultural resources or where visual elements may be introduced that are out of character with a historic property within the viewshed. These impacts can be avoided, minimized, or mitigated, but could have a collective effect in reducing the overall number of historic properties in the ROI. With the exception of Alternative 4, the other two action alternatives (2 and 3) have the potential to unearth an undocumented/unknown cultural resource through ground disturbance. This would introduce possible adverse cumulative impacts if the proper consultation, avoidance, and mitigation measures are not undertaken.

Under the No Action Alternative there would be no incremental, permanent increases in Marine personnel or construction activities associated with the Grow the Force action. Other past actions since FY06, as well as present and reasonably foreseeable actions, however, have or will contribute cultural resource impacts both on and off Base/Station. However, on- and off-Base/Station impacts would be expected to be incurred to a lesser degree than those found under the Preferred Alternative.

CHAPTER 5 OTHER CONSIDERATIONS
5.0 OTHER CONSIDERATIONS

5.1 Consistency with other Federal, State, and Local Plans, Policies, and Regulations

Based on evaluation with respect to consistency and statutory obligations, the USMC alternatives, including the Proposed Action for the Grow the Force in North Carolina EIS does not conflict with the objectives or requirements of federal, state, regional, or local plans, policies, or legal requirements. Table 5.1-1, starting on the next page, provides a summary of environmental compliance requirements that may apply.

Final EIS

Plans, Policies, and Controls	Regulatory Agency Authority	Status of Compliance	Section of EIS
NEPA (PL 91-190, 42 USC 4341 et seq. as amended) 1969, USMC Environmental Compliance and Protection Manual (Marine Corps Order P5090.2A, Change 2), DoN Procedures for Implementing NEPA (OPNAVINST 5090.1B 2003)	N/A	The EIS portion of this document has been prepared in accordance with NEPA, CEQ regulations, and USMC NEPA procedures. Public participation and review is being conducted in compliance with NEPA.	All of document
Clean Air Act (CAA) of 1987, 42 USC §§ 7401 to 7671	USEPA North Carolina DENR-DAQ	The Proposed Action would not create a new source of air pollution or affect the current attainment status of the region.	Section 3.12
Clean Water Act, 33 USC. §§ 1251 to 1387 (1986 & Supp. 1997).	USACE North Carolina DENR-DWQ	Permits under Sections 401 and 404 are required. Adherence to North Carolina Coastal County Stormwater Rule NPDES	Section 3.9 Section 3.15
Coastal Zone Management Act (CZMA) of 1972 (16 USC 1451)	North Carolina DENR-DCM	The USMC has determined the Proposed Action is consistent to the maximum extent practicable and has submitted on September 23, 2009 the final Coastal Consistency Determinations.	Section 3.4 Appendix C
Rivers and Harbors Act of 1892	USACE	The USACE is a cooperating agency to ensure USMC compliance with Section 10 of this Act "navigable waters" and 33 USC 9.	Section 3.15
Endangered Species Act of 1973, 16 USC §§ 1531 to 1534	USFWS	MCB Camp Lejeune and MCAS Cherry Point completed informal consultation with USFWS. It was determined that the Proposed Action would not affect terrestrial special status species and may affect, but not likely to adversely affect manatees with respect to P1382 (MCB Camp Lejeune) and P134 (MCAS Cherry Point).	Section 3.13

Table 5.1-1 Summary of Applicable Environmental Regulations and Regulatory Compliance for the Preferred Alternative

