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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

ADDRESSING THE

NAVAL HOSPITAL

MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

NOVEMBER 2012

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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT ADDRESSING THE NAVAL HOSPITAL MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Lead Agency: U.S. Marine Corps

Title of Proposed Action: Naval Hospital Camp Pendleton Replacement, Marine Corps Base Camp Pendleton

Designation: Supplemental Environmental Assessment

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ABSTRACT

In January 2010, a Finding of No Significant Impact was issued for the *Environmental Assessment (EA) for the Naval Hospital Camp Pendleton (NHCP) Replacement, Marine Corps Base Camp Pendleton, California* ("2010 NHCP Replacement EA"). The EA addressed the U.S. Department of the Navy's (Navy) proposal to construct and operate an NHCP replacement near the Main Gate of Marine Corps Base (MCB) Camp Pendleton. This Supplemental EA (SEA) is being prepared to analyze two project elements that were not addressed in the 2010 NHCP Replacement EA. The Navy proposes to construct a helicopter pad and install an alternate electric power line for the NHCP replacement at MCB Camp Pendleton, California.

The SEA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code §§4321–4370h); the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations Parts 1500–1508); Navy Regulations for Implementing NEPA; and Marine Corps Order P5090.2A, *Environmental Compliance and Protection Manual*. This SEA describes the potential environmental consequences resulting from the Proposed Action and the No Action Alternative on the following resource areas: biological resources, cultural resources, visual resources, water resources, air quality, geological resources, land use, coastal zone management, transportation, infrastructure and utilities, noise, and human health and safety (including airspace management).

Executive Summary

Introduction

In January 2010, a Finding of No Significant Impact (FONSI) was issued for the *Environmental Assessment (EA) for the Naval Hospital Camp Pendleton (NHCP) Replacement, Marine Corps Base (MCB) Camp Pendleton, California* ("2010 NHCP Replacement EA"). The EA addressed the U.S. Department of the Navy's (Navy) proposal to construct and operate an NHCP replacement near the Main Gate of MCB Camp Pendleton. Construction of the NHCP replacement at MCB Camp Pendleton began in December 2010 and is expected to be completed by January 2014. Further discussion of the NHCP replacement is provided in the 2010 NHCP Replacement EA.

During development of the 2010 NHCP Replacement EA, it was known that the NHCP replacement would require an alternate source of power to operate; however, the route for providing the alternate power to the NHCP replacement was unknown at that time. San Diego Gas and Electric (SDG&E) had already begun considering several routing alternatives to provide the power to the NHCP replacement, but none were finalized by the time the Finding of No Significant Impact (FONSI) was signed. The construction of a new helicopter pad (hereafter referred to as "helipad") was not identified during development of the 2010 NHCP Replacement EA; however, after the FONSI was signed, it was determined that a new helipad would be constructed for the NHCP replacement. Therefore, this Supplemental Environmental Assessment (SEA) is being prepared to analyze two project elements that were not addressed in the 2010 NHCP Replacement EA including construction of a helicopter pad (hereafter referred to as "helipad") and installation of an alternate electric power line. This SEA will provide a supplement to the 2010 NHCP Replacement EA.

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide a helipad in the immediate vicinity of the NHCP replacement. The Proposed Action is needed to facilitate the transport of sick and seriously injured patients in a time-efficient manner. In addition, the purpose of the Proposed Action is to provide alternate electric power for the NHCP replacement in the event that primary power is lost. During development of the 2010 NHCP Replacement EA, it was known that alternate power would be required for the NHCP replacement; however, the route for providing the alternate power to the NHCP replacement was unknown and routing alternatives were not finalized by SDG&E. The construction of a new helipad was not identified during development of the 2010 NHCP Replacement EA; however, after the FONSI was signed, the USMC requested that the Navy construct a new helipad for the NHCP replacement. Therefore, the SEA has been prepared to address these two elements, which were not incorporated into the 2010 NHCP Replacement EA.

Description of the Proposed Action and Alternatives

Helicopter Pad. Under the Proposed Action, a helipad would be constructed to support medical evacuations at the NHCP replacement. The helipad would be constructed southwest of the NHCP replacement, across a drainage creek (identified as waters of the United States), and across the access road from the south parking area. The project area for the proposed helipad has been previously disturbed and graded for construction of the NHCP replacement. An access road would be constructed from Wire Mountain Road, to the helipad, circling the helipad, and returning to Wire Mountain Road. The helipad would take approximately 9 months to 1 year to be designed and constructed. The proposed helipad would consist of a primary surface (approximately 200 x 200 feet [61 x 61 meters]) and an approach departure clearance surface (25:1 slope) extending on both sides of the primary surface of the helipad.

Alternate Electric Power Line. Under the Proposed Action, SDG&E would install a new 12-kilovolt (kV) alternate electric power line within their existing 2.64-mile (4.25-kilometer [km]), 69-kV power line alignment and right-of-way (ROW), which stretches from the Stuart Mesa Substation in the north, to the NHCP replacement site in the south. The new 12-kV alternate electric power line would be installed as part of SDG&E's infrastructure upgrade requirements and would also support the NHCP replacement. In addition, SDG&E would replace 32 existing wood transmission structures (i.e., transmission poles) with 31 steel transmission structures as part of their infrastructure upgrade requirements. Of the 31 replacement steel transmission structures, 7 would be engineered galvanized steel structures supported by concrete pier foundations, and 24 would be direct-embed, multi-piece, galvanized steel structures. Two of the engineered steel structures would replace the existing H-frame wood structures that span across the Santa Margarita River. One of the existing H-frame wood structures, currently situated south of the Santa Margarita River, would be removed without replacement. The existing H-frame wood structure would be removed by using a helicopter to drop off ground crews in the project area, which would then cut the structure at existing grade. Once the structure is cut, a helicopter would be used to remove the structure from the site. In addition, one new distribution structure would be installed along the alignment outside of the Stuart Mesa Substation. The installation of the alternate electric power line and the replacement of transmission structures would take approximately 6 to 8 months to be completed and would occur entirely within SDG&E-owned utility easements. The alternate electric power line would require installation by the time the NHCP replacement is scheduled to open in January 2014. For development, maintenance, and repair of existing SDG&E-owned facilities on MCB Camp Pendleton, SDG&E would operate under its own Natural Communities Conservation Plan (NCCP). The NCCP is an implementing agreement negotiated between the California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), and SDG&E that covers activities conducted by SDG&E on MCB Camp Pendleton. The NCCP was established to protect and enhance the recovery of species covered by the CDFG and USFWS.

No Action Alternative

CEQ regulations require consideration of the No Action Alternative. Under the No Action Alternative, the helipad would not be constructed. During medical evacuations, patients would be transported by ambulance to an air station (i.e., MCAS Camp Pendleton) or location that supports helicopters used for medical evacuations. In addition, alternate electric power would not be provided to the NHCP replacement. Under the No Action Alternative, the Navy would not achieve the required levels of operational readiness for the NHCP replacement.

Summary of Environmental Impacts

Proposed Action

Implementation of the Proposed Action would not result in any significant individual or cumulative environmental impacts. Because there would be no significant impacts on the environment, no mitigation measures would be required. However, the Navy would conduct all actions described under the Proposed Action in accordance with Marine Corps Order (MCO) P5090.2A, *Environmental Compliance and Protection Manual*, Chapter 12, best management practices (BMPs), and environmental protection measures to minimize any potential impacts on the environment.

No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No significant impacts on the natural or man-made

environment would be expected from the No Action Alternative. Long-term impacts on the electrical infrastructure would be expected, because the existing wood structures would not be replaced with steel structures and would continue to deteriorate. In addition, alternate electric power would not be provided to the NHCP replacement by the time it is scheduled to open in January 2014.

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MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AICUZ	Air Installation Compatible Use Zone
APZ	accident potential zone
AQCR	Air Quality Control Region
ATC	air traffic control
BASH	Bird/Wildlife Aircraft Strike Hazards
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCND	Coastal Consistency Negative Determination
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CMP	Coastal Management Program
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
CZ	Clear Zone
CZMA	Coastal Zone Management Act
dBA	A-weighted decibel
DOD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft^2	square feet
FY	fiscal year
GHG	greenhouse gas
ICRMP	Integrated Cultural Resources Management Plan
IFR	Instrument Flight Rules
INRMP	Integrated Natural Resources Management Plan
km	kilometer
kV	kilovolt
L_{eq}	equivalent sound level
LOS	level of service
LZ	landing zone
m^2	square meters
MBTA	Migratory Bird Treaty Act
MCAS	Marine Corps Air Station

MCB	Marine Corps Base
MCO	Marine Corps Order
mg/m^3	milligrams per cubic meter
MSL	mean sea level
MTS	Metropolitan Transit System
NAAQS	National Ambient Air Quality Standards
Navy	U.S. Department of the Navy
NCCP	Natural Communities Conservation Plan
NEPA	National Environmental Policy Act
NHCP	Naval Hospital Camp Pendleton
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NRHP	National Register of Historic Places
O_3	ozone
OSH	occupational safety and health
OSHA	Occupational Safety and Health Administration
Pb	lead
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PSR	Pre-Activity Study Report
RONA	Record of Non-Applicability
ROW	right-of-way
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDG&E	San Diego Gas and Electric
SEA	Supplemental Environmental Assessment
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOP	standard operating procedure
SUA	Special Use Airspace
TDM	Transportation Demand Management
TIP	Transportation Incentive Program
tpy	tons per year
UFC	United Facilities Criteria
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USMC	U.S. Marine Corps
VFR	Visual Flight Rules
VOC	volatile organic compound

1. Purpose of and Need for the Proposed Action

1.1 Introduction

In January 2010, a Finding of No Significant Impact (FONSI) was issued for the *Environmental Assessment (EA) for the Naval Hospital Camp Pendleton (NHCP) Replacement, Marine Corps Base (MCB) Camp Pendleton, California* ("2010 NHCP Replacement EA") (MCBCP 2010a). The EA addressed the U.S. Department of the Navy's (Navy) proposal to construct and operate an NHCP replacement near the Main Gate of MCB Camp Pendleton. As stated in the FONSI for the 2010 NHCP Replacement EA, Alternative 1 was selected as the action to be implemented. Under Alternative 1, the NHCP replacement is being constructed on a 105-acre (45.2-hectare) site directly east of Vandegrift Boulevard and north of Wire Mountain Road, and one MCB Camp Pendleton-owned power line (12 kilovolts [kV]) and two San Diego Gas and Electric- (SDG&E) owned power lines (12 kV and 69 kV) have been relocated. Construction of the NHCP replacement at MCB Camp Pendleton began in December 2010 and is expected to be completed by January 2014. Further discussion of the NHCP replacement is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

During development of the 2010 NHCP Replacement EA, it was known that the NHCP replacement would require an alternate source of power to operate; however, the route for providing the alternate power to the NHCP replacement was unknown at that time. SDG&E had already begun considering several routing alternatives to provide the power to the NHCP replacement, but none were finalized by the time the FONSI was signed. The construction of a new helicopter pad (hereafter referred to as "helipad") was not required during development of the 2010 NHCP Replacement EA; however, after the FONSI was signed, it was determined that a new helipad would be required for the NHCP replacement. Therefore, this Supplemental Environmental Assessment (SEA) is being prepared to analyze two project elements that were not addressed in the 2010 NHCP Replacement EA: construction of a helipad and installation of an alternate electric power line. This SEA will provide a supplement to the 2010 NHCP Replacement EA. Accordingly, this SEA will refer to the 2010 NHCP Replacement EA, as appropriate, to avoid unnecessary duplication.

This section presents an introduction to the Proposed Action, the purpose of and need for the Proposed Action, the scope of environmental review conducted and decision to be made, and a summary of key environmental compliance requirements.

1.2 Project Location

As detailed in the 2010 NHCP Replacement EA, MCB Camp Pendleton encompasses more than 125,000 acres (50,585.8 hectares) in San Diego County, in southern California (see **Figure 1-1**). Further discussion of the location of MCB Camp Pendleton is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

1.3 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide a helipad in the immediate vicinity of the NHCP replacement. The Proposed Action is needed to facilitate the transport of sick and seriously injured patients in a time-efficient manner. In addition, the purpose of the Proposed Action is to provide alternate electric power for the NHCP replacement in the event that primary power is lost. During development of the 2010 NHCP Replacement EA, it was known that alternate power would be required for the NHCP

Figure 1-1. Location of MCB Camp Pendleton and Surrounding Areas

replacement; however, the route for providing the alternate power to the NHCP replacement was unknown and routing alternatives were not finalized by SDG&E. The construction of a new helipad was not identified during development of the 2010 NHCP Replacement EA; however, after the FONSI was signed, the USMC requested that the Navy construct a new helipad for the NHCP replacement. Therefore, this SEA has been prepared to address these two elements, which were not incorporated into the 2010 NHCP Replacement EA.

1.4 Scope of Environmental Review and Decisions to be Made

The first step in defining the scope of the SEA was to classify resources into two categories: (1) resources that could be impacted by the Proposed Action, and (2) resources for which it was determined that detailed analysis would not be warranted due to the very low likelihood of any potential impacts from the Proposed Action. Based on the potential environmental effects of the Proposed Action, the scope of the SEA provides a detailed analysis of the following resource areas: biological resources, cultural resources, visual resources, water resources, air quality, geological resources, land use, coastal zone management, transportation, infrastructure and utilities, noise, and human health and safety (including airspace management, aircraft safety, hazardous materials and wastes, and solid waste). Three environmental resources that are often analyzed in an EA have been omitted from this analysis. The resources and the basis for their exclusions are as follows:

- *Recreation.* The Proposed Action would not involve any activities that would alter recreational areas or impact recreational activities at MCB Camp Pendleton. Accordingly, detailed examination of recreation has been excluded from this SEA.
- *Public Services.* The Proposed Action would not affect MCB Camp Pendleton public services. MCB Camp Pendleton operates and maintains police, fire, and solid waste disposal facilities and personnel. The Proposed Action would not impact the ability of MCB Camp Pendleton to provide adequate police or fire services, and would not require additional fire stations or firefighting resources. Accordingly, detailed examination of public services has been excluded from this SEA.
- *Socioeconomics and Environmental Justice.* The Proposed Action would not affect socioeconomic resources, sensitive receptors (i.e., schools, daycare facilities, or other areas with high populations of children), or minority or low-income populations. Accordingly, detailed examination of recreation has been excluded from this SEA.

The decision to be made by the Commanding General, MCI West/MCB Camp Pendleton, is whether or not to construct a helipad and install an alternate electric power line at MCB Camp Pendleton.

1.5 Summary of Key Environmental Compliance Requirements

1.5.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] Sections 4321–4370h) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed major Federal actions before those actions are taken. NEPA established the Council on Environmental Quality (CEQ), which was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (CEQ Regulations).

The Navy implements NEPA through *Procedures for Implementing the National Environmental Policy Act* (32 CFR Part 775). Additional guidance is found in Secretary of the Navy Instruction 5090.6A, *Environmental Planning for Department of the Navy Actions*, and the Marine Corps Order (MCO) P5090.2A, *Environmental Compliance and Protection Manual, Chapter 12l.*

1.5.2 Integration of Other Environmental Statutes and Regulations

According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively" (40 CFR 1500.2). Statutes, regulations, instructions, ordinances, rules, and policies applicable to the analysis in this SEA are provided in the 2010 NHCP Replacement EA (MCBCP 2010a). The NEPA process does not replace procedural or substantive requirements of other environmental statutes and regulations; it addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of key environmental issues and requirements associated with a proposed action.

2. Description of the Proposed Action and Alternatives

This section describes the Proposed Action and alternatives, including the No Action Alternative. The NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. In addition, CEQ regulations also specify the inclusion of a No Action Alternative against which potential impacts can be compared. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in accordance with CEQ regulations.

2.1 Proposed Action

As stated in **Section 1.1**, this SEA will provide a supplement to the 2010 NHCP Replacement EA. Accordingly, the SEA will refer to the 2010 NHCP Replacement EA, as appropriate, to avoid unnecessary duplication. Under the Proposed Action, the Navy proposes to construct a helipad and install an alternate electric power line for the NHCP replacement at MCB Camp Pendleton, California. Details of the Proposed Action are provided in the following subsections.

All construction activities would take place within the NHCP replacement footprint, as defined in the 2010 NHCP Replacement EA (MCBCP 2010a). The construction contractor would be responsible for restoring all areas temporarily disturbed by construction activities. In addition, a qualified restoration ecologist would develop a restoration plan for all temporary disturbances to upland habitat.

2.1.1 Helicopter Pad

The Naval Hospital at MCB Camp Pendleton operates a Level III Emergency Department, which treats a broad scope of medical emergencies (e.g., heart attacks, allergic reactions, general injuries) before transferring patients to a major trauma center. A Level III Emergency Department has transfer agreements with Level I or Level II trauma centers that provide back-up resources for the care of severe injuries. MCB Camp Pendleton Federal Fire responds to emergency calls on-installation and transports patients to the appropriate medical facility via ground ambulance or air transport via Mercy Air Service, Inc. (Mercy Air). The Naval Hospital primarily sends trauma patients to higher-level trauma centers at an average of five outbound air transports per month (Navy 2011). The same level of operations that was provided at the original Naval Hospital would be provided at the NHCP replacement, once construction is completed in 2014. To support the air transport of patients, a helipad is required at the NHCP replacement. The construction of the helipad was not analyzed in the 2010 NHCP Replacement EA (MCBCP 2010a), because during development of the EA, it was determined that a new helipad would not be required. However, it was later determined by the Navy that a new helipad would be required for the NHCP replacement.

Under the Proposed Action, a helipad would be constructed to support medical evacuations at the NHCP replacement. The helipad would be constructed southwest of the NHCP replacement, across a drainageway (identified as waters of the United States), and across the access road from the south parking area. The project area for the proposed helipad has been previously disturbed and graded for construction of the NHCP replacement. An access road would be constructed from Wire Mountain Road, to the helipad, circling the helipad, and returning to Wire Mountain Road. Patients would be transported from the hospital to the helipad via ambulance. **Figure 2-1** shows the location of the proposed helipad, including the landing zone, Clear Zones (CZs), Accident Potential Zones (APZs), and the access road. The helipad would take up to 12 months to be designed and constructed. Utilities would be provided to the helipad, as necessary, and all necessary utility lines would be installed in tandem with the road. As briefly described in the 2010 NHCP Replacement EA, the proposed helipad would consist of

Figure 2-1. Proposed Location of the Helipad

a primary surface (approximately 200 x 200 feet [61 x 61 meters]) and an approach/departure clearance surface (25:1 slope) extending on both sides of the primary surface of the helipad (MCBCP 2010a). The helipad would be constructed to support the existing helicopter operations at the NHCP replacement; however, in emergency and non-routine operations, the helipad could support any rotary-winged aircraft in the Navy or U.S. Marine Corps (USMC), including the MV-22 (Navy 2011).

2.1.2 Alternate Electric Power Line

The majority of electric power for MCB Camp Pendleton is purchased from SDG&E. SDG&E, through its parent company Sempra Energy, holds certain leases and easements with MCB Camp Pendleton for some of the power lines and various associated support facilities. The installation currently maintains and operates approximately 335 miles (539 kilometers [km]) of underground and aboveground power lines and 215 substations. Two major power lines, owned by SDG&E, transit MCB Camp Pendleton: one runs from the City of Oceanside, north along the coast to the San Mateo Substation at the San Diego County line near the City of San Clemente; and the other runs from the City of Fallbrook onto the installation. Easements for public utilities, and corridors to maintain those utilities, run throughout the installation. Within the past several years, there has been an effort to route underground power lines within the footprint of existing road rights-of-way (ROWs) and trails to reduce disturbance to natural areas and restrictions to training operations (MCBCP 2010a).

The NHCP replacement would require alternate (i.e., redundant) power, which is not currently available through the existing 69-kV transmission line. The alternate power would provide electricity to the NHCP replacement in the event that the main power provided to the NHCP replacement is lost. In addition, the electricity requirements for the NHCP replacement exceed the capacity of the existing 69-kV electric power line. The installation of the alternate electric power line was not analyzed in the 2010 NHCP Replacement EA, because during development of the EA, SDG&E (who own the existing power line) was developing and finalizing plans to distribute electricity to the NHCP replacement. In 2012, plans for installation of the alternate electric power line were finalized.

Under the Proposed Action, SDG&E would install a new 12-kV alternate electric power line within their existing 2.64-mile (4.25-km), 69-kV electric power line and ROW, which stretches from the Stuart Mesa Substation in the north, to the NHCP replacement site in the south. The existing power line alignment travels south along the western boundary of the Stuart Mesa housing development, turns slightly southeast and spans the Santa Margarita River, travels south on the western edge of the desalination ponds before turning east along Lemon Grove Road, and then turns south until it terminates at the northern end of the NHCP replacement site. The new 12-kV alternate electric power line would support the NHCP replacement and would be installed as part of SDG&E's infrastructure upgrade requirements. In addition, SDG&E would replace 32 existing wood transmission structures (i.e., transmission poles) with 31 steel transmission structures as part of their infrastructure upgrade requirements. Installation of the alternate electric power line and replacement of the transmission structures would take approximately 6 to 8 months to be completed and would occur entirely within SDG&E-owned utility easements. The alternate electric power line would require installation by the time the NHCP replacement is scheduled to open in January 2014. **Figure 2-2** depicts the location of the proposed alternate electric power line.

Currently, the SDG&E-owned transmission lines at MCB Camp Pendleton are supported by wood transmission structures. In an effort to maintain reliability of existing facilities in high-fire threat and wind-prone areas in SDG&E's service territory, SDG&E would replace the wood transmission structures with steel transmission structures. Along the existing power line alignment, 32 wood structures would be replaced with 31 steel structures to support the existing 69-kV transmission line and the new 12-kV

Figure 2-2. Location of the Proposed Alternate Electric Power Line

alternate distribution line. Of the 31 replacement steel transmission structures, 7 would be engineered galvanized steel structures supported by concrete pier foundations, and 24 would be direct-embed, multi-piece, galvanized steel structures. Two of the engineered steel structures would replace the existing H-frame wood structures that span across the Santa Margarita River. One of the existing H-frame wood structures currently situated south of the Santa Margarita River would be removed without replacement. The existing H-frame wood structure would be removed by using a helicopter to drop off ground crews in the project area, who would then cut the structure at existing grade. Once the structure is cut, the helicopter would be used to remove the structure from the site. The new steel structure would range in height from approximately 65 to 145 feet (19.8 to 44.2 meters) above ground level. The two H-frame steel structures would be approximately 145 feet (44.2 meters) long and would be within 10 feet (3.0 meters) of the existing structures. The average overall height increase would be approximately 14 feet (4.3 meters) or 24 percent to allow for increased vertical spacing between conductors in accordance with current design standards. In addition, one new steel transmission structure would be installed along the alignment outside of the Stuart Mesa Substation.

All structures would be constructed to current SDG&E standards, including design standards for avian protection. Before commencement of construction activities, SDG&E would complete nine geotechnical borings with soil recovery using hollow-stem auger drilling techniques to evaluate the subsurface conditions at each site. All access to and from the sites would be via the existing approved access roads, which are within SDG&E-owned utility easements. In addition, all geotechnical borings and seismic refraction surveys would be performed within existing access roads or maintenance pads. Soil borings would be collected in the vicinity of nine structures and all excavated soil would be backfilled. In the event that soil borings cannot be collected at a site, due to unexpected conditions such as large cobble, a seismic refraction survey would also be conducted at the site.

The new steel structures would be installed as close as possible to where the existing wood structures were located. They would be installed using a line truck or crane, and would be backfilled with concrete. All of the new steel structures, regardless of foundation type, would require the installation of two grounding rods buried approximately 8 to 12 inches deep and 6 feet apart (20.3 to 30.5 centimeters deep and 1.8 meters apart) within the established temporary work areas. Each grounding rod would be 8 feet (2.4 meters) long and 4 inches (10.6 centimeters) wide. New impervious surface areas associated with the grounding rod installation would be less than 1 square foot (ft^2) (0.09 square meters [m^2]) per structure.

The seven engineered galvanized steel structures would be anchor-bolted to a reinforced concrete pier foundation. Construction of a concrete pier foundation would require drilling a hole to varying depths depending on the loading and soil conditions, but to a depth that would allow for the installation of a rebar cage measuring approximately 6 to 10 feet (1.8 to 3.0 meters) in diameter and 30 to 40 feet (9.1 to 12.2 meters) long. Concrete pier foundations would measure approximately 8 to 10 feet (2.4 to 3.0 meters) in diameter and 2 to 3 feet (0.6 to 0.9 meters) above ground level, resulting in approximately 51 ft^2 (4.7 m^2) of new impervious surface area per structure. A temporary work area measuring 75 feet (22.9 meters) long by 75 feet (22.9 meters) wide would be required for the installation of each pier foundation structure. This would result in a temporary disturbance area of 5,574 ft^2 (i.e., 5,625 ft^2 minus 10 ft^2 of new impervious surfaces) (517.9 m^2 [i.e., 522.6 m^2 minus 0.9 m^2 of new impervious surfaces]) for each engineered steel structure. The 24 direct-embed, multi-piece, galvanized steel structures would be installed by drilling a hole approximately 30 inches (76.2 centimeters) in diameter and 10 to 14 feet (3.0 to 4.3 meters) deep to accommodate the structure base. Each of these structures would be directly embedded approximately 10 to 14 feet (3.0 to 4.3 meters) deep into the drilled hole resulting in a structure measuring 65 to 75 feet (19.8 to 22.9 meters) above ground level. Installation would require use of a temporary workspace within a 10-foot (3.0-meter) radius of each structure. This workspace would be confined to previously disturbed areas around the base of the existing structure to the greatest extent

possible. Installation of each steel structure would result in 5 or 10 ft^2 (0.5 to 0.9 m^2) of new impervious surface area, and up to approximately 314 ft^2 (29.2 m^2) of temporary disturbance area per structure.

After the installation of all new steel structures is completed, the 69-kV line from the existing wood structures would be temporarily transferred to the new steel structures, and then reconductored using the proposed stringing sites. New conductor for the 12-kV alternate feed would then also be installed from the proposed stringing sites. It is assumed that each stringing site would be within SDG&E's existing ROW and would require an area measuring 150 feet by 150 feet (22,500 ft^2) (45.7 meters by 45.7 meters [2,090.3 m^2]). The following six stringing sites would be established along the new alternate electric power line:

- Stringing Site 1: Stuart Mesa Substation
- Stringing Site 2: Northern edge of Santa Margarita River
- Stringing Site 3: Southern edge of Santa Margarita River
- Stringing Site 4: West of the desalination ponds
- Stringing Site 5: South of the desalination ponds
- Stringing Site 6: Intersection of Lemon Grove Road and Vandegrift Road.

Once the 69-kV and 12-kV lines are installed on the new steel structures, the existing wood structures would be removed. Structure removal would include the use of boom/bucket trucks to remove cross arms and conductors. SDG&E would obtain access to the wood structures from existing access roads. Minor brushing would be required around each wood structure to prepare for the drill rig, dump trucks, concrete trucks, 10-ton crane, flatbed/crew trucks, backhoe, and skip loader. The existing wood structures range in height from approximately 50 to 75 feet (15.2 to 22.9 meters) above ground level. Existing wood structures, where feasible, would be pulled directly out of the ground via a hydraulic jack and line truck. The holes left after removal of existing wood structures would be backfilled with native soils (preapproved by the Land Management Section). Old structures, associated hardware, guys, anchors, and other debris generated would be removed from the project site and recycled or disposed of at a U.S. Environmental Protection Agency- (USEPA) approved landfill in the vicinity of the installation.

SDG&E would require two staging yards for installing the alternate electric power line. The staging yards would serve as the location for structure framing; refueling construction vehicles; staging water trucks, construction trailers, and portable restrooms; parking; lighting; and temporary storage of emergency generators required for the project. The staging yards also could be used as helicopter landing zones to pick up and drop off structures and equipment. The proposed staging yards would be the 3-acre (1.2-hectare) Lemon Grove yard, which is southwest of the intersection of Lemon Grove Road and Vandegrift Road on Camp Pendleton (see **Figure 2-3**), and 2-acre (0.9-hectare) Cannon staging yard, which is on SDG&E-owned property at the Encina Substation in the City of Carlsbad. Both proposed staging yards are currently unpaved. Construction crews would use an area (confined to the previously disturbed areas around the base of the existing structure to the greatest extent possible) within a 10-foot (3.0-meter) radius of each structure to provide a safe and adequate workspace. The Lemon Grove staging area is a previously disturbed area. All of the staging area would be used for the Proposed Action through 2014. There are temporary pond basins within the Lemon Grove staging area. In the event that the pond basins are impacted during construction activities, the area would be returned to grade and the pond basins would not be restored.

Natural Communities Conservation Plan. Installation of the alternate electric power line could result in impacts on sensitive plant and wildlife species or their habitat, which could include species listed by the U.S. Fish and Wildlife Service (USFWS) or the California Department of Fish and Game (CDFG) as

Figure 2-3. Location of the Lemon Grove Lay Down Area

threatened or endangered under the Endangered Species Act (ESA) or California Endangered Species Act (CESA), respectively. Therefore, SDG&E prepared a Natural Communities Conservation Plan (NCCP) in 1995, in coordination with USFWS and CDFG. The NCCP is a comprehensive program of measures established to protect and enhance the recovery of species protected by the CDFG and USFWS. Species discussed in the NCCP include 52 plant species, 58 wildlife species, Federal- and state-listed threatened and endangered species, and regionally rare plant and wildlife species. The NCCP describes SDG&E's obligation to implement appropriate measures to avoid, minimize, or mitigate potential impacts on species and their habitats discussed in the NCCP. The NCCP is implemented for all SDG&E activities taking place within the SDG&E ROW at MCB Camp Pendleton.

The first priority of the NCCP is avoidance; if an impact would be unavoidable, then state-of-the-art conservation practices would be used to determine the best mitigation methods, consistent with the Operational Protocols. The NCCP includes mandatory Operational Protocols, which were developed to avoid or minimize impacts on wildlife and their habitat. SDG&E has planned for mitigation opportunities by establishing an offsite mitigation bank that is drawn against when unavoidable impacts occur. Adherence to the Operational Protocols in the NCCP, implementation of the SDG&E Avian Protection Program, and any applicable regulatory requirements would result in avoiding or minimizing any potential impacts on biological resources to less than significant levels.

In the event that impacts would be realized, SDG&E has been issued an ESA Section 10(a) permit and CESA Section 2081 permit (for incidental take) with an Implementation Agreement with the USFWS and the CDFG, respectively. The permits are for the management and conservation of multiple species and their associated habitats as established according to the ESA, CESA, and California's Natural Community Conservation Planning Act. The NCCP's Implementation Agreement states that the mitigation, compensation, and enhancement obligations contained in the agreement and the NCCP meet all applicable standards and requirements of the CESA, ESA, California Natural Communities Conservation Planning Act, and California Native Plant Protection Act.

The NCCP has undergone California Environmental Quality Act (CEQA) review by the CDFG and it was determined that no CEQA mitigation measures would be necessary and a Negative Declaration has been issued. Therefore, no additional protective, mitigation, compensation, or preservation measures would be required for the installation of the alternate electric power line. The NCCP, with its approved Section 10(a) and Section 2081 permits, is an existing condition that has been included in the environmental baseline for this SEA. Any potential impacts on species covered under the NCCP have been preassessed and premitigated by the NCCP.

2.1.3 Conservation Measures

Conservation measures as they pertain to potential impacts from the Proposed Action were derived from the 2010 NHCP Replacement EA. These conservation measures are implemented by SDG&E during construction activities and are summarized as follows (MCBCP 2010a):

- Potential impacts on coastal California gnatcatcher-occupied sage scrub vegetation would be mitigated, as determined through consultation with the USFWS.
- Potential impacts on coastal California gnatcatcher on installation and adjacent to the installation would be mitigated, as determined through consultation with the USFWS.
- Potential noise, lighting, and urban infrastructure impacts on adjacent coastal California gnatcatcher habitat and least Bell's vireo habitat would be mitigated through the use of noise abatement best management practices (BMPs).

- A construction traffic control plan would be implemented to minimize traffic impacts during construction activities.
- Potential impacts from construction activities would be minimized by limiting hours of construction activities, avoiding unnecessary noise-generating equipment, and implementing standard noise attenuation measures.
- All construction activities would be conducted within the defined footprints. Any construction activities that are proposed outside the defined footprints would be subject to further review to determine if potential impacts would be expected.
- All equipment and vehicles would be power washed before entering MCB Camp Pendleton property and the project site. The purpose for this conservation measure is to control the spread of invasive (i.e., nonnative) weeds and is in support of MCO P5090.2A, 11200.7, which requires installations to restrict the introduction of exotic species into natural ecosystems.

2.2 No Action Alternative

CEQ regulations require consideration of the No Action Alternative. The No Action Alternative does not meet the purpose of and need for the Proposed Action (as described in **Section 1.3**). It does, however, serve as a baseline against which the impacts of the Proposed Action can be evaluated. Under the No Action Alternative, the helipad would not be constructed. During medical evacuations, patients would be transported by ambulance to an air station (i.e., Marine Corps Air Station [MCAS] Camp Pendleton) or a location that supports helicopters used for medical evacuations. In addition, alternate electric power would not be provided to the NHCP replacement.

Under the No Action Alternative, the Navy would not achieve the required levels of operational readiness for the NHCP replacement. The No Action Alternative will be carried forward for further detailed analysis in the SEA as a baseline for comparison with the Proposed Action.

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3. Affected Environment and Environmental Consequences

This SEA has been prepared to analyze two project elements that were not addressed in the 2010 NHCP Replacement EA (MCBCP 2010a), as the need for these elements was not known during development of the 2010 NHCP Replacement EA (see **Section 1.1** for further details). These project elements include construction of a helipad and installation of an alternate electric power line. This SEA will provide a supplemental analysis to the 2010 NHCP Replacement EA. Accordingly, this section will refer to the 2010 NHCP Replacement EA, as appropriate, to avoid unnecessary duplication.

This section presents a description of the environmental resources and baseline conditions that could be affected from implementing the Proposed Action. In addition, this section presents an analysis of the potential environmental consequences of implementing the Proposed Action, and the consequences of selecting the No Action Alternative.

All potentially relevant environmental resource areas initially were considered for analysis in this EA. In compliance with NEPA, CEQ, and 32 CFR Part 775 guidelines, the discussion of the affected environment focuses only on those resource areas potentially subject to impacts, and those with potentially significant environmental issues. This section includes biological resources, cultural resources, visual resources, water resources, air quality, geological resources, land use, coastal zone management, transportation, infrastructure and utilities, noise, and human health and safety (including airspace management).

3.1 Biological Resources

3.1.1 Definitions

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Sensitive biological resources include listed (threatened or endangered) and proposed species under the ESA as designated by the USFWS, state-listed threatened or endangered species, and migratory birds. Critical Habitat is designated if the USFWS determines that it is essential to the conservation of a federally listed threatened or endangered species. In consultation for those species with designated critical habitat, Federal agencies are required to ensure that their activities do not adversely modify or destroy Critical Habitat to the point that it would no longer aid the species' recovery (USFWS 2002).

3.1.2 Existing Conditions

3.1.2.1 Vegetation

Vegetative communities identified within the project area for the helipad previously included degraded bare ground, disturbed California annual grassland, and nondisturbed California annual grassland. However, since the project area for the helipad has previously been graded to support the construction of the NHCP replacement, no vegetative communities are anticipated to occur within the project area.

Sensitive flora potentially occurring within the project area for the alternate electric power line are identified based on SDG&E's NCCP. Descriptions of these flora species and their preferred habitats are as follows (SDG&E 2012):

- *Coastal dunes milk-vetch*. The coastal dunes milk-vetch (*Astragalus tener* var. *titi*) is an annual species that blooms in early spring. Preferred habitat includes coastal areas, particularly sandy scrubs, dunes, and prairies. The coastal dunes milk-vetch is a candidate for listing by the USFWS

under the ESA, listed as endangered by the State of California, and considered endangered by the California Native Plant Society.

- *Little mousetail*. Little mousetail (*Myosurus minimus* ssp. *apus*) is an annual species that grows from spring to summer and blooms in mid-spring. Preferred habitat includes vernal pools and wet grasslands. The little mousetail does not currently have a Federal status and is not protected in the State of California. Little mousetail was formerly considered to be rare and endangered by the California Native Plant Society. Although it is still considered to be endangered throughout its range, it is now on the California Native Plant Society Review List.
- *Nuttall's lotus*. Nuttall's lotus (*Lotus nuttallianus Greene*) is an annual species that blooms from spring to mid-summer. Preferred habitat includes coastal dunes and scrub. Nuttall's lotus is a candidate for listing by the USFWS under the ESA and by the State of California. It is considered endangered by the California Native Plant Society.
- *Palmer's grapplinghook*. Palmer's grapplinghook (*Harpagonella palmeri*) is an annual species that blooms from spring to early summer. Preferred habitat includes dry chaparral, coastal shrub, and grasslands. Palmer's grapplinghook is not listed by the USFWS under the ESA or by the State of California, but is considered fairly endangered by the California Native Plant Society.
- *San Diego button-celery*. The San Diego button-celery (*Eryngium aristulatum* var. *parishii*) is a perennial or biennial species that blooms from mid-spring to mid-summer. Preferred habitat includes temporary or vernal pools. The San Diego button-celery is listed as endangered by the USFWS under the ESA, listed as endangered by the State of California, and is considered endangered by the California Native Plant Society.

3.1.2.2 Wildlife

Because the project area for the proposed helipad has been previously graded to support the construction of the NHCP replacement, it is anticipated that no wildlife or their habitat exists within the project area.

Some of the wildlife species (i.e., arroyo toad [*Bufo californicus*], coastal California gnatcatcher [*Polioptila californica californica*], least Bell's vireo [*Vireo bellii pusillus*], pacific pocket mouse [*Perognathus longimembris pacificus*], and southwestern willow flycatcher [*Empidonax traillii extimus*]) potentially occurring within the project area for the alternate electric power line are described in the 2010 NHCP Replacement EA (MCBCP 2010a). All other wildlife species potentially occurring within the project area are described as follows:

- *Belding's savannah sparrow*. The Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) is a nonmigratory sparrow that prefers coastal salt marshes (Zembal and Hoffman 2010).
- *California least tern*. The California least tern (*Sternula antillarum browni*) is locally migrant and moves from northern breeding areas in April to southern areas in August through November. The species prefers coastal areas and associated beaches, bays, lakes, and rivers. Nesting occurs along beaches (USFWS 2012a).
- *Coastal cactus wren*. The coastal cactus wren (*Campylorhynchus brunneicapillus*) has a very exclusive relationship with the prickly pear (*Opuntia littoralis* and *Opuntia oricola*) and coastal cholla (*Opuntia prolifera*), as the pears and cholla provide an ideal nesting location for the wren. General preferred habitat also includes coastal sage and succulent scrub (SDG&E 2012).

