FINAL DRAFT

Environmental Assessment

Cabin and Campsite Improvements at Wall Beach

Vandenberg Air Force Base, California

6 February 2020

30th Space Wing, Installation Management Flight
1028 Iceland Avenue, Building 11146
Vandenberg Air Force Base, California 93437

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Acronyms and Abbreviations

°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
30 CES/CEI	30th Space Wing, Installation Management Flight
30 CES/CEIEA	30th Space Wing, Installation Management Flight, Environmental Conservation
30 CES/CEIEC	30th Space Wing, Installation Management Flight, Environmental Compliance
30 SW	30th Space Wing
30 SWP	30th Space Wing Plan
AADT	Annual Average Daily Traffic
ac.	acre(s)
ADT	Average Daily Traffic
AFCEC	Air Force Civil Engineer Center
AFCEC/CZO	Environmental Operations Division
AFI	Air Force Instruction
AFOSH	Air Force Occupational Safety and Health
AOC	Area of Concern
AOI	Area of Interest
APZ	Accident Potential Zone
Base	Vandenberg Air Force Base
BCC	Federal Bird of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
bhp	brake horsepower
BMP	Best Management Practice
BO	Biological Opinion
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCA	California Coastal Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalent
CSC	California Species of Special Concern
CWA	Clean Water Act
CY	cubic yards
CZMA	Coastal Zone Management Act
dB	decibel(s)
dBA	A-weighted decibel

DoD	Department of Defense
DoDI	Department of Defense Instruction
DOT	Department of Transportation
EA	Environmental Assessment
EMS	Environmental Management System
EO	Executive Order
EPMs	Environmental Protection Measures
ESA	Endangered Species Act
FE	Federal Endangered Species
FR	Federal Register
ft.	foot or feet
ft^2	square feet
FT	Federal Threatened Species
GHG	greenhouse gas
GIS	Geographic Information System
GWP	global warming potential
ha	hectare(s)
HazMart	Hazardous Materials Pharmacy
HFC	hydrofluorocarbon
HS	hydrogen sulfide
HWMP	Hazardous Waste Management Plan
Hwy	Highway
ICRMP	Integrated Cultural Resources Management Plan
IRP	Installation Restoration Program
km	kilometer(s)
kVA	kilovolt-amps
L_{eq}	equivalent sound level
L_{eq1H}	1-hour average sound level
LCZ	Lateral Clear Zone
LOS	Level of Service
m	meter(s)
m^2	square meters
m^3	cubic meter
mg	milligram
mi.	mile(s)
MMRP	Military Munitions Response Program
MSRS	ManTech SRS Technologies, Inc.
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCA	Noise Control Act
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration

P2	pollution prevention
Pb	lead
$PM_{2.5}$	particulate matter less than 2.5 micrometers
PM_{10}	particulate matter less than 10 micrometers
POLs	petroleum, oil, and lubricants
ppb	parts per billion
ppm	parts per million
ppmv	parts per million by volume
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gases
ROI	region of influence
RWQCB	Regional Water Quality Control Board
SBCAPCD	Santa Barbara County Air Pollution Control District
SCCAB	South Central Coast Air Basin
SE	State Endangered Species
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLC	Space Launch Complex
SO_2	sulfur dioxide
SO_x	oxides of sulfur
SR	State Route
SSC	State Candidate Species
SSPP	Strategic Sustainability and Performance Plan
TI	traffic index
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	United States Air Force
U.S.	United States
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UXO	unexploded ordnance
VAFB	Vandenberg Air Force Base
V/C	volume-to-capacity
WSDOT	Washington State Department of Transportation

1 Purpose of and Need for the Proposed Action

The 30th Space Wing, Installation Management Flight (30 CES/CEI), has prepared this Environmental Assessment (EA) to evaluate the potential environmental effects of implementing the Proposed Action and identified alternatives per the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and the United States Air Force's (USAF) Environmental Impact Analysis Process (EIAP) regulations, 32 CFR Part 989. (See 32 CFR Part 989.3[e][7]). This EA will serve to maintain the USAF's NEPA compliance, as well as guide USAF decision-makers through project design, construction, and implementation. The Proposed Action consists of improving a previously disturbed recreation area by installing four separate, pre-fabricated kit cabins, and five tent camping sites. These improvements at Wall Beach would enhance recreational opportunities at Wall Beach through 30th Force Support Squadron (FSS) facilities at Vandenberg Air Force Base (VAFB or Base).

1.1 Project Location

VAFB is headquarters for the 30th Space Wing (30 SW). The 30 SW at VAFB is the USAF Space Command organization responsible for Department of Defense (DoD) space and missile launch activities on the United States west coast. Satellites destined for polar or near-polar orbit are launched from VAFB, and ballistic missiles are launched for testing. The 30 SW supports West Coast launch activities for the USAF, DoD, Missile Defense Agency, National Aeronautics and Space Administration, a few foreign nations, and various private industry contractors. To accommodate space and missile launches, roadways are required to access all portions of the Base.

VAFB is located on California's south-central coast, approximately halfway between San Diego and San Francisco (Figure 1-1). VAFB covers 99,099 acres (ac.) (40,104 hectares [ha.]) in western Santa Barbara County and occurs in a transitional ecological region that includes the northern and southern distributional limits for many plant and animal species.

The Proposed Action Area is located on North VAFB at Wall Beach, which is centrally located within VAFB, less than 5 miles (mi.) (8 kilometers [km]) from the Base cantonment area and California Boulevard (Figure 1-2). Wall Beach is accessible by existing paved roads such as New Beach Road and 35th Street (Figure 1-2). An existing, paved, 0.5 ac. (0.24 ha) parking area at the western terminus of New Beach Road provides access to the adjacent beach and Proposed Action Area. The proposed cabins and campsites would be installed immediately east of the parking area. The Proposed Action would disturb approximately 0.60 ac. (0.24 ha) (Table 1-1).

Figure 1-1. Regional location of Vandenberg Air Force Base.

Figure 1-2. Proposed Action Area vicinity.

Table 1-1. Project impact area.

Land Condition	Cabin Area (acres)	Campsite Area (acres)
To Be Cleared	0.2	0.2
Currently Disturbed/ Cleared	0.1	0.1
Currently Developed	0	0
Total	**0.3**	**0.3**

1.2 Purpose and Need

The Proposed Action, and its generated revenue, would enhance the FSS's ability to provide recreational opportunities consistent with VAFB's mission and USAF policy to consider environmental impacts in decision-making for all major Federal actions per 32 CFR 989 and (Air Force Instruction (AFI) 32-70, *Environmental Considerations in Air Force Programs and Activities*). [The Drafter is confusing United Nations language with US law, regulations, and AF Instructions.] Base personnel and their families [Query: Aren't potential patrons more than just base personnel and their families? Aren't all DoD authorized persons allowed to use it to generate maximum income for FSS? I recommend: "Authorized patrons (active duty military and their dependents, retired military and their dependents, and DoD and VAFB contractor employees)," vice "Base personnel"] would benefit from increased access to the recreational opportunities made possible by the Proposed Action. Currently, Wall Beach can only be enjoyed during the day, since patrons cannot extend their visit past nightfall. The Proposed Action would allow for overnight access to the area, with certain restrictions, through installing camping facilities at Wall Beach.

1.3 Scope of the Environmental Assessment

This EA identifies, describes, and evaluates the potential environmental impacts that could result from the Proposed Action and the No-Action Alternative, as well as possible cumulative impacts from other past, present, and planned actions on VAFB. In addition, the EA identifies environmental permits relevant to the Proposed Action. As appropriate, the EA describes, in terms of a regional overview or a site-specific description, the affected environment and environmental consequences of the action. Finally, the EA identifies management measures to avoid, prevent or minimize environmental impacts.