Plans, Policies, and Controls	Regulatory Agency Authority	Status of Compliance	Section of EIS
National Historic Preservation Act (NHPA) of 1966, as amended in 1980, 16 USC 470 <i>et al</i> .	North Carolina SHPO	MCB Camp Lejeune completed Section 106 consultation with the North Carolina SHPO and they concurred that the Proposed Action would not result in adverse effects to eligible or potentially eligible properties.	Section 3.16
Executive Order 12898 (Environmental Justice) 59 FR 7629 (1994)	N/A	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority or low income populations.	Section 3.6
Executive Order 13045 (Environmental Justice for Children, Protection from Environmental Health Risks and Safety Risks) 62 FR 19883 (1997)	N/A	The Proposed Action would not result in disproportionate risks to children from environmental health risks or safety risks.	Section 3.6
Executive Order 11990 (Protection of Wetlands) 42 FR 26961 (1977)	USACE	The Proposed Action would result in impacts to wetlands on MCB Camp Lejeune and MCAS Cherry Point. Specific mitigation measures would be developed in conjunction with USACE during the permitting phase once projects designs reach 100 percent.	Section 3.15
Migratory Bird Treaty Act of 1918, 16 USC 703 <i>et al.</i>	USFWS	The Proposed Action would not have a significant impact on migratory birds, and would comply with applicable requirements of the Act.	Section 3.13
Magnuson-Stevens Fishery Conservation and Management Act, as amended through 2007	NMFS	The Proposed Action would not adversely affect Essential Fish Habitat.	Section 3.15

Table 5.1-1 Summary of Applicable Environmental Regulations and Regulatory Compliance for the Preferred Alternative

5.2 Irreversible or Irretrievable Commitments of Resources

An irreversible/irretrievable commitment of resources results from a decision to use or modify resources when they are renewable only over a long period of time, such as soil productivity, or that are nonrenewable resources, such as cultural resources. The single most irreversible and irretrievable commitment of resources associated with the Proposed Action Alternatives is the loss of forested lands. It is considered an irreversible commitment because, for the foreseeable future, these areas would be developed and re-establishing forests in these areas would not be feasible. Some wetland areas and vegetation would be permanently lost due to construction; in addition, there is a potential for the displacement of wildlife or loss of sensitive species' habitat. Although these actual resources would be lost, much of the impacts would be offset or minimized through design, minimization measures, mitigation (in the case of wetlands), and consultation with regulatory agencies.

The materials and energy required for construction, operation, and maintenance of proposed infrastructure under any of the action alternatives represent irretrievable commitments of resources. The total amount of construction materials required for this action is relatively insignificant when compared to the resources available in the region. The energy required for construction consists of the fuels necessary to operate heavy construction equipment and trucks. Although energy conservation is a vital and critical issue, the energy resource commitment is not anticipated to be excessive in terms of region-wide usage. Materials and energy are not in short supply and their use would not have a significant effect upon continued availability of these resources. Construction, operations, and maintenance would also require a substantial expenditure of Federal funds that would not be directly retrievable.

5.3 Unavoidable Adverse Effects

Under all action alternatives, avoidance, minimization, or mitigation of adverse effects to natural, cultural, and other environmental resources were integrated into the Proposed Action to the greatest extent possible and practicable; however, all adverse impacts may not be completely avoided and/or mitigated. Some adverse effects would be temporary in nature; for example, there would be minor, short-term adverse effects to the noise environment and air quality from construction. Long-term impacts could include removal of both wetlands and sensitive habitat from land-clearing activities.

5.4 Relationship Between Short-term Use of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

NEPA requires analysis of the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This means that choosing one option may reduce future flexibility in pursuing other options, or that committing a resource to a certain use may eliminate the possibility for other uses of that resource.

The Proposed Action would result in both short- and long-term environmental effects. However, the Proposed Action would not be expected to result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public. With the exception of wetland impacts, no significant impacts have been identified for the Proposed Action. Implementation of mitigation measures developed in conjunction with USACE would ensure these impacts are minimized to the maximum extent practicable.