- *Golden eagle*. The golden eagle (*Aquila chrysaetos*) has a broad habitat range which includes grasslands, forestlands, brush land, and deserts. Nesting sites include cliffs or tall trees in lightly forested areas away from human interaction (USFWS 2011).
- *Light-footed clapper rail*. The light-footed clapper rail (*Rallus longirostris levipes*) is a nonmigratory species that prefers herbaceous wetlands, particularly cordgrass-pickleweed saltmarshes (USFWS 2012a).
- *Northern harrier*. The northern harrier (*Circus cyaneus*) is a migrant species that has a wide range of habitats including meadows, marshes, grasslands, and pastures. Nesting sites occur on or near the ground (CDFG undated).
- *Western snowy plover.* The western snowy plover (*Charadrius alexandrinus nivosus*) prefers habitat in dry sandy areas near salt marshes and ponds. Nesting sites occur in sandy areas and at the banks of lagoons or estuaries (SDG&E 2012).
- *Southwest pond turtle*. The southwest pond turtle (*Actinemys marmorata pallida*) prefers ponds, lakes, rivers, and shallow streams generally located in woodlands or grasslands (SDG&E 2012).

Pre-Activity Study Report. Additional wildlife observed and documented by SDG&E in the Pre-Activity Study Report (PSR) include the mule deer (*Odocoileus hemionus*), American goldfinch (*Spinus tristis*), great blue heron (*Ardea herodias*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*). Species observed and documented by SDG&E in the PSR that are covered under the NCCP include the brown pelican (*Pelecanus occidentalis*) and the Cooper's hawk (*Accipiter cooperii*) (SDG&E 2012).

The PSR provides a discussion of the quality of habitat for each wildlife species potentially occurring within the project area for the alternate electric power line. Descriptions of the quality of habitats, as described in the PSR, are as follows (SDG&E 2012):

- *Arroyo toad.* There is a low potential for the arroyo toad to occur within the project area for the alternate electric power line; however, no observations of the species or its burrows were documented during the survey conducted by SDG&E.
- *Belding's savannah sparrow*. High-quality nesting habitat occurs within the project area for the alternate electric power line; however, no observations of the species were documented during the survey conducted by SDG&E.
- *Coastal California gnatcatcher.* Suitable high quality habitat occurs within the project area for the alternate electric power line. No nests were observed or documented during the survey conducted by SDG&E. There is a high potential for coastal California gnatcatchers to occur within the project area for the alternate electric power line; however, no gnatcatchers were observed or heard during the survey conducted by SDG&E.
- *Least Bell's vireo*. Several least Bell's vireos were observed and heard within the project area for the alternate electric power line during the survey conducted by SDG&E. There is a potential for high-quality habitat for this species to occur within the project area for the alternate electric power line.
- *Pacific pocket mouse.* There is low potential for this species to occur within the project area for the alternate electric power line. A Pacific pocket mouse survey was conducted from 20 to 25 May 2012 per direction from the USFWS. No pacific pocket mice were identified or documented during the survey (STBC 2012).

- *Southwestern willow flycatcher.* Suitable high-quality habitat for this species occurs within the project area for the alternate electric power line; however, no southwestern willow flycatchers were observed or heard during the survey conducted by SDG&E.
- *Southwestern pond turtle.* A pond within the project area for the alternate electric power line could provide egg-laying habitat for this species. No southwestern pond turtles were observed during the survey conducted by SDG&E.

Based on the PSR, the following species were not observed or heard during the survey conducted by SDG&E and no suitable habitat is present within the project area for the alternate electric power line or immediate surrounding areas (SDG&E 2012):

- California least tern
- Coastal cactus wren
- Golden eagle
- Light-footed clapper rail
- Northern harrier
- Western snowy plover
- Coastal dunes milk-vetch
- Little mousetail
- Nuttall's lotus.

Protected and Sensitive Species. Because the project area for the proposed helipad has previously been graded to support the construction of the NHCP replacement, it is anticipated that no protected or sensitive species or their habitats exist within the project area. On 22 October 2012, MCB Camp Pendleton submitted a Technical Memorandum for Additional Construction of Naval Hospital Replacement to the USFWS (see **Appendix A**). The technical memorandum requested reinitiation of Section 7 consultation for the Naval Hospital Relocation and Main Exchange Mall Complex Project because the Proposed Action includes construction activities that were not included in the Biological Opinion for the 2010 NHCP Replacement EA. On 25 October 2012, the USFWS submitted a concurrence letter to MCB Camp Pendleton (see **Appendix A**). According to the USFWS, recent installationwide gnatcatcher surveys identified two gnatcatcher territories approximately 4,000 feet (1,219.2 meters) to the north and east and one gnatcatcher territory approximately 2,600 feet (792.5 meters) to the south of the project area. Although these territories are outside of the action area, they could be exposed to temporary increases in noise, vibration, and nighttime lighting associated with medical helicopter use.

Some of the protected and sensitive species potentially occurring within the project areas for the alternate electric power line, including the arroyo toad, federally listed as endangered; coastal California gnatcatcher, federally listed as threatened; least Bell's vireo, federally listed as endangered; pacific pocket mouse, federally listed as endangered; and southwestern willow flycatcher, federally listed as endangered, are described in the 2010 NHCP Replacement EA (MCBCP 2010a). All other protected and sensitive species potentially occurring within the project area for the alternate electric power line are described as follows:

- *California least tern.* The California least tern is a federally endangered species and is currently known or believed to occur in eight California counties including San Diego County. No Critical Habitat has been designated for this species (USFWS 2012b).

- *Golden Eagle*. The golden eagle is a federally protected species under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712; Ch. 128), as amended, and under the Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668–668c), as amended.
- *Light-footed clapper rail.* The light-footed clapper rail is a federally endangered species and is currently known or believed to occur in five California counties, including San Diego County. No Critical Habitat has been designated for this species (USFWS 2012b).
- *Western snowy plover.* The western snowy plover is listed as a federally threatened species and Critical Habitat is designated for the Pacific coastal population. The final Critical Habitat rule published 29 September 2005 indicates that Camp Pendleton actively manages western snowy plover nesting and wintering habitat. The installation is exempt from Critical Habitat designation pursuant to section 4(a)(3) of the ESA on a legally operative Integrated Natural Resources Management Plan (INRMP) that provides a benefit to the snowy plover (USFWS 2005).
- *Coastal dunes milk-vetch.* The coastal dunes milk-vetch is a federally endangered species and is currently known or believed to occur in Los Angeles and Monterey counties, California. No Critical Habitat has been designated for this species (USFWS 2012b).
- *San Diego button-celery*. The San Diego button-celery is a federally endangered species and is currently known or believed to occur in Imperial, Orange, Riverside, and San Diego counties, California. No Critical Habitat has been designated for this species (USFWS 2012b).

3.1.3 Environmental Consequences

3.1.3.1 Proposed Action

Helicopter Pad

Vegetation. No impacts on vegetation would be expected from construction of the helipad. Less than 1 acre (0.4 hectare) of land would be disturbed as a result of construction of the helipad. As previously stated, the project area for the helipad has been graded to support the construction of the NHCP replacement; therefore, no new impacts on vegetation would be expected. In accordance with the installation's INRMP, no mitigation would be required for potential impacts on upland vegetation.

Wildlife. No impacts on wildlife would be expected from construction of the helipad. As previously stated, the project area for the helipad has been graded to support the construction of the NHCP replacement; therefore, no new impacts on wildlife or their habitat would be expected.

Protected and Sensitive Species. The construction of the helipad and access road may affect, but is not likely to adversely affect, coastal California gnatcatchers; however, no significant impacts on protected and sensitive species would be expected from construction of the helipad. As previously stated, the project area for the helipad has been graded to support the construction of the NHCP replacement. According to the concurrence letter received from the USFWS on 25 October 2012 (see **Appendix A**), potential indirect effects on coastal California gnatcatchers from the construction of the helipad could include increased noise, vibration, and nighttime lighting during medical evacuation flights. However, the USFWS does not anticipate the temporary increases in noise, vibration, and nighttime lighting associated with medial helicopter use would significantly affect breeding, feeding, or sheltering gnatcatcher pairs. The nearest gnatcatcher territory is approximately 0.5 miles from the project area. Gnatcatcher pairs within this area of MCB Camp Pendleton already are exposed to relatively high levels of noise and vibration associated with the daily operation of MCB Camp Pendleton, and the medical evacuation flights are likely to average only five transports per month. Therefore, the USFWS concurs

that the proposed construction of the helipad would not result in any adverse effects on gnatcatchers beyond those already analyzed in the Biological Opinion for the 2010 NHCP Replacement EA.

Alternate Electric Power Line

As stated in **Section 2.1.2**, SDG&E's NCCP identifies and addresses protection strategies for plants, animals, and their habitats as they relate to infrastructure and economic development, including the alternate electric power line. The first priority of the NCCP is avoidance; if an impact is unavoidable, then state-of-the-art conservation practices are used to determine the best mitigation methods consistent with the Operational Protocols identified in the NCCP. SDG&E has pre-mitigated by establishing an offsite mitigation bank, which is drawn against when unavoidable impacts occur. Adherence to the Operational Protocols in the NCCP, implementation of the SDG&E Avian Protection Program, and any applicable regulatory requirements would result in avoiding or minimizing any potential impacts on biological resources to less than significant levels. The NCCP provides that take of certain narrow endemic species is to be avoided. Take authorizations for these species will be limited to emergencies and unavoidable impacts from repairs to existing facilities and would not occur without first conferring with the USFWS and CDFG. For new projects, kill or injury of such animal species or destruction of such plants or their supporting habitat would not be covered by the NCCP or Implementing Agreement.

The PSR provides specific information on activities associated with installation of the alternate electric power line including structure replacement installation methods and materials, access route and staging area locations, and stringing sites. The PSR also provides habitat information for each structure and stringing site and lists potential plant and animal species within the project area for the proposed alternate electric power line.

Vegetation. No significant impacts on vegetation would be expected from installation of the alternate electric power line. The coastal dunes milk-vetch, little mousetail, and Nuttall's lotus prefer habitat types that do not occur within the project area for the alternate electric power line or immediate surrounding areas (SDG&E 2012). The soils within the project area are not sandy enough to support these species. Palmer's grapplinghook, San Diego button-celery prefers habitat types that could occur within the project area for the alternate electric power line; however, during the development of the PSR, none of these species were observed within the project area or the immediate surrounding areas (SDG&E 2012).

Wildlife. Based on the 2012 PSR, the following species were not observed or heard during the survey conducted by SDG&E and no suitable habitat is present within the project area for the alternate electric power line or immediate surrounding areas (SDG&E 2012):

- California least tern
- Coastal cactus wren
- Golden eagle
- Light-footed clapper rail
- Northern harrier
- Western snowy plover.

Therefore, no impacts on these species would be expected from installation of the alternate electric power line.

Protected and Sensitive Species. No significant impacts would be expected on the Belding's savannah sparrow, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, arroyo toad, or pacific pocket mouse. High-quality nesting habitat occurs within the project area for the Belding's

savannah sparrow, coastal California gnatcatcher, least Bell's vireo, and the southwestern willow flycatcher; and low-quality habitat occurs for the arroyo toad and the pacific pocket mouse. However, mitigation methods described in SDG&E's NCCP would be implemented for any impacts on these species. No impacts on the southwest pond turtle would be expected, as construction activities would not occur within ponds.

3.1.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on biological resources would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.1.2**.

3.2 Cultural Resources

3.2.1 Definitions

Cultural resources is an umbrella term used for many heritage-related resources, including prehistoric and historic sites, buildings, structures, districts, objects, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason.

Cultural resources are commonly subdivided into archaeological resources (i.e., prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing), architectural resources (i.e., buildings or other structures or groups of structures that are of historic architectural, or other significance), and traditional cultural resources (i.e., traditional gathering areas). Historic properties might include buildings, structures, prehistoric or historic archaeological sites, districts, or objects that are generally 50 years of age or older, are historically significant, and that retain integrity that conveys this significance. More recent resources, such as Cold War-era buildings, might warrant listing on the National Register of Historic Places (NRHP) if they have the potential to gain significance in the future or if they meet "exceptional" significance criteria. Section 106 of the National Historic Preservation Act (NHPA) requires agencies to take into account the effect of their undertakings on properties listed in or eligible for listing in the NRHP and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking.

3.2.2 Existing Conditions

Historic properties at MCB Camp Pendleton include historic-age buildings, structures, and archaeological sites. A discussion of the installation prehistory and historic period cultural history is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

Two known cultural resources sites, CA-SDI-10226/H, a multi-component site (i.e., prehistoric and historic), and CA-SDI-14005H extend across the existing power line alignment. Portions of Site CA-SDI-10226/H, within the access roads, have been recommended as NRHP-eligible. Because one of the wood transmission structures (Z102639) is within the mapped boundary of Site CA-SDI-10226/H, a focused testing program was completed on 20 June 2011 to determine the nature and extent of subsurface cultural deposits within the APE at Pole Z102639. No cultural resources were identified during testing activities. Site CA-SDI-14005H is located at the intersection of the existing power line alignment at Vandegrift Boulevard and Stuart Mesa Road. This site was determined to be eligible for the NRHP in 1997. The location of this site is within the APE and would be monitored during construction activities to ensure no impacts occur on this site.

In addition, three prehistoric sites, CA-SDI-13929, CA-SDI-13932, and CA-SDI-1084A/B, are within the vicinity of the proposed alternate electric power line. On 29 June 2012, the USMC consulted with the State Historic Preservation Office (SHPO) regarding the Proposed Action and potential impacts on cultural resources (see **Appendix A**). Site CA-SDI-13929 has not been assessed for NRHP eligibility; however, this site is outside of the APE and not located within any access roads. Site CA-SDI-13932 was also recorded in 1995 as a low-density artifact and marine shell scatter. This site has not been assessed for NRHP eligibility; however, access roads through this site would be monitored to ensure no impacts occur on the site. On 7 August 2012, the SHPO provided concurrence that the Proposed Action would not affect historic properties (see **Appendix A**).

3.2.3 Environmental Consequences

3.2.3.1 Proposed Action

Under Section 106 of the NHPA, a project would adversely affect a historic property if it would alter the characteristics that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property.

Helicopter Pad

Construction of the proposed helipad would not adversely affect any historic properties or cultural resources, as no historic properties are currently present within the project area for the proposed helipad. Construction activities could result in the discovery of NRHP-eligible archaeological resources. In the event that NRHP-eligible archaeological resources are encountered, measures set forth in the MCB Camp Pendleton Integrated Cultural Resources Management Plan (ICRMP) would be implemented. The ICRMP contains measures for securing the area where resources are discovered from further disturbance, notifying appropriate installation personnel, following specific guidelines and methods for determining NRHP eligibility, involving representatives of groups with valid interests, and resolving adverse effects on eligible historic properties.

Alternate Electric Power Line

Installation of the alternate electric power line and replacement of wood structures with steel structures would not adversely affect any historic properties or cultural resources. During structure replacement, SDG&E would avoid impacts on cultural resources with implementation of design modifications. Construction activities could result in the discovery of NRHP-eligible archaeological resources. In the event that NRHP-eligible archaeological resources are encountered, measures set forth in the MCB Camp Pendleton ICRMP would be implemented. The ICRMP contains measures for securing the area where resources are discovered from further disturbance, notifying appropriate installation personnel, following specific guidelines and methods for determining NRHP eligibility, involving representatives of groups with valid interests, and resolving adverse effects on eligible historic properties.

Though the installation of the alternate electric power line would not adversely affect any historic properties or cultural resources, the following measures would be implemented during construction activities:

- All ground disturbances would be monitored by a qualified archaeologist and Native American monitor.
- The treatment of all inadvertent discoveries of cultural resources would be monitored.

- Avoidance of sites CA-SDI-13,932 and CA-SDI-13,929 would be ensured by monitoring and rerouting of equipment.
- Site CA-SDI-14005H is within approximately 98 feet (30 meters) of the alignment and would be monitored to ensure that this portion of the railroad is not adversely impacted.
- Access roads through Site CA-SDI-10226/H would be avoided by rerouting equipment and monitoring would ensure no adverse impacts on the eligible portions of the site.
- A monitoring and discovery plan would be developed, reviewed, and approved by the Cultural Resources Branch, and implemented through a contract independent from the construction contract to ensure that all ground-disturbing activities undertaken would be monitored.
- A qualified archaeologist and Native American monitor would be approved by the Cultural Resources Branch 2 weeks before the commencement of ground-disturbing activities.
- The qualified archaeologist would contact the Cultural Resources Branch within 2 weeks before the commencement of ground-disturbing activities.
- A monitoring report would be submitted upon completion of the project for review and approval by the Cultural Resources Branch.

3.2.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on cultural resources would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.2.2**.

3.3 Visual Resources

3.3.1 Definitions

Visual resources are analyzed by viewsheds, which is an area visible to the human eye from a fixed vantage point. Urban setting viewsheds tend to be areas of scenic or historic value deemed worthy of preservation. Viewsheds are often spaces that are readily visible from public roadways or parks. The significance of visual resource effects is very subjective and depends on the scenic quality of the disturbed area, the degree of alteration, and the sensitivity of the viewer. Impacts can be short-term or long-term in duration. The presence of construction vehicles, and stockpiled building materials is a potential short-term impact. The construction of buildings and infrastructure, altering the natural topography, or the presence of light sources is a potential long-term impact.

The extent to which the transmission line development contrasts with the existing natural or built setting of an area (or the viewshed), and transmission line hazard lighting as an additional light source have been considered to determine visual impacts.

Military helicopter operations cause light emissions that could affect surrounding residents and other nearby light-sensitive areas such as homes, parks, or recreational areas. Intrusive light emissions could emanate from airborne or ground-based helicopter operations lighting. Considering Camp Pendleton operates helicopters as part of their training and operations, light emissions due to helicopters are considered existing light emissions; therefore, they are not discussed in this EA.

Development is required to be consistent with the Federal Aviation Administration (FAA) Aeronautical Information Manual, Official Guide to Basic Flight Information and Air Traffic Control Procedures (FAA 2012) regarding obstructive lighting.

3.3.2 Existing Conditions

Additional discussion of the existing visual character, visibility from the surrounding area, lighting and glare, and adopted plans and guidelines is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

The project area for the proposed helipad is in an open space area. Views closer to the project area for the proposed helipad consist of built environment with residential to the east and to the south. Views to the west consist of the I-5 freeway and additional military facilities, and views to the north consist of open space.

The section of I-5 to the west of the project site has been designated by the California Department of Transportation, Scenic Highway program as an Eligible State Scenic Highway – Not Officially Designated (CDOT 2007). The helipad would be approximately 600 feet (182.9 meters) east of northbound I-5 and would be visible from automobiles traveling north.

The existing SDG&E power line alignment is approximately 0.3 miles (0.5 km) east of the I-5 freeway at the Santa Margarita crossing and 0.2 miles (0.3 km) west of Stuart Mesa Road.

3.3.3 Environmental Consequences

3.3.3.1 Proposed Action

Helicopter Pad

The helipad would be constructed east of the NHCP replacement south parking lot area, with an access route connecting through the south parking area. The helipad would be visible from the two roadways and I-5. The proposed helipad would not obstruct the background views of the mountains or open space. Additionally, there are no parks or recreational areas adjacent to the proposed helipad project area. The helipad would be easily visible from northbound I-5. This freeway is eligible for state scenic highway designation but has not been officially designated as such. Therefore, no significant impacts on visual resources would be expected from construction of the helipad.

Alternate Electric Power Line

No significant impacts on visual resources would be expected from installation of the alternate electric power line. As part of the Proposed Action, one existing wood structure, south of the river, would be removed, and two H-frame structures would be installed, to span the transmission lines across the Santa Margarita River. The replacement of existing wood structures with larger steel structures would increase the average overall height of the structures by approximately 14 feet (4.3 meters; 24 percent) to allow for increased vertical spacing between conductors in accordance with current design standards. However, the increase in height would not significantly interfere with scenic view of the mountains and open space in the background. Therefore, no significant impacts on visual resources would be expected from structure replacement.

Currently, existing wood structures do not require obstacle lighting (i.e., high-intensity lighting devices that are attached to tall structures and are used as collision-avoidance measures) by the FAA. It is

anticipated that two H-frame transmission structures would require obstacle lighting and marking, which would be provided by SDG&E. Development is required to be consistent with the FAA Aeronautical Information Manual, Official Guide to Basic Flight Information, and ATC Procedures regarding obstructive lighting. An aeronautical light beacon would be required for each of the transmission line structures. The light beacon displays flashes of white and colored light to indicate the location of an obstruction. The light used could be a rotating beacon or one or more flashing lights and coded lashes further identify the beacon site. Coordination with the FAA would be required to determine the color combination to be displayed on the new larger transmission structures. Because only two of the H-frame transmission structures would require obstacle lighting and marking, negligible, impacts would be expected on visual resources from lighting; however, impacts would not be considered significant.

It is likely that there will be variations in the types and quantities of lighting and marker balls used for the alternate electric power line. The analysis in this SEA presents the most conservative scenario (i.e., scenario expected to have the greatest potential to impact the natural and man-made environment) in which both lighting and marker balls would be used for the proposed alternate electric power line. The additional transmission line light source, regardless of the color of the light, would not generate a substantial light source that would affect day or nighttime views. In addition, the nearest observatory is more than 30 miles (48.3 km) east of the project area. Therefore, no significant impacts on visual impacts from transmission structure lighting or marker balls would be expected.

The staging yards associated with the Proposed Action could result in temporary impacts on visual resources during construction activities; however, these impacts would not be considered significant.

3.3.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on visual resources would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.3.2**.

3.4 Water Resources

3.4.1 Definitions

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Hydrology concerns the distribution of water through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow.

Groundwater is water that exists in the saturated zone beneath the earth's surface and includes underground streams and aquifers. Groundwater quality and quantity are regulated under several different programs. Further discussion of the programs that regulate groundwater is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as the area that has a one percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to

passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

Wetlands are land areas saturated with water, either permanently or seasonally, which take on characteristics distinguishing themselves as distinct ecosystems. The primary factor that distinguishes wetlands is the characteristic vegetation adapted to its unique soil conditions. The USACE is responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the Clean Water Act (CWA). Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill materials into the waters of the United States, including wetlands. Per Section 401 of the CWA, any applicant for a Federal license or permit to conduct any activity, including the construction or operation of facilities that could result in any discharge into the navigable waters, is required to provide the licensing or permitting agency a water quality certification from the state in which the discharge originates or will originate. The water resources relevant to the Proposed Action are based on the 2010 NHCP Replacement EA (MCBCP 2010a).

3.4.2 Existing Conditions

This section provides a brief summary of the existing water resources at MCB Camp Pendleton. Additional details regarding the existing water quality; and existing groundwater, inland surface water, floodplains, and drainage patterns at MCB Camp Pendleton are provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

The Santa Margarita River watershed encompasses approximately 742 square miles (1,921.8 square kilometers). The river consists of 27 miles (43.5 km) of free-flowing brackish water. The Santa Margarita River has documented excessive levels of dissolved solids and nitrates, and increasing concentrations of magnesium and sulfate. The Santa Margarita estuary is listed as impaired by the Regional Water Quality Control Board due to its current eutrophic state. The upper Santa Margarita River is impaired because it contains high levels of phosphorus. Approximately 200 acres (80.9 hectares) of wetland habitat remain in the Santa Margarita estuary. Several series of wetlands, defined by the existing dominant vegetation, are associated within the 200 acres (80.9 hectares). The wetland series in relation to the project areas associated with the Proposed Action are the arroyo willow series, black willow series, mulefat series, and the bulrush series.

3.4.3 Environmental Consequences

3.4.3.1 Proposed Action

Helicopter Pad

Short-term impacts would occur on water resources from construction of the helipad. Minor increases in the transport of nonpoint source pollutants from runoff into storm water drainage ditches could occur from construction activities. Potential temporary impacts could be reduced through adherence to proper engineering practices and implementation of conservation measures. Currently, there is a storm water construction permit, Erosion-and-Sediment-Control Plan, and Storm Water Pollution Prevention Plan developed for the NHCP replacement. Before commencement of construction activities, these plans and permit would be updated to include construction of the helipad. Therefore, no significant impacts on water resources would be expected.

Upon completion of construction activities, there would be a slight increase in impervious surface area; however, the helipad (including the access road) would compose less than 1 acre (0.4 hectare)

(approximately 200 x 200 feet [61 x 61 meters]). Since the project area for the helipad has been previously graded for the NHCP replacement, habitat within the project area for the helipad is considered largely degraded bare ground and disturbed nonnative grassland. The small increase in impervious surface area would result in a slight reduction of groundwater recharge; however, impacts would be reduced with implementation of BMPs and conservation measures (see **Section 2.1.3**).

No impacts on floodplains or wetlands would be expected from construction of the helipad. Construction activities would not be expected to result in the discharge of dredged or fill material into nearby waters or wetlands. No impacts would be expected on waters of the United States regulated under Section 404 of the CWA.

Alternate Electric Power Line

Short-term impacts would be expected on water resources from removal of the existing wood transmission structures and installation of the new steel transmission structures. Minor increases in the transport of nonpoint source pollutants from runoff to storm water drainage ditches could occur from construction activities. In addition, structure replacement could result in erosion and related sedimentation that could flow into nearby water bodies, which could increase turbidity. A National Pollutant Discharge Elimination System permit with a site-specific Storm Water Pollution Prevention Plan containing BMPs would be required for this project. Adherence to proper engineering practices and implementation of conservation measures would also reduce potential temporary impacts. Currently, there is a storm water construction permit, Erosion-and-Sediment-Control Plan, and Storm Water Pollution Prevention Plan developed for the NHCP replacement. Before commencement of construction activities, these plans and permit would be updated to include installation of the alternate electric power line. Therefore, no significant impacts would be expected. Long-term, beneficial impacts on water resources would be expected from removal of the existing structure located south of the river. Removal of this structure would eliminate the need for maintenance activities near the river.

Construction equipment could leak or spills could occur during construction activities. All fuels and other potentially hazardous materials would be contained and stored appropriately. If a spill or leak were to occur, Navy SOPs and procedures identified in MCO P5090.2A, *Environmental Compliance and Protection Manual*, Chapter 12, would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination.

Upon completion of construction activities, there would be a slight increase in impervious surface area. Each steel transmission structure would result in 5 to 10 ft^2 (0.5 to 0.8 m^2) of new impervious surface area. In addition, each steel transmission structure would require two grounding rods, which would result in a slight increase of impervious surface area (less than 1 ft^2 [0.09 m^2] per structure). The overall increase in impervious surface area would result in a slight reduction of groundwater recharge; however, impacts would be reduced with implementation of BMPs and conservation measures (see **Section 2.1.3**). Therefore, no significant impacts on water resources would be expected from installation of the alternate electric power line.

No impacts on floodplains or wetlands would be expected from installation of the alternate electric power line. Construction activities associated with structure replacement and installation of the alternate electric power line would not require any discharges of dredged or fill material into jurisdictional waters or waterways. Therefore, no impacts on jurisdictional waters regulated under Section 404 of the CWA would be expected.

3.4.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on water resources would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.4.2**.

3.5 Air Quality

3.5.1 Definitions

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

Ambient Air Quality Standards. Under the CAA, the USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to affect human health and the environment. The NAAQS represent the maximum allowable concentrations for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb) (40 CFR Part 50). The CAA also gives the authority to states to establish air quality rules and regulations. The State of California has adopted the NAAQS and promulgated additional California State Ambient Air Quality Standards (CAAQS) for criteria pollutants. In some cases, the CAAQS are more stringent than the Federal primary standards. **Table 3-1** presents the NAAQS and CAAQS.

Attainment Versus Nonattainment and General Conformity. The USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area was previously designated nonattainment but is now attainment; and an unclassified air quality designation by USEPA means that there is not enough information to classify an AQCR appropriately, so the area is considered attainment.

The General Conformity Rule applies only to significant actions in nonattainment or maintenance areas. This rule requires that any Federal action meet the requirements of a State Implementation Plan (SIP) or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

Greenhouse Gas Emissions. Greenhouse gases (GHGs) are primarily produced by the burning of fossil fuels and through industrial and biological processes. On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO_2) and other GHG emissions that can be used to inform future policy decisions.

Table 3-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	California	
CO	8-hour (1)	9 ppm (10 mg/m^3)	Same as Federal	None
	1-hour (1)	35 ppm (40 mg/m^3)	20 ppm (137 µg/m^3)	None
Pb	Rolling 3-Month Average (2)	0.15 µg/m^3 (3)	Same as Federal	Same as Primary
	Quarterly Average	1.5 µg/m^3 (3)	Same as Federal	Same as Primary
NO_2	Annual (4)	53 ppb (5)	30 ppb (57 µg/m^3)	Same as Primary
	1-hour (6)	100 ppb	180 ppb (338 µg/m^3)	None
PM_{10}	Annual (Arithmetic Mean)	None	20 µg/m^3	None
	24-hour (7)	150 µg/m^3	50 µg/m^3	Same as Primary
$PM_{2.5}$	Annual (8)	15 µg/m^3	12 µg/m^3	Same as Primary
	24-hour (6)	35 µg/m^3	None	Same as Primary
O_3	8-hour (9)	0.075 ppm (10)	0.07 ppm (180 µg/m^3)	Same as Primary
	1-hour (Daily Maximum)	None	0.09 ppm (180 mg/m^3)	None
SO_2	1-hour (11)	75 ppb(12)	0.25 ppm (655 µg/m^3)(14)	None
	Annual (Arithmetic Average)	0.03 ppm	None	None
	24-hour	0.14 ppm	0.04 ppm (102 µg/m^3) (13)	None
	3-hour (1)	None	Same as Federal	0.5 ppm (1300 µg/m^3)

Sources: CARB 2012

Notes: Parenthetical values are approximate equivalent concentrations.

1. Not to be exceeded more than once per year.
2. Not to be exceeded.
3. Final rule signed 15 October 2008. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved. USEPA designated areas for the new 2008 standard on 8 November 2011.
4. Annual mean.
5. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
6. 98th percentile, averaged over 3 years.
7. Not to be exceeded more than once per year on average over 3 years.
8. Annual mean, averaged over 3 years.
9. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
10. Final rule signed 12 March 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
11. 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
12. Final rule signed 2 June 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved. USEPA expects to designate areas for the new 2010 standard by 2 June 2012.
13. Not to be above this level more than once in a calendar year.
14. Not to be above this level more than twice in a consecutive 7-day period.

Key: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

Air Quality Permitting. Stationary source permitting impacts (e.g., New Source Review permits, Federal Prevention of Significant Deterioration and Title V operating permits) are not discussed further in the air quality analysis because there are no stationary sources installed as part of the Proposed Action defined by this Environmental Assessment.

3.5.2 Existing Conditions

Additional discussion of the existing environmental setting, climate, and meteorology; criteria pollutants; GHG emissions; and applicable air quality regulations, plans, and policies is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

As detailed in the 2010 NHCP Replacement EA, MCB Camp Pendleton is located in the San Diego Air Basin (SDAB). The SDAB is made up of only San Diego County. For Federal standards, SDAB is in non-attainment for the 8-hour O_3 (Subpart 1) standard and considered a moderate maintenance area for CO standards (USEPA 2012a, USEPA 2012b). The SDAB is in serious non-attainment for California state 1-hour O_3 standards and non-attainment for California state $PM_{2.5}$ and PM_{10} standards (CEPA 2012b). The area is either classified as attainment or unclassifiable for all other Federal and California criteria pollutant standards.

The most recent emissions for the SDAB are shown in **Table 3-2**. O_3 is not a direct emission; it is generated from reactions of volatile organic compounds (VOCs) and nitrogen oxides (NO_x), which are precursors to O_3. Therefore, for the purposes of this air quality analysis, VOCs and NO_x emissions are used to represent O_3 generation.

The California Air Resources Board (CARB) regulates air quality for the State of California. The San Diego County Air Pollution Control District (SDAPCD) is the air pollution control authority for San Diego County.

Table 3-2. SDAB Air Emissions Inventory (2008)

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
San Diego County	60,351	168,435	318,459	1,210	65,338	14,257

Source: CEPA 2012a

3.5.3 Environmental Consequences

3.5.3.1 Proposed Action

Helicopter Pad

Short-term impacts on air quality would be expected from the construction of the helipad; however, these impacts would not be considered significant. Construction activities would result in minor impacts on local and regional air quality during construction activities, primarily from site-disturbing activities and operation of construction equipment. Appropriate fugitive dust-control measures would be employed during construction activities to suppress dust. All emissions associated with construction operations would be temporary in nature. Emissions from the construction of the proposed helipad are summarized in **Table 3-3**. Emissions estimation spreadsheets and a summary of methodology used are included in **Appendix D**.

Table 3-3. Estimated Air Emissions Resulting from the Helipad Construction

Activity	NO_x tpy	VOC tpy	CO tpy	SO_2 tpy	PM_{10} tpy	$PM_{2.5}$ tpy	CO_2 tpy
Construction Combustion	4.807	0.551	2.119	0.380	0.345	0.335	544.622
Construction Fugitive Dust	-	-	-	-	1.629	0.163	-
Haul Truck On-Road	0.325	0.235	0.956	0.026	0.387	0.101	82.333
Construction Commuter	0.066	0.066	0.595	0.001	0.006	0.004	78.889
Total Emissions	***5.198***	***0.852***	***3.669***	***0.407***	***2.367***	***0.602***	***705.844***
General Conformity *de minimis* and NEPA Thresholds	100	100	100	NA*	NA*	NA*	NA
Exceed *de minimis* Thresholds	No	No	No	NA	NA	NA	NA

Note: * These pollutants do not have regulatory requirements for General Conformity. These pollutants are the USEPA's Prevention of Significant Deterioration requirement for major stationary sources of 250 tpy, which the Navy uses as a NEPA significance threshold.

Construction of the helipad would contribute directly to emissions of GHGs from the combustion of fossil fuels. Because CO_2 emissions account for approximately 92 percent of all GHG emissions in the United States, they are used for analyses of GHG emissions in this assessment. The U.S. Department of Energy, Energy Information Administration estimates that in 2009 gross CO_2 emissions in the State of California were 375.8 million metric tons and in 2009 gross CO_2 emissions in the entire United States were 5,425.6 million metric tons (DOE 2011). The anticipated amount of CO_2 emissions for construction of the helipad is 640.2 metric tons (705.84 U.S. tons). Construction activities would represent a negligible contribution (less than 0.0002 percent) to statewide GHG inventories and an extremely negligible contribution (less than 0.00002 percent) to national GHG inventories.

Once construction of the helipad is complete, no impacts on air quality would be expected from the use of helicopters up to five times a month for patient transportation. The existing helipad uses EC135, CH-46, and UH-60 helicopters or similar, and averages five air transports per month. **Table 3-4** lists expected emissions from either EC135 or UH-60 helicopters (or similar vehicles) for up to 60 air transports a year. These emissions levels would be the same as current levels generated by air transports at the existing helipad. Therefore, there is a net zero impact on air quality from post-construction helicopter emissions.

Table 3-4. Estimated Helicopter Air Emissions for the Helipad Operations

	Landing and Take-off Cycle (tpy)			One Hour of Flight (tpy)		
	NO_x	CO	$PM_{2.5}$	NO_x	CO	$PM_{2.5}$
EC135 Helicopter (60 flights per year)	0.0136	0.0682	0.000463	0.110	0.122	0.00337
UH-60 Helicopter (60 flights per year)	0.0379	0.0487	0.00112	0.359	0.0886	0.0133
Total	**0.0515**	**0.1169**	**0.001583**	**0.469**	**0.2103**	**0.01329**

Source: SFOCA 2009

Alternate Electric Power Line

Short-term impacts on air quality would be expected from the construction of the alternate electric power line; however, these impacts would not be considered significant. Construction activities would result in minor impacts on local and regional air quality during construction activities, primarily from site-disturbing activities and operation of construction equipment. Appropriate fugitive dust-control measures would be employed during construction activities to suppress dust. All emissions associated with construction operations would be temporary in nature. Emissions from the construction of the proposed alternate electric power line are summarized in **Table 3-5**. Emissions estimation spreadsheets and a summary of methodology used are included in **Appendix D**.

Emissions for use of helicopters during construction activities would depend on the type of helicopter to be used and the number of flights proposed. **Table 3-6** lists expected emissions from an UH-60 or similar helicopter for up to 62 flights (2 flights for each new steel power structure).

The U.S. Department of Energy, Energy Information Administration estimates that in 2009 gross CO_2 emissions in the State of California were 375.8 million metric tons and in 2009 gross CO_2 emissions in the entire United States were 5,425.6 million metric tons (DOE 2011). The anticipated amount of CO_2 emissions for construction of the alternate electric power line is 485.890 metric tons (535.711 U.S. tons). Construction activities would represent a negligible contribution (less than 0.0002 percent) towards statewide GHG inventories and an extremely negligible contribution (less than 0.00001 percent) toward national GHG inventories.

Table 3-5. Estimated Air Emissions Resulting from Alternate Electric Power Line Construction

Activity	NO_x tpy	VOC tpy	CO tpy	SO_2 tpy	PM_{10} tpy	$PM_{2.5}$ tpy	CO_2 tpy
Construction Combustion	3.312	0.429	1.453	0.262	0.237	0.230	375.583
Construction Fugitive Dust	-	-	-	-	0.730	0.073	-
Haul Truck On-Road	0.214	0.155	0.628	0.017	0.254	0.066	54.154
Generators	9.990	0.022	0.207	0.246	0.024	0.024	40.241
Construction Commuter	0.055	0.055	0.496	0.001	0.005	0.003	65.741
Total Emissions	***13.571***	***0.660***	***2.785***	***0.526***	***1.251***	***0.397***	***535.711***
General Conformity *de minimis* and NEPA Thresholds	100	100	100	NA*	NA*	NA*	NA
Exceed *de minimis* or NEPA Thresholds	No	No	No	NA	NA	NA	NA

Note: * These pollutants do not have regulatory requirements for General Conformity. These pollutants are the USEPA's Prevention of Significant Deterioration requirement for major stationary sources of 250 tpy, which the Navy uses as a NEPA significance threshold.

Table 3-6. Estimated Helicopter Air Emissions for the Alternate Electric Power Line Construction

	Landing and Take-off Cycle tpy			One hour of Flight tpy		
	NO_x	CO	$PM_{2.5}$	NO_x	CO	$PM_{2.5}$
UH-60 Helicopter (62 flights)	0.0392	0.0504	0.00116	0.371	0.0916	0.0103

Source: SFOCA 2009

Operation and maintenance of the alternate electric power line would be expected to generate short-term impacts on air quality, due to the use of maintenance vehicles; however, these impacts would not be considered significant. Appropriate BMPs would be employed, such as minimizing vehicle trips and keeping vehicles and equipment maintained, to minimize emissions.