1.4 Interagency and Intergovernmental Coordination and Consultation

The Proposed Action is a Federal undertaking subject to Section 106, National Historic Preservation Act compliance. VAFB initiated consultation with the State Historic Preservation Officer (SHPO) under 36 CFR Part 800. VAFB determined that the Proposed Action would have no adverse effect to any properties listed in or potentially eligible for listing in the National

Register of Historic Places. The SHPO has concurred with VAFB's determination of no adverse effect to historic properties and (Appendix A).

Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments*, directs Federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on Federally administered lands. The Santa Ynez Band of the Chumash Indians was consulted on the Proposed Action and expressed concern that persons renting the Wall Beach Cabins could walk into nearby archaeological sites and collect artifacts on the ground surface. VAFB Cultural Resources Managers are consulting with the Tribe to develop measures that would prevent beach-goers from collecting artifacts from nearby sites (Appendix B).

The Endangered Species Act (ESA) of 1973, Sikes Act of 1960, Department of Defense Instruction (DoDI) 4715.3, *Environmental Conservation*, and Air Force Instruction [AFI 32-7060, Interagency and Intergovernmental Coordination for Environmental Planning is defunct.] 32-7064, *Integrated Natural Resources Management*, require the USAF to consult with the United States Fish and Wildlife Service (USFWS) and/or the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) for all VAFB activities that are likely to adversely affect listed species. VAFB determined that the Proposed Action may affect threatened or endangered species under the USFWS's jurisdiction and prepared a Biological Assessment (BA) of the change in recreational use at Wall Beach. The USAF completed consultation with the USFWS for constructing the cabins 15 March 2019 (Appendix D; BO; 2018-F-0845; Appendix C). Operating the cabins is permitted under an existing BO for VAFB's Beach Management Plan (BO 8-8-12-F-11R; Appendix C).

Under the Coastal Zone Management Act (CZMA) of 1972 (16 United States Code [U.S.C.] §§ 1451, *et seq*.), a Federal action that may affect the coastal zone must be carried out in a manner that is consistent with state coastal zone management programs. On 16 December 2019, the California Coastal Commission (CCC) concurred with the USAF's consistency determination (CD-0004-18; Appendix D) for installing cabins and campsites at Wall Beach on VAFB. The CCC Executive Director determined that the Proposed Action would not adversely affect coastal resources.

2 Description of the Proposed Action and Alternatives

This chapter provides detailed descriptions of the Proposed Action, including equipment needs, construction requirements, and operational parameters. This chapter also describes the No-Action Alternative. The selection criteria that were used to identify the Proposed Action and rule out the No-Action Alternative are discussed below:

2.1 Proposed Action Selection Criteria for Alternatives

Per 32 CFR 989.8(c) the USAF "may expressly eliminate alternatives from detailed analysis, based on reasonable selection standards (for example, operational, technical, or environmental standards suitable to a particular project)." The Proposed Action was identified by evaluating its ability to meet of the following selection criteria:

- **Criterion 1:** Location – Proximity and ease of access to Wall Beach. Flat, well-drained, and stable topography. Quality of ocean view.
- **Criterion 2:** Environmental Constraints – Potential impacts to natural resources.
- **Criterion 3:** Existing Infrastructure – Ease of vehicle access, parking facilities, and existing disturbed areas.

In addition, CEQ Regulations for Implementing NEPA require Federal agencies to use the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that would avoid or minimize adverse effects of those actions on the quality of the human environment.

2.2 Alternative A: Proposed Action

2.2.1 Cabin Overview

The Proposed Action (Alternative A) includes installing four separate, pre-fabricated kit cabins immediately northeast of the existing parking area and wall at Wall Beach (Figure 2-1). Each cabin would be approximately 23 feet (ft.) long by 14 ft. wide by 10.5 ft. high (6.9 x 4.3 x 3.2 meters [m]) (Figures 2-2 through 2-5) and supported by 16 concrete pier foundations, 8 to 16 inches (in) (20.3 to 40.6 centimeters) above grade (Figures 2-5 and 2-6). Thus, the overall height above grade of each cabin would be approximately 12 ft. (3.7 m). Each cabin would have approximately 232 square feet (ft^2) (21.6 square meters [m^2]) of indoor living space and 84 ft^2 (7.8 m^2) of covered porch space. Each cabin would cover 316 ft^2 (29.4 m^2) but would require approximately 350 ft^2 (32.5 m^2) of cleared space to installation. All four cabins would cover a total area of approximately 1,264 ft^2 (117.4 m^2) and require 1,400 ft^2 (130 m^2) of cleared space for installation. Cabin building materials would primarily consist of treated logs and wooden materials, complete with metal roofing and trim. Routine inspection and maintenance of cabin facilities would be required to ensure cabins are in good condition. In addition, regular care of the grounds would include removing weeds and any trash left by campers.

2.2.2 Campsite Overview

Five tent camping sites would be established at Wall Beach within the project area (Figure 2-1). Campsites would be located immediately southeast of the proposed cabins and require minor clearing of vegetation and debris to prepare the sites. Each campsite would require less than 300 ft^2 (27.9 m^2) for camping activities. One vehicle would be allowed per cabin or campsite and would park next to each cabin or campsite within the disturbed area delineated in Figure 1-3. Campsites would not have any facilities or amenities other than picnic tables and would not include fire pits. All open fires would be prohibited. The campsites would also require routine inspection and maintenance of facilities to ensure cabins are in good condition, as well as regular weeding to maintain the grounds and remove trash left by campers.

2.2.3 Construction Overview

All equipment and materials would be staged on paved surfaces within the project area, including the existing parking area (Figure 2-1). The period of construction would be 90 to 120 days and occur any time of the year. A four-person construction crew would be on site for 90 days. A 40 cubic yard (CY) (30.6 cubic meters [m^3]) roll-off dumpster would be utilized for construction-generated waste during the entire construction period. A temporary portable toilet would remain onsite for 120 days for construction workers. Initial vegetation clearing will be performed by scraping and grubbing the vegetation to ground level with a front-end loader. Pier construction would require approximately 20 CY (15.3 m^3) of concrete, which would be poured into holes drilled by an auger (Figure 2-6). If holes need to be left open overnight, they would be covered.

2.2.4 Project Equipment Needs

The exact type of equipment that would be used during construction may vary slightly from the projections below, depending on contractor capabilities (Table 2-1). However, these estimates provide a basis for analyzing related issue areas such as air quality, noise, and traffic.

Table 2-1. Estimated equipment needs.

Expected Equipment	Brake Horsepower	Estimated Duration (Total Project Hours)
Front-end Loader with auger attachment	50	80
Two (2) concrete mixer trucks (Class IIX)	≥300	16
All-terrain forklift	120	16
Flatbed truck (Class VI)	≤300	16
Two (2) Pickup trucks – crew transport & tool storage (Class II)	350	360

2.2.5 Cabin and Facility Utilization

One cabin is intended to sleep a maximum of four people. Each cabin would accommodate an estimated 150 rental nights per year. Reservations during the late fall and winter months are expected to be few since the cabins would not have central heating or electricity. One vehicle per cabin would be permitted. There would be no utilities or plumbing associated with the cabins. The cabins are intended to serve only as protection against the elements. Patrons would be required to bring their own drinking water. The nearest potable water is located approximately 2.0 mi. (3.2 km) by road at the Rod and Gun Club facility on Taco Road (Figure 1-2). Patrons would use an existing portable restroom and trash containers, located immediately south of the proposed cabins and campsites (Figure 2-1). In addition, a second portable toilet would be placed between the campsites and cabins (Figure 2-1). Both portable toilets would be secured to prevent tipping and will have secondary containment. Cabins and campsites would utilize battery-powered LED lanterns for lighting. Campers would be instructed to properly contain and dispose of trash in the trash containers.