CHAPTER 6 LIST OF PREPARERS

6.0 LIST OF PREPARERS

U.S. Navy

Name	Title	Affiliation
Kerry Buchinger	Environmental Engineer	Claimant NEPA Support, Naval Facilities
		Engineering Command, Mid-Atlantic,
		Norfolk, Virginia
McKenny Hartman	Environmental Engineer	Resident Officer in Charge of Construction
Mike Jones	Physical Scientist	Claimant NEPA Support, Naval Facilities
		Engineering Command, Mid-Atlantic,
		Norfolk, Virginia

U.S. Marine Corps

Name	Title	Affiliation
Marine Corps Installa	tions East	
Scott Brewer	Regional Environmental Coordinator	Environmental Department, Marine Corps Installations East
Kim Fleming	Regional Environmental Coordination/NEPA and Natural Resources	Environmental Department, Marine Corps Installations East
Diesel Hinkle	Community Planner	Community Plans and Liaison Office, Marine Corps Installations East
Dave Turner	Aviation Facilities Planning Officer	Aviation Plans and Policies, Marine Corps Installations East
MCB Camp Lejeune		
Erin Atkins	Environmental Engineer	Environmental Conservation Branch, Environmental Management Division, Installations and Environment Department, Marine Corps Base Camp Lejeune
Tom Barbee	Environmental Assessment Specialist	Head, National Environmental Policy Act Section, Environmental Conservation Branch, Environmental Management Division, Installations and Environment Department, Marine Corps Base, Camp Lejeune
Danny Becker	Forester	Environmental Conservation Branch, Environmental Management Division, Installations and Environment Department, Marine Corps Base Camp Lejeune
Michael Elks	Environmental Engineer	Facility Planning Branch, Installation Development Division, Installations and Environment Department, Marine Corps Base Camp Lejeune
Robin Ferguson	Environmental Assessment Specialist	Environmental Conservation Branch, Environmental Management Division, Installations and Environment Department, Marine Corps Base Camp Lejeune

Name	Title	Affiliation
Twylah Hardison	Environmental Protection	Environmental Conservation Branch,
	Specialist	Environmental Management Division,
	-	Installations and Environment Department,
		Marine Corps Base Camp Lejeune
Martin Korenek	Wildlife Biologist	Environmental Conservation Branch,
		Environmental Management Division,
		Installations and Environment Department,
		Marine Corps Base Camp Lejeune
Bob Lowder	Environmental Engineer	Environmental Quality Branch, Environmental
		Management Division, Installations and
		Environment Department, Marine Corps Base,
		Camp Lejeune
Danny Marshburn	Timber Management Forester	Environmental Conservation Branch,
		Environmental Management Division,
		Installations and Environment Department,
		Marine Corps Base Camp Lejeune
Scott W. Martin	Environmental Attorney	Eastern Area Council Office, Marine Corps
		Base Camp Lejeune
Duane Richardson	Range Safety Specialist	Range Development Division, Training and
		Operations Department, Marine Corps Base
		Camp Lejeune
Rick Richardson	Base Archaeologist	Environmental Conservation Branch,
		Environmental Management Division,
		Installations and Environment Department,
		Marine Corps Base Camp Lejeune
Emily Sylvester	Senior Project Engineer	Installation Development Division, Installations
		and Environment Department, Marine Corps
		Base, Camp Lejeune
Craig Tenbrink	Wildlife Biologist	Environmental Conservation Branch,
		Environmental Management Division,
		Installations and Environment Department,
	A //	Marine Corps Base Camp Lejeune
Dave wunder	Attorney	Eastern Area Council Office
Maj. Mike Evans	Attorney	Eastern Area Council Office
MCAS New River		
Kirk Kropinack	Manager, Environmental	Environmental Affairs Department, Marine
MCAS Charmen Daint	Affairs	Corps Air Station New River
MCAS Cherry Point	Natara 1 Daga ang Managan	Engine manufal Affaire Descenter and Marine
Carmen Lombardo	Natural Resources Manager	Environmental Affairs Department, Marine
Change Dawn att	Engling was and all Durate ations	Corps Air Station Cherry Point
Steve Bennett	Environmental Protection	Environmental Compliance Division,
	Specialist	Corres Air Station Charge Doint
Joonno Curlin	Environmental Correliance	Corps All Station Cherry Point
Joanna Curnn	Division Head	Corps Air Station Charge Doint
Tony Fontono	Environmental Protection	Corps All Station Cherry Point
Tony Fontana	Specialist	Environmental Affairs Department Marine
	specialisi	Corns Air Station Charge Daint
1		Corps All Station Cherry Pollit