3.5.3.2 General Conformity for the Proposed Action

SDAPCD's Rule 1501, "Conformity of General Federal Actions" establishes SDAB's Federal designation status for each pollutant. The applicable *de minimis* levels for San Diego County are 100 tons per year (tpy) for VOCs, NO_x, and CO (San Diego County 2012). SDAB is currently classified as non-attainment area for the Federal 8-hour O_3 (Subpart 1) standard and a moderate maintenance area for Federal CO standards; VOC and NO_x are precursors to the formation of O_3. SDAB is in attainment or unclassifiable for the Federal PM_{10}, $PM_{2.5}$, NO_2, SO_2, and Pb standards.

The combination of construction annual (2013) emissions as a result of implementation of the Proposed Action and construction emissions calculated in the 2010 NHCP Replacement EA for 2013 would be below the General Conformity *de minimis* thresholds (see **Tables 3-7**). Therefore, implementation of the Proposed Action would conform to the SIP and a formal conformity determination would not be required. The General Conformity Record of Non-Applicability (RONA) is provided in **Appendix C**. Potential impacts on air quality from the combined construction of the Proposed Action and emissions from the NHCP replacement construction activities would be short-term, local, and minor.

Table 3-7. Total Estimated Air Emissions (2013)

Activity	NOx tpy	VOC tpy	CO tpy	SO2 tpy	PM10 tpy	PM2.5 tpy	CO2 tpy
Helipad Construction	5.198	0.852	3.669	0.407	2.367	0.602	705.844
Alternate Electric Power Line Construction	13.981	0.66	2.927	0.526	1.251	0.408	535.711
Total Construction Emissions for the Proposed Action	***19.179***	***1.512***	***6.596***	***0.933***	***3.618***	***1.01***	***1,241.555***
Emissions for NHCP Replacement EA 2013 Construction Activities [a]	12.9	6.2	9.1	0.005	25.3	5.8	1,482.82
Total Construction Emissions for 2013	***32.079***	***7.712***	***15.696***	***0.938***	***28.918***	***6.81***	***2,724.375***
General Conformity *de minimis*	100	100	100	NA [b]	NA [b]	NA [b]	NA
Exceed *de minimis* or NEPA Thresholds	No	No	No	No	No	No	NA

Notes:
a. Emissions for the NHCP replacement construction activities as determined in the 2010 NHCP Replacement EA.
b. These pollutants do not have regulatory requirements for General Conformity. These pollutants are well below the USEPA's Prevention of Significant Deterioration requirement for major stationary sources of 250 tpy, which the Navy uses as a NEPA significance threshold.

3.5.3.3 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on regional or local air quality would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.5.2**.

3.6 Geological Resources

3.6.1 Definitions

Topography. Topography refers to the general shape and arrangement of a land surface, including its elevation and the position of both natural and artificial features.

Geology. Geology is the study of the Earth's composition and provides information on the structure of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Soils. Soils are the unconsolidated materials overlying bedrock or other parent materials. Soils are usually described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink swell potential, and erosion potential affect their abilities to support certain uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime Farmland. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses.

Geologic Hazards. Geologic hazards are defined as a natural geologic event that can endanger human lives and property. Examples include earthquakes, landslides, rock falls, ground subsidence, and avalanches.

3.6.2 Existing Conditions

The project area for the helipad has previously been graded to support the construction of the NHCP replacement. No hydric soils or prime farmland soils are identified within the footprint of the Proposed Action. An overview of the soils mapped at MCB Camp Pendleton and its environs, along with the project areas associated with the Proposed Action are displayed in **Figure 3-1**. Additional discussion of the existing soils, topography, geologic setting, tectonic and seismic setting, fault rupture, seismic shaking, liquefaction, and other geologic hazards is provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

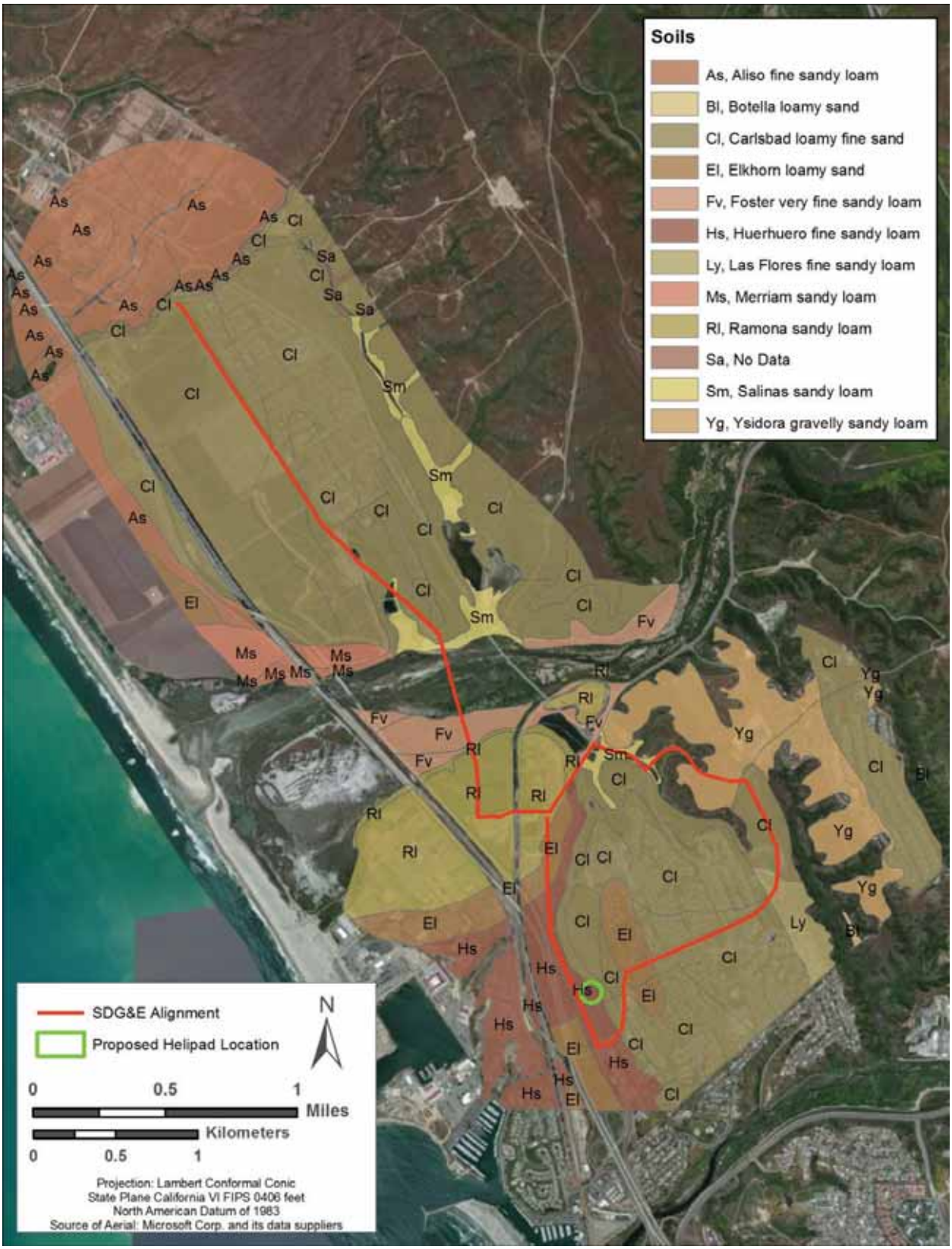

Figure 3-1. Soils Mapped at MCB Camp Pendleton

3.6.3 Environmental Consequences

3.6.3.1 Proposed Action

Helicopter Pad

Because the project area for the helipad has previously been graded to support the construction of the NHCP replacement, no additional site preparation (i.e., grading, recontouring, paving, or removing vegetation) would be required. Use of storm water-control measures that favor reinfiltration would minimize the potential for erosion and sediment production as a result of future storm events. An Erosion-and-Sediment-Control Plan; Spill Prevention, Control, and Countermeasures Plan; and Storm Water Pollution Prevention Plan were developed for the NHCP replacement project and would be adhered to and implemented throughout construction activities. The Huerhuero fine sandy loam is the only soil mapped at the project area for the helipad. The soil was analyzed for building construction limitations associated with shallow excavations and local roads, and might be limited for development due to its slope. Site-specific soil investigations would be carried out before construction to determine if limitations exist and to determine appropriate BMPs to offset potential impacts; therefore, no impacts on soils would be anticipated. No impacts on topography or geology would be expected. The project area for the helipad is not near active faults or other geologic hazards. Therefore, impacts on humans and property would not be expected from geologic hazards within the project area.

Alternate Electric Power Line

Short- and long-term impacts on soils would be expected from the installation of the alternate electric power line. Short-term impacts during construction would result from disturbing soils, clearing vegetation, grading, and excavating or trenching; however, these impacts would not be considered significant. Vegetative clearing would increase erosion and sedimentation potential, particularly where structures must be placed in areas with steep slopes. An Erosion-and-Sediment-Control Plan; Spill Prevention, Control, and Countermeasures Plan; and Storm Water Pollution Prevention Plan were developed for the NHCP replacement project and would be adhered to and implemented during and following structure replacement to contain soil and runoff on site, and would reduce potential for impacts associated with erosion and sedimentation, and transport of sediments in runoff.

As a result of structure replacement, long-term impacts would be expected, as soils would be compacted and soil structure would be disturbed and modified; however, these impacts would not be considered significant. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and would be eliminated in those areas within the footprint of the pier foundation structures. Surface soil structure would be permanently altered in locally affected areas. Loss of soil structure due to compaction from foot and vehicle traffic could change local drainage patterns. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. Use of storm water-control measures that favor reinfiltration would minimize the potential for erosion and sediment production as a result of future storm events.

The transmission line is underlain by a variety of soils, some of which could be limited for development by slope characteristics or erosion potential. Site-specific soil testing should be conducted before installing the alternate electric power line to determine if limitations exist and to determine appropriate BMPs to offset potential effects.

No impacts on topography or geology would be anticipated. The proposed project area is not near active faults or other geologic hazards. Therefore, impacts on humans and property would not be expected from geologic hazards within the project area.

3.6.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on geological resources would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.6.2**.

3.7 Land Use

3.7.1 Definitions

Land use is assessed relative to consistency with adopted land use plans and policies and relative to compatibility with existing and planned land use. Two main objectives of land use planning are to ensure orderly growth and achieve compatible uses among adjacent properties or areas.

3.7.2 Existing Conditions

This section provides a brief summary of the existing land use at MCB Camp Pendleton. Additional details regarding the adopted plans and policies, existing land use, and proposed land use are provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

The *Marine Corps Base Camp Pendleton 2030 Base Master Plan* ("2030 Base Master Plan") (MCBCP 2010b) supersedes the previous master plan approved in 1993. The MCB Camp Pendleton Master Plan was updated in December 2010, and the 2030 Base Master Plan is the official planning document for MCB Camp Pendleton. The 2030 Base Master Plan is used to maintain continuity in future facilities planning and development and for siting future projects.

The project area for the proposed helipad is an undeveloped portion of land southwest of the NHCP replacement site, within the southern sector of the installation. The project area is situated north of Vandegrift Boulevard and west of Wire Mountain Road within the Maingate 20 Area. The southern sector of the installation is a mix of residential, commercial, and undeveloped uses and parks.

The alternate electric power line would be installed along the existing SDG&E-owned power line alignment. Adjacent land uses include a housing development, the Santa Margarita River, desalination ponds, the NHCP replacement, and undeveloped lands along the utility corridor used for MCB training purposes.

3.7.3 Environmental Consequences

3.7.3.1 Proposed Action

Helicopter Pad

The construction of the helipad would not involve changes to land use designation and would not impact the viability of existing land use in the vicinity of the proposed helipad; therefore, no changes to land use designations would be expected. Land in the vicinity of the proposed helipad exposed to noise levels above 65 dB DNL would not be expected to increase significantly under the Proposed Action, as

compared to baseline conditions, because a substantial number of helicopter operations already occur throughout the installation. The proposed helipad would be constructed outside of regulated airspace areas or other training and impact areas per the 2030 Base Master Plan. The active emergency landing zone would be used infrequently, and adjacent land uses are compatible with helipad operations; therefore, no impacts on land use would be expected from construction of the helipad.

Alternate Electric Power Line

The installation and operation of the alternate electric power line would be compatible with existing and planned future development in the area. Structure replacements associated with the installation of the alternate electric power line would not involve changes to land use designations and would not affect the viability of existing land use in the vicinity of proposed alternate electric power line; therefore, no changes to land use designations would be expected. Installation and operation of the alternate electric power line would not result in incompatibility among adjacent land uses in the vicinity of the proposed project areas; therefore, no impacts on land use would be expected from installation of the alternate electric power line.

3.7.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on land use would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.7.2**.

3.8 Coastal Zone Management

3.8.1 Definitions

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §§ 1451–1466, as amended) encourages coastal states to develop and implement coastal zone management plans. The term "coastal zone" refers to the coastal waters and adjacent shorelands, which are strongly influenced by each other and in proximity to the shorelines of several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The coastal zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which, have direct and significant impacts on the coastal waters; and to control those geographical areas, which are likely to be affected by or vulnerable to, sea level rise. The coastal zone, as defined in Section 304 of the CZMA, excludes "lands the use of which is by law subject solely to the discretion of, or which is held in trust by the Federal government, its officers or agents" (16 U.S.C. § 1453[1]).

The State of California has developed and implemented a federally approved Coastal Management Program (CMP) describing current coastal legislation and enforceable policies. The California Coastal Act of 1976 (California Public Resources Code, Division 20) implements California's CZMA program. The California Coastal Commission is the state coastal zone planning and management agency and administers the state program in coordination with a network of other state agencies with jurisdiction over coastal resources.

3.8.2 Existing Conditions

The general description of the California coastal zone can be found in Section 30103 of the California Public Resource Code. Site-specific revisions to the coastal zone boundaries can be found at Sections 30150–30174 of the California Public Resources Code. The California coastal zone generally extends

1,000 yards (914.4 meters) inland from the mean high tide line. In some estuarine habitat and recreational areas, it extends inland to the first major ridgeline or 5 miles (8.0 km) from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards (914.4 meters) from the mean high tide line. The coastal zone of California extends seaward 3 nautical miles (NOAA 2012).

Since MCB Camp Pendleton is on Federal land, it is excluded from the coastal zone per Section 304; however, Section 307 states that "Federal actions within a state's coastal zone (or outside the coastal zone, if the action affects land or water uses or natural resources within the coastal zone) be consistent to the maximum extent practicable with the enforceable policies of the state coastal management plan" (16 U.S.C. § 1456(c)(1)(A)). The Navy recognizes that actions addressed in this SEA could affect land or water uses or natural resources of the coastal zone via "spill over," and, therefore, are subject to the consistency provisions of the CZMA.

3.8.3 Environmental Consequences

3.8.3.1 Proposed Action

Pursuant to 15 CFR § 930.35, the Navy has developed and submitted a Coastal Consistency Negative Determination (CCND) to the California Coastal Commission under the CZMA. The USMC has determined that the proposed construction of the helipad and installation of the alternate electric power line would not adversely affect any coastal zone resources. The CCND incorporates all activities associated with the Proposed Action, including those activities that would take place at MCB Camp Pendleton. The USMC analyzed the impacts from implementation of the Proposed Action on the coastal zone by assessing reasonably foreseeable direct and indirect effects on the coastal uses or resources. On 17 September 2012, the California Coastal Commission concurred with the CCND stating that the Proposed Action would not adversely affect coastal zone resources, including public access, wetlands, sensitive habitat, and public views (see **Appendix B**).

MCB Camp Pendleton is a secure military installation and access to the installation is limited to proper Department of Defense (DOD) identification card holders, such as military personnel, civilian employees, and military families. No waterfront exists within the project areas and no new in-water construction would occur as part of the Proposed Action. An Erosion-and-Sediment-Control Plan; Spill Prevention, Control, and Countermeasures Plan; and Storm Water Pollution Prevention Plan were developed for the NHCP replacement project and would be adhered to and implemented throughout construction activities. No significant impacts on California's coastal zone would be expected from construction of the helipad or installation of the alternate electric power line.

3.8.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on coastal zone management would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.8.2**.

3.9 Transportation

3.9.1 Definitions

The transportation resource is defined as the system of roadways, highways, and all other transportation networks that are in the vicinity of the proposed project areas and could reasonably be expected to be potentially affected by the Proposed Action. Traffic relates to changes in the number of vehicles on roadways and highways as a result of a proposed action.

3.9.2 Existing Conditions

This section provides a brief summary of the existing transportation systems at MCB Camp Pendleton and a summary of the Transportation Demand Management (TDM) Plan being implemented at MCB Camp Pendleton to reduce traffic congestion. The TDM Plan is provided in this SEA in **Appendix E**. Additional details regarding the existing traffic conditions; transportation circulation system; intersection levels of service (LOSs); and applicable regulations, plans, and policies at MCB Camp Pendleton are provided in the 2010 NHCP Replacement EA. In addition, detailed traffic count data collected and traffic modeling calculation reports supporting the related traffic evaluation are provided in Appendix F of the 2010 NHCP Replacement EA (MCBCP 2010a).

Primary access to MCB Camp Pendleton is provided by I-5 and the Main Gate on Vandegrift Boulevard. Traffic studies have highlighted the need to mitigate traffic congestion at the I-5 southbound entrance ramp from Harbor Drive, which provides access to the Main Gate (see **Figure 3-2**). The excessive queuing along this route can be attributed in part to the individual cantonment areas, Marine Corps Main Exchange, and the NHCP replacement site, which are in close proximity to the Main Gate. Traffic congestion along this portion of Harbor Drive and I-5 can also be attributed in part by the exiting traffic through the Del Mar Gate between afternoon peak hours (3:30 p.m. to 5:30 p.m.), which exacerbates congestion of eastbound left-turn traffic at the Harbor Drive/I-5 southbound entrance ramp.

The project area for the proposed helipad is between Wire Mountain Road and Vandegrift Boulevard, just north of where the two roadways intersect and about 1,200 feet (365.8 meters) north of the Main Gate. Vandegrift Boulevard turns into Harbor Drive about 700 feet (213.4 meters) south of the Main Gate. The project area for the helipad is vacant with the exception of a drainage creek (identified as waters of the United States) and access road for the south parking area. The project area for the alternate electric power line is within the existing SDG&E-owned power line alignment and ROW. The majority of the existing power line alignment can be accessed via unmaintained access roads.

The installation's peak morning start times are 5:00 a.m. and between 6:30 a.m. and 7:30 a.m. and the afternoon end times are between 4:30 p.m. and 5:00 p.m. Based on the number of personnel and proximity to the Main Gate the following cantonment areas have the greatest influence on the traffic congestion near the Main Gate: the current Naval Hospital (27 Area), Del Mar (20 Area), Mainside Headquarters, Chappo (22 Area), Margarita (33 Area), 24 Area, and Las Flores (41 Area).

Alternative transportation options to, from, and within the installation include bus routes, bike paths, and the "Y-Shuttle." The Metropolitan Transit System's (MTS) Route 315 services the current Naval Hospital, Mainside Headquarters, and Chappo (22 Area). MTS Route 395 services Del Mar (20 Area) and Las Flores (41 Area) (MTS undated). A bike path runs parallel to I-5 from San Clemente to the Main Gate Vicinity (San Diego Reader 2008). The Camp Pendleton Y-Shuttle is a free shuttle for active-duty military personnel that provides transportation to and from medical, "women, infants and children," and counseling appointments (Stride undated).

Figure 3-2. Aerial Photograph of Harbor Drive and I-5 Southbound Ramp

There are several programs (e.g., Navy's Transportation Incentive Program (TIP) and qualified vanpool programs) designed to promote alternative transportation to, from, and at MCB Camp Pendleton. The Navy's TIP is designed to reimburse mass transit costs incurred by personnel in their local commute. The iCommute program is a regional vanpool program, which allows groups of 7 to 15 people to lease and share a van on a month-to-month basis. The San Diego Association of Governments contributes $400 per van per month to help the participants with the lease costs. Real-time ridesharing matches drivers and riders during or directly before the time of the taking of a trip on an ad-hoc basis. Despite the existence of these programs, the participation of MCB Camp Pendleton personnel in these programs is low. Less than 2 percent of MCB Camp Pendleton personnel participate in Navy's TIP and less than 1 percent of installation's personnel are currently enrolled in a qualified vanpool program.

In response to previous traffic studies at MCB Camp Pendleton and as a traffic-reduction measure, a TMD Plan has been developed and will be implemented at MCB Camp Pendleton (see **Appendix E**). The TDM Plan aids in the reduction of traffic levels at the I-5 southbound entrance ramp from Harbor Drive (near the installation's Main Gate) during peak traffic hours. This entrance point for MCB Camp Pendleton provides access to the NHCP replacement, Marine Corps Main Exchange, and Oceanside community. This plan provides three primary strategies to mitigate anticipated traffic congestion:

- Enhanced marketing and outreach/promotion of the Navy's TIP. The Navy's TIP provides financial incentives to military employees who commute to work using public transit, vanpools, and carpools.
- Expansion of regional vanpool program participation to MCB Camp Pendleton by installation personnel, in coordination with the San Diego Association of Governments regional vanpool program (iCommute).
- Development of a real-time ridesharing pilot project to increase the effectiveness and attractiveness of carpooling or vanpooling as a preferred mode for the journey-to-work commute to MCB Camp Pendleton.

Implementation of the TDM Plan promotes a reduction of overall installation traffic at MCB Camp Pendleton.

3.9.3 Environmental Consequences

3.9.3.1 Proposed Action

Helicopter Pad

Temporary impacts on the transportation network would be expected from the construction of the helipad due to increased traffic and parking lot use associated with construction equipment and contractor vehicles; however, these impacts would not be considered significant. Construction traffic would comprise a small percentage of the total existing traffic on the installation. Many of the heavy construction vehicles would be driven to the project area and kept on site for the duration of construction activities, resulting in relatively few additional trips. The project area for the helipad is approximately 1,200 feet (365.8 meters) from the Main Gate, where there are currently high levels of traffic congestion.

Temporary increases in traffic would also be expected on Wire Mountain Road and Vandegrift Boulevard. As discussed in the 2010 NHCP Replacement EA, the segment of Wire Mountain Road to Lemon Grove Road has an Average Daily Traffic (ADT) of 26,959 and a capacity of 37,000. The segment of Vandegrift Boulevard to the I-5 Bridge has an ADT of 12,540 and a capacity of 19,000. The

segment of Vandegrift Boulevard to MACS Road has an ADT of 13,585 and a capacity of 19,000 (MCBCP 2010a). Therefore, it is anticipated that these segments have adequate capacity to accommodate the increased construction traffic. Construction traffic routes can be selected and scheduled to avoid peak traffic flows at the Main Gate and Del Mar Gate, which would minimize potential impacts on traffic congestion.

Long-term, beneficial impacts on the transportation system would be expected from the newly constructed helipad. During emergency events, patients would be transported directly from the NHCP replacement via helicopter to higher-level trauma centers. This would allow for increased emergency response time. No significant impacts on the transportation system would be expected from construction of the helipad.

Alternate Electric Power Line

Temporary impacts on the transportation network would be expected from the installation of the alternate electric power line and structure replacement due to increased traffic associated with construction equipment and contractor vehicles; however, these impacts would not be considered significant. Two staging yards would be used to support construction vehicles and construction equipment during installation of the alternate electric power line; therefore, construction traffic along installation roadways would be minimal and no impacts would be expected on the parking infrastructure at MCB Camp Pendleton. In addition, construction traffic would compose a small percentage of the total existing traffic on the installation. Many of the heavy construction vehicles would be driven to the staging yards and kept on site for the duration of construction activities, resulting in relatively few additional trips.

The stringing sites would not be on or immediately adjacent to any roadways with the exception of Stringing Site 6, which is at the intersection of Lemon Grove Road and Vandegrift Road. The segment of Wire Mountain Road to Lemon Grove Road has an ADT of 26,959 and a capacity of 37,000. The segment of Lemon Grove Road to Stuart Mesa Road has an ADT of 27,140 and a capacity of 37,000. The segment of Vandegrift Boulevard to the I-5 Bridge has an ADT of 12,540 and a capacity of 19,000. The segment of Vandegrift Boulevard to MACS Road has an ADT of 13,585 and a capacity of 19,000. Therefore, it is anticipated that these segments have adequate capacity to accommodate the increased construction traffic.

Due to the location of stringing sites and staging yards, it is anticipated that most of the increased construction traffic would be concentrated at the intersection of Lemon Grove Road and Vandegrift Road. This intersection is approximately 1.1 miles (1.8 km) from the Main Gate, where there are currently high levels of traffic congestion. However, construction traffic routes can be selected and scheduled to avoid peak traffic flows at the Main Gate, which would further reduce potential impacts on the transportation system. No significant impacts on the transportation system would be expected.

3.9.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP. No impacts on transportation would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.9.2**.

3.10 Infrastructure and Utilities

3.10.1 Definitions

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to economic growth of an area. The infrastructure components to be discussed in this section include the electricity supply, natural gas supply, water supply, and sanitary sewer and wastewater system at MCB Camp Pendleton. Solid waste has been excluded from analysis in this section for reasons described in **Section 1.4.**

3.10.2 Existing Conditions

Details regarding the existing electric, natural gas, potable water, and sanitary sewer and wastewater systems at MCB Camp Pendleton are provided in the 2010 NHCP Replacement EA (MCBCP 2010a).

3.10.3 Environmental Consequences

3.10.3.1 Proposed Action

Helicopter Pad

No significant impacts on infrastructure and utilities would be expected from construction of the helipad. No impacts on the natural gas supply or sanitary sewer and wastewater systems would be expected. During construction activities and upon completion of the helipad, there would be no increase in the demand for sanitary sewer and wastewater treatment and there would be no increase in demand for natural gas.

Electricity Supply. No significant, adverse impacts on the electricity supply would be expected from construction of the helipad. Upon completion of construction activities, there would be a long-term increase in demand for electricity associated with the lighting required for the helipad. The long-term increase in demand would not be expected to exceed the existing capacity; therefore, potential impacts would not be considered significant.

Water Supply. No significant, adverse impacts on the water supply would be expected from construction of the helipad. Construction activities would require minimal amounts of water, primarily for dust-suppression purposes. This water would be obtained from the installation's water supply system. It is assumed that construction activities would be staggered; therefore, any potential increases in water demand would be temporary, intermittent, and minimal.

Alternate Electric Power Line

No significant impacts on infrastructure and utilities would be expected from installation of the alternate electric power line. No impacts on the natural gas supply or sanitary sewer and wastewater systems would be expected. During construction activities and upon completion of installation of the alternate electric power line, there would be no increase in the demand for sanitary sewer and wastewater treatment and there would be no increase in demand for natural gas.

Electricity Supply. Long-term, beneficial impacts would be expected from the replacement of 32 existing wood structures with steel structures. In general, wood structures have an economic service life of 30 years. With ideal conditions and proper maintenance, wood structures can obtain an actual service life of 80 years (Morrell 2008). Replacement of the existing wood structures with steel structures would

extend the service life of the circuit and would also provide the required support for the new alternate 12-kV power line. Manufacturers of the steel transmission structures estimate a service life of 60 to 85 years (Davis 2012).

It is not anticipated that electric service at the installation would be interrupted when the existing wood structures are removed and the new steel structures are installed. The conductor strands would be moved one segment at a time. Any disruptions in power supply would be temporary; therefore, potential impacts would not be considered significant.

Water Supply. Short-term impacts on the water supply would be expected from construction of the alternate electric power line. Construction activities would require minimal amounts of water, primarily for dust-suppression purposes. This water would be obtained from the installation's water supply system. It is assumed that construction activities would be staggered; therefore, any potential increases in water demand would be temporary, intermittent, and minimal.

3.10.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on the natural gas supply, water supply, or sanitary sewer and wastewater system would be expected from implementation of the No Action Alternative. Long-term impacts on the electrical infrastructure would be expected. The existing wood structures would not be replaced with steel structures and would continue to deteriorate. In addition, alternate electric power would not be provided to the NHCP replacement by the time it is scheduled to open in January 2014.

3.11 Noise

3.11.1 Definitions

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas.

Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. A-weighted decibel (dBA) is a metric used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981). **Table 3-8** compares common sounds and shows how they rank in terms of the effects on hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet (6.1 meters) away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981).

Table 3-8. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet [4.6 meters])	Very quiet
50	Light auto traffic (100 feet [30.5 meters])	Quiet
60	Air conditioning unit (20 feet [6.1 meters])	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet [0.6 meters])	Annoying
90	Heavy truck (50 feet [15.2 meters]) or city traffic	Very annoying; Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet [60.1 meters]) or auto horn (3 feet [0.9 meters])	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: FICON 1992, *HDR extrapolation

Single sound events for aircraft noise are measured using the Sound Exposure Level (SEL) metric. SEL is a measure of the total sound exposure of an event compressed into a 1-second time interval. Thus, it takes in the sound energy of the event and represents it as a steady noise level that lasts for 1 second. The SEL metric represents the sound of an aircraft flyover.

3.11.2 Existing Conditions

A detailed discussion regarding the existing noise sources and receptors; noise levels; and applicable noise regulations, plans, and policies at MCB Camp Pendleton is provided in the 2010 NHCP Replacement EA (MCBCP 2010a). Noise levels from flight operations that exceed ambient noise levels typically occur beneath main approach and departure corridors on the airfield, in local air traffic patterns around the airfield, and in areas immediately adjacent to parking ramps and aircraft staging areas. As aircraft in flight gain altitude, the noise level contribution decreases to lower levels, which often become indistinguishable from the ambient noise levels.

3.11.3 Environmental Consequences

3.11.3.1 Proposed Action

The sources of noise under the Proposed Action that could impact populations include construction activities, operational vehicular noise, operational equipment, and occasional helicopter operations. Noise from construction activities varies depending on the type of construction equipment being used, the area that the action would occur in, and the distance from the noise source. Construction activities can cause a temporary increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, and other work equipment. **Table 3-9** lists noise levels associated with common

types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Individual equipment used for construction activities would be expected to result in noise levels comparable to those shown in **Table 3-9**. Noise from construction activities varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. To predict how these activities would impact adjacent populations, noise from the probable equipment was estimated. For example, construction usually involves several pieces of equipment (e.g., bulldozers and trucks) that can be used simultaneously. Under the Proposed Action, the cumulative noise from the equipment, during the busiest day, was estimated to determine the total impact of noise from construction activities at a given distance. Examples of expected cumulative construction noise during daytime hours at specified distances are shown in **Table 3-10**. These sound levels were estimated by adding the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source.

Table 3-9. Predicted Noise Levels for Construction Equipment

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94
Diesel fuel power generator	72

Sources: USEPA 2012a

Table 3-10. Estimated Noise Levels from Construction Activities

Distance from Noise Source (feet)	Estimated Noise Level (dBA)
50	90–94
100	84–88
150	81–85
200	78–82
400	72–76
800	66–70
1,200	< 64

Helicopter Pad

Construction noise levels were determined to be well below the City of San Diego's and San Diego County's construction noise limits of 75 dBA hourly equivalent sound level (L_{eq}) at a residential property line (City of San Diego 2008, San Diego County 2009). The short-term increase in noise levels from construction of the helipad would not result in significant impacts on the surrounding populations. The noise from construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy construction equipment would be used periodically during construction; therefore, noise levels from the equipment would fluctuate throughout the day. The proposed construction would be expected to result in noise levels comparable to those indicated in **Table 3-10**.

Once construction of the helipad is completed, helicopter operations are expected to be conducted occasionally (i.e., up to 5 times each month for patient transfers). The helicopters proposed for use are the UH-60, EC-135, and CH-46. **Table 3-11** includes typical noise levels expected for the UH-60, CH-46, and EC-135 helicopters. Potential impacts on noise levels from helicopter operations are anticipated to be similar to those of existing helicopter operations; however, impacts would depend on the proposed flight paths and the type of populations exposed to overflights. Residences adjacent to Wire Mountain Road are approximately 800 feet (243.8 meters) from the proposed helipad. Consequently, populations would be exposed to noise levels of approximately 75 to 85 dBA SEL from helicopter overflights.

Table 3-11. Predicted Noise Levels for Helicopters

Distance (feet)	SEL Noise Levels (dBA)		
	UH-60*	CH-46	EC-135
250	93	89	85
800	85	82	75
3,000	73	71	63
9,000	60	61	54
14,000	54	56	50

Note: * H-60 is typically used as general name for a variety of United States military helicopters. Noise levels detailed in the table are for the UH-60.

Alternate Electric Power Line

Construction of the alternate electric power line would be expected to result in short-term impacts on the noise environment from equipment that would be used during structure-replacement activities. However, these impacts would not be considered significant. Individual equipment used for construction activities would be expected to result in noise levels comparable to those shown in **Table 3-9**. Noise from construction activities varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source.

Given the extent of the construction activities and the proximity to residential and commercial developments, short-term impacts from construction noise would be expected. However, noise generation would last only for the duration of construction activities and could be minimized through measures such as the restriction of these activities to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.), and the use of equipment exhaust mufflers. It is not anticipated that the short-term increase in noise levels resulting from the Proposed Action would cause significant, adverse impacts on the surrounding populations.

Once construction activities are complete, short-term impacts on the noise environment could occur during operation and maintenance of the alternate electric power line, due primarily to the use of maintenance vehicles. However, noise generation is anticipated to be infrequent and would only last for short durations. It is not anticipated that the short-term increase in noise levels from maintenance activities would cause significant impacts on the surrounding populations.

3.11.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided to the NHCP replacement. No impacts on the existing noise environment would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.11.2**.

3.12 Human Health and Safety

3.12.1 Definitions

Human health and safety includes consideration of any activities and operations that have the potential to affect the safety, well-being, or health of the public and military personnel. The primary human health and safety issues identified in this SEA include worker health and safety during construction activities, hazardous materials and waste disposal, solid waste management, airspace management, and aircraft safety.

Worker Health and Safety. Construction site and worker safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices (e.g., industrial hygiene) that reduce risks of illness, injury, death, and property damage. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment (PPE), and availability of Material Safety Data Sheets. The health and safety of onsite military and civilian workers are safeguarded by DOD and Navy regulations designed to comply with standards issued by the Federal Occupational Safety and Health Administration (OSHA), the USEPA, and state occupational safety and health agencies. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Hazardous Materials and Wastes. Hazardous materials are defined by 49 CFR § 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR § 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180. Hazardous wastes are defined by the Resource Conservation and Recovery Act at 42 U.S.C. § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Airspace Management. Airspace is defined as the space that lies above the land and waters of a nation and comes under its jurisdiction. The scheduling, or time dimension, is an important factor in airspace management and air traffic control (ATC). The management of airspace is governed by Federal legislation and by military regulations and procedures. The ultimate authority in assigning and managing

airspace is the Federal Aviation Administration (FAA), which establishes rules of flight and ATC procedures to govern safe operations within each type of designated airspace. The airspace environment is described in terms of its principal attributes, namely controlled and uncontrolled airspace and Special Use Airspace (SUA).

Controlled airspace is a generic term that encompasses the different classifications (Class A, B, C, D, and E) of airspace and defines dimensions within which ATC service is provided to flights. The FAA has established various airspace designations, including the following:

- *Class A.* Airspace from 18,000 feet (5,846.4 meters) above mean sea level (MSL) up to 60,000 feet (18,288.0 meters) MSL.
- *Class B.* Airspace from the surface up to 10,000 feet (3,048.0 meters) MSL.
- *Class C.* Generally, airspace from the surface up to 4,000 feet (1,219.2 meters) above the airport elevation.
- *Class D.* Generally, airspace from the surface up to 2,500 feet (762.0 meters) above the airport elevation.
- *Class E.* Class E airspace can be described as general controlled airspace. The majority of Class E airspace is where more stringent airspace control has not been established (FAA 2012).

The FAA designates SUA for certain military training activities. One such airspace type is designated restricted airspace. A Restricted Area is airspace designated in Federal Aviation Regulations (FAR) Part 73, Special Use Airspace, within which the flight of nonparticipating aircraft, while not wholly prohibited, is subject to restriction. The Navy Air Installation Compatible Use Zone (AICUZ) Program delineates clear zones (CZs) and accident potential zones (APZs), which are areas around an airfield where an aircraft mishap is most likely to happen.

Aircraft Safety. Aircraft safety is based on the physical risks associated with aircraft flight. Military aircraft fly in accordance with FAR Part 91, *General Operating and Flight Rules*, which govern such things as operating near other aircraft, ROW rules, aircraft speed, and minimum safe altitudes. This regulation has precise requirements for the use of airports, heliports, and other landing areas; local flying rules; and SUA. For example, an installation commander having Navy aircraft assigned to his or her command must prepare and publish local flying rules. These rules include the use of tactical training and maintenance test flight areas, arrival and departure routes, and airspace restrictions, as appropriate, to help control air operations. In addition, naval aviators must also adhere to the flight rules, ATC, and safety procedures provided in Navy guidance (Navy 2009).

The two key aircraft safety concerns addressed in this SEA include aircraft mishaps and Bird/Wildlife Aircraft Strike Hazard (BASH), and they are defined as follows:

- *Aircraft Mishaps.* Mishaps are often the result of hazards, which are potential causes of damage and injury under human control. The goal of the Naval Aviation Safety Program is to eliminate or control hazards through safety awareness training and enforcing the highest possible standards of conduct and performance. Mishaps are classified (i.e., Classes A, B, and C) by the Navy according to the severity of resulting injury, occupational illness, or property damage, with Class A being the most severe (Navy 2003).
- *BASH.* The Navy devotes considerable attention to detecting and reporting hazards to prevent mishaps from occurring, including BASH. Bird and wildlife strikes are an aircraft safety concern due to the potential damage that a strike might have on the aircraft, injury to aircrews, or injury to

persons on the ground from debris (CNIC 2010). The Navy has developed bird detection and deterrent strategies, harassment techniques, and habitat modification to reduce the incidence of wildlife strikes at Navy airfields around the world.

3.12.2 Existing Conditions

Worker Health and Safety. The existing human health and safety conditions associated with Federal health and safety requirements are consistent with those described in **Section 3.12.1.4** (Other Federal Health and Safety Requirements) of the 2010 NHCP Replacement EA, and are incorporated herein by reference.

Human health and safety at MCB Camp Pendleton is managed under applicable Federal and state health and safety policies, including those identified by the Navy, Marine Corps Public Health Center, OSHA, and the USEPA. In addition, human health and safety is addressed in the Navy Region Southwest Safety and Occupational Health Program Instruction and the Marine Corps occupational safety and health (OSH) program, which provide policy, procedures, and overall guidance for the OSH program to ensure a safe and healthful work environment for all Navy personnel. It is the policy of the Navy to observe every possible precaution in the planning and execution of all operations that occur on or off shore to prevent injury to people or damage to property.