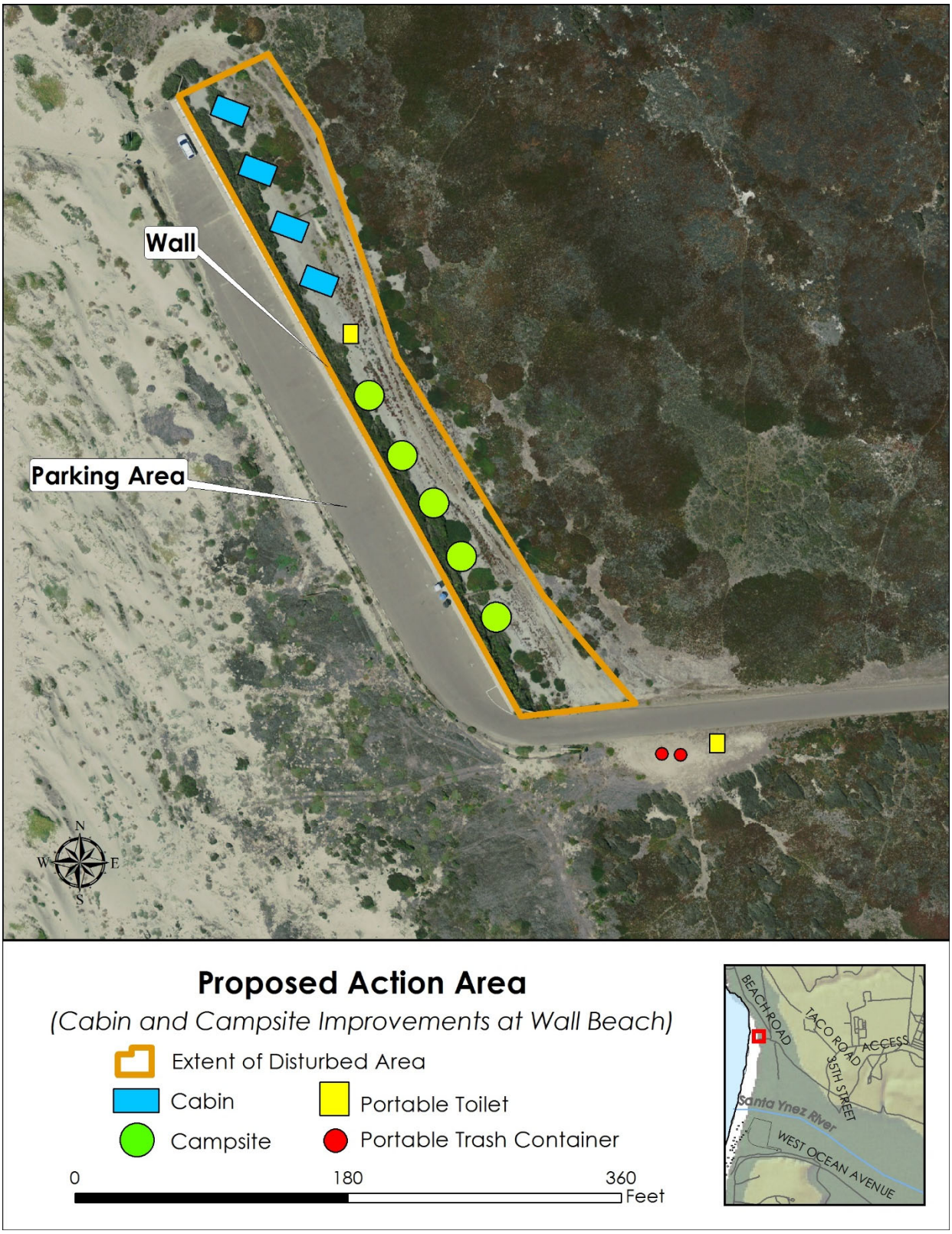

Figure 2-1. Proposed location of cabin and campsite improvements.

Figure 2-2. Cabin – front view.

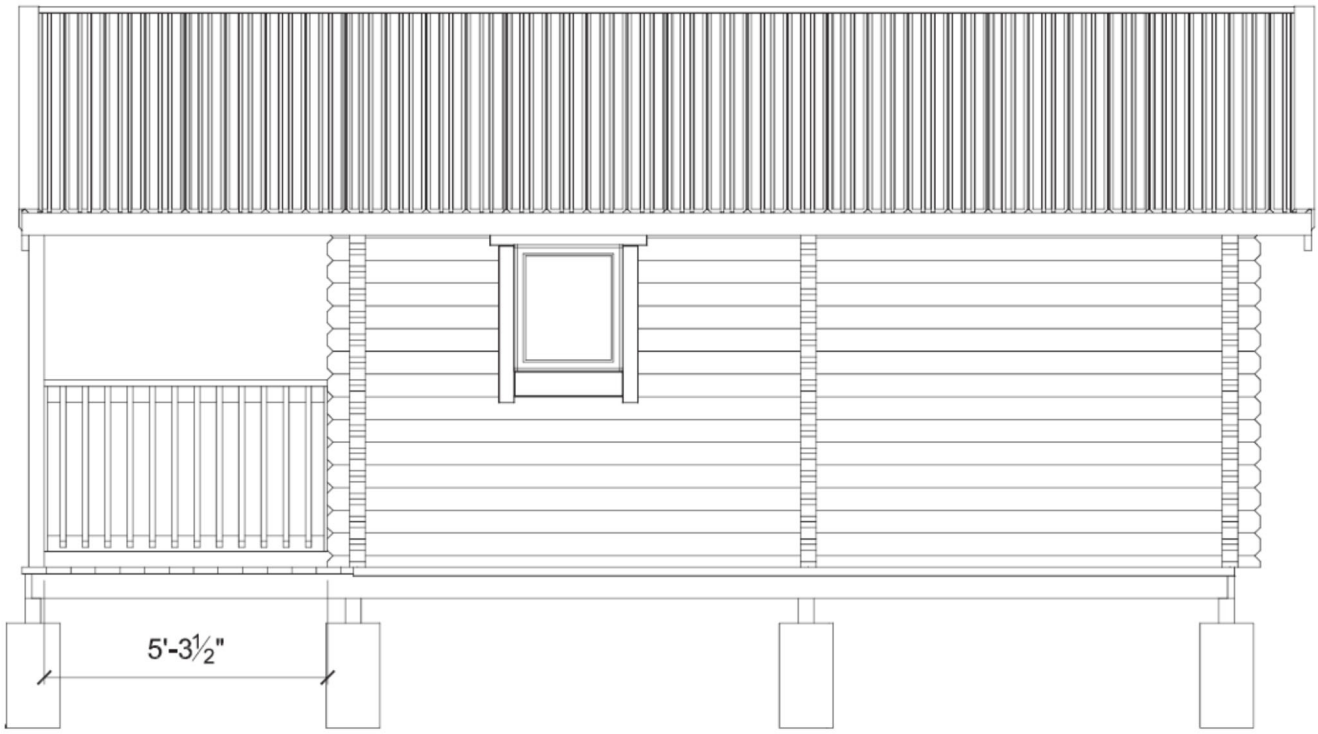

Figure 2-3. Cabin – side view.