Name	Title	Affiliation
Tyler Harris	Deputy Community Plans and	Community Plans and Liaison Office, Marine
	Liaison Officer	Corps Air Station Cherry Point
Tania Irizarry	Environmental Engineer	Facilities Development Department, Marine
		Corps Air Station Cherry Point
Dale McFarland	Restoration Division Head	Environmental Affairs Department, Marine
		Corps Air Station Cherry Point
William Potter	Environmental Protection	Environmental Compliance Division,
	Specialist	Environmental Affairs Department, Marine
		Corps Air Station Cherry Point
George Radford	Environmental Affairs Officer	Environmental Affairs Department, Marine
		Corps Air Station Cherry Point
Rich Weaver	Natural Resources Specialist	Environmental Affairs Department, Marine
		Corps Air Station Cherry Point
Tina Martin-Nims	Wildlife Biologist	Natural Resources Division, Environmental
		Affairs Department, Marine Corps Air Station
		Cherry Point

U.S. Army Corps of Engineers

Name	Title	Affiliation
Richard K. Spencer	Regulatory Specialist	U.S. Army Corps of Engineers, Wilmington Regulatory Office

TEC Inc.

Name	Title	Education/Responsibility	Years Experience
Kathy L. Rose	Project Manager Senior	B.A. Political Science/German,	
	Environmental Analyst	M.A. International Relations,	23
		M.S. Natural Resources	
Carol A. Zurawski	Environmental	B.A. Biology	
	Analyst/Deputy Project	M.E.M. Environmental	9
	Manager	Management	
Dana Banwart	Environmental	B.S. Biology	
	Analyst/Deputy Project		9
	Manager		
Stephen Berry	Senior Environmental Analyst	B.S., Environmental Engineering,	
		B.S. Ecology/Chemistry.	29
		Responsible for Water Resources	
Robert S. Carlon	Environmental Analyst	A.A. Agricultural Technology	
		B.A. Marketing and	
		Advertisement	5
		M.S. Agricultural and Extension	
		Education	
Michael Costanzo	Senior Economist	B.A., M.A., Ph.D. Geography	28
Lucas DuPont	Environmental Analyst	B.A. English/Environmental	4
		Science	4
Emily Ferguson	Environmental Analyst	B.A. Public and Urban Affairs	1
Ellen Graap-Loth	Senior Environmental Analyst	B.S. Natural Resources	17

Name	Title	Education/Responsibility	Years Experience
Lesley Hamilton	Senior Environmental Analyst	B.A. Chemistry	17
Rachel Healey	Environmental Analyst	B.S. Biology and MBA	5
Edie Mertz	Graphics Specialist	A.A. General Education. Responsible for Graphics	13
Jeannette A. Seagraves	Environmental Analyst	B.S. Marine Science	6
Meredith Sherrill	GIS Specialist and Planner	B.A. Environmental Science	1
Sharon Simpson	Production		4
Kenneth W. Swain	Senior Environmental Analyst	B.S. Geology M.S. Coastal Geology	15
Jason C. Taylor	Environmental Analyst	B.S. Environmental Science	12
William C. Wilbert, P.E.	Senior Planner	B.L.A. Landscape Architecture	30
Asher A. Williams	Environmental Analyst	B.S. Environmental Science	1
Carol P. Wirth	Senior Planner	B.S. Ecology and Evolutionary Biology	15
Erin Santos	Environmental Analyst	B.A. Anthropology	4

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