A detailed discussion regarding the management of hazardous materials and wastes including the Installation Restoration Program and petroleum release sites at MCB Camp Pendleton is provided in the 2010 NHCP Replacement EA (MCBCP 2010a). MCB Camp Pendleton operates and maintains two sanitary landfills on the installation. Solid waste collection and disposal are contracted out to Professional Waste Systems, which collect and dispose of solid waste at one of the two sanitary landfills on the installation.

Airspace Management. MCAS Camp Pendleton (Munn Field) Airport is in the southern portion of MCB Camp Pendleton, and is surrounded by Class D airspace that extends from the surface up to 2,600 feet (792.5 meters) above MSL with a radius of 2.6 miles (4.2 km) to the north, west, and northwest and a radius of 4 miles (6.4 km) in all other directions. There are four restricted areas associated with MCB Camp Pendleton and MCAS Camp Pendleton (R-2503A, R-2503B, R-2503C, and R-2503D). R-2503A and R-2503D overlie the western and southwestern portions of the installation and extend over the Pacific Ocean. The designated altitudes of R-2503A are surface to 2,000 feet (609.6 meters) MSL and R-2503D extends from 2,000 feet (609.6 meters) MSL to 11,000 feet (3,352.8 meters) MSL. R-2503B is over the central, eastern, and southeastern portions of the installation. R-2503B extends from surface to 15,000 feet (4,572.0 meters) MSL. R-2503C overlays R-2503B in the central and eastern portions of MCB Camp Pendleton and extends from 15,000 feet (4,572.0 meters) above MSL to 27,000 feet (8,229.6 meters) above MSL. MCB Camp Pendleton is designated as the using agency, and is the scheduling authority of this airspace (MCBCP 2010b). The extreme southern portion of MCB Camp Pendleton in the vicinity of the Main Gate, including the NHCP replacement site, is not under any restricted areas. However, the northern portion of the alternate electric power line is under R-2503A/D.

MCB Camp Pendleton has standardized helicopter landing zones (LZs) at all developed areas that are used for VIP, command, and routine administrative flights. In addition, there are several confined area landing sites, which are training and practice sites for helicopter pilots, and designated drop zones for parachute and paratroop mission training throughout the installation. The only helicopter operations areas in the vicinity of the project areas associated with the Proposed Action are three helicopter LZs: one north of the northern terminus of the existing 69-kv power line alignment in Area 41 (Las Flores), and two in Area 20 (Del Mar) to the west of the NHCP replacement site (MCBCP 2010b).

Aircraft Safety. Aircraft operations at MCB Camp Pendleton and MCAS Camp Pendleton are predominantly helicopters and light fixed-wing aircraft (MCBCP 2010b). The CZs and APZs at MCAS Camp Pendleton (Munn Field) do not overlap with the NHCP replacement site or any of the project areas associated with the Proposed Action and, therefore, are not discussed further in this SEA.

The number of Navy-wide Class A flight aviation accidents and the flight accident rate per 100,000 flying hours are provided in **Table 3-12**. As shown, the total number of accidents and the accident rate increased from fiscal year (FY) 2010 to FY 2011 (Naval Safety Center 2011, Naval Safety Center 2012).

Table 3-12. Navy-Wide Aviation Flight Accident Data

Year	Number of Class A Accidents		Mishap Rate		Flight Hours	
	Navy	Marine Corps	Navy	Marine Corps	Navy	Marine Corps
FY 2009	11	4	1.17	1.41	938,114	283,511
FY 2010	7	4	0.78	1.46	893,477	273,516
FY 2011	9	7	0.96	2.44	939,683	287,295
FY 2012*	4	3	0.78	2.03	N/A	N/A

Sources: Naval Safety Center 2011, Naval Safety Center 2012
Notes: * Through 26 April 2012.
Key: FY = fiscal year; N/A = Not available.

The U.S. Air Force (USAF) provides accident data for the UH-60 helicopters. Because a derivative of this helicopter would conduct operations at the proposed new helipad, USAF accident data for the UH-60 helicopter is used. The number of USAF-wide Class A mishaps, the Class A mishap rate, and the annual flying hours are provided in **Table 3-13**. As shown, no Class A mishaps have occurred during the past 2 years, and during the 2 years prior (FY 2008 and FY 2009), less than two Class A mishaps with the UH-60 helicopter have occurred per year (AFSC 2011).

Table 3-13. USAF Class A Accident Data for the UH-60 Helicopter

Year	Number of Class A Accidents	Class A Mishap Rate	Annual Flying Hours
FY 2008	2	7.87	25,412
FY 2009	1	4.03	24,818
FY 2010	0	0.00	29,328
FY 2011	0	0.00	26,668
10-year average (2001–2011)	**1.2**	**4.57**	**26,217**

Source: AFSC 2011
Key: FY = fiscal year

MCB Camp Pendleton is surrounded by highly congested airspace that is recognized by the FAA as among the busiest and most complex in the country (MCBCP 2010b). Numerous "Victor Routes" (VR-designator) exist along the western boundary of the installation. Federal airways have a width of 4 miles (6.4 km) on either side of the airway centerline and can be structured between the altitudes of 700 feet (213.4 meters) above ground level and 18,000 feet (5,486.4 meters) above MSL. These Federal

airways in the vicinity of MCB Camp Pendleton create a potential civilian aircraft hazard. Unintentional intrusions by civilian aircraft occur on a routine basis. Due primarily to these intrusions, MCB Camp Pendleton has been designated by the FAA as "high midair potential" (MCBCP 2010b).

3.12.3 Environmental Consequences

3.12.3.1 Proposed Action

This section addresses potential impacts on human health and safety for military, civilian, and contracted employees; MCB Camp Pendleton residents; and the general public in the surrounding areas during construction of the helipad and construction of the alternate electric power line.

All military personnel, contract employees, and contractors performing construction activities at MCB Camp Pendleton are responsible for following safety regulations and are required to conduct construction activities in a manner that minimizes risk to workers and personnel. Contractors performing construction activities at MCB Camp Pendleton are responsible for their industrial hygiene.

Helicopter Pad

Worker Health and Safety. No impacts on contractor safety would be expected from construction of the helipad. The health and safety of contractors performing work in the project area for the helipad would be managed by adherence to established Federal, state, and local safety regulations. The project area would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project area would be directed to roads and streets that carry minimum vehicles. Contractors would be required to establish and maintain safety programs for their employees. MCB Camp Pendleton Environmental Security would be responsible for ensuring that all contractors would be informed of, and responsible for, the facility-appropriate hazardous materials and waste-handling procedures, and would coordinate the use of hazardous materials and wastes with the Hazardous Waste/Hazardous Materials Manager.

Construction equipment could leak or spills could occur during construction activities. All fuels and other potentially hazardous materials would be contained and stored appropriately. If a spill or leak were to occur, Navy Standard Operating Procedures (SOPs) and procedures identified in MCO P5090.2A would be implemented to contain the spill or leak and minimize the potential for, and extent of, associated contamination. If soil contamination (discolored and or odorous) is discovered during construction activities, the Navy would ensure soil is properly evaluated and managed. If Installation Restoration Program infrastructure (e.g., monitoring wells, treatment systems, conveyance pipes) is present at the project site, project planning would include protection of Installation Restoration Program infrastructure to avoid disruption of clean-up activities and minimize potential impacts on the Installation Restoration Program; therefore, no significant impacts would be expected on or from the Installation Restoration Program. The solid waste produced during construction activities would be accommodated in the existing on-installation landfills, as neither of the on-installation landfills are near capacity.

Airspace Management. Potential impacts on airspace management are estimated based on the extent to which construction and operation of the NHCP replacement helipad would affect air traffic within the Class D and E airspace and the R-2503 restricted area complex at MCB Camp Pendleton. No impacts on airspace management would be expected as a result of construction and operation of the helipad, as there would be no changes in airspace use. Operation of the helipad would be conducted using existing procedures; existing flight tracks and profiles would be modified as necessary to account for the new helipad location. It is estimated that the same level of operations previously provided at the NHCP would

be provided at the NHCP replacement. Therefore, based on existing operations, it is anticipated that the new helipad for the NHCP replacement would support approximately five medical evacuations per month via helicopter to area trauma centers, and would rarely receive inbound patients via helicopter (Navy 2011). Implementation of the Proposed Action would not result in the need to reconfigure current military airspace, impose any major restrictions on air commerce opportunities, significantly limit airspace access to users over current conditions, or require modifications to ATC systems.

The proposed new helipad would be designed to accommodate the EC-135 helicopter, used to transport outbound patients, and CH-46 and UH-60 helicopters, used for inbound patients. The proposed helipad design consists of a primary surface measuring approximately 200 feet by 200 feet (61.0 meters by 61.0 meters) and an approach-departure clearance surface with a 25:1 slope. According to United Facilities Criteria (UFC) 3-260-01, *Airfield and Heliport Planning and Design*, this type of helipad is defined as a Navy and Marine Corps standard VFR helipad (DOD 2008). Navy and Marine Corps standard Visual Flight Rules (VFR) helipads have standard zones CZs, APZs, and imaginary surfaces established around the helipad to identify areas of high levels of aircraft noise and accident potential. Based on UFC 3-260-01, CZs at Navy and Marine Corps standard VFR helipads, such as the proposed NHCP replacement helipad, should be 150 feet wide and 400 feet long (45.7 meters wide and 121.9 meters long), and the APZs are 150 feet wide and 800 feet long (45.7 meters wide and 243.8 meters long) (DOD 2008).

Aircraft Safety. Operations at the proposed new helipad would not be expected to change from current operations at the existing helipad. The types of helicopters used for the Navy Hospital, number of outbound and inbound medivac flights, and destinations of outbound flights would likely remain the same. Therefore, no impacts on aircraft safety would be expected from construction of the helipad.

Alternate Electric Power Line

Worker Health and Safety. No significant impacts on contractor safety would be expected from installation of the alternate electric power line. The health and safety of contractors performing work in the project area for the alternate electric power line would be managed by adherence to established Federal, state, and local safety regulations. Contractors would be required to establish and maintain safety programs for their employees. The Navy would be responsible for ensuring that all contractors are informed of the facility-appropriate hazardous materials and waste-handling procedures, and would coordinate the use of these materials and wastes with the Hazardous Waste/Hazardous Materials Manager. Construction equipment could leak or spills could occur during construction activities. All fuels and other potentially hazardous materials would be contained and stored appropriately. If a spill or leak were to occur, Navy SOPs and procedures identified in MCO P5090.2A would be implemented to contain the spill or leak and minimize the potential for, and extent of, associated contamination. The solid waste produced during construction activities would be accommodated in the existing on-installation landfills, as neither of the on-installation landfills are near capacity.

The Navy has implemented a Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all of its facilities. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and reduce the generation of hazardous wastes. In addition, the installation has established measures and programs for the use of hazardous materials and generation of hazardous wastes to ensure they are handled in compliance with Federal, state, and local environmental laws and regulations. Existing wood structures that would be replaced under the Proposed Action likely contain a treated wood waste and, thus, are considered a hazardous waste within the State of California. The contractor would properly dispose of these wood structures in accordance with state regulations at a USEPA-approved landfill in the vicinity of the installation. Workers involved in the removal of existing wood structures would implement appropriate BMPs to minimize exposure to treated

wood. Work areas surrounding construction activities would be fenced and appropriate signs posted to reduce safety risks to outside personnel and the general public. If soil contamination (discolored and or odorous) is discovered during construction activities, the Navy would ensure soil is properly evaluated and managed. If Installation Restoration Program infrastructure (e.g., monitoring wells, treatment systems, conveyance pipes) is present at the project site, project planning would include protection of Installation Restoration Program infrastructure to avoid disruption of clean-up activities and minimize potential impacts on the Installation Restoration Program; therefore, no significant impacts would be expected on or from the Installation Restoration Program.

Airspace Management. Installation of the alternate electric power line would require the use of helicopters to remove existing structures and install new steel structures. It is anticipated that helicopters would use one of two proposed staging yards to load supplies and new steel structures and deposit removed wood structures. Helicopters would make trips from the staging yards to each proposed structure location where it would hover until structure installation is complete. Under the Proposed Action, there would be no need to reconfigure current military airspace, impose any major restrictions on air commerce opportunities, significantly limit airspace access to large numbers of users over current conditions, or modify ATC systems; however, the use of helicopters for transmission structure installation would require coordination with MCB Camp Pendleton and MCAS Camp Pendleton.

The contractor performing transmission structure installation would coordinate with MCB Camp Pendleton during construction to avoid any potential disruption to aviation activities. Significant planning would occur to anticipate needs, identify potential problems, and develop workable solutions for issues associated with use of the airspace for structure installation and associated ATC requirements. Such planning should ensure that impacts associated with use of airspace and airspace management requirements are negligible. No significant impacts on airspace management would be expected.

Aircraft Safety. The total number of helicopter operations conducted at MCB Camp Pendleton would slightly increase with the use of helicopters during the installation of the alternate electric power line. Consequently, the safety risk to personnel and the local community from aircraft mishaps would also increase. The installation of the alternate electric power line would take 6 to 8 months to be constructed; however, it is not expected that helicopters would be used every day. It is assumed that at least one trip would be required to remove each existing wood structure and install each new steel structure resulting in approximately 62 trips. This negligible increase in operations would not be expected to increase the risk of mishaps. Existing SOPs at MCB Camp Pendleton and the contractor conducting structure installation would be employed to ensure appropriate airspace management by all participating aircraft, which would reduce the potential for crowding or mishaps. Therefore, no significant impacts on human health and safety from aircraft mishaps would be expected.

3.12.3.2 No Action Alternative

Under the No Action Alternative, the helipad would not be constructed and alternate electric power would not be provided for the NHCP replacement. No impacts on human health and safety would be expected from the No Action Alternative. Existing conditions would remain the same, as described in **Section 3.12.2**.

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4. Cumulative and Other Impacts

4.1 Cumulative Effects

CEQ regulations for implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 CFR Parts 1500-1508). A cumulative effect is defined as the following (40 CFR § 1508.7):

> *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

CEQ's guidance for considering cumulative effects states that NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant" (CEQ 1997). The first step in assessing cumulative effects involves identifying and defining the scope of other actions and their interrelationship with a proposed action or alternatives. The scope must consider other projects that coincide with the location and timeline of a proposed action and other actions. **Section 4.1.1** identifies the projects considered for the cumulative effects analysis. **Section 4.1.2** provides an analysis of cumulative impacts for each of the environmental resources discussed in this SEA.

For the purposes of this analysis, the temporal span of consideration is the construction period and beginning of operations (i.e., FY 2013 and FY 2014). The spatial area of consideration for potential cumulative effects varies by resource area. For some resources, it might only include the project boundaries, such as for geological resources. Projects having significant air emissions within an airshed might be important in the consideration of cumulative effects on air quality. Given the large geographical area that could be considered for potential effects, this cumulative effects analysis focuses on projects within the boundaries of MCB Camp Pendleton and projects in the vicinity of MCB Camp Pendleton that affect common resources.

4.1.1 Projects Considered for Potential Cumulative Effects

Section 4.2 of the 2010 NHCP Replacement EA included descriptions of past, present, and reasonably foreseeable future actions that were identified for potential cumulative effects (MCBCP 2010a). The affected environment for potential cumulative effects would be essentially the same under this Proposed Action and under the 2010 NHCP Replacement EA Proposed Action. Descriptions of past, present, and reasonably foreseeable future actions as described in Section 4.2 of the 2010 NHCP Replacement EA are incorporated by reference into this SEA. **Table 4-1** summarizes the projects and relevant cumulative environmental factors considered for potential cumulative effects on MCB Camp Pendleton.

Activities in the City of Oceanside, southeast of MCB Camp Pendleton, as discussed in the 2010 NHCP Replacement EA are also incorporated by reference. Of note, however, is that the City of Oceanside finalized the Coast Highway Vision and Strategic Plan ("Strategic Plan"), which was only in draft form when the 2010 NHCP Replacement EA was prepared (City of Oceanside 2009). Development activities in the City of Oceanside in the vicinity of MCB Camp Pendleton consist mainly of housing. The Strategic Plan presents multiple scenarios for development along the Coast Highway corridor including an arts, technology, and environment district; mixed use nodes; and high-density housing.

Table 4-1. Related and Cumulative Projects

Project Title	Project Description	Project Status	Relevant Cumulative Environmental Factors
NHCP Replacement	Construction of the NHCP replacement and associated infrastructure.	The project is currently under construction with an estimated completion date of January 2014.	Noise, Air Quality, Geological Resources, Biological Resources, Water Resources, Cultural Resources, Infrastructure and Utilities, Health and Safety
Grow the Force Initiative	Construction of temporary and permanent facilities and infrastructure at MCB Camp Pendleton to support an increase in the number of personnel stationed at the installation.	Grow the Force Initiative is ongoing. Many trailers are being removed as MILCON projects are completed.	Land Use, Noise, Air Quality, Geological Resources, Biological Resources, Water Resources, Socioeconomics, Cultural Resources, Infrastructure and Utilities
Installationwide Utility Infrastructure Improvements	Construction of new or upgrade of existing utility systems to provide reliable and compliant water, wastewater, natural gas, electric, and communications systems to support military training and operations and delivery of life support and quality of life services. Includes Northern Regional Tertiary Treatment Plan (P-1043/1046); three new replacement substations and a new 69-kV distribution line (P-1048); construction of a new fiber-optic cable and telephone cable system (P-1093); new 12-kV distribution circuits and meter station (P-1094); and 90,000 feet (27,000 meters) of new high-pressure natural gas mains (P-1099).	A Final EIS and ROD were completed in September 2010.	Water Resources, Biological Resources, Air Quality, Cultural Resources, Infrastructure and Utilities

Project Title	Project Description	Project Status	Relevant Cumulative Environmental Factors
Various BEQs Plus-ups	Several MILCON projects are proposed to provide additional BEQ facilities in the 52, 53, and 62 areas.	Area 52: Construction nearly complete Area 53: Construction complete Area 62: Construction complete	Air Quality, Water Resources, Biological Resources, Infrastructure and Utilities
Repair 24 Access Roads	Repair and stabilize 24 existing unpaved roads throughout MCB Camp Pendleton's training ranges.	An EA is currently being developed and some of the roads have been repaired via CATEX.	Geological Resources, Water Resources, Biological Resources, Cultural Resources
Installationwide Fuel Optimization	Construct new fuel stations or modernize or replace existing fuel stations resulting in six contractor-owned and -operated fuel stations located in 12 or 14; and 21, 22, 41, 43, and 52 areas.	Construction began in April 2012.	Water Resources, Biological Resources, Air Quality
Range 108 EOD Facility	Construction and operation of a new EOD training facility that would include an ordnance library, workshop/tool room, classroom, library, office/kitchen area, two duty rooms (including a locker room and showers), restroom, lounge, permanent overhead canopy, support facilities, and site improvements.	An EA is currently being developed.	Noise, Air Quality, Geological Resources, Water Resources, Biological Resources, Infrastructure and Utilities, Health and Safety
Advanced Water Treatment Facility/Utility Corridor Project (P-113)	Construct, operate, and maintain an Advance Water Treatment facility and associated infrastructure. The project included adding treatment processes to the Haybarn Canyon Drinking Water Iron/Manganese Removal Treatment Facility and constructing a pipeline for disposal of brine that will be generated by the facility.	Construction began in 2011 and is currently underway with a completion date estimated in June 2013.	Water Resources, Biological Resources, Cultural Resources, Air Quality, Infrastructure and Utilities

Project Title	Project Description	Project Status	Relevant Cumulative Environmental Factors
Operations Access Points (P-159) Red Beach	Construction of a bridge, retaining walls, and access roads that would facilitate an increase in capacity and reliability.	The Final SEA was completed in April 2012. Construction is expected to begin in January 2013.	Geological Resources, Water Resources, Biological Resources, Cultural Resources, Air Quality
P-614 Special Operations Training Group Battle Course, 41 Area	Construct, operate, and maintain a 270-degree tactical automated reaction range/urban sniper range and related support facilities northwest of Range 130.	The Final SEA was completed in January 2011. Construction was completed in June 2012.	Geological Resources, Biological Resources, Cultural Resources, Air Quality, Water Resources
Installationwide Water Infrastructure (P-1044 and P-1045)	Construction, operation, and maintenance of infrastructure upgrades, expansions, and improvements on the installation water system and replacement of a critical link in the installation roadway system. Projects include Northern Advanced Water Treatment plant and associated facilities (P-1044) and connection of the installation's northern and southern water system (P-1045).	The Final EIS was completed and the ROD was finalized in September 2012.	Geological Resources, Water Resources, Biological Resources, Cultural Resources, Air Quality, Health and Safety, Infrastructure and Utilities
PE1015R Light-Armored Vehicle Simulator Building	This project will construct a 3,600-ft^2 facility to house four full-motion, light-armored, vehicle driver simulators.	Construction is complete.	Biological Resources, Air Quality, Infrastructure and Utilities
P-1069	This project will provide a four-story open bay BEQ with a parking for 330 personally owned vehicles. The facility will have weapons rooms, laundry rooms, and company offices. This project will have 42,000 ft^2 of photovoltaic panels.	The project is currently under construction with an estimated completion date of December 2012.	Water Resources, Biological Resources, Air Quality, Infrastructure and Utilities
P-637 (Range 314) Improvements	This project will modernize an existing live-fire range (Range 314) by constructing a live-fire infantry squad battle range, installing Remote Target Systems, constructing/modifying support facilities, and replacing the existing access road through San Mateo Creek with a road and bridge.	The EA is currently being developed and the project is in the design phase.	Water Resources, Biological Resources, Air Quality, Infrastructure and Utilities

Project Title	Project Description	Project Status	Relevant Cumulative Environmental Factors
Northern Region Tertiary Treatment Plant (P-1043)	Converts STP12 to a Tributary Area Pump Station 12. Construct raw sewer pipeline to convey wastewater from Tributary Area Pump Station 12 to the Northern Region Tertiary Treatment Plant. Construct an effluent pipeline to convey 5 million gallons per day of treated wastewater from the Northern Region Tertiary Treatment Plant to both the San Onofre Percolation Ponds and the Sierra One Percolation Ponds. Construct solar farm to generate 5.3 megawatts of power. Contract options include eight one-year Operation and Maintenance periods for the Northern Region Tertiary Treatment Plant, major raw wastewater transmission facilities, and effluent disposal facilities.	The project is currently under construction with an estimated completion date of December 2013.	Water Resources, Biological Resources, Air Quality, Cultural Resources, Infrastructure and Utilities
Upgrades to Electrical Systems and Associated Facilities (P-1048)	Construct a 69-kV electric transmission system to provide improved efficiency and reliability, system redundancy, and energy cost savings. The fourth substation would convert the proposed 69-kV line to the existing-12 kV system and would provide distribution of electric power through four different connecting segments integrated into northern and southern loops designed to service the entire installation.	The project is currently under construction with an estimated completion date of January 2014.	Water Resources, Biological Resources, Air Quality, Cultural Resources, Infrastructure and Utilities
Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094)	The project is located at Case Springs, Roblar Road. The project would expand the existing intercamp installation fiber-optic network with a communications system that provides a minimum of two separate line paths to each area on the installation. All communications lines would be underground.	The project is currently under construction with an estimated completion date of May 2013.	Water Resources, Biological Resources, Cultural Resources, Air Quality, Infrastructure and Utilities, Health and Safety

Project Title	Project Description	Project Status	Relevant Cumulative Environmental Factors
Wire Mountain Road Interchange	The project will reconstruct the four lanes of Vandegrift Boulevard between the traffic lights of Wire Mountain Road and the Marine Corps Main Exchange. This will also provide an additional deceleration lane for northbound traffic to enter the NHCP replacement by means of a new traffic light without creating congestion.	The project has been awarded and construction activities began in September 2012.	Water Resources, Biological Resources, Cultural Resources, Air Quality, Noise
San Jacinto Road Extension	The project includes extending San Jacinto Road to the Exchange Complex access road to Vandegrift Boulevard, reconstructing an existing section of San Jacinto Road, constructing a new signalized intersection at San Jacinto Road and Wire Mountain Road, relocating the motorcycle safety course, constructing a sound attenuation wall, and conducting minor utility improvements.	The Draft SEA is in the public review period.	Biological Resources, Transportation, Noise, and Air Quality

Key:
BEQ = Bachelor Enlisted Quarters
CATEX = Categorical Exclusion
EA = Environmental Assessment
EIR = Environmental Impact Report
EIS = Environmental Impact Statement
EOD = Explosive Ordnance Disposal
ft2 = square feet
kV = kilovolt
MILCON = Military Construction
ROD = Record of Decision
SEA = Supplemental Environmental Assessment

4.1.2 Cumulative Effects on Resource Areas under the Proposed Action

4.1.2.1 Biological Resources

For the purposes of biological resources, the geographic scope for the assessment of cumulative impacts varies and is based on the presence of suitable habitat and known occurrences of a specific resource. Projects with potential direct and indirect impacts on biological resources include the NHCP Replacement, Grow the Force Initiative, Installationwide Utility Infrastructure Improvements, Various BEQs Plus-ups, Repair 24 Access Roads, Installationwide Fuel Optimization, Range 108 EOD Facility, Advanced Water Treatment Facility/Utility Corridor Project (P-113), Operations Access Point (P-159) Red Beach, P-614 Special Operations Training Group Battle Course, 41 Area, Installationwide Water Infrastructure (P-1044 and P-1045), PE1015R Light-Armored Vehicle Simulator Building, P-1069, P-637 (Range 314) Improvements, Northern Region Tertiary Treatment Plant (P-1043), Upgrades to Electrical Systems and Associated Facilities (P-1048), Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094), Wire Mountain Road Interchange, and San Jacinto Road Extension. These projects include impacts that would result in the loss of native plant communities, permanent loss of sensitive plant populations, species losses that affect population viability, and the reduction in adjacent habitat quality from temporary actions including the addition of noise and dust during construction to permanent effects such as the addition of lighting. For native plant and wildlife communities, other cumulative impacts could include habitat fragmentation or the permanent loss of contiguous (interconnecting) native habitats such as migration or movement corridors.

Natural vegetative communities at MCB Camp Pendleton have been highly modified by past development and military operations. The installation supports a diversity of wildlife, including several federally protected species. MCB Camp Pendleton has an INRMP that is a reference and planning document for managing the installation's natural resources while maintaining mission readiness. One programmatic consultation with USFWS provides the foundation for ESA compliance at MCB Camp Pendleton: a 1995 Biological Opinion covering the Estuarine and Beach Ecosystem and Conservation Plan and the Riparian Ecosystem Conservation Plan. MCB Camp Pendleton's programmatic approach to federally listed threatened and endangered species ensures that potential impacts of present and ongoing installation activities are considered in the context of regional resource inventories, which is inherently a cumulative management approach. As a result, potential cumulative impacts on federally listed species are effectively reduced through avoidance, minimization, or compensation measures, as required.

All ground-disturbing projects at MCB Camp Pendleton are required to adhere to various protection measures designed to minimize potential effects on vulnerable species and their habitats, including riparian, wetlands, coastal sage scrub, and estuarine-beach habitats. Furthermore, the potential for cumulative effects on biological resources at MCB Camp Pendleton associated with habitat and wildlife disturbance is much reduced because of ongoing monitoring and management activities in place to minimize adverse effects from development and operations.

As discussed in **Section 3.1.3**, the Proposed Action would not result in significant impacts on biological resources. Implementation of conservation measures, as discussed in **Section 2.1.3**, would ensure construction and operational activities associated with the Proposed Action would contribute minimally to adverse effects on biological resources. Similarly, the spatial and temporal extents of impacts on biological resources from other cumulative projects are expected to be limited due to implementation of conservation measures and permit conditions. As a result, the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts on biological resources.

4.1.2.2 Cultural Resources

For the purposes of cultural resources, the geographic scope for the assessment of cumulative impacts is generally limited to areas where ground-disturbing activities would occur, and the viewsheds around architectural resources that are NRHP-eligible. Historic properties at MCB Camp Pendleton include historic-age buildings, structures, and archaeological sites. Projects with potential direct and indirect impacts on cultural resources include the NHCP Replacement, Grow the Force Initiative, Installationwide Utility Infrastructure Improvements, Repair 24 Access Roads, Advanced Water Treatment Facility/Utility Corridor Project (P-113), Operations Access Points (P-159) Red Beach, P-614 Special Operations Training Group Battle Course, 41 Area, Installationwide Water Infrastructure (P-1044 and P-1045), Northern Region Tertiary Treatment Plant (P-1043), Upgrades to Electrical Systems and Associated Facilities (P-1048), Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094), and Wire Mountain Road Interchange. These projects include impacts that would alter any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association; physically alter, damage, or destroy all or part of a resource; alter characteristics of the surrounding environment that contribute to the resource's significance; introduce visual or audible elements that are out of character with the property or that alter its setting; neglect the resource to the extent that it deteriorates or is destroyed; or result in the sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance. As discussed in **Section 3.2.3.1**, no effects on cultural resources would be expected as a result of the Proposed Action. Implementation of all other projects on MCB Camp Pendleton would have no cumulative effects on cultural resources (MCBCP 2010a). Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on cultural resources.

4.1.2.3 Visual Resources

For the purposes of visual resources, the geographic scope for the assessment of cumulative impacts is defined as the areas from which proposed projects can be viewed (i.e., the viewshed). There are several projects planned in the vicinity of the proposed helipad. Cumulatively, these projects would change the appearance of this area of MCB Camp Pendleton and would be visible from I-5, which is an Eligible State Scenic Highway but has not been officially designated as such. The planned visual changes in the vicinity of the helipad would be compatible with surrounding land uses. The proposed alternate electric power line would result in taller structures that are more visible. In the cumulative context of other projects and the surrounding areas, this could be considered a visual intrusion. However, this project is planned in an existing utility corridor where structures already exist; it is not a particularly sensitive viewshed. Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on visual resources.

4.1.2.4 Water Resources

The geographic scope of the water resources cumulative analysis includes the Santa Margarita Hydrologic Unit, which has historically been affected by various anthropogenic sources, including storm water runoff and wastewater discharge; the Lower Santa Margarita River and the Santa Margarita Lagoon are CWA 303(d) impaired waters (see discussion in **Section 3.4.2**). MCB Camp Pendleton has an INRMP that is a reference and planning document for managing the installation's natural resources while maintaining mission readiness.

Direct impacts on water resources would include the discharge of waste materials that would affect downstream water quality, the increase in facilities and other impermeable surfaces that affect the

volumes or patterns of surface flows or increase potentials for flooding within the drainage areas, and increases in soil disturbance during construction resulting in additional sedimentation into area creeks. Cumulatively, implementation of all other projects on MCB Camp Pendleton, including the NHCP Replacement, Grow the Force Initiative, Installationwide Utility Infrastructure Improvements, Various BEQs Plus-ups, Repair 24 Access Roads, Installationwide Fuel Optimization, Range 108 EOD Facility, Advanced Water Treatment Facility/Utility Corridor Project (P-113), Operations Access Point (P-159) Red Beach, P-614 Special Operations Training Group Battle Course, 41 Area, Installationwide Water Infrastructure (P-1044 and P-1045), P-1069, P-637 (Range 314) Improvements, Northern Region Tertiary Treatment Plant (P-1043), Upgrades to Electrical Systems and Associated Facilities (P-1048), Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094), and Wire Mountain Road Interchange would result in increased impervious surfaces and could contribute to nutrient loading into the Santa Margarita Lagoon (MCBCP 2010a).

Conservation measures, as described in **Section 2.1.3**, were developed to accompany standard MCB Camp Pendleton BMPs and the required permits that ensure project actions avoid, minimize, and mitigate these potential effects. Therefore, implementation of the Proposed Action would not result in significant impacts on water quality including water demand/supply, surface water and groundwater quality, construction-induced erosion, or increased flooding potential on or off site. Although other past, present, and reasonably foreseeable future actions on MCB Camp Pendleton would have similar effects, these projects would also comply with applicable Federal regulations and requirements, and would have to implement similar types of protection measures. This would minimize long-term impacts from the Proposed Action and other projects in the regional vicinity. In addition, adherence to National Pollutant Discharge Elimination System construction permits (for projects larger than 1 acre [0.4 hectare]), which would include the use of BMPs to control erosion and sedimentation and minimize storm water from leaving the construction sites, would minimize the potential for construction-related cumulative effects on water quality. Therefore, the cumulative impacts identified for water quality from the Proposed Action, in conjunction with other projects on and in the regional vicinity, would not be significant.

4.1.2.5 Air Quality

Criteria Pollutants. The geographic extent for cumulative effects on air quality is defined as the SDAB, which is made up of only San Diego County. Historically, air quality in the SDAB has been adversely affected by anthropogenic sources. For Federal standards, SDAB is in nonattainment for the 8-hour O_3 (Subpart 1) standard and considered a moderate maintenance area for CO standards. The SDAB is in serious nonattainment for California state 1-hour O_3 standards and nonattainment for California state $PM_{2.5}$ and PM_{10} standards. The area is either classified as attainment or unclassifiable for all other Federal and California criteria pollutant standards (see discussion in **Section 3.5.2**).

As described in **Section 3.5.3**, construction activities associated with the proposed helipad and the alternate electric power line would result in short-term emissions of criteria pollutants while construction activities are occurring. However, these emissions would remain substantially below all emissions significance thresholds. The estimated emissions for implementation of the Proposed Action are shown in **Table 3-7**, in **Section 3.5.3.2**. Operational activities for the proposed helipad would be similar to existing helicopter emissions for patient transports, so there would be a net zero impact on air quality from operational helicopter emissions. Emissions from cumulative projects could contribute to the ambient pollutant impacts generated from proposed construction activities. However, these emissions would occur far enough away from the proposed construction such that they would produce low ambient pollutant impacts in proximity to the project site. Therefore, air quality impacts from the minor amounts of project emissions, in combination with emissions from cumulative projects including the NHCP Replacement, Grow the Force Initiative, Installationwide Utility Infrastructure Improvements, Various BEQs Plus-ups, Installationwide Fuel Optimization, Range 108 EOD Facility, Advanced Water

Treatment Facility/Utility Corridor Project (P-113), Operations Access Point (P-159) Red Beach, P-614 Special Operations Training Group Battle Course, 41 Area, Installationwide Water Infrastructure (P-1044 and P-1045), PE1015R Light-Armored Vehicle Simulator Building, P-1069, P-637 (Range 314) Improvements, Northern Region Tertiary Treatment Plant (P-1043), Upgrades to Electrical Systems and Associated Facilities (P-1048), Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094), Wire Mountain Road Interchange, and San Jacinto Road Extension would not be substantial enough to contribute to an exceedance of an ambient air quality standard. Implementation of standard fugitive dust and construction equipment emission-control measures and conservation measures, as described in **Section 2.1.3**, would ensure that air emissions from proposed construction activities would produce less than significant impacts. Consequently, proposed construction activities would produce less than significant cumulative impacts on criteria pollutant levels. New development activities, including the Proposed Action, would conform to the SIP. Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on air quality.

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. Therefore, in the absence of an adopted or science-based NEPA significance threshold for GHGs, this SEA compares GHG emissions from the Proposed Action to the State of California and United States net GHG emissions inventories to determine the relative increase in proposed GHG emissions. Estimated gross CO_2 emissions in the State of California were 375.8 million metric tons, and in 2009, gross CO_2 emissions in the entire United States were 5,425.6 million metric tons (DOE 2011). Cumulative estimated CO_2 emissions would represent 0.0003 percent of the State of California's 2009 CO_2 emissions and 0.00002 percent of nationwide CO_2 emissions. GHG emissions cumulatively would not be significant for the installation development activities at MCB Camp Pendleton. Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on air quality.

Although the Proposed Action would produce minimal cumulative impacts on global climate change, the Navy implements broad-based programs (e.g., Executive Order [EO] 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*; the Commandant of the Marine Corps' *"Bases-to-Battlefield" Expeditionary Energy Strategy and Implementation Plan*) to reduce energy consumption and shift to renewable and alternative fuels, thereby reducing overall emissions of GHGs.

4.1.2.6 Geological Resources

For the purposes of geological resources, the geographic scope for the assessment of cumulative impacts is generally limited to areas where ground-disturbing activities would occur and adjacent areas. Projects with potential direct and indirect impacts on geological resources include the NHCP Replacement, Grow the Force Initiative, Repair 24 Access Roads, Range 108 EOD Facility, Operations Access Points (P-159) Red Beach, P-614 Special Operations Training Group Battle Course, 41 Area, and Installationwide Water Infrastructure (P-1044 and P-1045). These projects include impacts that would alter the lithology, stratigraphy, and geological structure that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; and change the soil composition, structure or function within the environment. Generally, adverse effects can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development. The proposed helipad and alternate electric power line would have localized effects on soils as a result of site grading, compaction, and vegetation removal. Considered cumulatively,

construction activities occurring at the same time and in the same vicinity of the Proposed Action could result in increased potential for sedimentation and erosion during ground-disturbing activities, but implementation of erosion- and sediment-control BMPs would be expected to limit potentially adverse cumulative effects. When added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on geological resources.

4.1.2.7 Land Use

For the purposes of land use, the geographic scope for the assessment of cumulative impacts is primarily the land use parcels of the areas of new construction and adjacent areas, although land uses and controls are governed by installationwide plans, primarily the 2030 Base Master Plan. Projects with potential direct and indirect impacts on land use (i.e., Grow the Force Initiative) would be inconsistent or in noncompliance with existing land use plans or policies, preclude the viability of existing land use, preclude continued use or occupation of an area, be incompatible with adjacent land use to the extent that public health or safety is threatened, or conflict with planning criteria established to ensure the safety and protection of human life and property. As discussed in **Section 3.7.2**, the Proposed Action does not involve changes in land use and would be compatible with existing and planned development. Other construction projects are subject to NEPA evaluation and must comply with the 2030 Base Master Plan and other land use plans, which ensure that land uses are compatible and land use conflicts are avoided. Several projects would accommodate increased utility and infrastructure demands for increased personnel. The projects considered for cumulative effects are expected to be consistent with present and foreseeable land uses. Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on land use.

4.1.2.8 Coastal Zone Management

For the purposes of coastal zone management, the geographic scope for the assessment of cumulative impacts is generally 1,000 yards inland from the mean high tide line on MCB Camp Pendleton and immediately south of Camp Pendleton. As discussed in **Section 3.8.2**, the Proposed Action would not involve waterfront or new in-water construction. The 2010 NHCP Replacement EA did not identify impacts on coastal zone management as a result of other development activities (MCBCP 2010a). Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on coastal zone management.