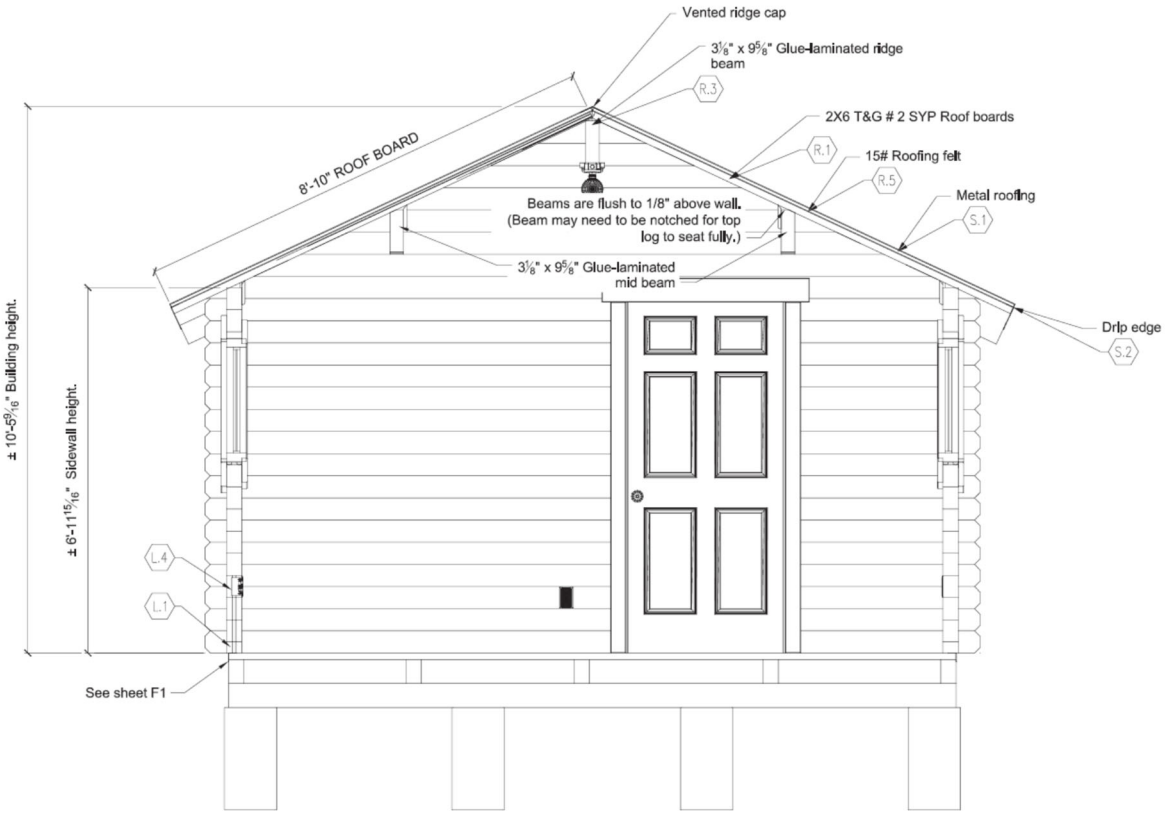

Figure 2-4. Cabin front view dimensions.

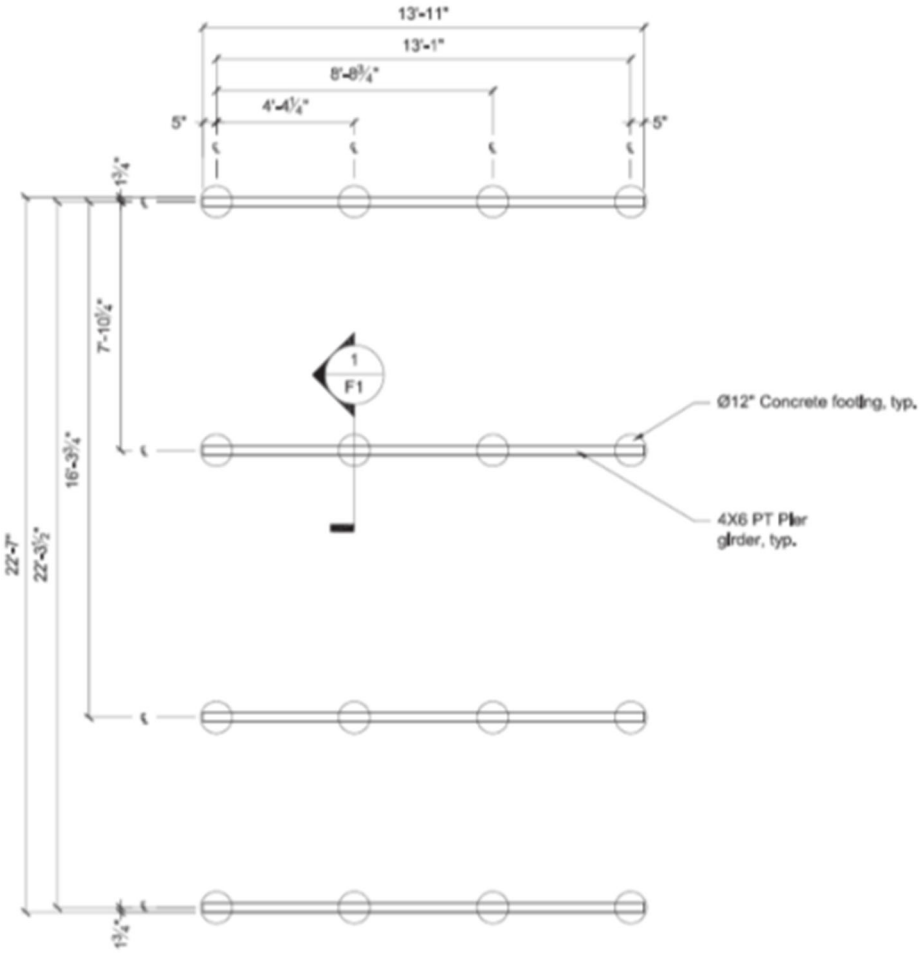

Figure 2-5. Pier layout.

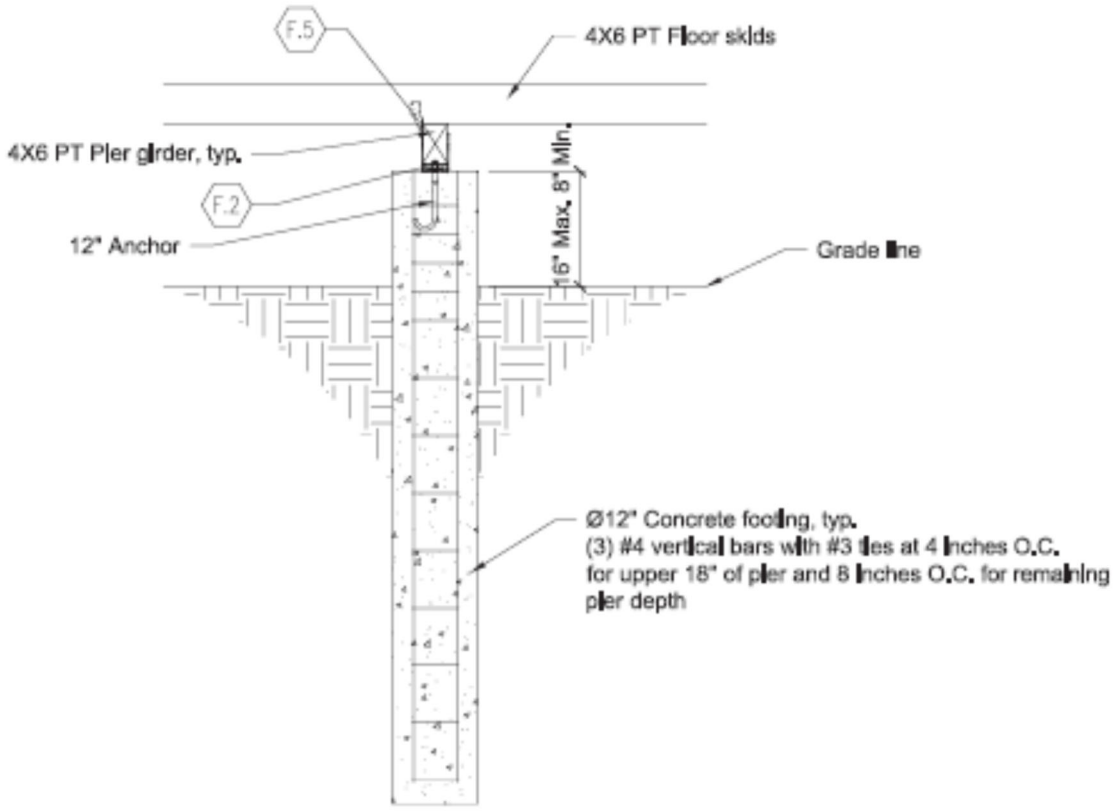

Figure 2-6. Pier detail.

2.2.6 Beach Access Adjacent to Cabins

Wall Beach is only open to military recreation (active duty military and their dependents, retired military and their dependents, DoD and VAFB contractor employees). However, during the western snowy plover breeding season (1 March to 30 September) at Wall Beach, recreational beach access is limited to a 0.25 mi. (0.4 km) stretch of the northernmost section. This section of beach (open area) is differentiated from the closed section of Wall Beach (closed area) by yellow ropes with signs delineating the closure. Ropes run perpendicular to the ocean from the back dunes to the mean high tide line. The closed area opens for recreational use during the western snowy plover non-breeding season (October 1 to February 28).

2.2.7 Environmental Protection Measures

Implementing the environmental protection measures (EPMs), outlined below, should avoid or minimize potential adverse effects to various environmental resources during implementing the Proposed Action. Mandatory EPMs (denoted by "shall" or "would") are part of the project design and would be implemented as part of the Proposed Action to avoid, minimize, reduce, or compensate for the anticipated environmental impacts. Discretionary protection [added for consistency with FONSI] measures (denoted by "may" or "could") may or may not be implemented to further reduce environmental impacts.

2.2.7.1 Air Quality

The Santa Barbara County Air Pollution Control District (SBCAPCD) and California Air Resources Board (CARB) requires the following dust control measures to decrease fugitive dust emissions from ground disturbing activities:

- Water—preferably reclaimed—shall be applied at least twice daily to dirt roads, graded areas, and dirt stockpiles to prevent excessive dust at the staging areas. Watering frequency would be increased whenever wind speed exceeds 15 miles per hour.
- After completing construction activities, disturbed soil shall be treated by watering, revegetating, or spreading soil binders to prevent wind erosion of the soil.
- All fine material transported off-site shall be either sufficiently watered or securely covered to prevent excessive dust.
- All haul trucks, if needed, would be required to exit the site via an access point where a gravel pad or grizzly has been installed.
- Stockpiles of soil or other fine loose material shall be stabilized by watering or another appropriate method to prevent wind-blown fugitive dust.
- On-site vehicle speeds shall be limited to 15 miles per hour.
- Ground disturbance shall be limited to the smallest practical area and to the least amount of time.
- Designated personnel shall monitor project activities to ensure that excessive dust is not generated at demolition sites.
- The Proposed Action shall comply with storm water management plans, including Best Management Practices (BMPs) to reduce dust emissions.
- Any portable equipment powered by an internal combustion engine with a rated horsepower of 50 brake horsepower (bhp) or greater used for this project shall be registered in the California State-wide Portable Equipment Registration Program or have a valid SBCAPCD Permit to Operate. Examples of such equipment are portable generators, compressors, and light-carts. Copies of each registration or permit along with fuel usage and hours of operation must be submitted to 30 SW, Installation Management Flight, Environmental Compliance (30 CES/CEIEC) Air Quality section at the end of the project or by 15 January, whichever occurs first.

- Earth moving shall comply with SBCAPCD Rule 345, Control of Fugitive Dust from Construction and Demolition Activities. Under Rule 345, construction, demolition, or earthmoving activities are prohibited from causing discharge of visible dust outside the property line and must utilize standard BMPs to minimize dust from truck hauling, track-out/carry-out from active construction sites, and demolition activities.
- Off-road construction equipment shall comply with all Federal, State and local regulations. A description of each piece of equipment, including make, model, serial number and rated bhp, along with fuel usage and hours of operation, must be provided to the 30 CES/CEIEC Air Quality section at the end of the project or by 15 January, whichever occurs first.

The following control measures may be implemented to decrease diesel emissions, as applicable:

- When feasible, the contractor may use equipment powered with Federally mandated "clean" diesel engines.
- The size of the engine in equipment and number of pieces of equipment operating simultaneously for the project should be minimized.
- Engines should be maintained in tune per manufacturer or operator's specification.
- Ultra-low sulfur diesel fuel (15 parts per million by volume [ppmv]) may be used for all diesel equipment.
- U.S. Environmental Protection Agency (USEPA) or CARB certified diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters may be installed on all diesel equipment.
- CARB developed idling regulations may be followed for trucks during loading and unloading.
- When practicable, diesel equipment should be replaced with electrical equipment.
- The construction period should be lengthened during smog season (May through October), to minimize the number of vehicles and equipment operating at the same time.
- Alternatively, fueled construction equipment, such as compressed natural gas, liquefied natural gas, or electric, should be used if feasible.

2.2.7.2 Biological Resources

2.2.7.2.1 General Protection and Monitoring Measures

The following protection measures would apply to all aspects of the Proposed Action to protect and minimize effects on biological resources.

- One week before construction activities begin, a qualified biological monitor, approved by USFWS and 30th Space Wing, Installation Management Flight, Environmental Conservation (30 CES/CEIEA), shall delineate areas where special-status species are located or concentrated. During construction, the monitor will be present to inspect the site three times per week to monitor activities. The biological monitor shall be responsible for inspecting equipment and equipment staging areas for gas and oil leaks

and ensuring that all EPMs are being implemented properly. The monitor will perform additional responsibilities, as described below. Prior to the onset of the Proposed Action, the name(s) and credentials of the biologist(s) who would conduct the monitoring activities shall be submitted to the USFWS for their approval.

- Qualified biologists shall brief all project personnel prior to them participating in project implementation activities. At a minimum, the training would include describing the following: the listed species and sensitive biological resources occurring in the area, the general and specific measures and restrictions to protect these resources during project implementation, the provisions of the ESA and the necessity of adhering to the provisions of the ESA, and the penalties associated with ESA violations.
- Disturbances in the Proposed Action Area shall be kept to the minimum extent necessary to accomplish project objectives.
- All excess materials excavated shall be removed from the Proposed Action Area and transported to a designated waste or fill site.
- Any erosion control materials used (i.e. gravel, sand, fill material, wattles etc.) would be from weed-free sources. Only 100% biodegradable erosion control materials (e.g., erosion blankets, wattles, etc.) would be left in place following project completion.
- Portable toilets would only be placed over disturbed surfaces or within staging areas and include secondary containment and be secured against tipping.
- All human generated trash at the project site shall be disposed of in proper containers and removed from the work site and properly disposed at the end of each workday.
- All construction debris and trash shall be removed from the work area upon completing the project.
- To prevent introducing weeds, equipment and vehicles shall be cleaned of weed seeds before using them in the Action Area. Prior to transport, any skid plates shall be removed and cleaned. Equipment should be cleaned of weed seeds daily, especially wheels, undercarriages, and bumpers. For equipment vehicles that have caked-on dirt or mud, before leaving the project area, they shall be cleaned with hand tools such as bristle brushes and brooms at a designated exit area; vehicles may subsequently be washed at the AAFES car wash or approved wash area. For equipment vehicles with dry dusted dirt on vehicles (and no caked-on dirt or mud), prior to leaving the site at a designated exit area, equipment vehicles shall be thoroughly brushed; alternatively, vehicles may be air blasted on site.
- Pamphlets detailing beach rules would be printed and distributed to patrons during the check-in process. Patrons would be required to sign a letter of understanding during check-in at the VAFB Outdoor Recreation center.
- During check-in, FSS recreation staff would brief and provide patrons pamphlets on trash and litter best management practices.
- Daily, a VAFB grounds crew would be inspected the area to remove trash near the facilities.
- A VAFB grounds crew would perform grounds maintenance in areas around the cabins and campsites at least once a week.