4.1.2.9 Transportation

For the purposes of transportation, the geographic scope for the assessment of cumulative impacts includes roadways in the vicinity of the Main Gate. Existing traffic conditions are affected by the following factors:

- The location of the Main Gate, which is the primary entrance to MCB Camp Pendleton, on Vandegrift Boulevard, the only arterial route of ingress and egress from the southern portion of the installation to the city of Oceanside and I-5.
- The location of the existing commissary, which is the only military grocery store on MCB Camp Pendleton, and the only such facility in northern San Diego County, nearly adjacent to the NHCP replacement site and near the proposed helipad site, directly across the same major artery that serves the Main Gate.
- The concentration of large military housing areas at Wire Mountain and Stuart Mesa, within 2 miles (3.2 km) of the Main Gate.

Cumulatively, other projects would be expected to increase personnel at MCB Camp Pendleton and would change traffic flow in the vicinity of the Main Gate. Construction of the helipad and installation of the alternate electric power line would be expected to have only temporary, minor increases in local traffic. The goal of the TDM Plan (as described in **Section 3.9.3**) is to reduce peak-hour traffic exiting from MCB Camp Pendleton onto Harbor Drive and the I-5 Southbound ramps by 200 vehicles. The Marine Corps prepared a Traffic Engineering and Safety Study for MCB Camp Pendleton in 2012, which documents existing traffic conditions and considers strategies for managing future growth (MCBCP 2012). The Traffic Engineering and Safety Study includes all transportation recommendations, mitigation measures, and additional improvements from previous studies, and provides recommendations for intersections, roadways, nonmotorized transportation, transit and travel demand management, and hydrology/hydraulics. Based on (1) detailed analysis and modeling of existing traffic patterns and volumes, and changes in patterns and volumes expected due to the proposed construction; (2) improvements being constructed by cumulative projects; and (3) proposed measures to address any adverse impacts of increased traffic, no adverse, cumulative effects from the Proposed Action would be expected.

4.1.2.10 Infrastructure and Utilities

The geographic region of analysis for impacts on infrastructure and utilities includes the areas of construction and surrounding areas that share the same utilities. The Proposed Action would not involve a significant net change in utilities usage. Already planned electrical system upgrades would be designed consistent with SDG&E standards and would be sized to meet the needs of proposed development in the area. The Proposed Action would not increase demands on natural gas such that the existing supply would be inadequate. Sufficient capacity exists within the landfills at MCB Camp Pendleton to accommodate the increase in solid waste generation from construction and there would be no consequential change in the level of operational activities associated with the Proposed Action. The demands on electricity, potable water, natural gas, sewage treatment, and solid waste disposal of the other relevant projects including the NHCP Replacement, Grow the Force Initiative, Installationwide Utility Infrastructure Improvements, Various BEQs Plus-ups, Installationwide Fuel Optimization, Range 108 EOD Facility, Advanced Water Treatment Facility/Utility Corridor Project (P-113), Installationwide Water Infrastructure (P-1044 and P-1045), PE1015R Light-Armored Vehicle Simulator Building, P-1069, P-637 (Range 314) Improvements, Northern Region Tertiary Treatment Plant (P-1043), Upgrades to Electrical Systems and Associated Facilities (P-1048), Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094), in combination with the demands from the Proposed Action, would be accommodated by existing supplies and capacities and planned upgrades. Therefore, the cumulative utility impacts from the Proposed Action, in conjunction with other projects on and in the regional vicinity, would not be significant.

4.1.2.11 Noise

The geographic region of analysis for impacts on the ambient noise environment includes the immediate vicinity of the project areas. Existing noise sources in the vicinity of the project areas at MCB Camp Pendleton include vehicle traffic from I-5 and Vandegrift Boulevard and aircraft overflights. Projects with potential direct and indirect impacts on the ambient noise environment including the NHCP Replacement, Grow the Force Initiative, Range 108 EOD Facility, and San Jacinto Road Extension would result in an increase in noise exposures to noise-sensitive areas at or above a DNL of 65 dBA. Construction of the helipad and alternate electric power line would generate localized, short-term, intermittent effects during machinery operations. Long-term effects of the Proposed Action on the noise environment would also occur as a result of operation of the medical transport helicopter and maintenance of the alternate electric power line infrastructure. Cumulative noise sources in the vicinity of the project

areas would include construction activities, while those are occurring, and vehicle noise. When added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on the noise environment.

4.1.2.12 Human Health and Safety

For the purposes of human health and safety, the geographic scope for the assessment of cumulative impacts is defined as the immediate vicinity of the project areas and adjacent areas. Projects with potential direct and indirect impacts on human health and safety include the NHCP Replacement, Range 108 EOD Facility, Installationwide Water Infrastructure (P-1044 and P-1045), Installationwide Communications Upgrades (P-1093) and Electrical Distribution Facility (P-1094). These projects include impacts that would substantially increase risks associated with the safety of construction personnel, contractors, or the local community; substantially hinder the ability to respond to an emergency; or introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place. MCB Camp Pendleton complies with all applicable Federal, state, and local laws and regulations related to human health and safety to provide a safe working environment while supporting military readiness and training activities. The Navy would ensure that construction contractors are aware of hazardous materials and waste-handling procedures. The proposed helipad and alternate electric power line would not be expected to affect airspace management or aircraft safety, though coordination with ATC would be necessary for the use of helicopters during structure installation. Cumulative projects at MCB Camp Pendleton would also comply with established safety procedures and hazardous materials and waste management procedures. Therefore, when added to the effects from other projects in the cumulative effects region, the Proposed Action would not result in significant cumulative effects on human health and safety.

4.1.3 Cumulative Effects on Resource Areas under the No Action Alternative

The No Action Alternative would result in continuation of the existing conditions. Under the No Action Alternative, no effects on biological resources, cultural resources, visual resources, water resources, air quality, geological resources, land use, coastal zone management, transportation, infrastructure and utilities, noise, or human health and safety were identified. Therefore, when added to the effects from other projects in the cumulative effects region, the No Action Alternative would not result in significant cumulative effects.

4.2 Compatibility of Proposed Action and Alternatives with the Objectives of the Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

No potential conflicts are anticipated between the Proposed Action and any of the installation master plans, policies, or controls that address and guide uses within MCB Camp Pendleton. The Proposed Action would occur on Federal property and would not affect off-installation land uses.

4.3 Relationship Between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

NEPA requires consideration of the relationship between short-term use of the environment and the impacts that such use could have on the maintenance and enhancement of long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Such impacts include the possibility that choosing an alternative could reduce future

flexibility to pursue other alternatives, or that choosing a certain use could eliminate the possibility of other uses at the site. Short-term uses of the biophysical components of the human environment include direct impacts, usually related to construction activities, which occur over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss. The Proposed Action would require minimal construction activity resulting in short-term, minor effects. Construction of the proposed helipad would enhance long-term operations of the NHCP replacement and better serve those in need of urgent medical care at better-equipped facilities. The proposed alternate electric power line would ensure power supply for the NHCP replacement. These are long-term, beneficial uses.

4.4 Irreversible or Irretrievable Commitments of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended. Resources that are irreversibly or irretrievably committed to a project are those that are typically used on a long-term or permanent basis; however, those used on a short-term basis that cannot be recovered (e.g., non-renewable resources such as metal, wood, fuel, paper, and other natural or cultural resources) also are irretrievable. Human labor is also considered an irretrievable resource. All such resources are irretrievable in that they are used for a project and, therefore, become unavailable for other purposes.

Material Resources. Material resources used for the Proposed Action would include concrete or asphalt (for the helipad), reinforced concrete (for pier foundations), steel (for structures), copper wire (for the power lines), and various other material supplies, and these would be irreversibly lost. The materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. No significant effects would be expected on energy resources used as a result of the Proposed Action, though any energy resources consumed would be irretrievably lost. These include petroleum-based products (e.g., gasoline, diesel, jet fuel) and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles and jet fuel would be used for helicopters installing steel transmission structures. During operation, jet fuel would be used for the operation of helicopters accessing the helipad, which would not represent a noticeable change over the baseline condition since the current hospital operates a helipad. Electricity would be supplied to the NHCP replacement via the proposed alternate electric power line. Consumption of these energy resources would not place a significant demand on their availability in the region.

Human Resources. The use of human resources for construction activities is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities, and is considered beneficial.

5. List of Preparers

This SEA was prepared by HDR under direction of the Naval Facilities Engineering Command Southwest. Members of the Navy, U.S. Marine Corps, and SDG&E staff responsible for the preparation of the document are listed as follows.

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APPENDIX A

PUBLIC AND AGENCY INVOLVEMENT AND CORRESPONDENCE

Consultation Letter: State Historic Preservation Office

UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE
BOX 555010
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENV/CRB
June 29, 2012

Mr. Wayne Donaldson, FAIA
State Historic Preservation Officer
Department of Parks and Recreation
1725 23rd Street, Suite 100
Sacramento, CA 95816-7053

Dear Mr. Donaldson:

SUBJECT: AMENDMENT TO THE NAVAL HOSPITAL REPLACEMENT (20011001C)

Marine Corps Base (MCB) Camp Pendleton requests your continued review and concurrence for the above-referenced amended undertaking in order to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f) as amended. MCB Camp Pendleton has changed the scope of the previous proposed Naval Hospital Replacement (SHPO File No. USMC91019C). Changes to the undertaking including construction of a helicopter pad (helipad), installation of a secondary electrical power alignment, and implementation of Transportation Demand Management (TDM) measures to reduce, spread, and direct traffic. The purpose of the amended undertaking is to provide a helipad for the EC-135, CH-46, and UH-60 helicopters as well as secondary electrical power alignment necessary for the Naval Hospital replacement.

Undertaking and Area of Potential Effects

The amended undertaking, pursuant to 36 CFR §800.16(y), is located in the southwest portion of MCB Camp Pendleton (Enclosure (1)). The helicopter had is located in the southwest of the Naval Hospital APE in the parking lot area, across a drainage creek, and across the access road from the south parking area (Enclosure (2)).

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The SDG&E electric line stretches from the Stuart Mesa Substation in the north, to the Naval Hospital replacement site in the south. The existing alignment travels south along the western boundary of the Stuart Mesa housing development, turns slightly southeast and spans the Santa Margarita River, travels south on the western edge of the desalination ponds before turning east along Lemon Grove Road, and then turns south until it terminates at the northern end of the Naval Hospital replacement site(Enclosure (3)).

Helicopter Pad

A helipad would be constructed to support medical evacuations at the Naval Hospital replacement. The proposed helipad would consist of a primary surface (approximately 200 x 200 feet [61 x 61 meters]) and an approach departure clearance surface (25:1 slope) extending on both sides of the primary surface of the helipad. For outbound hospital transfer patients, EC-135 helicopters would be used and for inbound hospital patients, CH-46 and UH-60 helicopters would be used in accordance with specific operational and mission requirements. Due to land use constraints and the current location of military family housing, heavier helicopters would not be accommodated by the proposed helipad. The helipad would be constructed to support smaller rotary-wing aircraft such as EC-135, CH-46, and UH-60 helicopters.

Secondary Electrical Power Alignment

San Diego Gas and Electric (SDG&E) would install a new 12-kilovolt (kV) secondary electrical power line within their existing 2.64-mile (4.25-kilometer [km]), 69-kV power alignment and right-of-way (ROW). The new 12-kV power alignment would be installed as part of SDG&E's infrastructure upgrade requirements and would also support the NHCP replacement. In addition, SDG&E would replace 32 existing wood transmission poles with 31 steel transmission poles as part of their infrastructure upgrade requirements. One less pole would be required, because the transmission line would span the Santa Margarita River, which would allow one pole, south of the Santa Margarita River, to be removed from the river without replacement. The secondary

electrical power alignment and transmission pole replacement would occur entirely with SDG&E-owned utility easements.

The wood to steel pole replacement will reestablish existing access roads, footpaths, and workspaces as needed. All poles will be replaced in or adjacent to their current locations. Of the 32 wood poles, six will be engineered steel poles with pier foundations. The pier foundation poles are special engineered poles that are anchor-bolted to a reinforced concrete foundation. Of the six engineered steel poles, two will replace three existing h-frame wood poles that span across Santa Margarita River. These two poles will be approximately 145 feet in length and will be within 10 feet of the existing poles. The h-frame pole that is within the Santa Margarita River will be removed, possibly by helicopter dropping off ground crews to cut the pole at existing grade. Once the h-frame pole is cut, a helicopter will be used to remove them from the site. SDG&E would require two staging yards for installing the secondary electrical power alignment. The staging yards would serve as the location for pole framing; refueling construction vehicles; staging water trucks, construction trailers, and portable restrooms; parking; lighting; and temporary storage of emergency generators required for the project. The staging yards could also be used as helicopter landing zones to pick up and drop off poles and equipment. The proposed staging yards would be the 3-acre (1.2-hectare) Lemon Grove yard, which is southwest of the intersection of Lemon Grove Road and Vandegrift Road on Camp Pendleton, and 2-acre (0.9-hectare) Cannon staging yard, which is on SDG&E-owned property at the Encina Substation in the City of Carlsbad (enclosures (4) and (5).

Identification of Historic Properties Present

Pursuant to 36 CFR 800.4(b)(1), MCB Camp Pendleton has made a reasonable and good faith effort to carry out appropriate identification efforts for historic properties in the vicinity of the amended proposed undertaking.

Helicopter Pad

Helicopter Pad is located within the original Naval Hospital APE which was addressed in letter dated October 15, 2009 with

response letter from your office dated December 24, 2009 (USMC091019C). There are no recorded archaeological or historic buildings in the amended Naval Hospital helopad location. There are, however, sites in the vicinity (within 500 m) of the APE including CA-SDI-20167 which was discovered during monitoring of the Naval Hospital construction (USMC091019C).

Secondary Electrical Power Alignment

Five previous cultural resource studies have been completed within this portion of the APE and include Welch (1978), Clevenger (1987), Schroth (1995), Cheever and Collett (1997), and York (2010). Four cultural resources were identified within the APE; CA-SDI-10,226/H, CA-SDI-13,929, CA-SDI-13,932, and CA-SDI-14,005H (Enclosure (6)). The entire APE was surveyed by HDR in 2012 and the report is provided as enclosure (7).

CA-SDI-10226/H was evaluated by York (2011) and recommended as eligible for National Register of Historic Places (NRHP) listing presented in a letter to your office dated March 27, 2012 for the Basewide Water Infrastructure and Stuart Mesa Bridge Replacement project. You office responded in a letter dated May 7, 2012 argeeing with this recommendation (USMC110404E). Due to the presence of pole Z102639 within the mapped boundary of CA-SDI-10226/H, a focused testing program was completed on June 20, 2011 by HDR staff archaeologists for the proposed SDG&E TLA Three Pole Replacement Project aboard Marine Corps Base Camp Pendleton, San Diego County, California (Whitaker 2011b). That proposed project consists of the replacement of SDG&E poles Z102639 (A), Z221310 (A), and Z21105 (A). The focused testing was designed to determine the nature and extent of subsurface cultural deposits within the proposed project's area of potential effect (APE) at pole Z102639 to gauge the potential project impacts to CA-SDI-10226/H. Four manually excavated STPs were completed within the vicinity of pole Z102639; each measured approximately 50 cm in diameter and reached a maximum depth of 70 cm. All four of the STPs were negative for cultural resources and as a result a test unit was not excavated. This portion of the site is recommended as not contributing to the characteristics of the CA-SDI-10226/H that make it eligible for NRHP listing. Portions of the eligible site are within the access roads. Access roads through this site

will be avoided by rerouting equipment. Monitoring will ensure no impacts to the eligible portions of the site.

CA-SDI-13,929 was recorded in 1995 by Gallegos and Associates (Schroth et al 1996) as a low density artifact and marine shell scatter. Artifacts included one mano, one hammer stone, one flake, fire-affected rock, and approximately five pieces of marine shell including *Pecten* sp., *Ostrea* sp., *Mytilus* sp., *Donax* sp. and *Chione* sp. This site has not been assessed for NRHP eligibility, however, this site is outside the APE and not within access roads.

CA-SDI-13,932 was recorded in 1995 by Gallegos and Associates (Schroth et al 1996) as a low density artifact and marine shell scatter. Artifacts included one core, four flakes, fire-affected rock, and approximately five pieces of marine shell including *Pecten* sp., *Donax* sp. and *Chione* sp. This site has not been assessed for NRHP eligibility. Access roads through this site will be avoided by rerouting equipment. This road will be monitored to assure no impacts to the site.

CA-SDI-14,005H One site CA-SDI-14005H, California Southern Railroad line Segment A, is located at the intersection of the alignment at Vandegrift Boulevard and Stewart Mesa Road. This railroad segment was determined eligible for National Register listing by Phillips et al. (1997) and concurred with by your office in a letter dated March 3, 1997 (USMC961217A). The location of this site is within 30 m of the APE and will be monitored during construction to ensure that this portion of the railroad is not adversely affected.

Finding of Effect

Based on the results of our identification effort we have determined that there are historic properties within the APE. In accordance with 36 CFR 800.5 (a) (1), MCB Camp Pendleton has applied the criteria of adverse effect and determined that although there are historic properties within or near to the APE our effects will not be adverse because only the non-contributing portion of CA-SDI-10226/H will be affected. Monitoring will also be required for this property as well as for CA-SDI-14005H to minimize any further effects.

Since there is the potential for archaeological sites to be found during construction, archaeological and Native American monitors will be required for this undertaking. MCB Camp Pendleton has found that, subject to 36 CFR 800.5(b), the proposed undertaking will have "No Adverse Effects" and imposes the following conditions: (1) all ground disturbance will be monitored by a qualified archaeologist and Native American monitor to address the treatment of all inadvertent discoveries of cultural resources; (2) avoidance of sites CA-SDI-13,932 and CA-SDI-13,929 will be ensured by monitoring and rerouting of equipment; (3) The location CA-SDI-14005H is within 30 m of the alignment and will be monitored during construction to ensure that this portion of the railroad is not adversely affected; (4) access roads through site CA-SDI-10226/H will be avoided by rerouting equipment and monitoring will ensure no adverse effects to the eligible portions of the site; (5) a monitoring and discovery plan will developed (reviewed and approved by the Cultural Resources Branch) and implemented through a contract independent from the construction contract to ensure that all ground disturbing activities undertaking are monitored; (6) a qualified archaeologist and Native American monitor will be approved by the Cultural Resources Branch two weeks prior to the start of ground disturbing activities, as described above; (7) the qualified archaeologist shall contact the Cultural Resources Branch two weeks prior to the start of ground disturbing activities as described above; and (8) the submittal of a monitoring report upon completion of the project for review and approval by the Cultural Resources Branch. Therefore MCB Camp Pendleton has found that subject to 36 CFR 800.5(b), there will be "No Adverse Affects" with conditions for the proposed amended Naval Hospital undertaking (2011001C).

Consultation with Tribes and Other Parties

In addition to contacting your office, MCB Camp Pendleton, pursuant to 36 CFR 800.4, is consulting with federally and non-federally recognized Luiseño tribal governments (Pauma Band of Mission Indians, Pechanga Band of Luiseno Indians, Rincon Band of Luiseno Indians, La Jolla Band of Mission Indians, Soboba Band of Mission Indians, San Luis Rey Band of Mission Indians) and non-federally recognized Juaneño tribal governments (Juaneño

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ENV/CRB
June 29, 2012

Band of Mission Indians) as part of the Base's established consultation process. MCB Camp Pendleton has notified the public through contacts with the San Diego Archaeological Society.

Consultation on Finding

Based on the results of the identification efforts and imposed conditions, MCB Camp Pendleton has found that subject to 36 CFR 800.5(b), no historic properties will be adversely affected in association with the proposed undertaking. MCB Camp Pendleton requests your agreement with a "**No Adverse Effects**" with conditions finding for this undertaking on Camp Pendleton. References are provided as enclosure (8).

If you have any questions, please contact the undersigned at (760) 725-9738, or by email, danielle.page@usmc.mil .

Sincerely,

D. M. PAGE
Head, Cultural Resources Branch
Environmental Security
By direction of
the Commanding General

Enclosures: 1. Project Location Map
2. Map Helicopter Pad APE
3. SDG&E Secondary Electrical Power Alignment APE
4. Cannon staging yard
5. Staging/Laydown Lemon Grove yard
6. Surveys and Cultural Resources in proximity to APE
7. HDR Survey Report
8. References

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Concurrence Letter: State Historic Preservation Office

STATE OF CALIFORNIA – THE NATURAL RESOURCES AGENCY
EDMUND G. BROWN, JR., *Governor*

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20010001C

August 07, 2012

Reply in Reference To: USMC091019C

Danielle Page
Head, Cultural Resource Management Branch
Assistant Chief of Staff, Environmental Security
United States Marine Corps
Box 555008
Camp Pendleton, CA 92055-5008

Section 106 Consultation for Third Amendment to Naval Hospital Replacement, Camp Pendleton

Dear Ms. Page:

Thank you for continuing consultation regarding the United States Marine Corps (USMC) efforts to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

The USMC previously received concurrence from my office that the above referenced project will not affect historic properties. Since that time, the Area of Potential Effect (APE) and project description has been modified to facilitate the installation of a secondary power alignment requiring the removal and replacement of 32 utility poles, and construction of a helipad. Project components include:

- Construction of 200 foot by 200 foot helipad;
- Installation of new 12Kv electrical power line;
- Utility pole replacement within or adjacent to existing holes;

Historic properties identification efforts detected the following four cultural resources within the APE: CA-SDI-13,932 and SDI-13-929 (low density artifact and marine scatters that are as yet unevaluated for National Register eligibility), CA-SD-14005H (a NRHP eligible segment of the California Southern Railroad line), and CA-SDI-10226/H (a NRHP eligible prehistoric temporary habitation site). Because of the proximity of eligible resources to the project area, the USMC is proposing the following conditions as well as additional conditions stipulated on page six of their 29 June 2012 letter:

- Monitoring of all ground disturbance by a qualified archeologist and Native American monitor;
- Avoidance of sites CA-SDI-13,932 and SDI-13-929;
- Monitoring within the vicinity of CA-SD-14005H;
- Avoidance of access roads through site CA-SDI-10226/H.

The USMC is requesting my concurrence with their determination of no adverse effect. After reviewing this information, I have the following comments:

1) I concur that the APE has been properly determined and documented pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16(d).

2) It is my understanding that the USMC will have a qualified archeological monitor and Native American monitor present for ground disturbing activities.

3) Because complete avoidance of CA-SDI-13,932 will be ensured through monitoring and the site is in the APE but unevaluated for NRHP eligibility, I suggest this site be assumed eligible for the purposes of this undertaking.

4) In consideration of your intention to adhere to the self-imposed conditional measures set forth in this letter (please see above), I suggest that a finding of conditional No Adverse Effect pursuant to 36 CFR Part 800.5(b) is appropriate and that the documentation supporting this finding has been provided pursuant to 36 CFR Part 800.11(d).

5) Please be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 or at email at ecarroll@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Technical Memorandum: U.S. Fish and Wildlife Service

TECHNICAL MEMO FOR ADDITIONAL CONSTRUCTION OF NAVAL HOSPITAL REPLACEMENT, MARINE CORPS BASE CAMP PENDLETON

October 22, 2010
MCBCP Environmental Security

Marine Corps Base Camp Pendleton completed, January 2010, the *Environmental Assessment (EA) for the Naval Hospital Camp Pendleton (NHCP) Replacement, Marine Corps Base (MCB) Camp Pendleton, California* ("2010 NHCP Replacement EA"). In addition, MCB Camp Pendleton and U.S. Fish and Wildlife Service (USFWS) completed consultation for the NHCP Replacement and Marine Corps Main Exchange Project, MCB Camp Pendleton, San Diego County, California, in January 2010. The resulting Biological Opinion ((BO) FWS-MCBCP-09B0334-09F0946) addressed impacts from constructing and operating the NHCP replacement and Marine Corps Main Exchange on coastal California gnatcatchers (*Polioptila californica californica*).

The Naval Hospital has modified a portion of their plans for the NHCP replacement to include two project elements that were not addressed in the 2010 NHCP Replacement EA, including construction of a helicopter pad (hereafter referred to as "helipad") and installation of an alternate electrical power alignment. These two project elements have the potential to affect federal and state listed species. MCB Camp Pendleton is proposing to address the alternate electrical power alignment under the San Diego Gas and Electric (SDGE) NCCP; therefore, those impacts are not discussed in this memo.

Helipad—The Navy proposes to construct and operate a helipad at MCB Camp Pendleton to support medical evacuations at the NHCP replacement. The helipad would be located within the NHCP replacement site that was evaluated in the BO for the NHCP replacement. Specifically, the helipad would be constructed southwest of the NHCP replacement, across a drainage ditch (identified as waters of the United States), and across the access road from the south parking area. The project area for the proposed helipad previously consisted entirely of disturbed California annual grassland vegetation; however, the project area for the proposed helipad has been previously disturbed and graded for construction of the NHCP replacement. An access road would be constructed from Wire Mountain Road, to the helipad, circling the helipad, and returning to Wire Mountain Road (see attached Figure 1). The helipad would take up to 12 months to be designed and constructed. The helipad would consist of a primary surface (approximately 200 x 200 feet [61 x 61 meters]) and an approach/departure clearance surface (25:1 slope) extending on both sides of the primary surface of the helipad. As reported in the 2009 Final Biological Assessment completed for the 2010 NHCP Replacement EA, coastal California gnatcatchers have not been identified at the project area for the proposed helipad during past surveys, and the project area for the proposed helipad was not considered suitable habitat for coastal California gnatcatchers. Additionally, the proposed helipad would be constructed entirely outside of the watersheds of all known vernal pools in the vicinity. Thus, construction of the helipad would not result in the loss of vernal pools or California coastal sage habitat or directly harm any San Diego fairy shrimp or coastal California gnatcatchers. The project area is located entirely within the project footprint evaluated in the BO, as amended 9 May 2012 and the BO considered the disturbance of all habitat within the project footprint.

The helipad would be constructed to support the existing helicopter operations at the Naval Hospital. The helipad could support any rotary-winged aircraft in the Navy or USMC, including the MV-22. The Naval Hospital primarily sends trauma patients to higher-level trauma centers at an average of five outbound air

ENCLOSURE 1

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transports per month. The same level of operations that was provided at the original Naval Hospital would be provided at the NHCP replacement, once construction is completed in 2014.

Noise from helicopter operations during takeoffs and landings from the helipad could cause temporary disruption to coastal California gnatcatchers' breeding, nesting, foraging, or other behaviors, and could result in a decrease in reproductive fitness. However, upon completion of the NHCP replacement and Marine Corps Main Exchange, the nearest known habitat for this species is 4000 ft (1219.2 meters) (.75 miles) northeast of the proposed helipad. Coastal California gnatcatchers detected in those areas are frequently exposed to noise from helicopter operations at MCB Camp Pendleton, any additional effects on the coastal California gnatcatcher's physiology, behavior, or reproductive success from the distant and infrequent additional medical evacuation flights could not be meaningfully measured, detected, or evaluated. Based on the above information, MCB Camp Pendleton has determined that the construction and operations of the helipad may affect, but is not likely to adversely affect coastal California gnatcatcher and is consistent with the 2010 Biological Opinion for the Hospital/Exchange.

Figure 1. Location of the Proposed Helipad

Concurrence Letter: U.S. Fish and Wildlife Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

In Reply Refer To:
FWS-MCBCP-10B0038-10F0080-R002

OCT 25 2012

Mr. William H. Berry
Head, Resource Management Division
Assistant Chief of Staff, Environmental Security
Box 555008
Camp Pendleton, California 92055-5008

Attention: Ms. Sherri Sullivan

Subject: Reinitiation of Section 7 Consultation for Naval Hospital Relocation and Main Exchange Mall Complex Project, Marine Corps Base Camp Pendleton, San Diego County, California

Dear Mr. Berry:

We received your email request (5090 ENV/WMS) dated October 22, 2012, requesting reinitiation of formal consultation in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), for construction activities associated with the Naval Hospital Relocation and Main Exchange Mall (Naval Hospital) Project on Marine Corps Base Camp Pendleton (MCBCP). The proposed action includes additional development activities beyond those analyzed within our biological opinion for the Naval Hospital Project (FWS-MCBCP-10B0038-10F0080, Naval Hospital BO) including construction of a new helicopter pad, its associated access road, and construction of San Diego Gas and Electric's (SDGE) access roads and upgrade of electrical poles. The construction of the SDGE access roads and upgrade of poles will be addressed separately in accordance with their Subregional Natural Community Conservation Plan/Habitat Conservation Plan. The U.S. Marine Corps (Marine Corps) determined that the proposed construction of the helicopter pad and associated access road may affect, but is not likely to adversely affect the federally threatened coastal California gnatcatcher (*Polioptila californica californica*, gnatcatcher).

The Marine Corps proposes to construct and operate a helicopter pad at MCBCP to support medical evacuations at the Naval Hospital and to construct an associated access road to the helicopter pad. The helicopter pad and access road will be located southwest of the hospital. The helicopter pad could take up to 12 months to be designed and constructed and will consist of a primary surface of approximately 200 feet × 200 feet and an approach/departure clearance surface extending on all sides of the primary surface. The access road will be constructed from Wire Mountain Road to the helicopter pad, will circle the helipad, and return to Wire Mountain Road.

The construction of a helicopter pad and access road were not included in the original Naval Hospital BO. However, the area that will be impacted by the addition of the helicopter pad and access road is included in the original Naval Hospital Project footprint, and potential impacts to gnatcatchers from development within the Naval Hospital Project footprint were already evaluated within the Naval Hospital BO. Therefore, no additional analysis of direct permanent or temporary impacts to gnatcatcher habitat from the addition of these two project features is necessary.

Indirect effects associated with the addition of the helicopter pad including increased noise, vibration, and night-time lighting during medical evacuation flights were not evaluated in the Naval Hospital BO. Recent basewide gnatcatcher surveys identified two gnatcatcher territories approximately 4,000 feet to the north and east and one gnatcatcher territory approximately 2,600 feet to the south of the project site. Although these territories are outside of the action area as defined within the Naval Hospital BO, they could be exposed to temporary increases in noise, vibration, and night-time lighting associated with medical helicopter use.

However, we do not anticipate the temporary increases in noise, vibration, and night-time lighting associated with medical helicopter use to significantly affect breeding, feeding, or sheltering gnatcatcher pairs because the nearest gnatcatcher territory is about 0.5 mile from the project site, gnatcatcher pairs within this area of MCBCP are already exposed to relatively high levels of noise and vibration associated with the daily operation of MCBCP, and because medical evacuation flights are likely to average only five transports per month. Therefore, we concur that the proposed additions to the Naval Hospital Project will not result in any adverse effects to gnatcatchers beyond those already analyzed in the Naval Hospital BO.

With this determination, the interagency consultation requirements of section 7 of the Act have been satisfied. Although this ends consultation, obligations under section 7 of the Act shall be reconsidered if (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (2) this action is subsequently modified in a manner that was not considered in this assessment, or (3) a new species is listed or critical habitat designated that may be affected by the action.

We appreciate your coordination on this project. If you have any questions regarding this consultation, please contact Katy Kughen at 760-431-9440, extension 201.

Sincerely,

for Karen A. Goebel
Assistant Field Supervisor

Report on Focused Pacific Pocket Mouse Surveys at Stuart Mesa

Scott Tremor Biological Consulting
2114 Diamond Street
San Diego, CA 92109

June 1, 2012

Ron Freeman
San Diego Gas and Electric
Supervisor - Biological Resources
Environmental Programs

Re: Letter Report on Focused Surveys at Stuart Mesa for the Endangered Pacific Pocket Mouse (*Perognathus longimembris pacificus*)

Dear Mr. Freeman,

This report conveys the results of focused surveys at Stuart Mesa for the Pacific Pocket Mouse (PPM).

This project was requested by the US Navy. The new Naval Hospital on Camp Pendleton requires a back-up or secondary feed of electrical power in case the primary feed from Oceanside is disrupted by any unplanned outages. San Diego Gas and Electric (SDGE) is contracted to upgrade its 12kV line to provide this secondary feed which included four structures in the Stuart Mesa Area (see attached).

A subspecies of the Pacific Pocket Mouse (PPM) is known to occur in the adjacent Oscar 1 Training Area east of Stuart Mesa Road. Similar habitat occurs within or near the four poles that will be up graded with new poles. As a result of potential impacts to the PPM, protocol surveys were required by the US Fish and Wildlife Service.

It was determined by SDGE that the affected area for the southernmost pole was no greater than 5625 ft^2 (522.6 m^2) and 309 ft^2 (28.7m^2) for the three northern poles. The potential impact information was used to develop an acceptable sampling plan was designed in deliberation with William Miller at the US Fish and Wildlife Service.

The survey covered an area of 11,021 ft^2 (1,024m^2) for the three northern power poles. The survey consisted of a 25 trap, 5 x 5 trap grid using 8 m trap spacing. In addition, each survey grid was augmented with 10 traps that were subjectively placed along the road berms of the access road leading to each power pole. Therefore, at each of the three northern power pole locations 35 traps were deployed resulting in a total of 105 traps set each night for five nights (525 trap nights).

The same 25 trapping configuration was employed for the southernmost power pole. However, the adjacent road was already covered with the traps from the northern trapping grids so no

augmentation was necessary. In total, there were 125 trap nights during the week of May 20-25, 2012 for the southern pole.

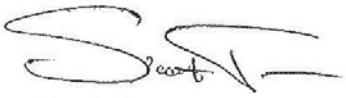
Results

A total of 650 trap nights were associated with the four poles that will be replaced and access roads for the secondary electrical feed to the new Naval Hospital, No PPM were captured or observed during the May 20-25, 2012 surveys.

This information will also be conveyed in a formal report to the US Fish and Wildlife Service within the next 30 days.

Let me know if you have further questions.

Sincerely,



Scott Tremor

APPENDIX B

COASTAL CONSISTENCY DETERMINATION

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Coastal Consistency Negative Determination: California Coastal Commission

Mark Delaplaine
State of California
California Coastal Commission
45 Fremont, Suite 2000
San Francisco, CA 94105-2219

Dear Mr. Delaplaine:

SUBJECT: NEGATIVE DETERMINATION FOR CONSTRUCTION OF NAVAL HOSPITAL REPLACEMENT, MARINE CORPS BASE CAMP PENDLETON

Per the Federal Coastal Zone Management Act (CZMA) of 1972 as amended, Section 307c(1), the U.S. Marine Corps (USMC) has determined that the proposed construction of the helicopter pad (hereafter referred to as "helipad" and installation of the alternate electric power line would not affect the coastal zone and, therefore, no Consistency Determination is required. We request your concurrence on a Coastal Consistency Negative Determination for this action.

A Draft Supplemental Environmental Assessment (SEA) has been prepared for this action under Marine Corps regulations implementing the National Environmental Policy Act. The Draft SEA contains detailed analysis supporting the determination that the proposed construction of the helipad and installation of the alternate electric power line would not have an effect on coastal resources and other environmental resources would not be significantly affected.

Project Purpose and Need: The purpose of the proposed action is to provide a helipad and alternate electric power line necessary for the Navy Hospital Camp Pendleton (NHCP) replacement at Marine Corps Base (MCB) Camp Pendleton. The proposed action is needed because the NHCP replacement requires alternate electrical power to operate in the event that primary power is lost. The NHCP replacement requires a helipad in the immediate vicinity of the NHCP replacement to transport sick and seriously injured patients in a time-efficient manner.

Project Description: Under the proposed action, a helipad would be constructed to support medical evacuations at the NHCP replacement. The helipad would be constructed southwest of the NHCP replacement, on the opposite side of an existing drainage creek (identified as waters of the United States), and across from the access road from the south parking area. An access road would be constructed from Wire Mountain Road, to the helipad, circling the helipad, and returning to Wire Mountain Road (see **Figure 1**). The helipad would take up to 12 months to be designed and constructed. The proposed helipad would consist of a primary surface (approximately 200 x 200 feet [61 x 61 meters]) and an approach departure clearance surface (25:1 slope) extending on both sides of the primary surface of the helipad. The helipad would be constructed to support the existing helicopter operations conducted at the Naval Hospital; however, in emergency and non-routine operations, the helipad could support any rotary-winged aircraft in the U.S. Department of the Navy (Navy) or USMC, including the MV-22.

Under the proposed action, San Diego Gas and Electric (SDG&E) would install a 12-kilovolt (kV) alternate electric power line for the NHCP replacement. The alternate electric power line would require installation by the time the NHCP replacement is scheduled to open in January 2014. The alternate electric power line would be installed within the existing 2.64-mile (4.25-km) power line alignment and would take 6 to 8 months to be constructed. The existing power line travels south along the western boundary of the Stuart Mesa housing development, turns slightly southeast and spans the Santa Margarita River, travels south on the western edge of the desalination ponds before turning east along Lemon Grove Road, and then turns south until it terminates at the northern end of the NHCP replacement site (see **Figure 2**).

Figure 1. Location of the Helipad

Figure 2. Location of SDG&E Alternate Electric Power Line

Thirty-two existing wood poles would be replaced with 32 steel poles to support the existing 69-kV transmission line and the new 12-kV alternate power transmission line as part of SDG&E's infrastructure upgrade requirements. Of the 32 new steel transmission poles, 6 would be engineered steel poles with pier foundations, and 26 would be galvanized direct-embed multi-piece replacement steel poles. Of the 6 engineered steel poles, 2 would replace 3 existing H-frame wood poles that span across the Santa Margarita River. One of the existing H-frame wood poles, currently situated south of the Santa Margarita River, would be removed without replacement. The existing H-frame wood pole would be removed by using a helicopter to drop off ground crews in the project area, which would then cut the pole at existing grade. Once the pole is cut, a helicopter would be used to remove the pole from the site. After installation of all new poles is completed, the 69-kV wires from the existing poles would be transferred to the new steel poles, and new conductor for the 12-kV alternate feed would be installed from the proposed stringing sites.

Determination: The proposed action, as described above, would occur outside the coastal zone boundary. Furthermore, the coastal zone, as defined in Section 304 for the CZMA, does not include "lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal government." The land in question is wholly-owned and operated by the Navy. However, the USMC recognizes that actions outside of the coastal zone could affect land or water uses or natural resources in the coastal zone and therefore, such actions would be subject to the consistency provisions of the CZMA. Consequently, an analysis of the impacts of the proposed action on the coastal zone was conducted.

Per this analysis, construction of the helipad and installation of the alternate electric power line would have no effect on coastal zone resources, including public access, recreation, the marine environment, natural resources, cultural resources, or aesthetics.

Public Access and Recreation: The proposed action would not have any effect on public access to, or commercial or recreational use of, the coastal zone. The project areas are on a military installation, with restricted access to the public. The proposed action would not affect beach access points or otherwise affect recreation or transportation in the coastal zone.

Marine Environment: The proposed action would not affect the marine environment. Erosion and sedimentation during construction activities would be controlled by development and implementation of a Storm Water Pollution Prevention Plan. A plan for landscaping and revegetation would be developed and implemented to provide permanent soil stabilization.