- After patrons checkout, VAFB Outdoor Recreation staff would inspect cabins interiors.
- All open fires would be prohibited.

2.2.7.2.2 Vegetation Resources

- As practicable, native vegetation and plant community removal would be minimized.
- When and where practicable, non-native vegetation within the Proposed Action Area may be removed during project related activities under the biological monitor's direction.

2.2.7.2.3 General Wildlife Resources

- If identified, wildlife and special status species shall be removed from the Proposed Action Area and relocated to the nearest suitable habitat. These activities would be accomplished prior to starting construction and only under a qualified biologist' direct supervision.
- The number and disposition of all special status species encountered or relocated would be recorded. Native wildlife species, including special status and listed species, would be removed to the nearest suitable habitat, chosen at the discretion of the biologist. The holding time would be minimized to the greatest extent feasible and the health of all held animals would be continuously monitored to evaluate the need for additional animal protection measures.
- Qualified biologist(s) would permanently remove any non-native species encountered within the Proposed Action Area to the maximum extent possible.
- If practicable, any vegetation clearing will occur outside of migratory bird nesting season (15 February through 15 August). If work occurs during nesting season, a qualified biologist would conduct bird nest surveys prior to project activities and delineate buffers around any nests that are found to prevent disturbance. The contractor would coordinate with 30 CES/CEIEA prior to work.
- Open holes or trenches left overnight would be covered with plywood or metal sheets to minimize animal entrapment risks.

2.2.7.2.4 Western Snowy Plover Protection Measures

- A noise curfew would be established from 10:00 p.m. to 7:00 a.m. to avoid noise disturbances to western snowy plovers.
- Anti-perching devices would be installed on cabin roofs to deter avian predators.
- Pets would not be allowed during western snowy plover nesting season (1 March to 30 September). Outside of plover nesting season, pets would only be allowed within a designated pet cabin, and when outside of the cabin would be required to be on leash.

The following minimization measures would apply to Proposed Action as it specifically relates to construction activity occurring during the western snowy plover breeding season (1 March – 30 September) and minimize effects on breeding plovers:

- A Service-approved biologist will monitor breeding plovers, and any active nests or chicks, at least 3 times per week during construction activities to document any noise related

impacts. Monitoring will be focused in the area defined in Figure 4-3. These data will be used in the future to better understand noise related impacts to breeding plovers, and to develop effective minimization measures.

- Qualified biologists shall brief all project personnel prior to them participating in project activities. At a minimum, the training would include a description of the following: listed species and sensitive biological resources occurring in the area, the general and specific measures and restrictions to protect these resources during project implementation, the provisions of the ESA and the necessity of adhering to the provisions of the ESA, and the penalties associated with ESA violations.
- No night construction will not be allowed.
- All trash will be removed daily to help prevent attracting predators to the area.

2.2.7.3 Cultural Resources

- If previously undocumented cultural resources are discovered during maintenance activities, work would stop and the procedures established in 36 CFR 800.13 and the VAFB Integrated Cultural Resources Management Plan (ICRMP) shall be followed.

2.2.7.4 Earth Resources

- The site must be secured from potential erosion resulting from rain and wind events. Erosion and sediment control measures such as silt fences, temporary grass cover, fiber rolls, erosion control mats, and other BMPs would be installed or implemented as appropriate. Only 100-percent biodegradable erosion control materials would be left in place following project completion.

2.2.7.5 Hazardous Materials and Waste Management

- Hazardous materials would be procured through or approved for use by VAFB Hazardous Materials Pharmacy (HazMart). Monthly hazardous materials usage will be reported to HazMart to meet legal reporting requirements.
- Hazardous materials would be properly stored and managed in secured areas.
- Chemical stockpile spill containment, if necessary, would be accomplished to minimize or preclude hazardous releases.
- Standard procedures would be used to ensure that all equipment is maintained properly and free of leaks during operation, and all necessary repairs are done with proper spill containment. All equipment operating within the Proposed Action Area would be inspected regularly for fluid leaks. A Spill Prevention Plan would be approved by 30 CES/CEIEC and implemented.
- Spill containment materials would be placed around the equipment before refueling. Stationary equipment would be outfitted with drip pans and hydrocarbon absorbent pads. Additionally, per 40 CFR 112, Spill Prevention, Control, and Countermeasure Plan requires that tanks and containers have secondary containment or tanks double-walled.

- All hazardous materials would be properly identified and used per manufacturer specifications to avoid accidental exposure to or release of hazardous materials required to operate and maintain construction equipment.
- Hazardous waste shall be managed per the Hazardous Waste Management Plan (HWMP), 30 SW Plan 32-7043-A (USAF 2002). A Community Awareness Emergency Response form would be completed and submitted to CES/CEIEC within 24 hours of a Haz-Mat spill or release.
- Prior to project implementation, the contractor would prepare a hazardous material Spill Prevention and Response Plan and obtain 30 CES/CEI's concurrence.

2.2.7.6 Coastal Zone Management

- The USAF shall coordinate the Proposed Action with the CCC to comply with the CZMA.

2.2.7.7 Solid Waste

- The excavation waste (i.e., vegetation removed from the Proposed Action Area) would be hauled to a municipal landfill and disposed of as green waste to be composted. Other waste would be recycled if possible.
- Debris shall be segregated to facilitate subsequent pollution prevention (P2) options. P2 options would be exercised in the following order: reuse of materials, recycling of materials, and then regulatory compliant disposal.
- All solid waste disposal and construction debris recycling tonnages would be tracked and reported to 30 CES/CEIEC on a quarterly basis.

2.2.7.8 Transportation

- Employees may be encouraged to carpool and eat lunch on-site.
- Truck trips should be scheduled during non-peak traffic hours to the greatest extent practicable.

2.2.7.9 Water Resources

- The site must be secured from potential erosion resulting from rain and wind events. Erosion and sediment control measures such as silt fences, temporary grass cover, fiber rolls, erosion control mats, and other BMPs would be installed or implemented as appropriate. Only 100-percent biodegradable erosion control materials would be left in place following project completion.
- BMPs to prevent discharge of waste (construction materials, contaminants, washings, fuels, and oils) shall include the following measures, as applicable:
    a. Ensure all equipment is properly maintained and free of leaks during operation, and all necessary repairs carried out with proper spill containment.

b. Fueling of equipment would be conducted in pre-designated areas with spill containment materials placed around the equipment before refueling. Stationary equipment would be outfitted with drip pans and hydrocarbon absorbent pads.
c. Adequate spill response supplies shall be maintained at the construction staging area for immediate response and clean-up of any fuel spills.
d. Hazardous materials shall be stored in proper containers to include secondary containment.
e. Vehicle and equipment washing shall be prohibited except within staging areas. High pressure washing of undercarriages and wheel wells shall be prohibited at the project site.
f. Cover waste disposal containers at the end of every business day and during a rain event. Pick up any trash that escapes from containers at the end of each day.
g. Contain and protect loose construction materials and stockpiled waste material from wind and rain at all times unless actively being used.
h. Portable toilets must be properly secured to prevent tipping in windy conditions.
i. Campers shall be instructed to contain and remove all trash generated.

2.2.7.10 Human Health and Safety

- The construction contractor would comply with Occupational Safety and Health Administration (OSHA), Air Force Occupational Safety and Health (AFOSH) regulations, and other recognized standards and applicable USAF regulations or instructions.
- Restricted public access to the proposed construction site would be provided through use of signs and fencing if feasible.
- The contractor must also provide for the health and safety of workers and all subcontractors who may be exposed to their operations or services. The contractor must submit a health and safety plan to the base and appoint a formally trained individual to act as safety officer. The appointed individual would be the point of contact on all problems involving job site safety.
- During work performance, the contractor must comply with all provisions and procedures prescribed for the control and safety of personnel and visitors to the job site.

2.3 Alternative B: No-Action Alternative

Under the No-Action Alternative (Alternative B), cabins and campsites would not be installed at Wall Beach – rendering facilities and natural resources unaffected from their current condition(s). Recreational opportunities for authorized patrons would be limited to current levels.

3 Affected Environment

This chapter describes the existing environment near and within the Proposed Action Area for the Proposed Action and No-Action Alternative. VAFB is located in northwestern Santa Barbara

County, where agriculture is the main economic and land use influencer. The base encompasses approximately 99,099 ac. (40,104 ha) and is physically divided into north VAFB and south VAFB by the Santa Ynez River. Much of VAFB is open space set aside as security or safety buffer zones for space launch activities. The Proposed Action is located on north VAFB – one mile north of the Santa Ynez River. The affected environment considered for most resources was confined to the immediate Proposed Action Area. For some environmental resources, however, a wider regional area was used, as appropriate.

The resources identified for analysis in this EA include: air quality, biological resources, cultural resources, earth resources, hazardous materials and hazardous waste management, human health and safety, solid waste management, transportation, and water resources. The following resources were considered but not analyzed in this EA:

- Environmental Justice. Per EO 12898, Environmental Justice, the potential effects of the Proposed Action on minority communities and low-income communities were considered. The project would neither affect nor disproportionately affect low-income or minority populations. The Proposed Action would enhance existing infrastructure on VAFB and potential environmental impacts would not extend into populated areas.
- Socioeconomics. Implementing the Proposed Action is unlikely [likely?] to result in the creation of some temporary new jobs. However, these potential new jobs would have no effect on the socioeconomic environment of the region (i.e., Lompoc Valley and Santa Maria Valley). Implementing the No-Action Alternative would neither create nor eliminate jobs from the regional area.
- Land Use and Aesthetics. The Proposed Action does not include any change in the land use or aesthetics of the project area; it only proposes the improvements of existing infrastructure. Therefore, the Proposed Action does not include any component that would impact land use and aesthetics and this resource section is not carried forward for analysis in this EA.

3.1 Air Quality

3.1.1 Definition of Resource

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health and welfare of the general public. Six major pollutants of concern, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended and fine particulate matter (particulate matter less than 10 micrometers [PM_{10}] and particulate matter less than 2.5 micrometers [$PM_{2.5}$]), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants (Table 3-1). Areas that violate a Federal air quality standard are designated as non-attainment areas.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts,

and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., ppmv).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, Pb, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, emissions that are considered "precursors" to secondary pollutants in the atmosphere (such as reactive organic gases [ROG] and oxides of nitrogen (NO_x), which are considered precursors for O_3), are the pollutants for which emissions are evaluated to control the level of O_3 in the ambient air.

The State of California has identified four additional pollutants for ambient air quality standards: visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The CARB has also established the more stringent California Ambient Air Quality Standards (CAAQS). Areas within California in which ambient air concentrations of a pollutant are higher than the state or Federal standard are considered to be non-attainment for that pollutant. Table 3-1 shows both the Federal and state ambient air quality standards. Toxic air pollutants, also called hazardous air pollutants, are a class of pollutants that do not have ambient air quality standards but are examined on an individual basis when there is a source of these pollutants. The State of California has identified particulate emissions from diesel engines as a toxic air pollutant.

Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse. GHGs are emitted by both natural processes and human activities. State law defines greenhouse gases as any of the following compounds: CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons and sulfur hexafluoride (California Health and Safety Code Section 38505(g)). GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a

GWP of 21, and N_2O, which has a GWP of 310. CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity. CO_2, and to a lesser extent, CH_4 and N_2O, are products of combustion and are generated from stationary combustion sources as well as vehicles. High global warming potential gases include GHGs that are used in refrigeration/cooling systems such as chlorofluorocarbons and HFCs.

Table 3-1. Ambient Air Quality Standards.

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3]	Secondary[4]	Concentration[5]
O_3	1 hour	-	-	0.09 ppm
	8 hours	0.070 ppm	Same as primary	0.070 ppm
Respirable Particulate Matter (PM_{10})	24 hours	150 µg/m^3	Same as primary	50 µg/m^3
	Annual arithmetic mean	-	-	20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	24 hours	35 µg/m^3	Same as primary	-
	Annual arithmetic average	12 µg/m^3	15 µg/m^3	12 µg/m^3
CO	1 hour	35 ppm	-	20 ppm
	8 hours	9 ppm	-	9 ppm
NO_2	1 hour	100 ppb	-	0.18 ppm
	Annual arithmetic average	53 ppb	Same as primary	0.030 ppm
SO_2	1 hour	75 ppb	-	0.25 ppm
	24 hours	-		0.04 ppm
Pb	30-day average	-	-	0.15 µg/m^3
	Rolling 3-month average	0.15 µg/m^3	Same as primary	-
Hydrogen Sulfide (HS)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m^3)
Sulfates (SO_4)	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 am to 6 pm, Pacific Standard Time)			In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.
Vinyl chloride[6]	24 Hour			0.01 ppm (26 µg/m^3)

[1]NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the USEPA for further clarification and current Federal policies.
[2]California Ambient Air Quality Standards for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM_{10}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.
[3]National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
[4]National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
[5]Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

[6]The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Notes: CO = carbon monoxide, ft. = feet, NAAQS = national ambient air quality standards, CAAQS = California Ambient Air Quality Standards, NO_2 = nitrogen dioxide, O_3 = ozone, Pb = lead, $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 micrometers in diameter, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter, ppb = parts per billion, ppm = parts per million, SO_2 = sulfur dioxide, $\mu g/m^3$ = micrograms per cubic meter
Source: California Air Resources Board 2015

3.1.1.1 Regional Setting

VAFB is within Santa Barbara County and under the jurisdiction of the SBCAPCD. The SBCAPCD is the agency responsible for the administration of Federal and state air quality laws, regulations, and policies in Santa Barbara County, which is within the South Central Coast Air Basin (SCCAB). The SCCAB includes San Luis Obispo, Santa Barbara, and Ventura Counties.

The SCCAB, and all of Southern California, lies in a semi-permanent high-pressure zone of Eastern Pacific Region. The coast is characterized by sparse rainfall, most of which occurs in the winter season and hot, dry summers, tempered by cooling sea breezes. In Santa Barbara County, the months of heaviest precipitation are November through April, averaging 14.7 inches annually. The mean temperature in the VAFB area, as reported by monitors in Lompoc, is 58.3 degrees Fahrenheit (°F) and the mean maximum and mean minimum temperatures are 69.6°F and 47.0°F, respectively (Western Regional Climatic Center 2014).

Santa Barbara County is classified as an attainment/unclassified area for the NAAQS for all criteria pollutants. Santa Barbara County is considered a nonattainment area for the CAAQS for ozone and PM_{10} by the SBCAPCD although the EPA has not made a final designation on this attainment status. Santa Barbara County is classified as an attainment/unclassified area for the CAAQS for all other criteria pollutants.