The proposed action would not involve hazardous materials or effluent discharge. A minor increase in urban runoff would not affect marine waters. Runoff from construction activities would be managed according to the Storm Water Pollution Prevention Plan and best management practices (e.g., bioswales, straw bales, erosion control mats, hydroseeding) to reduce the transport of pollutants and sediment in surface runoff from developed areas.

Land Resources: The proposed action would not affect land resources in the coastal zone. The project areas are located outside of the coastal zone. The proposed action would follow appropriate design measures (e.g., construction restrictions, revegetation, stormwater and erosion-control management).

MCB Camp Pendleton Environmental Security would review the landscaping plan to verify that appropriate native plants and acceptable landscape plant species are used in accordance with the Base Exterior Architecture Plan and the U.S. Environmental Protection Agency's 1995 Guidance for the Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds.

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Aesthetics: The proposed project would not significantly affect aesthetics or visual resources of the coastal zone. Construction activities associated with the proposed action would be conducted in an existing developed region of MCB Camp Pendleton. Adjacent development includes the Wire Mountain Housing Area, commissary and shopping center, sewage treatment plant, and Vandegrift Boulevard. The surrounding region includes Interstate-5, freeway access ramps, and the Del Mar Boat Basin. The overall visual quality of the location is moderate.

Conclusion: Per 15 Code of Federal Regulations 930.35 of the regulations implementing the Federal CZMA, this Negative Determination demonstrates that a Consistency Determination is not required for the proposed action, as it would not affect any land uses, water uses, or natural resources of the coastal zone.

Thank you for your prompt consideration of this matter. Our point-of-contact is Ms. Kristin Thomas in our Project Oversight Branch at (760) 763-7946.

Sincerely,

D.F. LEVI
Lieutenant Colonel, U.S. Marine Corps
Deputy, MCB Camp Pendleton Environmental Security

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1 Concurrence Letter: California Coastal Commission

STATE OF CALIFORNIA -- NATURAL RESOURCES AGENCY

EDMUND G. BROWN, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

September 17, 2012

W.J. Christensen, Head
Environmental Planning
U.S. Marine Corps
Marine Corps Installations West
Marine Corps Base Camp Pendleton
Box 555010
Camp Pendleton, CA 92055-5010

ATTN: Kristin Thomas

Re: **ND-047-12** U.S. Marine Corps Negative Determination, Helipad and Alternate electric power serving Naval Hospital, Marine Corps Base Camp Pendleton, San Diego Co.

Dear W.J. Christensen:

The Coastal Commission staff has reviewed the above-referenced negative determination for the construction of a helipad and installation of an alternate power line to serve the Naval Hospital Camp Pendleton, east of I-5 and Vandegrift Rd., south of the Santa Margarita River on Marine Corps Base Camp Pendleton. The helipad would be 200 ft. by 200 ft. and would support helicopter operations at the hospital. The helipad site was previously disturbed and graded to serve as an ancillary parking lot for the hospital. The hospital is currently under construction and anticipated to open in 2014. The alternate power line would follow an existing power line route and would provide an independent backup power source for the hospital. Thirty-two wood power poles would be replaced with steel poles designed to include measures for avian protection.

The project would not affect public access (which is restricted in this area due to military security needs), wetlands, sensitive habitat, or public views. Best Management Practices would be implemented to minimize sedimentation and erosion and protect water quality, including the nearby watercourse running between the helipad and the hospital. With the measures included, the Commission staff **agrees** with the Marine Corps that the proposed project would not adversely affect coastal zone resources. We therefore **concur** with your negative determination made pursuant to 15 CFR 930.35 of the NOAA implementing regulations. Please contact Mark Delaplaine of the Commission staff at (415) 904-5289 if you have any questions regarding this matter.

Sincerely,

(for) CHARLES LESTER
Executive Director

cc: San Diego District

APPENDIX C

RECORD OF NON-APPLICABILITY

UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE
BOX 555010
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENV/PLN

MEMORANDUM FOR THE RECORD

From: Commanding General
To: Director, Environmental Security

Subj: RECORD OF NON-APPLICABILITY (RONA) FOR NEPA 20080315; NAVAL HOSPITAL REPLACEMENT MARINE CORPS BASE, CAMP PENDLETON

Ref: (a) U.S. Environmental Protection Agency (USEPA), Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, published in the *Federal Register* on 30 November 1993 (40 Code of Federal Regulations [CFR] Parts 6, 51, and 93)
(b) USEPA, Revisions to the General Conformity Regulations; Final Rule, published in the *Federal Register* on 5 April 2010 (40 CFR Parts 51 and 93)
(c) Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1C, CH-1 (Appendix F)

Encl: (1) SEA for the Naval Hospital, Camp Pendleton Emissions Analysis for Clean Air Act Conformity Applicability

1. References (a), (b), and (c) provide implementing guidance for documenting Clean Air Act (CAA) Conformity Determination requirements. The General Conformity Rule applies to Federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants.

2. The Proposed Action would occur within the San Diego Air Basin (SDAB) portion of Marine Corps Base (MCB) Camp Pendleton. This portion of the SDAB is currently in non-attainment of the 8-hour ozone (O_3) NAAQS and is a maintenance area for carbon monoxide (CO) NAAQS. The SDAB is in attainment of the NAAQS for all other criteria pollutants. Therefore, only project emissions of CO and O_3 (or its precursors, volatile organic compounds [VOCs] and nitrogen oxides [NO_x]) were analyzed for

FOR OFFICIAL USE ONLY

Subj: RECORD OF NON-APPLICABILITY (RONA) FOR NEPA 20080315; RANGE 108 EXPLOSIVE ORDNANCE DISPOSAL (EOD) TRAINING FACILITY, CAMP PENDLETON

General Conformity Rule applicability. The annual *de minimis* threshold levels for this region are 100 tons of VOC, NO_x, and CO. Federal actions can be exempt from conformity determinations if they do not exceed designated *de minimis* threshold levels.

3. An emissions analysis for the SEA for the Naval Hospital, MCB Camp Pendleton is presented in the enclosure. *De minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action and a formal Conformity Determination is not considered necessary.

4. To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that implementation of the Proposed Action does not require a formal CAA Conformity Determination.

VINCENT A. COGLIANESE

Copy to:
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ENV

APPENDIX D

AIR QUALITY EMISSIONS CALCULATIONS

Summary	Summarizes total emissions by calendar year for Helicopter Pad Construction
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction and demolition activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Haul Truck On-Road	Estimates emissions from haul trucks hauling fill materials to the job site.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the San Diego Air Quality Control Region Tier report for 2008, to be used to compare Helicopter Pad Construction to regional emissions.

Air Emissions for Helicopter Pad Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
Combustion	4.807	0.551	2.119	0.380	0.345	0.335	544.622
Fugitive Dust	-	-	-	-	1.629	0.163	-
Haul Truck On-Road	0.325	0.235	0.956	0.026	0.387	0.101	82.333
Commuter	0.066	0.066	0.595	0.001	0.006	0.004	78.889
TOTAL	***5.198***	***0.852***	***3.669***	***0.407***	***2.367***	***0.602***	***705.844***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***640.200***	***metric tons***	
State of California's CO_2 emissions =	***375,800,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of California's CO_2 emissions =	***0.00017%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000012%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2012. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. Data released October 2011. Data accessed 01 May 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because Helicopter Pad Construction is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

San Diego Interstate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	318,459	60,351	65,338	14,257	1,210	168,435

Source: USEPA National Emissions Inventory (NEI) (http://neibrowser.epa.gov/eis-public-web/home.html). Site visited on 01 May 2012

Air Emissions from Helicopter Pad Construction

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	318,459	60,351	65,338	14,257	1,210	168,435
Emissions	5.198	0.852	3.669	0.407	2.367	0.602
% of Regional	**0.002%**	**0.001%**	**0.006%**	**0.003%**	**0.196%**	**0.000%**

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, $PM_{10,}$ and CO_2 due to Construction and Demolition

	General Construction and Demolition Activities	**Area Disturbed**	
1.)	Construct New Helicopter Pad	43,000 ft^2	
2.)	Construct Access Road	8,700 ft^2	

Total Construction Area:	43,000 ft^2	Line 1
	0.99 acres	
Total Demolition Area:	0 ft^2	
	0.00 acres	
Total Pavement Area:	8,700 ft^2	Line 2
	0.20 acres	
Total Disturbed Area:	51,700 ft^2	Line 1 and Line 2
	1.19 acres	
Construction Duration:	12 months	
Annual Construction Activity:	240 days	Assume 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	3.45	2.55	2.47	4941.53

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	3.93	2.78	2.69	5623.96

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	2.58	1.92	1.87	3703.07

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.

c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	1	41.641	2.577	15.710	3.449	2.546	2.469	4941.526
Paving Equipment	1	45.367	2.606	18.578	3.926	2.776	2.693	5623.957
Demolition Equipment	1	31.808	1.886	12.584	2.585	1.923	1.865	3703.074
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744	4464.512
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating**			16.900					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	51,700	1.19	1	(from "Grading" worksheet)
Paving:	8,700	0.20	1	
Demolition:	0	0.00	0	
Building Construction:	43,000	0.99	240	
Architectural Coating	43,000	0.99	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	41.64	2.58	15.71	3.45	2.55	2.47	4,942
Paving	45.37	2.61	18.58	3.93	2.78	2.69	5,624
Demolition	-	-	-	-	-	-	0
Building Construction	9,455.12	751.15	4,171.75	747.92	678.97	658.60	1,071,483
Architectural Coatings	71.48	345.47	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	**9,613.61**	**1,101.80**	**4,237.35**	**760.32**	**690.48**	**669.76**	**1,089,244**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Total Project Emissions (lbs)	9,613.61	1,101.80	4,237.35	760.32	690.48	669.76	1,089,244
Total Project Emissions (tons)	4.807	0.551	2.119	0.380	0.345	0.335	544.622

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Construction and Demolition Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
$PM_{2.5}$ Emissions			
$PM_{2.5}$ Multiplier	0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	0.20	acres

General Construction and Demolition Activities (0.19 ton PM_{10}/acre-month)

Duration of Project	12	months
Area	0.99	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	**PM_{10} controlled**	**$PM_{2.5}$ uncontrolled**	**$PM_{2.5}$ controlled**
New Roadway Construction	1.007	0.503	0.101	0.050
General Construction Activities	2.251	1.125	0.225	0.113
Total	**3.257**	**1.629**	**0.326**	**0.163**

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 1.19 acres/yr (from Combustion Worksheet)
Qty Equipment: 3.00 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	1.19	0.15
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	1.19	0.58
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	0.59	0.60
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	0.59	0.25
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	1.19	0.42
TOTAL								1.99

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 1.99
Qty Equipment: 3.00
Grading days/yr: 0.66

Haul Truck Emissions

Emissions from hauling excavation material and construction supplies are estimated in this spreadsheet.
Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

Assumptions:
Haul trucks carry 20 cubic yards of material per trip.
The average distance from the project site to the materials source is 15 miles; therefore, a haul truck will travel 30 miles round trip.
Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Amount of Building Materials (Above Ground) =	3,185	cubic yards	Assumes 2 feet of building material are needed
Amount of Building Materials (Below Ground) =	7,963	cubic yards	Assumes 5 feet of material are needed for the below ground portion
Amount of Excavation Material =	19,111	cubic yards	Assumes 12 feet of material would need to be excavated on average
Number of trucks required =	1513	heavy duty diesel haul truck trips	
Miles per trip =	30	miles	

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**6.5**	**4.7**	**19.1**	**0.512**	**7.73**	**2.01**	**1645.605**

Notes:
Emission factors for all pollutants except CO_2 are from USAF IERA 2003.
Emission factors for PM, PM_{10}, SO_x are from HDDV in Table 4-50 (USAF IERA 2003).
Emission factors for VOC, CO, and NO_x are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF IERA 2003).
Diesel fuel produces 22.384 pounds of CO2 per gallon.
It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003)
CO_2 emission factor = 22.384 lbs CO_2/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**650.414**	**470.299**	**1911.216**	**51.233**	**773.492**	**201.128**	**164665.298**
tons	**0.325**	**0.235**	**0.956**	**0.026**	**0.387**	**0.101**	**82.333**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 369 trips * NO_x emission factor (g/mile) * lb/453.6 g

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

Assumptions:
Passenger vehicle emission factors for scenario year 2010 are used.

The average roundtrip commute for a construction worker =	30	miles
Number of construction days =	240	days
Number of construction workers (daily) =	20	people

Passenger Vehicle Emission Factors for Year 2010 (lbs/mile)

NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 27 May 2009.
Notes:
The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC.

Construction Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**132.212**	**131.614**	**1189.837**	**1.552**	**12.525**	**7.889**	**157778.258**
tons	**0.066**	**0.066**	**0.595**	**0.001**	**0.006**	**0.004**	**78.889**

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

San Diego Intrastate Air Quality Control Region

			All Emission Sources					
Row #	State	County	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	CA	San Diego	318,459	60,351	65,338	14,257	1,210	168,435
Grand Total			318,459	60,351	65,338	14,257	1,210	168,435

SOURCE:
http://neibrowser.epa.gov/eis-public-web/home.html
USEPA National Emissions Inventory (NEI)

Summary	Summarizes total emissions by calendar year for Alternate Electric Power Line Construction
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction and demolition activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Haul Truck On-Road	Estimates emissions from haul trucks hauling fill materials to the job site.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
Generator	Estimates emissions from the operation of generators.
AQCR Tier Report	Summarizes total emissions for the San Diego Interstate Air Quality Control Region Tier report for 2008, to be used to Compare Alternate Electric Power Line Construction to regional emissions.

Air Emissions for Alternate Electric Power Line Construction

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
Combustion	3.312	0.429	1.453	0.262	0.237	0.230	375.583
Fugitive Dust	-	-	-	-	0.730	0.073	-
Haul Truck On-Road	0.214	0.155	0.628	0.017	0.254	0.066	54.145
Generators	9.990	0.022	0.207	0.246	0.024	0.024	40.241
Commuter	0.055	0.055	0.496	0.001	0.005	0.003	65.741
TOTAL	***13.571***	***0.660***	***2.785***	***0.526***	***1.251***	***0.397***	***535.711***

Note: Total $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***485.890***	***metric tons***	
State of California's CO_2 emissions =	***375,800,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of California's CO_2 emissions =	***0.00013%***		
United States' CO_2 emissions =	***5,425,600,000***	***metric tons***	*(U.S. DOE/EIA 2011)*
Percent of USA's CO_2 emissions =	***0.000009%***		

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2012. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide).* Available online <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. Data released October 2011. Data accessed 01 May 2012.

Since future year budgets were not readily available, actual 2008 air emissions inventories for the counties were used as an approximation of the regional inventory. Because Alternate Electric Power Line Construction is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

San Diego Interstate Air Quality Control Region

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	318,459	60,351	65,338	14,257	1,210	168,435

Source: USEPA National Emissions Inventory (NEI) (http://neibrowser.epa.gov/eis-public-web/home.html). Site visited on 01 May 2012

Air Emissions from Alternate Electric Power Line Construction

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	318,459	60,351	65,338	14,257	1,210	168,435
Emissions	13.571	0.660	2.785	0.526	1.251	0.397
% of Regional	**0.004%**	**0.001%**	**0.004%**	**0.004%**	**0.103%**	**0.000%**

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, $PM_{10,}$ and CO_2 due to Construction and Demolition

	General Construction and Demolition Activities	**Area Disturbed**	
1.)	Construct Alternate Electric Power Line	41,850	ft^2
2.)	Staging areas	352,800	ft^2

Total Construction Area:	41,850	ft^2	Line 1
	0.96	acres	
Total Demolition Area:	0	ft^2	
	0.00	acres	
Total Pavement Area:	0	ft^2	
	0.00	acres	
Total Disturbed Area:	394,650	ft^2	Line 1 and Line 2
	9.06	acres	
Construction Duration:	8	months	
Annual Construction Activity:	160	days	Assume 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	3.45	2.55	2.47	4941.53

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	3.93	2.78	2.69	5623.96

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	2.58	1.92	1.87	3703.07

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.

c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	1	41.641	2.577	15.710	3.449	2.546	2.469	4941.526
Paving Equipment	1	45.367	2.606	18.578	3.926	2.776	2.693	5623.957
Demolition Equipment	1	31.808	1.886	12.584	2.585	1.923	1.865	3703.074
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744	4464.512
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating**			16.673					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	394,650	9.06	6	(from "Grading" worksheet)
Paving:	0	0.00	0	
Demolition:	0	0.00	0	
Building Construction:	41,850	0.96	160	
Architectural Coating	41,850	0.96	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	249.85	15.46	94.26	20.70	15.27	14.81	29,649
Paving	-	-	-	-	-	-	0
Demolition	-	-	-	-	-	-	0
Building Construction	6,303.41	500.77	2,781.17	498.62	452.65	439.07	714,322
Architectural Coatings	71.48	340.92	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	**6,624.74**	**857.15**	**2,906.74**	**524.33**	**474.11**	**459.88**	**751,166**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Total Project Emissions (lbs)	6,624.74	857.15	2,906.74	524.33	474.11	459.88	751,166
Total Project Emissions (tons)	3.312	0.429	1.453	0.262	0.237	0.230	375.583

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Construction and Demolition Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
$PM_{2.5}$ Emissions			
$PM_{2.5}$ Multiplier	0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	8	months
Area	0.00	acres

General Construction and Demolition Activities (0.19 ton PM_{10}/acre-month)

Duration of Project	8	months
Area	0.96	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	**PM_{10} controlled**	**$PM_{2.5}$ uncontrolled**	**$PM_{2.5}$ controlled**
New Roadway Construction	0.000	0.000	0.000	0.000
General Construction Activities	1.460	0.730	0.146	0.073
Total	**1.460**	**0.730**	**0.146**	**0.073**

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 9.06 acres/yr (from Combustion Worksheet)
Qty Equipment: 3.00 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	9.06	1.13
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	9.06	4.43
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	4.53	4.57
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	4.53	1.87
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	9.06	3.18
TOTAL								15.18

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 15.18
Qty Equipment: 3.00
Grading days/yr: 5.06

Haul Truck Emissions

Emissions from hauling excavation material and construction supplies are estimated in this spreadsheet.
Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

Assumptions:
Haul trucks carry 20 cubic yards of material per trip.
The average distance from the project site to the materials source is 15 miles; therefore, a haul truck will travel 30 miles round trip.
Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Amount of Building Materials =	22	cubic yards	For pier foundations for 6 poles and typical foundations for 25 poles
Amount of Building Materials =	1,278	cubic yards	For utility poles
Amount of Excavation Material =	18,600	cubic yards	Assumes 5 feet of material would need to be excavated on average
Number of trucks required =	995	heavy duty diesel haul truck trips	
Miles per trip =	30	miles	

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**6.5**	**4.7**	**19.1**	**0.512**	**7.73**	**2.01**	**1645.605**

Notes:
Emission factors for all pollutants except CO_2 are from USAF IERA 2003.
Emission factors for PM, PM_{10}, SO_x are from HDDV in Table 4-50 (USAF IERA 2003).
Emission factors for VOC, CO, and NO_x are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF IERA 2003).
Diesel fuel produces 22.384 pounds of CO2 per gallon.
It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003)
CO_2 emission factor = 22.384 lbs CO_2/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**427.740**	**309.289**	**1256.897**	**33.693**	**508.681**	**132.270**	**108290.914**
tons	**0.214**	**0.155**	**0.628**	**0.017**	**0.254**	**0.066**	**54.145**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 369 trips * NO_x emission factor (g/mile) * lb/453.6 g

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

Assumptions:
Passenger vehicle emission factors for scenario year 2010 are used.

The average roundtrip commute for a construction worker =	30	miles
Number of construction days =	160	days
Number of construction workers (daily) =	25	people

Passenger Vehicle Emission Factors for Year 2010 (lbs/mile)

NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 27 May 2009.
Notes:
The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC.

Construction Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**110.177**	**109.679**	**991.531**	**1.293**	**10.437**	**6.574**	**131481.882**
tons	**0.055**	**0.055**	**0.496**	**0.001**	**0.005**	**0.003**	**65.741**

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

Generator Kilowatts		Conversion from kW to Btu/hr	Engine Btu/hr (Assume 35% efficiency converting mechanical to electrical power)	Engine MMBtu/hr
500		1707.2	2,438,876	2.44

Diesel Industrial Engine Emission Factors from AP-42, Section 3.4	NOx	CO	TOC	PM-10	SO_2	CO_2
	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu
Emission Factor	3.2	0.85	0.09	0.1	1.01	165

Assume max. 1280 hrs/yr operation

NOx	CO	TOC	PM-10	SO_2	CO_2
(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
9,989.63	207.30	21.95	24.39	246.33	40,241.45

Emissions Per Generator	NOx	CO	TOC	PM-10	SO_2	CO_2
	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
	4.995	**0.104**	**0.011**	**0.012**	**0.123**	**20.121**

Project Emissions	NOx	CO	TOC	PM-10	SO_2	CO_2	Number of Generators
	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	
Alternate Electric Power Line Construction	**9.990**	**0.207**	**0.022**	**0.024**	**0.246**	**40.241**	**2**

Source: USEPA 1996. *AP-42. Large Stationary Diesel And All Stationary Duel-fuel Engines.* Table 3.4-1. Page 3.4-5.

San Diego Intrastate Air Quality Control Region

			All Emission Sources					
Row #	State	County	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	CA	San Diego	318,459	60,351	65,338	14,257	1,210	168,435
Grand Total			318,459	60,351	65,338	14,257	1,210	168,435

SOURCE:
http://neibrowser.epa.gov/eis-public-web/home.html
USEPA National Emissions Inventory (NEI)

APPENDIX E

TRANSPORTATION DEMAND MANAGEMENT PLAN

Transportation Demand Management Plan for the Naval Hospital

DRAFT
Final Report

Prepared for:

Marine Corps Base Camp Pendleton

Prepared by:

HDR | ONE COMPANY *Many Solutions*

in association with:

Kimley-Horn and Associates, Inc

June 2012

095861000

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1. EXECUTIVE SUMMARY

This Transportation Demand Management (TDM) Plan is one of several measures taken by the U.S. Department of the Navy (DON) to proactively improve traffic flow prior to Grow the Force, the Exchange Complex, and the Naval Hospital Camp Pendleton Replacement projects all becoming operational. The DON's primary objective for this effort is to have information on different alternatives available for reducing traffic at Marine Corps Base Camp Pendleton (MCB Camp Pendleton) and an evaluation of the effectiveness of each of the alternatives if they were to be implemented.

In preparing this Plan, Kimley-Horn reviewed the traffic studies previously prepared for MCB Camp Pendleton, reviewed existing TDM programs currently available at MCB Camp Pendleton, conducted planning workshops with installation staff and representatives from various commands to summarize the problem, identify potential solutions, and ascertain the degree to which MCB Camp Pendleton would benefit from the various potential solutions. This Plan also briefly discusses some of the additional data collection, analysis, and communications strategies that are recommended for further consideration by MCB Camp Pendleton. Some recommendations could be implemented in the short-term, while others may be long-term considerations. This Plan does not attempt to prioritize these recommendations, as such priority will inevitably depend on the availability of resources at MCB Camp Pendleton and future data collection or dissemination channels, which fall outside of the scope of this Plan.

This Plan recommends that two strategies be carried forward for immediate implementation. In addition, a monitoring and evaluation program should be implemented on the installation to track progress. Both are really expansions on existing TDM measures that are currently being implemented, albeit with limited success, on MCB Camp Pendleton. The measures to implement include:

- Expand participation in the Navy's Transportation Incentive Program (TIP) through targeted marketing and employee communication protocols; and
- Expand participation in the San Diego Association of Governments (SANDAG) Regional Vanpool Program, through targeted marketing and employee communication protocols.

As traffic operations and TDM measures at MCB Camp Pendleton continue to be monitored in the foreseeable future and with the increasing demand to use alternative modes of transportation and reduce greenhouse gas (GHG) emissions and other environmental pollutants, further studies could be performed by the DON to make informed decisions on when and where to invest in programs or improvements. Based on the feedback and information obtained and notable information not available during the preparation of this Plan, the following are suggested for further study either by the DON or by others.

- Conducting an origin-destination study for MCB Camp Pendleton personnel and civilians to document where individuals are commuting to/from on a regular basis. This would prove to be helpful in targeting TDM and/or transit initiatives.
- Conducting a feasibility study of increasing transit routes and/or frequency to serve more areas of MCB Camp Pendleton, and increase frequency on the two existing North County Transit District (NCTD) Breeze bus routes that serve the installation, as both suffer from low poor geographic coverage and low frequency.

2. INTRODUCTION

HDR has retained Kimley-Horn and Associates, Inc. (Kimley-Horn), to prepare a Transportation Demand Management (TDM) Plan for Marine Corps Base Camp Pendleton (MCB Camp Pendleton). The TDM Plan is one of several measures taken by the U.S. Department of the Navy (DON) to proactively improve traffic flow prior to Grow the Force, the Exchange Complex, and the Naval Hospital Camp Pendleton Replacement projects all becoming operational. Specifically, this Plan has been prepared to reduce outbound traffic exiting MCB Camp Pendleton during the afternoon peak period on the Harbor Drive and I-5 southbound ramps. The Plan identifies several strategies to reduce peak period traffic at this location. The DON's primary objective for this effort is to have information on different alternatives available for reducing traffic at MCB Camp Pendleton and the effectiveness of each of the alternatives if they were implemented.

In preparing this Plan, Kimley-Horn was tasked with reviewing the traffic studies previously prepared for MCB Camp Pendleton to determine the cause and nature of traffic congestion in the vicinity of the Main Gate and I-5 southbound ramp at Harbor Drive, and to review existing TDM programs currently available at MCB Camp Pendleton. Planning workshops were conducted with installation staff and representatives from various commands to summarize the problem, identify potential solutions, and ascertain the degree to which MCB Camp Pendleton would benefit from the various potential solutions. A technical memorandum was prepared with four TDM Plan scenarios tailored to MCB Camp Pendleton and was presented to installation staff, representatives from various commands, and Marine Corps leadership. The technical memorandum and the resulting discussions formed the basis for the development of this Plan. Final conclusions and recommendations are summarized herein.

This Plan also briefly discusses some of the additional data collection, analysis, and communications strategies that are recommended for further consideration by the DON. Some recommendations could be implemented in the short-term, while others may be long-term considerations. This Plan does not attempt to prioritize these recommendations, as such priority will inevitably depend on the availability of resources at MCB Camp Pendleton and future data collection or dissemination channels, which fall outside of the scope of this Plan.

3. EXISTING CONDITIONS

To help understand the traffic dynamics at MCB Camp Pendleton and specifically near the Main Gate and I-5 southbound ramps, Kimley-Horn obtained information from MCB Camp Pendleton staff and leadership, California Department of Transportation (CALTRANS), San Diego Association of Governments (SANDAG), North County Transit District (NCTD), and the DON. The information obtained was in addition to previous studies prepared for MCB Camp Pendleton. This section summarizes key information on existing traffic conditions obtained from these sources and used in developing the TDM Plan.

3.1 MCB Camp Pendleton Travel Patterns

3.1.1 Access Locations

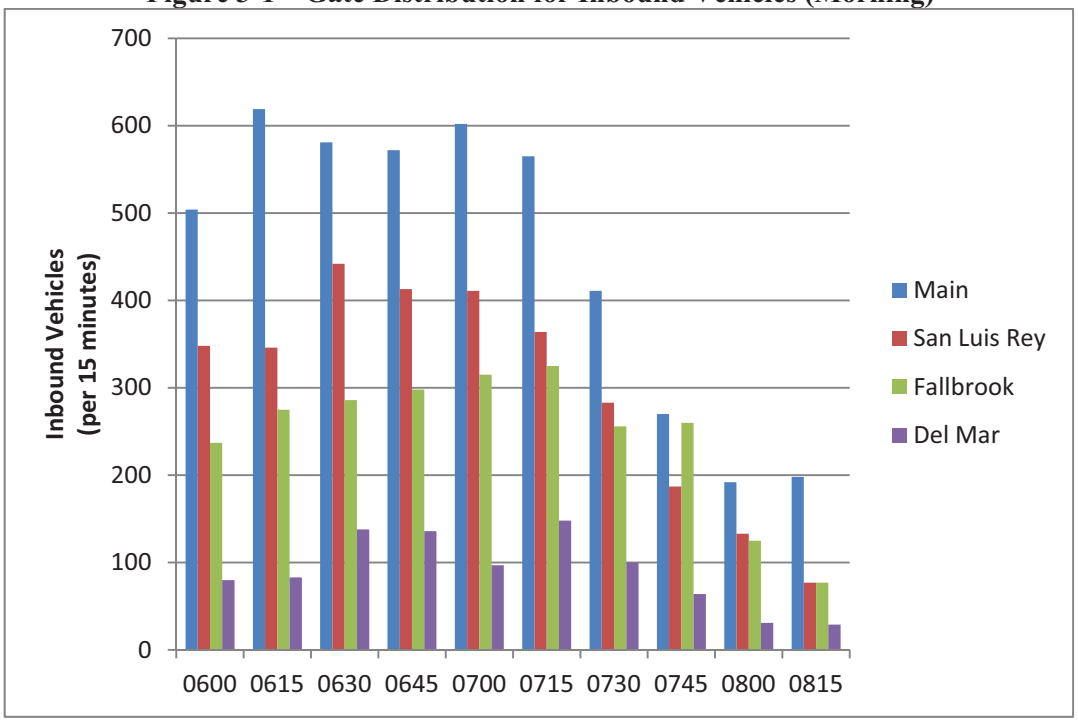
Access to MCB Camp Pendleton is provided at seven Gate locations:

1. Oceanside Gate (also known as the Main Gate)
2. San Luis Rey Gate
3. Fallbrook Gate
4. Del Mar Gate
5. Las Pulgas Gate
6. San Onofre Gate
7. Cristianitos Gate

The Main, Del Mar, San Luis Rey, and Fallbrook gates provide access to southern MCB Camp Pendleton, where the TDM Plan is tailored to. The Las Pulgas Gate provides access to central MCB Camp Pendleton, and the San Onofre and Cristianitos gates provide access to northern MCB Camp Pendleton.

Figure 3-1 illustrates of the number of inbound vehicles between 0600 and 0830 hours at each of the four gates that provide access to the southern portion of MCB Camp Pendleton (counts performed in 2010). As shown in the figure, over 500 vehicles enter the Main Gate in each 15-minute period between 0600 and 0730 hours. The San Luis Rey Gate is the next busiest Gate on the southern portion, but is well below the number of vehicles at the Main Gate.

Figure 3-1 – Gate Distribution for Inbound Vehicles (Morning)



3.1.2 Vehicle Occupancy

Vehicle occupancy data was also collected for the inbound vehicles counted in 2010 and discussed previously. At the Main Gate, the data shows an average of 1.11 persons per vehicle. The San Luis Rey Gate also averaged 1.11 persons per vehicle. The Fallbrook and Del Mar gates had a lower average, with 1.03 and 1.07 persons per vehicle, respectively. This information demonstrates that the majority of people commuting to MCB Camp Pendleton in the morning are driving alone and people are not typically participating in a carpool or vanpool.

3.1.3 Work Hours

MCB Camp Pendleton representatives furnished data on the work begin and end times for various units throughout MCB Camp Pendleton, organized by cantonement area. The data is not a complete list of all activities within the installation, but provides a snapshot of where personnel travel to and from on a "typical day." **Figure 3-2** illustrates the location of each of the cantonement areas for which information was provided and the number of personnel associated with each. **Table 3-1** shows the breakdown of the number of officers, enlisted personnel, and civilians assigned to units in each cantonement area in February 2012. **Table 3-2** and **Table 3-3** summarize the resulting work hour times of installation personnel by cantonment area in the morning (start time) and afternoon (end time), respectively. The individual cantonment areas which have the largest populations in the southern portion of MCB Camp Pendleton are highlighted in red. These areas attract the most people and therefore would have the greatest opportunity to implement TDM measures. The work start times and end times are illustrated in **Figures 3-3** and **3-4**, respectively.

It should be noted that the data is not assumed to include each individual within each area and some personnel and/or civilians are likely not included in the information.

Figure 3-2 – Personnel Distribution by Cantonement Area

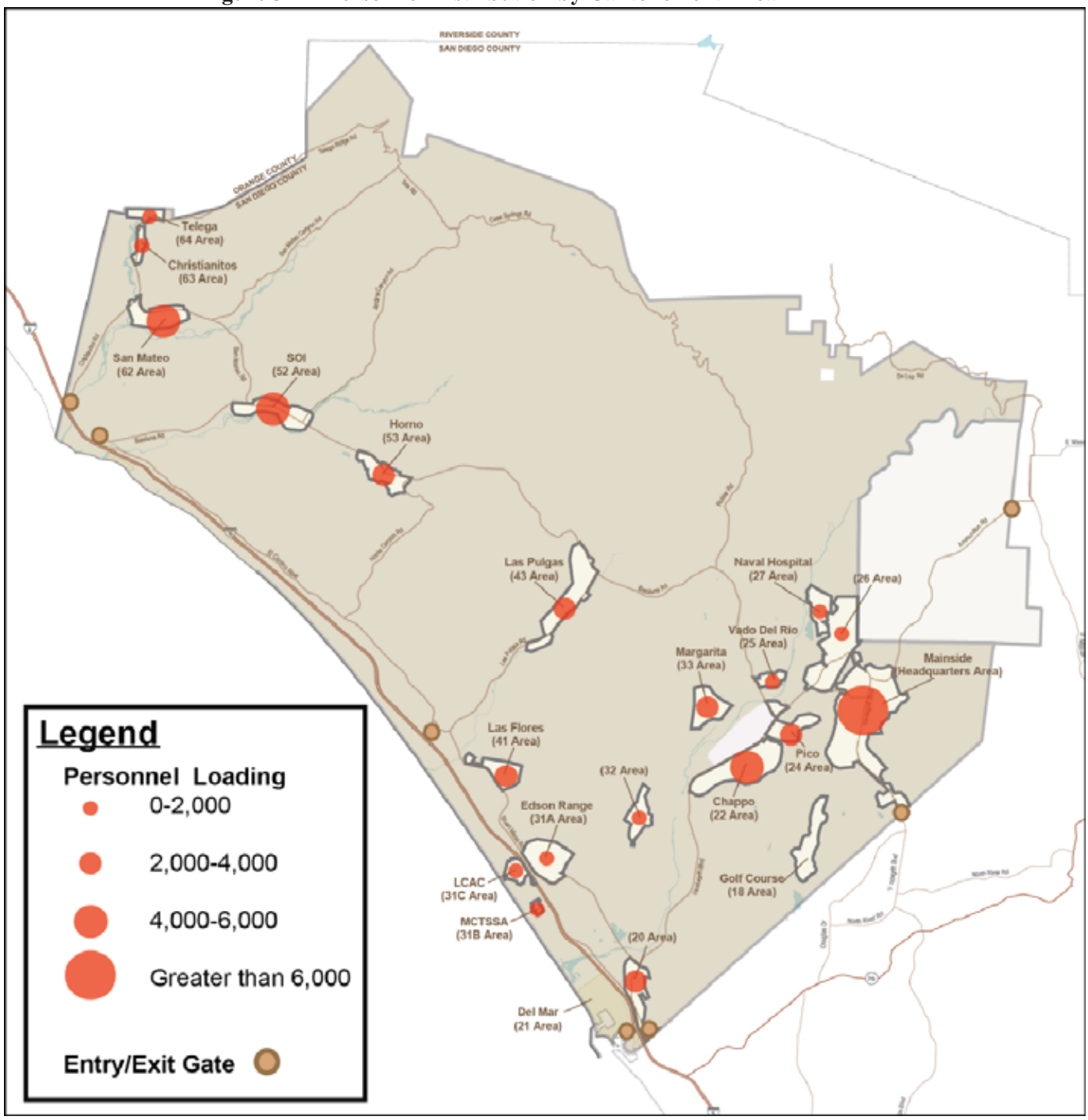


Table 3-1 – Type of Personnel by Cantonement Area

	Personnel Loading			
Installation Area	**Officers**	**Enlisted**	**Civilians**	**Total**
Mainside HQ	529	7,949	798	**9,276**
Del Mar (21 Area) / (20 Area)	367	2,914	-	**3,281**
New Naval Hospital		1,936		**1,936**
Chappo (22 Area)	238	3,171	1,274	**4,683**
24 Area	502	3,252	176	**3,930**
Vado Del Rio (25 Area)	37	570	6	**613**
26 Area	1	46	-	**47**
Naval Hospital (27 Area)	261	567	690	**1,518**
Edson Range (31A Area)	29	399	243	**671**
MCTSSA (31B Area)	113	294	417	**824**
LCAC (31C Area)	27	611	150	**788**
32 Area	95	683	94	**872**
Margarita (33 Area)	158	1,889	58	**2,105**
Las Flores (41 Area)	211	2,708	53	**2,972**
Las Pulgas (43 Area)	113	1,638	44	**1,794**
SOI (52 Area)	82	5,446	167	**5,695**
Horno (53 Area)	218	3,760	6	**3,984**
San Mateo (62 Area)	268	4,604	45	**4,917**
Cristianitos (63 Area)	7	92	6	**105**
Talega (64 Area)	4	1,532	-	**1,536**
Total	**3,372**	**43,363**	**4,271**	**51,006**

Table 3-2 – Personnel Work Start Times

	AM Hours						
Installation Area	0500	0530	0600	0630	0700	0730	0800
Mainside HQ	0	0	0	0	4823	4453	0
Del Mar / (20 Area)	7	0	0	3216	58	0	0
New Naval Hospital			484		1452		
Chappo (22 Area)	10	0	361	751	258	62	50
24 Area	3930	0	0	0	0	0	0
Vado Del Rio (25 Area)	609	0	0	0	0	0	0
26 Area	47	0	0	0	0	0	0
Naval Hospital (27 Area)	0	0	0	0	1518	0	0
Edson Range (31A Area)	0	0	0	62	234	14	3
MCTSSA (31B Area)	824	0	0	0	0	0	0
LCAC (31C Area)	788	0	0	0	0	0	0
32 Area	0	0	872	0	0	0	0
Margarita (33 Area)	0	0	0	0	2102	0	3
Las Flores (41 Area)	0	1124	671	0	666	0	3
Las Pulgas (43 Area)	0	846	85	0	5	694	2
SOI (52 Area)	0	0	0	5678	14	0	3
Horno (53 Area)	0	0	3960	0	12	5	3
San Mateo (62 Area)	0	0	0	4831	0	0	3
Cristianitos (63 Area)	0	0	0	105	0	0	0
Talega (64 Area)	0	0	0	0	0	1526	0
Total	**6215**	**1970**	**6433**	**14643**	**11142**	**6754**	**70**
% of Total	**13%**	**4%**	**14%**	**31%**	**24%**	**14%**	**0%**

*AM times with fewer than 50 trips omitted
*Not all travelers included: Those outside of the defined ranges of time, and the variable start time/travelers omitted

Figure 3-3 – Personnel Work Start Times

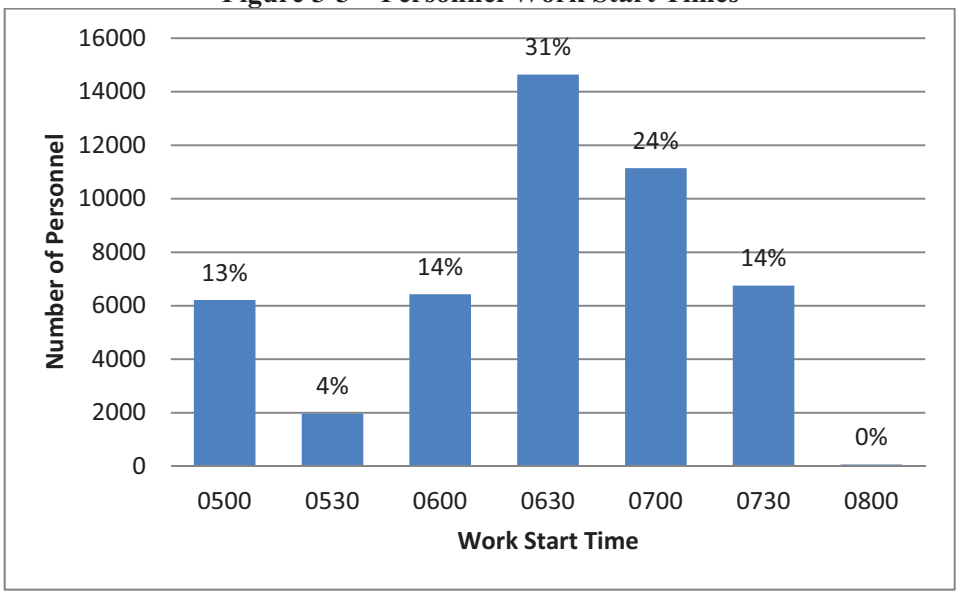
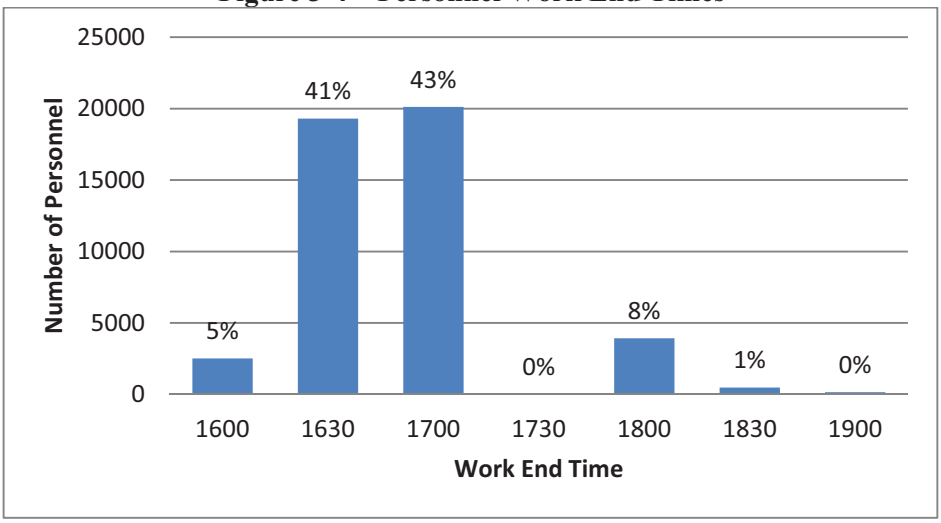


Table 3-3 – Personnel Work End Times

	PM Hours						
Installation Area	1600	1630	1700	1730	1800	1830	1900
Mainside HQ	0	9276	0	0	0	0	0
Del Mar / (20 Area)	9	586	0	0	2686	0	0
New Naval Hospital	484					484	
Chappo (22 Area)	98	173	1129	12	20	0	96
24 Area	0	0	3930	0	0	0	0
Vado Del Rio (25 Area)	0	0	613	0	0	0	0
26 Area	0	0	47	0	0	0	0
Naval Hospital (27 Area)	1518	0	0	0	0	0	0
Edson Range (31A Area)	299	14	0	0	0	0	0
MCTSSA (31B Area)	0	0	824	0	0	0	0
LCAC (31C Area)	0	0	788	0	0	0	0
32 Area	0	0	872	0	0	0	0
Margarita (33 Area)	22	2059	2	0	0	0	12
Las Flores (41 Area)	11	0	1206	0	1230	0	9
Las Pulgas (43 Area)	5	1703	86	0	0	0	0
SOI (52 Area)	14	0	5681	0	0	0	0
Horno (53 Area)	15	3965	0	0	0	0	0
San Mateo (62 Area)	48	0	4831	0	0	0	29
Cristianitos (63 Area)	0	0	105	0	0	0	0
Talega (64 Area)	0	1526	0	0	0	0	8
Total	**2523**	**19302**	**20114**	**12**	**3936**	**484**	**154**
% of Total	**5%**	**41%**	**43%**	**0%**	**8%**	**1%**	**0%**

*Not all travelers included: Those outside of the defined ranges of time, and the variable start time/travelers omitted

Figure 3-4 – Personnel Work End Times



Personnel throughout MCB Camp Pendleton have varying work schedules, working different days and different number of hours per day. The work start times are relatively staggered, with the heaviest peak period between 0630 and 0730 hours. Although the start times are staggered, the work end times are shown to be clustered to have over 80-percent of the personnel leaving MCB Camp Pendleton between 0430 and 0530 hours.

Comparing the work start time data with the snapshot of Gate volume data, the data suggests that people may stagger their arrival times even beyond the staggering of work start time. Naturally, people try to avoid excessive delays and queues when possible and may get to the installation before or after their work start time begins to minimize the amount of time spent traveling to work.

Other factors to consider are the number of contractors participating in the RAPIDGate program, visitors to MCB Camp Pendleton, and additional civilians and/or personnel not included in the data above.

3.1.1 RAPIDGate Program

Information on the RAPIDGate program was obtained in January 2012. The information provided showed that there are 1,866 active companies and 18,273 active employees participating in the RAPIDGate program. Information on actual use of the RAPIDGate credentials at the Main Gate is shown in **Table 3-4**. The data suggest that over 500 RAPIDGate participants enter MCB Camp Pendleton on an average day.

Table 3-4 – RAPIDGate Participants Entering at the Main Gate

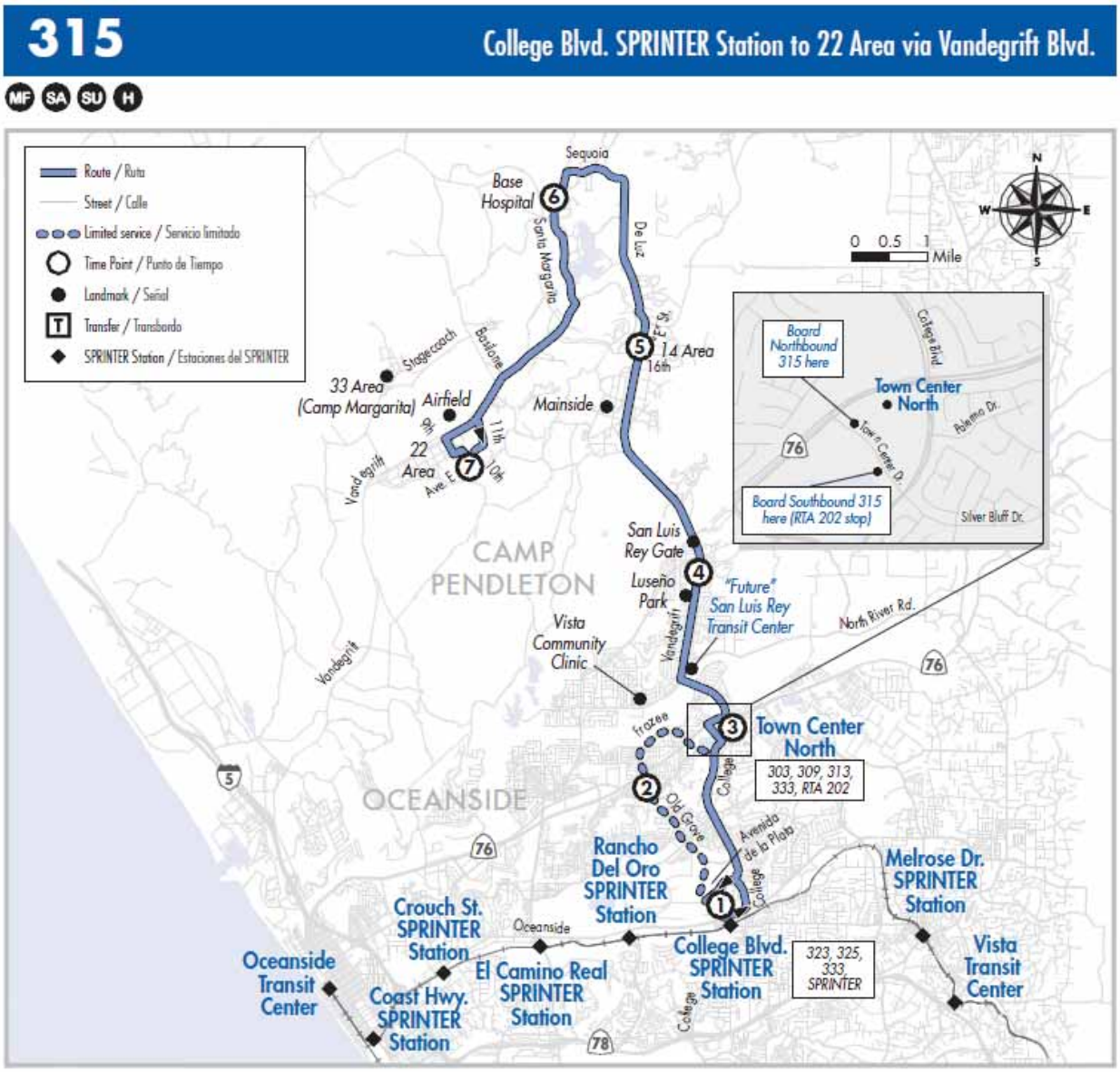
	RAPIDGate		*RAPID*-RCx		
January 2012	**Approved**	**Denied**	**CAC**	**Teslin**	**DL**
Week 1	2,551	51	111	-	1,180
Week 2	2,860	62	80	-	1,265
Week 3	3,491	80	118	3	1,540
Week 4	3,191	59	160	4	1,405
Week 5	1,113	19	63	2	487
Total	**13,206**	**271**	**532**	**9**	**5,877**

Notes:
CAC = Common Access Cards
Teslin = Military Retiree and Dependent Identification Card;
DL = Driver's License

3.2 MCB Camp Pendleton Transit Options

Currently, there are two bus routes operated by NCTD that serve MCB Camp Pendleton. Route 315 provides service between College Boulevard SPRINTER station and the 22 Area of MCB Camp Pendleton, serving the central and eastern part of the installation and runs hourly. The route enters MCB Camp Pendleton through the San Luis Rey Gate, follows Vandegrift Boulevard through the 14 Area and past the Hospital, and turns around at Avenue E and 10th Street in the 22 Area. **Figure 3-5** illustrates Route 315.

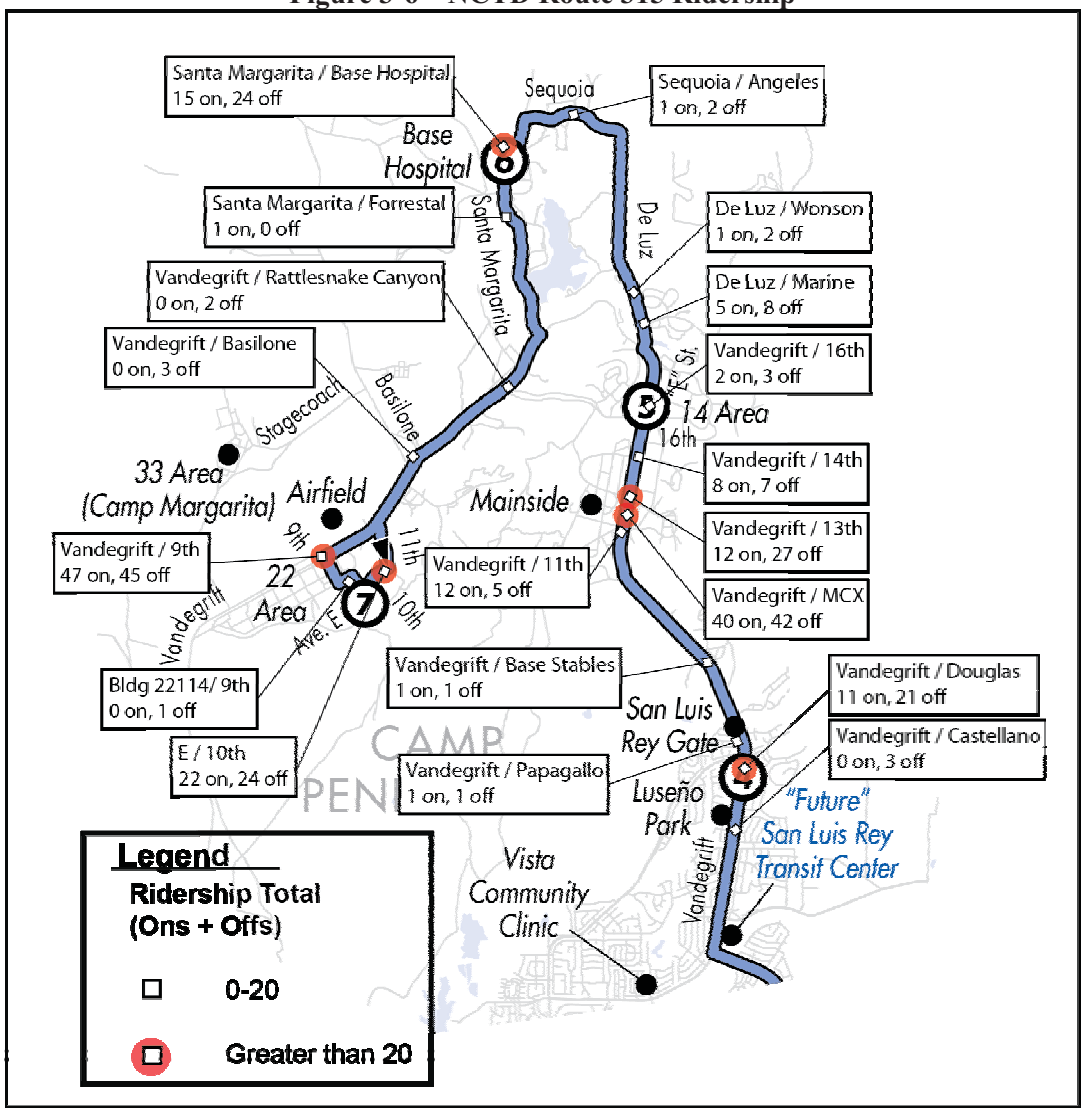
Figure 3-5 – NCTD Route 315 Map



Ridership data from 2010 was obtained for NCTD Route 315. The data represents a survey of ridership taken by SANDAG on a "typical day." The data is merely a snapshot of the ridership numbers and does not reflect extensive research of the route ridership. The data collected in year 2010 shows 400 boardings (ons) and alightings (offs) at stops within or adjacent to MCB Camp Pendleton. **Figure 3-6** illustrates the total number of ons and offs at each stop, and locations with a total greater than 20 are highlighted.

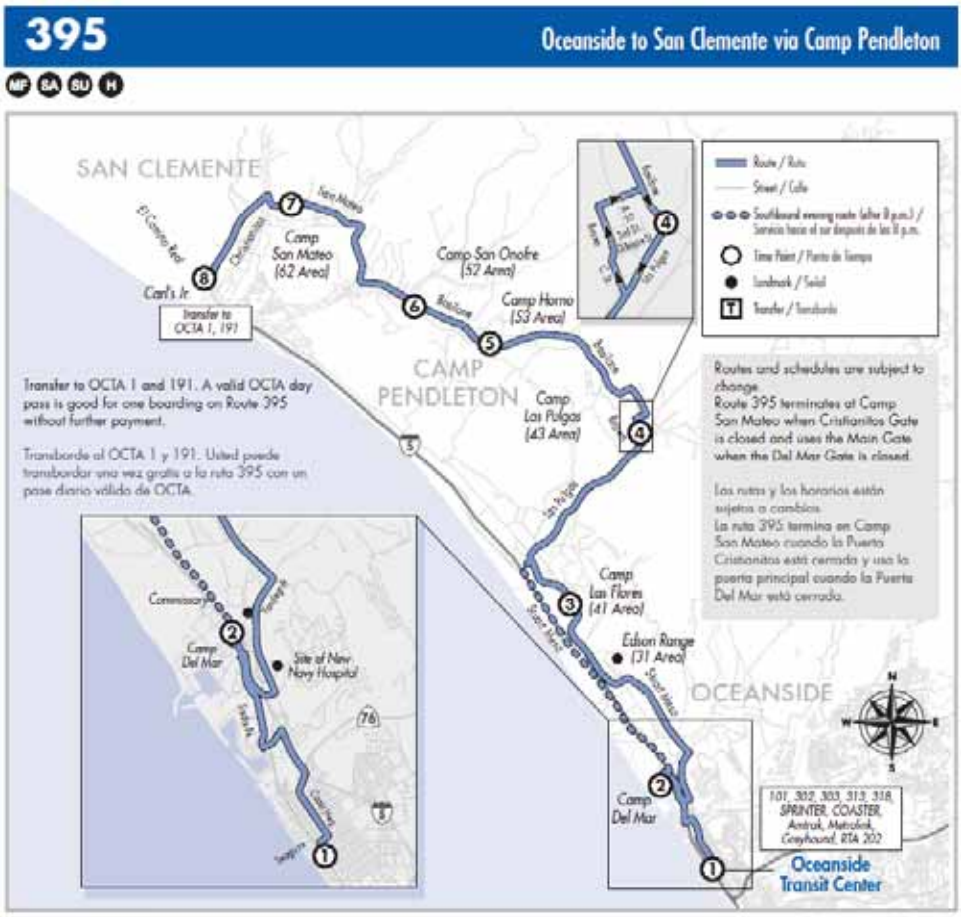
It should be noted that the data was obtained during an old variation of Route 315. In 2011 the route was modified to its current configuration with the help of a Job Access and Reverse Commute (JARC) grant from the Federal Transit Administration (FTA). Ridership data for the current route was not available at the time of this Plan. The information shown in the figure includes stops that were included in the old route and are still part of the modified route.

Figure 3-6 – NCTD Route 315 Ridership



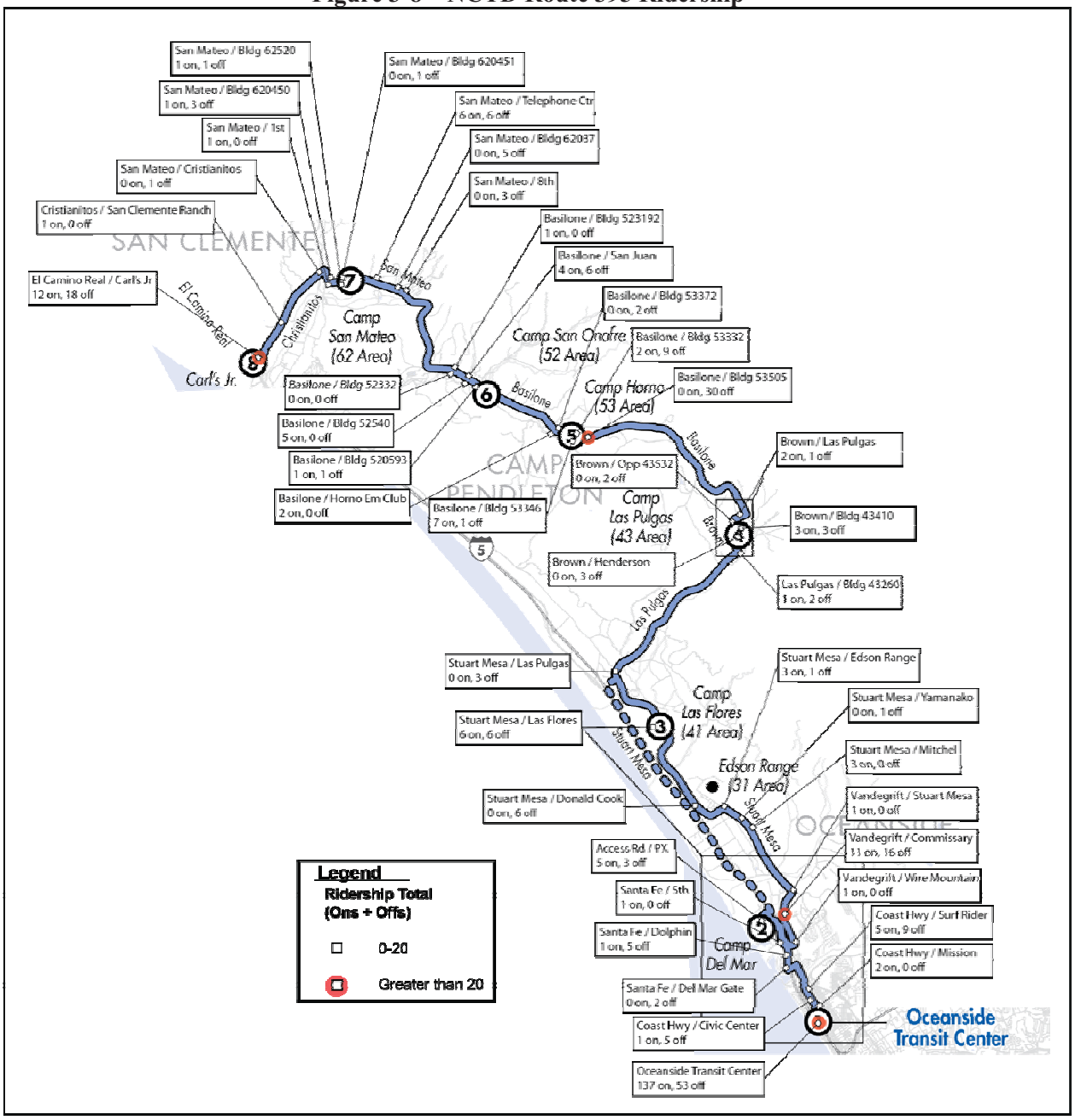
Route 395 provides service between the Oceanside Transit Center and San Clemente, providing service through the western part of the installation and has limited service. Destinations along the route include Camp Del Mar, Camp Las Flores (41 Area), Camp Las Pulgas (43 Area), Camp Horno (53 Area), Camp San Onofre (52 Area), and Camp San Mateo (62 Area), all located within MCB Camp Pendleton. **Figure 3-7** illustrates Route 395.

Figure 3-7 – NCTD Route 395 Map



Ridership data from 2010 was also obtained from SANDAG for NCTD Route 395 and represents a "typical day." The data collected shows 450 boardings (ons) and alightings (offs) at stops within or adjacent to MCB Camp Pendleton. **Figure 3-8** illustrates the total number of ons and offs at each stop, and locations with a total greater than 20 are highlighted.

Figure 3-8 – NCTD Route 395 Ridership



NCTD is currently evaluating the creation of a new COASTER station at MCB Camp Pendleton. They have identified this as an opportunity to shift a larger number of installation personnel to using commuter rail. Two possible sites for the new station have been selected for evaluation. The general location of these sites is shown in **Figure 3-9**. If their current evaluation study shows positive results and moves forward, a future related study may be needed to identify internal circulation needs related to the proposed COASTER stop.

Figure 3-9 – Potential Locations of COASTER Station at MCB Camp Pendleton

Aerial Source: Aerials Express, 2012

3.3 Ramp Metering: I-5 Southbound from Harbor Drive

Caltrans recently expanded the I-5 Southbound entrance ramp from Harbor Drive from a single lane ramp to a ramp with two lanes plus a high-occupancy vehicle (HOV) lane. The expansion helped provide more capacity on the ramp. As part of the project, a ramp metering system was installed at this location. Currently, the ramp meter is only active for the morning commute hours, between 0530 and 0930 hours. The ramp meter operates in a traffic responsive mode, meaning there are 15 separate rates that can be used. The meter rate depends on the freeway mainline volumes and can shift up or down one rate at a time. The rates range between allowing 451 and 804 vehicles per hour per lane, using two vehicles per green and a green light interval between 9 and 16 seconds.

4. TRANSPORTATION DEMAND MANAGEMENT MEASURES

4.1 What is TDM? TDM strategies provide a variety of travel choices for individuals and organizations. Some MCB Camp Pendleton service and civilian commuters currently participate in various TDM programs, including carpooling, vanpooling, and the Guaranteed Ride Home (GRH) program. MCB Camp Pendleton and the San Diego metropolitan Navy installations have been a successful part of the Regional Vanpool Program for many years. The participation in the Regional Vanpool Program is generally associated with longer distance interregional commutes from southern Riverside County to MCB Camp Pendleton and the San Diego metropolitan Navy installations. Vanpooling travel times are competitive with commuters who drive alone since vanpools can utilize high occupancy vehicle on-ramps and lanes. Currently, less than two-percent of MCB Camp Pendleton service and civilian commuters take transit or participate in the Regional Vanpool Program, which is notably less than the Navy's overall transit and vanpool modal split in San Diego County, which ranges between 8- and 14-percent, depending upon the facility.

Table 4-1 lists various TDM strategies that could operate independent of one another or through a combination of selected measures to mitigate anticipated traffic congestion at the Main Gate and in the vicinity of MCB Camp Pendleton. These strategies cause various types of travel changes including shifts in mode (from driving to walking, cycling, ridesharing, public transit, etc.), destination (closer rather than more distant services), time (from peak to off-peak), and frequency (consolidating trips and substituting telework for physical travel). All of these measures are intended to reduce installation-related automobile traffic and thereby reduce or mitigate traffic impacts associated with the expansion of services and growth of the installation. The solutions identified in the Recommendations chapter (Ch. 5) include the TDM Strategies that were developed in conjunction with MCB Camp Pendleton personnel and management and were screened through a series of meetings to discern the degree to which the Marine Corps leadership would embrace each measure for possible implementation. This process helped determine the strategies that would have the highest degree of success based on the level that each command would be able and willing to implement some or all of the potential TDM measures that were identified and discussed during the planning workshops.

Table 4-1 – TDM Strategies by Type

Improves Transport	Incentives	Land Use Management	Implementation Programs
▪ Transit improvements ▪ Pedestrian and Bicycling improvements ▪ Rideshare programs ▪ HOV priority ▪ Flextime ▪ Carsharing ▪ Telework ▪ Taxi service improvements ▪ GRH	▪ Congestion pricing ▪ Distance-based fees ▪ Commuter financial ▪ Parking pricing ▪ Parking regulations ▪ Fuel tax increases ▪ Transit encouragement	▪ Smart growth ▪ Transit oriented development ▪ Location-efficient development ▪ Parking management ▪ Carfree planning ▪ Traffic calming	▪ Commute trip reduction programs ▪ School and campus transport management ▪ Freight transport management ▪ Tourist transport management ▪ Marketing programs ▪ Transport planning reforms

This table lists various management strategies. Many include subcategories.
Source: Excerpted from Basewide Traffic Engineering and Safety Study, URS Corporation, February 2012.

Most of the TDM Strategies in Table 4-1 already operate in some form in San Diego County, and some directly serve MCB Camp Pendleton. Several of these programs are described in detail below.

4.1.1 Carpooling

Carpooling is the most common and flexible way for commuters to share a ride and often occurs between family members, friends, or co-workers. Carpools are usually more informal than a vanpool, more flexible than public transit, and do not necessarily require multiple pick-up or drop-off locations. Carpools generally have two or more passengers who live in the same neighborhood or along the same route and use a private vehicle to commute to common destinations. Carpooling often appeals most to people traveling at least ten miles and over 20-30 minutes. Carpoolers that commute to MCB Camp Pendleton have not been actively tracked; however, iCommute has recently launched innovative Web-based tools, RideMatcher and TripTracker, which assists commuters with ride matching and commuter trip logging and offers a mechanism to quantify MCB Camp Pendleton carpoolers. SANDAG is also currently offering incentives to new carpools under an innovative pilot project.

4.1.2 Vanpooling

Vanpools provide non-stop, point-to-point service with vanpool participants serving as regular drivers. Vanpools are generally a solution when there is not enough demand between specific origin-destination points to provide a fixed transit route. The San Diego Regional Vanpool Program is a service operated by iCommute. Vans in the San Diego Regional Vanpool Program are leased from one of two vendors. The lease agreement includes maintenance, insurance, and roadside assistance. Van riders pay for gasoline and the van's lease cost minus a $400-per-month financial incentive/vanpool subsidy provided by SANDAG to commuters who vanpool to offset their monthly lease cost. To qualify for the Regional Vanpool Program subsidy, vans must have an origin or destination within San Diego County or travel 20 miles within San Diego County. Vanpool capacities range from 7 to 15 passengers and must have 80-percent start-up occupancy. In recent years the program has shown strong growth, with the number of vanpools approaching 800 throughout the San Diego region, more than doubling in the past 10 years. Approximately 10-percent of the SANDAG Regional Vanpool Program vans are associated with MCB Camp Pendleton, with 80 vans currently serving the installation from five general origin zones including South County, Central San Diego, North County, Orange and Riverside Counties. Refer to **Table 4-2** for existing SANDAG-subsidized vanpools from study area origins.

Table 4-2 – Existing SANDAG-Subsidized Vanpools From Study Area Origins

Zone	Origin Areas Served	# Vans	Departure Time Ranges	
			AM Hours	PM Hours
1	**South Bay** (includes Bonita, Chula Vista, Imperial Beach, Lemon Grove, Paradise Valley, Spring Valley)	9	0500-0730	1530-1700
2	**Central San Diego** (includes College Area, Mira Mesa, North Park, Serra Mesa)	6	0500-0700	1530-1900
3	**San Diego North County** (includes Oceanside, San Marcos, Valley Center)	3	0700-0730	1630-1700
4	**Orange County/Long Beach**	2	0630-0700	1530-1600
5	**Riverside County** (includes Hemet, Lake Elsinore, Menifee, Murrieta, Perris, San Jacinto, Sun City, Temecula, Wildomar, Winchester)	60	0500-0730	1400-1800

Source: SANDAG, December 2011 Vanpool Program Origins with MCBCP as work site/Destination

4.1.3 Buspooling

Buspools serve groups of 15 or more people sharing a ride in a prearranged vehicle. Buspools provide point-to-point service travel options for otherwise difficult-to-service trips. Buspools are an option where demand exceeds that of a vanpool and where existing transit does not provide competitive travel times. The *San Diego-Riverside Interregional Transit, Vanpool, and Buspool Study* that was completed by SANDAG in December 2009 assessed the feasibility of establishing interregional buspools from Riverside County to San Diego County. Among the study's key findings was the implementation of vanpool consolidation into buspools, which the final report stated could result in up to 76 interregional vanpools being replaced with up to 27 buspools, freeing up as many as 49 vanpool vehicles. The option of converting some of the vanpools originating in Riverside County that serve MCB Camp Pendleton is definitely plausible, with three out of four vanpools serving MCB Camp Pendleton originating in Riverside County. Vanpools originating in Murrieta and Temecula appear to be particularly good candidates for consolidation given the large number of vans that originate in those two cities and the surrounding towns. However, in 2010 SANDAG attempted to create a Limited Express Transit Service/buspool from the Murphy Canyon area to the 32nd Street Naval Base based on a similar potential and the buspool failed to attract the necessary ridership. The "Murph Express" buspool ceased operation in 2011, but did result in the creation of a few additional vanpools along that route.

4.1.4 iCommute

iCommute is SANDAG's regional commuter assistance program. The goal of the iCommute program is to manage and reduce traffic congestion during peak travel times, as well as reduce greenhouse gas (GHG) emissions and other environmental pollutants that result from commuters driving to work each day. iCommute assists commuters by providing free, online services and tools to plan their commute trips. One of these resources is a new ride matching tool called RideMatcher. This application provides commuters with a safe, easy way to find ride sharing opportunities. Another tool called TripTracker allows commuters to track their commute trips to see how much money they are saving and how much GHG emissions they are reducing by not driving alone. Within iCommute's program, commuters can also sign up for the GRH program. Networks can be created for each origin zone within the iCommute online system. This means MCB Camp Pendleton commuters can easily find a rideshare partner within their network. By setting up a network, there also is the option to generate reports to determine the level of reduction in vehicle miles traveled and emissions that MCB Camp Pendleton has achieved as a whole and what kind of impact is being made across the region.

4.1.5 Shuttles and First- and Last-Mile Transit Solutions

For those who commute to and from work using the transit system in San Diego County, there are often several steps to their commute. Collecting and distributing passengers to and from central transit hubs provides the underlying conditions necessary for high-quality and competitive transit service. The first mile of the commute is the trip from your front door to the transit stop (train, trolley station, or bus stop). The last mile of a commute is from the transit stop to the workplace. In low-density development areas, it is often a challenge to achieve the "critical mass" of riders necessary to provide efficient and cost-effective service. Transit users must first find a way to the transit location nearest their house by taking a shuttle or driving. Transit often drops off commuters at locations where they have to take another connection to their workplace. Station car vehicles or short-distance vanpools are services that connect between transit stations and work and home destinations. Short-distance vanpools are required to meet the conditions of the SANDAG Vanpool Guidelines. Station vehicles provide a cost-effective, direct alternative to distributor and feeder bus/shuttle services. Other options include shuttles in high-density employment areas and carpooling to and from transit stops.

4.1.6 COASTER Commuter Rail Expansion

As mentioned above, NCTD is currently studying the option of adding a ninth COASTER station within the gates of MCB Camp Pendleton near the Stuart Mesa Housing Area or the commercial/retail area just south of Lemon Grove Road (refer to Figure 3-9 for general locations). Existing COASTER ridership among MCB Camp Pendleton service and civilian commuters is minimal because there is no direct connection between the nearest existing station (Oceanside Transit Center) and the largest cantonment areas on the installation. Adding a station within MCB Camp Pendleton has the potential to attract a large number of new COASTER riders, but still faces the challenge of the first- and last-mile connections within MCB Camp Pendleton to the proposed station. Due to the dispersed nature of MCB Camp Pendleton operations, an internal circulator shuttle, reliable bike routes/paths/stations, or other means of internal distribution will also be necessary. These considerations are not explored further in the TDM Plan.

4.1.7 Bicycling and Walking

Bicycling and walking to and from transit stations are healthy and economic ways to solve that first- or last-mile connection. Most NCTD buses are equipped with bike racks. Also, bicycles are allowed on the COASTER and SPRINTER rail vehicles. SANDAG manages a Regional Bicycle Locker Program with more than 850 bike lockers at 60 locations, but none currently serve MCB Camp Pendleton directly. Bicycle lockers offer safe and secure locations to store bikes at many transit stations and park and ride lots with easy sign-up through iCommute. It does not appear that MCB Camp Pendleton has a bicycle locker program or a network of bicycle routes within the installation; however, there are bicycle racks located at some locations and it is suggested that these be expanded into a formal bicycle facility and bicycle parking program. A bicycle sharing program might also be considered as a part of the COASTER station access study and might be feasible for moving personnel around the installation during the day. SANDAG produces a Regional Bikeway Map and an interactive Bike Map (www.icommutesd.com/Bike/BikeMap.aspx) that covers more than 1,000 miles of bicycle travel options, including bike routes, paths, and lanes; however, it doesn't currently cover any of the roadways within MCB Camp Pendleton. It is recommended that MCB Camp Pendleton work with SANDAG to incorporate this information into future updates to the Regional Bike Map.

4.1.8 Guaranteed Ride Home

The Guaranteed Ride Home (GRH) program is a SANDAG service that can get commuters home in case of an emergency or unscheduled overtime. Commuters who carpool, vanpool, take an express bus, ride the COASTER, or bike to work have a safety net with the GRH program. To be eligible for the GRH program, commuters must be enrolled in the program, be employed in San Diego County (MCB Camp Pendleton service and civilian commuters are eligible), commute a minimum of three times per week via a qualified mode, and pay a $3 co-pay when the service is used. MCB Camp Pendleton commuters can sign up for the GRH program online using iCommute. When they want to use this service, they can self-validate online and print out a GRH voucher. Commuters are eligible to use the GRH program three times a year. MCB Camp Pendleton currently has just under 100 commuters enrolled in the GRH program, nearly all of them are enrolled in an existing vanpool program (a few identified COASTER as their primary commute mode).

4.1.9 511 Traveler Information

511 is a free phone, Web, and television service that provides commuters with real-time travel information so they can make the most efficient route or mode choice. The 511 Web site, www.511sd.com, consolidates the region's transportation information into a one-stop online resource. The 511 TV broadcasts air on the City of San Diego, the County of San Diego, and the City of

Oceanside public access channels. 511 provides up-to-the minute information on traffic conditions for all modes of transportation. 511 is available 24 hours a day, 7 days a week via the phone and the Web.

4.1.10 Compass Card

The Compass Card is an innovative "smart card" technology used for transit and is being used as San Diego's new transit pass. It is designed to streamline and expedite fare collections. The embedded smart card technology allows riders to validate the card by tapping it on a specially designed validator or farebox. Compass Cards speed up transaction times and allow transit to maintain schedules. Compass Cards also provide detailed usage information on ridership that will assist transportation planners and MCB Camp Pendleton planners with improving service.

4.1.11 Parking on MCB Camp Pendleton and Regional Park and Ride Facilities

Parking availability at MCB Camp Pendleton is on a first-come, first-served basis and appears to be free of charge with little to no exception. A comprehensive parking policy does not exist at MCB Camp Pendleton, however the installation does have some instances of zoned parking that is controlled by rank and grade.

Regional Park and Ride lots are usually free and convenient parking lots that allow commuters to meet for transit, vanpooling, or carpooling. The existing regional Park and Ride facilities are owned by the State of California, the City of San Diego, various cities in the region, the County, churches, and shopping centers. The distance an individual must travel to arrive at a Park and Ride facility is a significant detriment to usage. Commuters tend to patronize Park and Ride lots that are close to home relative to the length of the overall trip. Driving distance from home is a key attribute in selecting which lot to use. Access time and frequent express service are the primary demand generating characteristics of successful transit Park and Ride lots. Identifying more carpool and vanpool parking spaces at preferential locations on the installation will assist with encouraging those modes of transportation.

4.1.12 Navy Transportation Incentive Program

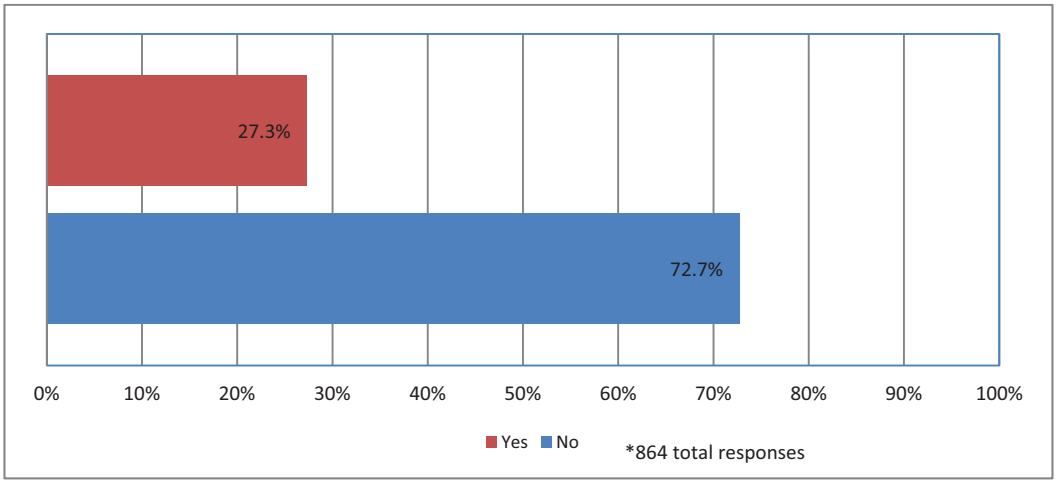
The Department of Defense Instruction 1000.27 establishes a mass transit benefit program for outside the National Capital Region. In accordance with this Instruction the Department of the Navy (DON) has implemented the Transportation Incentive Program (TIP) for DON employees to help reduce their daily contribution to traffic congestion and air pollution, as well as expand their commuting alternatives. Specifically, the TIP provides financial incentives to military employees who commute to work using transit or vanpools. Effective January 1, 2012, DON members are eligible for transit benefits up to $125.00 per month (parking fees are not included) for specific pre-approved commuter mass transit transportation costs not to exceed actual expenses. The TIP is designed to pay for mass transit costs incurred by personnel in their local commute from residence to permanent duty station. According to the DON's TIP application, participants must accurately claim an amount that reflects their actual commuting cost.

The *Navy TDM Initiative Study* completed by SANDAG in 2010 indicates that nearly 5,000 individuals were enrolled in the TIP within the DON facilities in metropolitan San Diego, including MCB Camp Pendleton. Currently less than 900 participants from MCB Camp Pendleton are enrolled in the Navy's TIP program. Less than 200 participants use the TIP to offset the cost of commuting by bus or train, and another 650 participants use the subsidy to cover their cost of commuting in a qualified vanpool. Part of the problem identified in the SANDAG study is that TIP enrollment fluctuates as DON personnel deploy, return from deployment, or move out of the area to take another assignment. Therefore, continuous marketing of TIP enrollment benefits is necessary. A comparison of TIP participation levels with the working population at MCB Camp Pendlton would suggest there may be a lack of awareness

for this benefit. This was at least partially verified by an online survey of MCB Camp Pendleton personnel (sample size 890) conducted by the NCTD in August 2010, which results indicate that only 27.3-percent of MCB Camp Pendleton personnel are aware of the TIP (**Figure 4-1**).

Figure 4-1. TIP Awareness

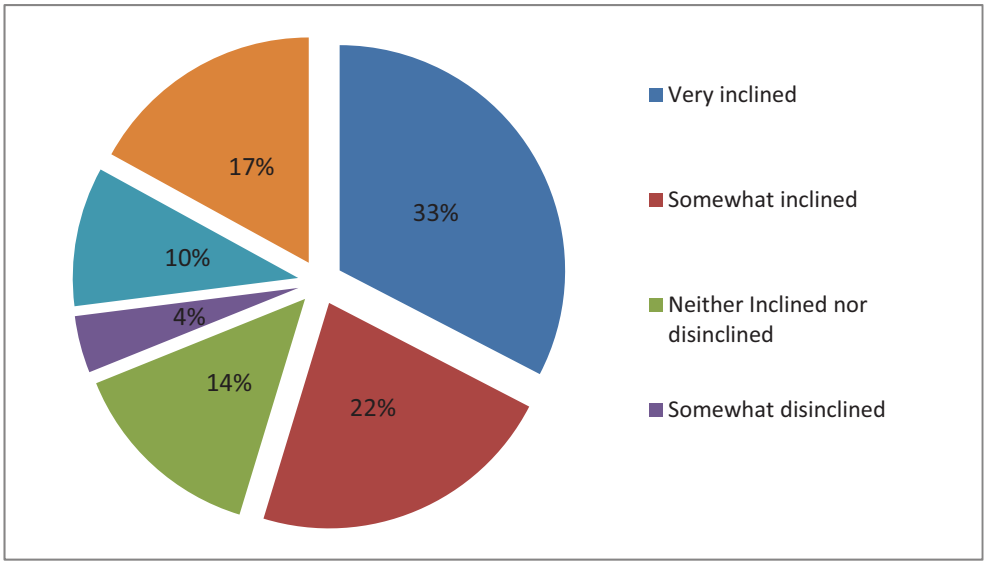
Survey Question: Did you know that all Navy and Marine Corps military members and federal DON civilian employees, including NAF employees are eligible for reimbursement up to $230 per month in commuter mass transit costs including commuter bus, commuter train, light rail, and van pool?



Additionally, the NCTD survey polled respondents regarding their inclination to use mass transit if they were eligible to receive the $230 (since reduced to $125.00 per month) TIP transit cost reimbursement (**Figure 4-2**). As shown in the figure, 33-percent of respondents answered that they would be "very inclined" while 22-percent answered they would be "somewhat inclined" to use mass transit to get to work.

Figure 4-2. TIP Awareness

Survey Question: If you are eligible for the $230 per month transit cost reimbursement, how inclined are you to use mass transit to get to work?



As a result of the 2010 *Navy TDM Initiative Study*, SANDAG's iCommute program has begun to conduct targeted outreach to the Navy concerning the availability of the TIP and other regional commute incentives and options. This has resulted in an increase in vanpool formation for Navy facilities, and expected results would likely follow similar targeted outreach to MCB Camp Pendleton. The data described thus far suggests that the TIP is being underutilized at MCB Camp Pendleton. Increased marketing of the TIP may be rewarded with increased enrollment in the program.

At the April 26, 2012 meeting to discuss the Draft TDM Plan, SANDAG's Principal TDM Planner committed to offering their support to increase targeted outreach to MCB Camp Pendleton in conjunction with the regional iCommute program. SANDAG can provide direct, on-installation Employer and Employee outreach support as well as a number of data support services related to the iCommute programs, and has tentatively committed to staffing one or more "commuter fair" events that would be held on MCB Camp Pendleton surrounding the opening of the new Naval Hospital or for other special events. Additional information should be arranged for commute fairs including NCTD Bus, COASTER, and SPRINTER information, iCommute program materials, Metrolink and Riverside Transit options, and information on the Navy TIP program. It is recommended that representatives from each transportation sponsor agency be invited to participate in the commuter fairs. Following those initial events, continuous marketing of iCommute program by SANDAG and TIP enrollment benefits for MCB Camp Pendleton should be coordinated on an on-going basis.

4.1.13 Telecommuting

Col. Nicholas F. Marano, signed Base Order 12600.1, on March 18, 2010, which allows eligible civilian personnel on MCB Camp Pendleton to participate in a Telework program that enables them to complete assigned duties and tasks at an alternate location, such as their homes. The program allows for two types of alternative work schedules; regular/recurring and ad hoc. The regular/recurring schedule is designed for employees who will repeatedly work at least one day each pay period, at an alternative worksite. This includes injuries or illnesses that require convalescent leave time. The ad hoc schedule is for use of an alternative worksite on occasional, one-time or irregular basis, and is only authorized for short durations. To be approved for participation in the program, employees must submit a Telework package to their supervisor that includes: a proposed Telework agreement with a schedule of when and where duties will be performed; a designated location, or area of the home, as an official alternative worksite that also complies with safety requirements listed in a safety checklist; and a completed departmental

memorandum of agreement, detailing expectations of the work. Eligible employees must also complete a Telework 101 training course before they can begin the program. Additionally, employees must have a phone and/or email to communicate with their supervisors, coworkers and customers during working hours, and have a childcare plan, as family responsibilities must not interfere with work time. They must also observe all policies for taking leave and be ready to return to the installation if needed at any time during scheduled working hours.

Once an employee has submitted a Telework request, it is the supervisor's responsibility to determine whether the position could be executed at an alternate worksite that will not impair the mission. Positions will not be approved if they adversely affect the performance of other employees, burden the remaining worksite staff, diminish level of service to customers, require frequent or short-notice face-to-face interactions or present a security risk. According to the order, suitable Telework candidates should demonstrate dependability, responsibility, satisfactory performance, satisfactory attendance, a record of high personal motivation and good time management skills. Unsuitable candidates would be those that do not meet basic performance standards, are in trainee or entry-level positions, have been counseled or disciplined for leave abuse and those who have received general disciplinary or adverse actions. Once employees are deemed suitable by their supervisor, their request is then forwarded to the appropriate assistant chief of staff/directors for final approval.

4.1.14 Real-Time Ridematching

Real-time ridematching (sometimes called "Dynamic Ridesharing") represents the natural technological evolution of carpooling and has the promise of substantial social and environmental benefits. The primary enabler of real-time matching today is smart phone technology, which permits the matching of riders and drivers in real-time through the coalescence of location-based services, cashless payment, incentives and rewards tracking, secure identification, matching by affinities and relationships, and user ratings/crowdsourcing.[1] Real-time ridematching does not require commuters to commit to a single carpool with fixed routes and schedules; rather it facilitates the matching of riders and drivers on an ad-hoc basis, based on availability of seats and a common origin-destination pattern. While these services greatly expand options for commuters, they do not modify the basic dynamics of pre-arranged carpools, which still requires substantial coordination among participants and severely constrains schedule flexibility. If technology is the enabler of real-time ridematching, then incentives are the catalyst to making it succeed. Success in any ridesharing program is dependent upon creating an incentive for drivers to abandon their single-occupancy vehicle habits, and to share their seats with riders that they may not know. Combining direct financial incentives with the convenience of real-time ridematching of riders and drivers has the potential to dramatically decrease the number of single-occupancy vehicles on the road. While the Navy has expressed interest in supporting the development of real-time ridematching in other parts of the Country, it was determined at the April 26, 2012 meeting to discuss the Draft TDM Plan that this measure would not be a high priority for MCB Camp Pendleton, given the environment and other more feasible measures available. More information on the Navy's support for real-time ridematching can be directed to Mr. Marc Oliphant, AICP, Regional Employee Transportation Coordinator at Naval District Washington, by phone, at (202) 685-8049, or by emailing marc.oliphant@navy.mil.

4.2 Basewide Traffic Engineering and Safety Study Recommendations[2]

[1] Dynamic ridesharing is defined as a market package as ATIS8 in the National IT Architecture. See, "The National ITS Architecture." Version 6.0, May 2007 update.

[2] Section 2 excerpted from Marine Corps Base Camp Pendleton, *Basewide Traffic Engineering and Safety Study*, Prepared by URS Corporation, February 2012, Chapter 8, pages 8-1 to 8-4.

The *Basewide Traffic Engineering and Safety Study* that was completed earlier this year by URS identified 10 categories of benefits often associated with the implementation of TDM programs, including: congestion reduction, roadway cost savings, parking cost savings, consumer savings, transport diversity (mobility options for non-drivers), road safety, energy conservation, pollution reduction, public health, and efficient land use (smart growth). Of the 10 categories that were identified, congestion reduction and transport diversity were selected as being the most applicable to reducing trips to and within MCB Camp Pendleton. Further, it was suggested that by pursuing the strategies from these categories, many of the benefits from the other categories would be realized indirectly, including cost savings, safety, conservation, pollution reduction, and improved public health. The strategies URS identified for the Congestion Reduction and Transport Diversity categories are summarized in the following sections.

4.2.1 Congestion Reduction Benefits and Strategies

Traffic congestion is the incremental delay resulting from interference among vehicles in the traffic stream as a roadway reaches its capacity. Congestion increases travel time, driver stress, vehicle operating costs, crash rates (although it tends to reduce injuries and deaths) and pollution. Although most traffic congestion indicators (such as roadway level of service ratings and various congestion indices) only consider impacts on other motor vehicle traffic, vehicle use can also cause delays to non-motorized travel (called the barrier effect or severance, as discussed in Litman, 2009). Reduced congestion can provide various specific types of benefits, such as:

- Reduced delay/improved mobility for personal travel, commercial services and freight transport
- Reduced vehicle operating costs (fuel and brake wear)
- Reduced energy consumption and pollution emissions
- Reduced traffic crashes (but increased crash severity)
- Reduced delay to walking and cycling
- Improved emergency response

Mobility management tends to reduce congestion to the degree that it reduces urban-peak vehicle travel. Some strategies, such as flextime, also reduce transit crowding. Congestion reduction benefit analysis is complicated by the tendency of congestion to maintain equilibrium due to latent demand (additional peak-period trips that people would make if congestion declines). For example, if a mobility management program causes some commuters to shift from driving to an alternative mode, some additional vehicle trips may be made that would otherwise have been deterred by congestion. As a result, congestion reduction benefits decline over time and an increased portion of benefits consist of user benefits from those additional peak-period trips. Since these are the trips consumers most willingly forego in response to higher travel costs (time and fuel), their net value tends to be small.

Some mobility management strategies reduce the point of congestion equilibrium (the degree of congestion at which people forego peak-period vehicle trips), by improving alternative modes (such as increased speed relative to driving, convenience, comfort, and affordability), by applying targeted road and parking fees, by reducing total vehicle travel demand, or by changing land use patterns to reduce distances. Strategies that improve alternative modes, particularly grade-separated transit or HOV routes, are also particularly effective at reducing congestion (Litman, 2005). Commute, school and tourist transport management programs also tend to be particularly effective for reducing congestion. Freight transport management can reduce congestion on corridors with heavy truck traffic. Smart growth that concentrates activities tends to increase the intensity of congestion but reduce its overall costs by reducing the distance between destinations and improving alternative modes.

4.2.2 Transport Diversity Benefits and Strategies

Transportation diversity refers to the quantity and quality of accessibility options available, particularly for non-drivers. Improved diversity increases transport system efficiency by allowing users to choose the best travel option for each situation, reduces chauffeuring responsibilities, improves disadvantaged people's economic opportunities, and increases community resilience. It is the opposite of automobile dependency. Specific benefits include:

- Allow people to choose the travel option (reducing stress and increasing enjoyment)
- Reduced need to chauffeur non-drivers
- Financial savings, particularly for lower-income people
- Increased economic opportunity for non-drivers (supports equity objectives)
- Increases transportation system resilience (ability to accommodate unexpected or sudden change)

Mobility management generally increases transportation diversity by improving alternative modes and creating more accessible communities. Improvements that accommodate people with disabilities (called universal design) are particularly helpful. Programs that encourage discretionary travelers (people who could drive) to use alternative modes can provide indirect benefits to non-drivers' by increasing public support for alternative modes and increasing their social acceptability.

Taking the conditions of the installation into account (secure military facility, large commuting population, geographic dispersion, etc.), URS selected what they believed were the most effective TDM strategies for Camp Pendleton from the congestion reduction and transportation diversity categories to develop a single strategy list for further exploration. The specific measures that URS identified included the following:

- Transit Improvements
- Rideshare Programs
- Pedestrian and Bicycling Improvements
- Flextime
- Telework
- Commute trip reduction programs and incentives
- Marketing programs
- Congestion pricing[3]

Probably the most important recommendation from the URS study is to increase participation in the Navy's TIP program, and it was suggested that a dedicated effort that reaches all MCB Camp Pendleton personnel and all new personnel as they arrive at MCB Camp Pendleton would be the most effective way of increasing participation levels in the TIP program. Second to that, the URS study recommended providing additional transit routes to serve more areas of MCB Camp Pendleton, and increasing frequency on the two existing NCTD Breeze bus routes that serve the installation, as both suffer from low poor geographic coverage and low frequency.

4.2.3 MCB Camp Pendleton Civilian Work Shift Analysis

The majority of the remainder of the TDM Chapter of the *Basewide Traffic Engineering and Safety Study* focused on the potential implementation of flexible work time or staggered start and end times for MCB Camp Pendleton personnel. This included work shifts for all divisions and services listed below:

[3] According to the *Basewide Traffic Engineering and Safety Study*, the use of tolls at Camp Pendleton is currently being researched by Major David Roen, AFIT, Graduate School of Engineering and Management

- MCCS HQ
- MCCS Operations
- Financial Management
- Human Resources
- Marketing
- Food and Hospitality
- Marine and Family Services
- Retail
- Semper Fit
- Services
- MOAC
- Logistics HQ

The URS analysis, and the more exhaustive analysis performed by Kimley-Horn (outlined in Chapter 3 of this Plan) illustrate why Gate traffic queues around the peak commute hours. In the Mainside area, there are a large number of employees arriving between 0700 and 0800 hours. Based on Gate counts, URS estimated the number at just under 16,000 people commuting onto the installation each morning. It was assumed that work shift adjustments presented the largest opportunity for spreading the time distribution of trips and thus reducing traffic impacts at the Main Gate. However, the April 26, 2012, meeting to discuss the Draft TDM Plan resulted in less overall support within MCB Camp Pendleton ranks for this strategy based on the nature of the work required of service personnel and the relatively inflexible start and end times for those shifts. This strategy was therefore dropped from further consideration but it is recommended that MCB Camp Pendleton consider how best to incorporate a Flexible Work Schedule policy into the existing Telecommuting Base Order.

5. COMMUTE COST CASE STUDIES

This section outlines the potential cost of commute alternatives for three representative commute origins and with MCB Camp Pendleton as the commuter work site/destination. An online "Commute Cost Calculator" that SANDAG provides on its iCommute program web site[4] was used as the basis for deriving the estimated time and cost savings for each mode and trip pair.

The three scenarios tested for the journey to work to MCB Camp Pendleton were from the communities of Temecula, Tierrasanta, and Vista, California. These communities were selected as being representative of a large proportion of trips originating in Southern Riverside County, Central San Diego, and North San Diego County, to MCB Camp Pendleton and back. For each scenario, inputs that include the number of work days in a typical month (22 days), the round trip distance for the selected commute scenario, an average fuel economy (20 miles per gallon average was used), and an average cost for a gallon of gasoline ($4.00 per gallon was used), along with a null ($0.00) value for the cost of work site parking since currently MCB Camp Pendleton does not charge service or civilian employees to park on the installation. Based on these inputs, the Commute Cost Calculator returned the estimated daily, monthly, and yearly cost to commute between the selected origin-destination for each of the following commute modes:

- Drive Alone
- Carpool with one other person
- Vanpool with seven other people; and a variety of public transit options, including the COASTER, SPRINTER, Trolley, and bus.

Table 5-1 summarizes the results of the Cost Commute case studies. As shown in the table, vanpool or transit commutes with the TIP reimbursable would be virtually free of cost for a commuter.

[4] http://www.icommutesd.com/Commuters/Calculator.aspx

Table 5-1 – TDM Strategies by Type

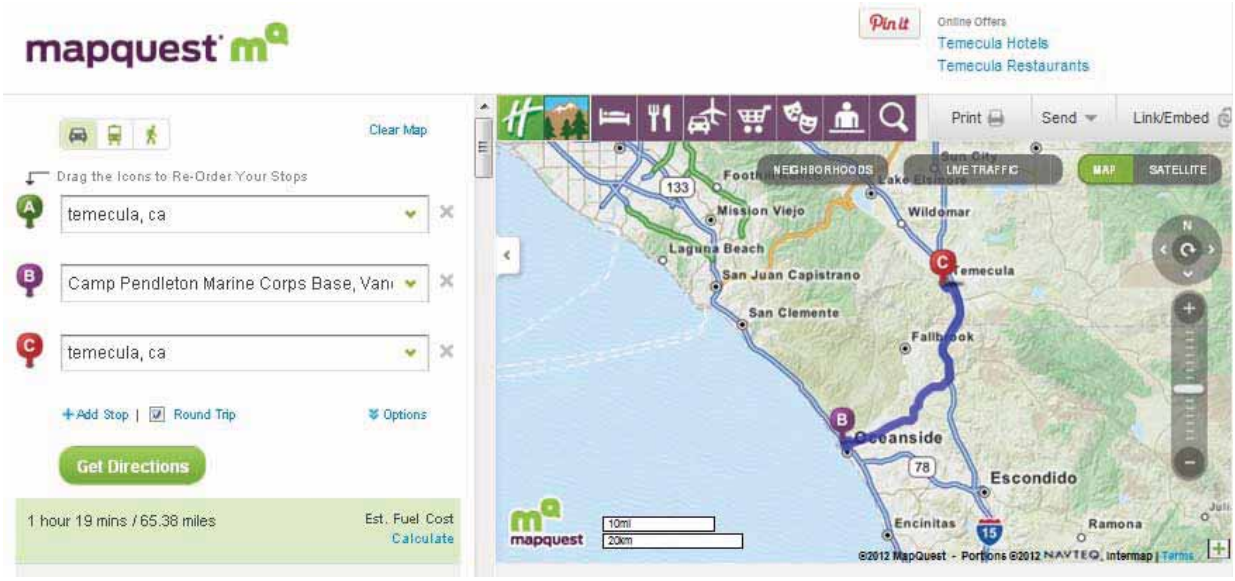
	Temecula		Tierrasanta		Vista	
	Daily	Monthly	Daily	Monthly	Daily	Monthly
Drive Alone	$16.45	$362	$18.22	$401	$6.07	$134
Carpool with one other	$8.22	$181	$9.11	$200	$3.04	$67
Vanpool with 7 other	$5.14	$113	$5.37	$118	$3.77	$83
Vanpool with 7 others and TIP reimbursable (up to $125/month)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Transit BREEZE Bus	--	--	--	--	$5.00	$59.00
Transit BREEZE Bus with TIP reimbursable (up to $125/month)	--	--	--	--	$0.00	$0.00

The remainder of this section displays screenshots from the case study analysis, showing the inputs and outputs of the Cost Commute Calculator and including an estimated cost and time savings for taking the proposed alternatives when compared to driving alone.

5.1.1.1 Temecula to Camp Pendleton (Southern Riverside County)

The approximate round trip distance between Temecula and Camp Pendleton and back is 65 miles.

Figure 5-1. Temecula to Camp Pendleton Driving Directions



Based on 264 annual work days, 20 mpg fuel economy, and $4.00 per gallon gasoline, the annual cost of driving alone for this commute trip is over $4,000 per year, compared to roughly one-third of that cost to commute by vanpool (no viable transit connections exist between Riverside and MCB Camp Pendlton at present).

Figure 5-2. Temecula to Camp Pendleton Commute Cost Comparison

Commute Cost Calculator

have you calculated your commute?
see how much you could save today!

How many days per month do you commute to work? (22 is full time)	22
How far is your **round trip** commute to work? (in miles) MapQuest	65
How many miles per gallon does your vehicle average? Federal Fuel Economy Guide	20
How much per gallon do you pay for gas?	$ 4.00
How much do you pay each month for parking?	$ 0

calculate costs

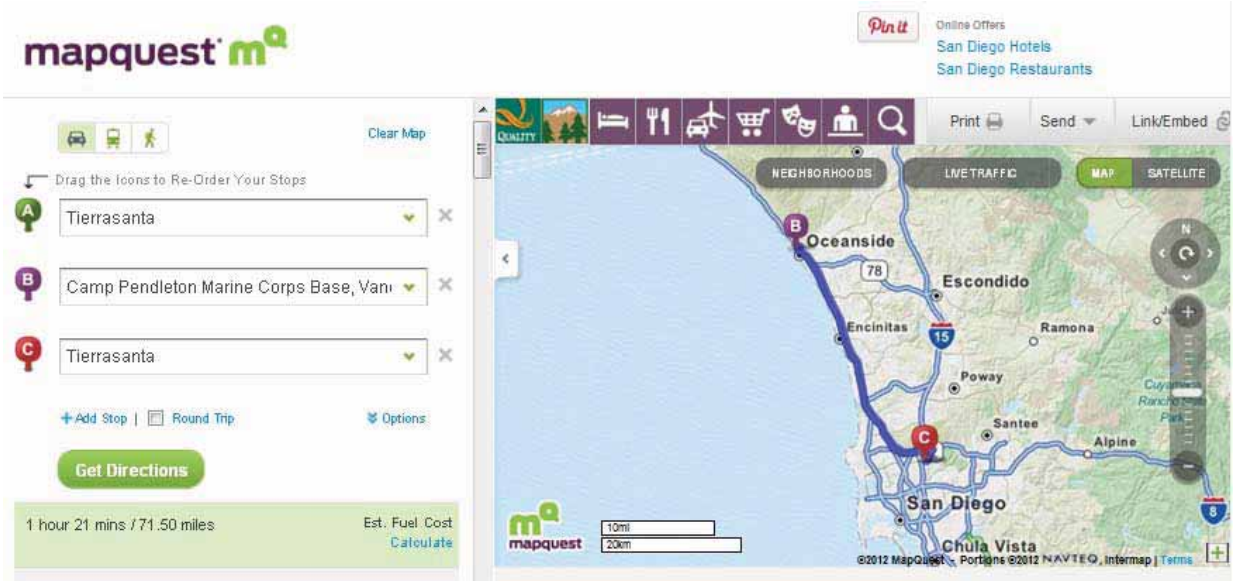
here's what you pay if you:

	Daily	Monthly	Yearly
Drive Alone *	$16.45	$361.79	$4,341.48
Carpool with 1 other person	$8.22	$180.90	$2,170.74
Vanpool with 7 other people **	$5.14	$113.11	$1,357.28

5.1.1.2 Tierrasanta to Camp Pendleton (Central San Diego)

The approximate round trip distance between Tierrasanta and Camp Pendleton and back is 72 miles.

Figure 5-3. Tierrasanta to Camp Pendleton Driving Directions



Based on 264 annual work days, 20 mpg fuel economy, and $4.00 per gallon gasoline, the annual cost of driving alone for this commute trip is nearly $5,000 per year, which is twice what it would cost to carpool with one other person (transit options were not considered time competitive for this scenario).

Figure 5-4. Tierrasanta to Camp Pendleton Commute Cost Comparison

Commute Cost Calculator

have you calculated your commute?
see how much you could save today!

How many days per month do you commute to work? (22 is full time)	22
How far is your ***round trip*** commute to work? (in miles) MapQuest	72
How many miles per gallon does your vehicle average? Federal Fuel Economy Guide	20
How much per gallon do you pay for gas?	$ 4.00
How much do you pay each month for parking?	$ 0

calculate costs

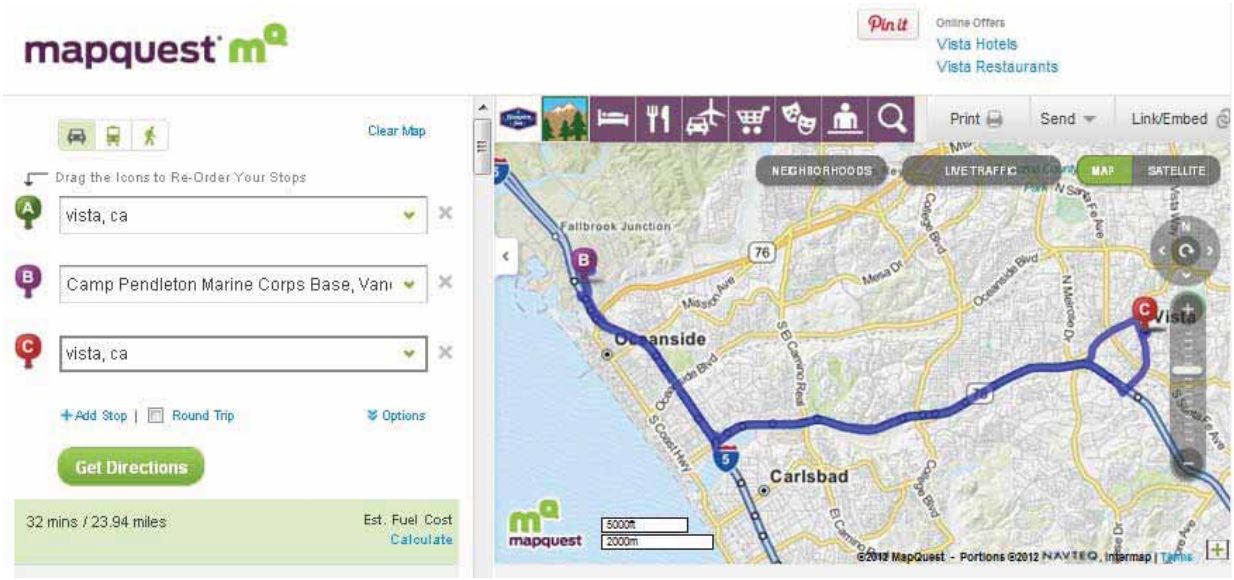
here's what you pay if you:

	Daily	Monthly	Yearly
Drive Alone *	$18.22	$400.75	$4,809.02
Carpool with 1 other person	$9.11	$200.38	$2,404.51
Vanpool with 7 other people **	$5.37	$118.24	$1,418.88

5.1.1.3 Vista/Oceanside to Camp Pendleton (San Diego North County)

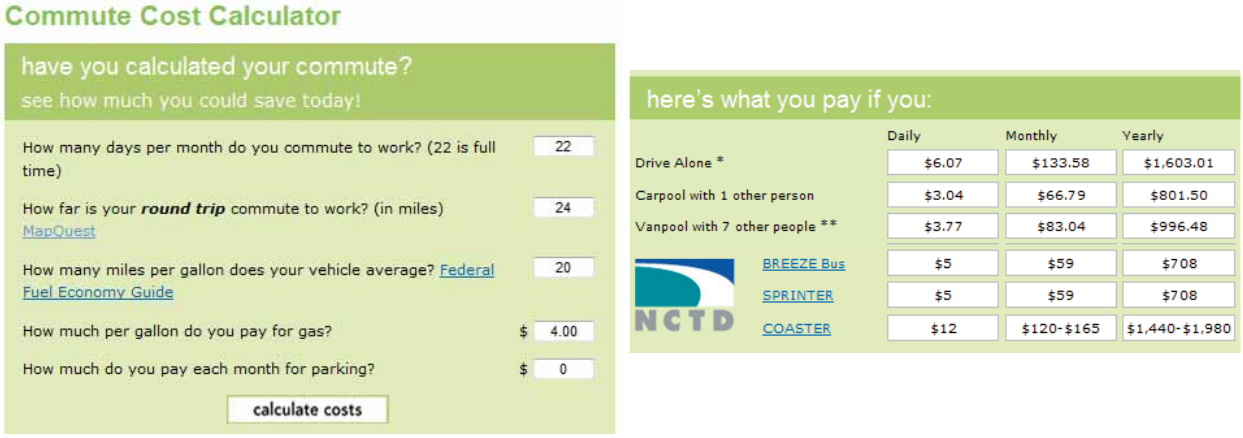
The approximate round trip distance between Vista and Camp Pendleton and back is 24 miles.

Figure 5-5. Vista to Camp Pendleton Driving Directions



Based on 264 annual work days, 20 mpg fuel economy, and $4.00 per gallon gasoline, the annual cost of driving alone for this commute trip is around $1,600 per year, which is roughly double the cost of sharing a ride with one other person, and costs more than vanpooling or any available transit option.

Figure 5-6. Vista to Camp Pendleton Commute Cost Comparison[5]



6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Findings

The development of this TDM Plan was initiated by forecasted poor operations on traffic facilities near the MCB Camp Pendleton Main Gate during peak commute hours. While TDM measures implemented as a mitigation to that problem are useful and recommended, there are other reasons why MCB Camp Pendleton desires to develop and promote TDM programs. These include the range of benefits outlined in Section 4.2, which are: congestion reduction, roadway cost savings, parking cost savings, consumer savings, transport diversity (mobility options for non-drivers), road safety, energy conservation, pollution reduction, public health, and efficient land use (smart growth). It was suggested during a meeting held on April 26, 2012, where the Draft TDM Plan was presented to MCB Camp Pendleton and DON personnel, that a strong driver for altering MCB Camp Pendleton service and civilian personnel commute behavior would be the actual monetary cost savings that would accrue to the commuter as a result of their participation in available TDM programs. As such, the case studies provided in Section 5 were included to illustrate the range of cost savings and time savings which one would expect to receive as a result from switching to a commute alternative from driving alone.

6.2 Recommendations

6.2.1 Recommended TDM Implementation Plan

Based on the presentation of the Draft TDM Plan at the April 26, 2012 meeting, and in light of the emphasis on broad and long-range objectives for TDM participation among MCB Camp Pendleton service and civilian personnel, and reflective of the importance of cost as a prime motivator of MCB Camp Pendleton personnel to choose an alternative to driving alone; it is recommended that two

[5] * Drive alone cost estimates include an average maintenance and tire cost of five cents per mile based on AAA "Your Driving Costs 2011" brochure. Cost estimates do not include full-coverage insurance, license, registration, taxes, depreciation (15,000 miles annually), vehicle loan payments, or finance charges. ** Vanpool costs are based on average lease costs and gas for an eight passenger van. The SANDAG $400 month subsidy has been applied. *** Transit prices are based on purchase of full fare adult Day or Monthly Pass. COASTER daily ticket prices reflect round trip purchase. Yearly transit costs equal Monthly Pass price x 12. Senior/Disabled/Medicare and Youth discount passes are available for those who qualify.

strategies be carried forward for immediate implementation. In addition, a monitoring and evaluation program should be implemented on MCB Camp Pendleton to track progress. Both are really expansions on existing TDM measures that are currently being implemented, albeit with limited success, on MCB Camp Pendleton. The measures include:

- Expand participation in the Navy TIP program through targeted marketing and employee communication protocols; and
- Expand participation in SANDAG's Regional Vanpool Program, through targeted marketing and employee communication protocols.

Expand Participation in the Navy TIP program

SANDAG has pledged to work closely with MCB Camp Pendleton to develop and maintain a strong outreach program to market the benefits available through the region's iCommute program, including vanpool, GRH, and the Navy's TIP. This effort will entail SANDAG's participation in one or more commute fairs to be held at MCB Camp Pendleton, and to establish and maintain regular and on-going communication between the MCB Camp Pendleton TIP Coordinator and SANDAG's iCommute staff. SANDAG has a number of informational brochures on the iCommute programs (copies are included in the Appendix). Hard copies of these brochures can be provided to the MCB Camp Pendleton TIP Coordinator as needed. In addition, MCB Camp Pendleton and DON leadership are encouraged to use person-to-person communications within the various service and civilian units on the installation to further promote and encourage the benefits TDM can provide and to put in place a regular monitoring and reporting framework to measure success of the Plan.

Expand Participation in SANDAG's Regional Vanpool Program

The Navy has been a successful part of the Regional Vanpool Program for many years. According to SANDAG, participation in the Regional Vanpool Program is generally associated with longer distance interregional commutes from southern Riverside County to San Diego metropolitan Navy installations. Vanpooling travel times are competitive with commuters who drive alone since vanpools can utilize high occupancy vehicle on-ramps and lanes. Currently, the Navy's overall transit and vanpool modal split in San Diego County ranges between 8- and 14-percent, depending upon the facility. Based on the MCB Camp Pendleton TDM Plan goal of reducing peak period trips by 200, vanpool seems to be an efficient way to achieve this goal with minimal public investment and minimal direct marketing and outreach. Of the 80 current vans serving MCB Camp Pendleton in SANDAG's vanpool program, they average seven (7) passengers per van. Vans have the capacity to serve 8-, 10-, 12, or 15 persons per van. Using the current average vanpool size as a target, it would take less than 30 new vanpools to satisfy the mitigation strategy. This is a 37-percent growth for vanpools serving MCB Camp Pendleton, and would require SANDAG to commit to offering the $400/month subsidy per van (approximate $150,000 per year) and the Navy's TIP incentive to attract the necessary riders.

Importance of Monitoring and Evaluation

In order to evaluate the effectiveness of the outreach program, TIP, and vanpool program at serving MCB Camp Pendleton commute trips, SANDAG and MCB Camp Pendleton leaders will need to identify existing and potential users, determine customer preferences, and evaluate the effectiveness of current and potential program features. Key issues, such as commuter out-of-pocket cost versus amount of available subsidy to offset those costs, vanpool turnover, leasing practices (including the capital cost

of contracting for using federal funds), driver training, and marketing lessons learned would need to be highlighted. SANDAG is planning to conduct a comprehensive market assessment of its vanpool program and identifying answers to some of these key issues may be addressed by that study. Regardless, MCB Camp Pendleton should put in place a basic monitoring practice based on data tracking to determine the return on its investment in marketing and implementation of the TDM programs. This can be as simple as tracking statistics for new TIP and vanpool enrollments, or as detailed as daily trip tracking using SANDAG's iCommute software. Basic reporting is a requirement of receiving the vanpool and TIP subsidies.

Conclusion: Focus on Financial Savings to Commuter

During the development of the MCB Camp Pendleton TDM Plan, the issue of direct savings to the service and civilian commuters working on the installation was identified as a key concern and opportunity for promoting the benefits of TDM. As such, the final thought in this Plan is to identify a typical scenario that would result in significant savings to the commuters, based on participation in a qualifying vanpool and the Navy's TIP. Using the example of Central San Diego as the home end of the work trip, as shown in Figure 5-4, each commuter in a 7-person vanpool would spend approximately $120 per month for work related transportation costs, including sharing the cost of the van lease and fuel. This amount falls within the current monthly TIP benefit of up to $125 per month, essentially negating the cost of the commute. Participating in a regional vanpool has the potential to save each commuter on average $400 per month from driving alone, not to mention the additional benefits of reduced delays at the Main Gate, reduced congestion on regional roadways, and reduced emissions and fuel used.

6.2.2 Suggestions for Further Study

As traffic operations and TDM measures at MCB Camp Pendleton continue to be monitored in the foreseeable future and with the increasing demand to use alternative modes of transportation and reduce GHG emissions and other environmental pollutants, further studies could be performed by MCB Camp Pendleton to make informed decisions on when and where to invest in programs or improvements. Based on the feedback and information obtained and notable information not available during the preparation of this TDM Plan, the following are suggested for further study either by MCB Camp Pendleton or by others:

- Conducting an origin-destination study for MCB Camp Pendleton personnel and civilians to document where individuals are commuting to/from on a regular basis. This would prove to be helpful in targeting TDM and/or transit initiatives.

- Conducting a feasibility study of increasing transit routes and/or frequency to serve more areas of MCB Camp Pendleton, and increase frequency on the two existing NCTD Breeze bus routes that serve the installation, as both suffer from low poor geographic coverage and low frequency.