The CARB and SBCAPCD operate a network of ambient air monitoring stations throughout Santa Barbara County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest active ambient monitoring station to the project site is the Lompoc South H Street monitoring station. O_3, PM_{10}, CO, NO_2, and SO_2The Lompoc South H Street monitoring station measures all criteria pollutants. The VAFB monitoring station at the STS Power site was closed in 2019; however, provides historical data for O_3, PM_{10}, CO, NO_2, and SO_2.

For the period from 2015 through 2019, the 1-hour CAAQS for ozone was not exceeded at either the VAFB or Lompoc H Street monitoring stations. The 8-hour NAAQS and CAAQS for ozone was exceeded once in 2015 at the VAFB monitoring station. At the Lompoc H Street monitoring station, the 24-hour PM_{10} CAAQS was exceeded 16 times in 2017, 2 times in 2018, and 3 times in 2019. At the VAFB monitoring station, the 24-hour PM_{10} CAAQS was exceeded 14 times in 2016, 35 times in 2017, and 4 times in 2018. The 24-hour PM10 NAAQS was exceed twice in 2017 and 4 times in 2016 at the AFB monitoring station, and once in 2015 at both monitoring stations. The 24-hour PM2.5 NAAQS was exceeded twice in 2018 and 4 times in 2017 at the Lompoc H Street monitoring station. The data from the monitoring stations indicate that air quality is in attainment of all other state and Federal standards.

3.1.1.2 Region of Influence

Specifically identifying the Region of Influence (ROI) for air quality requires knowledge of the type of pollutant, emission rates of the pollutant source, proximity to other emission sources, and local and regional meteorology. For inert pollutants (all pollutants other than ozone and its precursors), the ROI is generally limited to a few miles downwind from the source. However, for photochemical pollutant such as ozone, the ROI may extend much farther downwind. Ozone is a secondary pollutant that is formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors (ROG, NOx, and PM_{10}). The maximum effect of precursors on ozone levels tends to occur several hours after the time of emission during periods of high solar load and may occur many miles from the source. Ozone and ozone precursors transported from other regions can also combine with local emissions to produce high local ozone concentrations. The ROI for Proposed Action includes the SCCAB.

3.1.2 Federal Requirements

3.1.2.1 Clean Air Act, General Conformity, and NEPA

The USEPA is the agency responsible for enforcing the Clean Air Act (CAA) of 1970 and its 1977 and 1990 amendments. The purpose of the CAA is to establish NAAQS, to classify areas as to their attainment status relative to the NAAQS, to develop schedules and strategies to meet the NAAQS, and to regulate emissions of criteria pollutants and air toxics to protect public health and welfare. Under the CAA, individual states are allowed to adopt ambient air quality standards and other regulations, provided they are at least as stringent as Federal standards. The Clean Air Act Amendments (CAAA) (1990) established new deadlines for achievement of the NAAQS, dependent upon the severity of non-attainment.

The USEPA requires each state to prepare a State Implementation Plan (SIP), which describes how that state will achieve compliance with the NAAQS. A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all Federal air quality standards.

The CAAA also requires that states develop an operating permit program that would require permits for all major sources of pollutants. The program would be designed to reduce mobile

source emissions and control emissions of hazardous air pollutants through establishing control technology guidelines for various classes of emission sources.

New Source Review: A New Source Review is required when a source has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specified major source thresholds (100 or 250 tons per year) which are predicated on a source's industrial category. Through the SBCAPCD's permitting processes, all stationary sources are reviewed and are subject to a New Source Review process.

EO 13834: On 17 May 2018 EO 13693, *Planning for Federal Sustainability in the Next Decade*, was revoked with the publication of EO 13834, *Efficient Federal Operations*. The EO outlines guidelines and goals for Federal agencies to establish in the management of energy, environmental water, fleet, buildings, and acquisition management.

General Conformity: Under 40 CFR Part 93 and the provisions of Part 51, Subchapter C., Chapter I, Title 40, Appendix W of the CFR, of the CAA as Amended, Federal agencies are required to demonstrate that Federal actions conform with the applicable SIP.

The USEPA general conformity rule applies to Federal actions occurring in non-attainment or maintenance areas. Because Santa Barbara County is an unclassified/attainment area for all NAAQS, the General Conformity Rule does not apply to the Proposed Action at VAFB.

3.1.3 Local Requirements

As indicated previously, in Santa Barbara County the SBCAPCD is the agency responsible for the administering Federal and state air quality laws, regulations, and policies. Included in the local air districts' tasks are monitoring air pollution, maintenance of air quality standards through programs to control air pollutant emissions, and promulgating Rules and Regulations. SBCAPCD regulations require that facilities building, altering, or replacing stationary equipment that may emit air pollutants obtain an Authority to Construct permit. Further, SBCAPCD regulations require stationary sources of air pollutants to obtain a Permit to Operate. The local air districts are responsible for the review of applications and for the approval and issuance of these permits. It is not anticipated that the cabin and campsite installations project would require any stationary sources. In addition, the SBCAPCD regulations require stationary source that would emit 25 tons per year or more of any pollutant except CO in any calendar year during construction to obtain emission offsets.

3.2 Biological Resources

3.2.1 Region of Influence

The existing biological setting includes the regional setting of VAFB, the specific Proposed Action Area, and past and present disturbances in and near the cabin and campsite installations project. Biological resources on VAFB are abundant and diverse compared to other areas of California because VAFB is within an ecological transition zone where the northern and southern ranges of many species overlap, and because the majority of the land within the base boundaries has remained undeveloped. The ROI considered in this EA for biological resources encompasses the

Proposed Action Area (Figure 2-1) and western snowy plover habitat located at Wall Beach (Figure 3-1).

Wall Beach is located on a west-facing, coastal sand beach, approximately 1 mi. (1.6 km) north of the Santa Ynez River lagoon and less than 5 mi. (8 km) southwest of the VAFB cantonment area (Figure 1-2). Wall Beach is accessible by existing paved roads such as New Beach Road and 35th Street (Figure 1-2). An existing, paved, 0.5 ac. (0.24 ha) parking area at the western terminus of New Beach Road provides access to Wall Beach and the Proposed Action Area. The proposed cabins and campsites would be installed immediately east of the parking area. The Proposed Action would disturb approximately 0.60 ac. (0.24 ha) (Table 1-1).

3.2.2 Methodology

Biological resources in the vicinity of the Proposed Action Area were characterized based on a review of VAFB Geographic Information System (GIS) data and available documents for the Proposed Action. Complete lists of plant and wildlife species documented within the Proposed Action Area can be found in Appendix E. Potential occurrence of special status and sensitive species was determined based on the presence of suitable habitat or past records of occurrence of the species. Sources accessed and reviewed to determine potential for occurrence included the California Natural Diversity Database (California Department of Fish and Wildlife [CDFW] 2018) and existing local and regional references (Robinette et al. 2016). A survey of the Proposed Action Area was conducted in 2018 to assess the potential presence of additional listed species.

3.2.3 Vegetation Resources

Vegetation types were classified across VAFB in 2009 using a modified Holland system (Wildscape 2009). These vegetation types and boundaries were confirmed during jurisdictional determination field surveys (USAF 2016). Table 3-3 provides acreages of each vegetation community anticipated to be impacted by project activities within the Proposed Action Area. Vegetation within the Proposed Action Area is comprised of small amount of central coastal scrub habitat, although coastal foredune habitat is the nearest and most dominant native habitat adjacent to the Proposed Action Area. The remainder of the Proposed Action Area consists of disturbed/cleared and non-native habitats (Table 3-3).

Table 3-2. Vegetation Communities Affected by Project Activities within the Proposed Action Area.

Vegetation Type	Cabin Area (acres)	Campsite Area (acres)
Central Coast Scrub	0.1	0.1
Disturbed/Cleared	0.15	0.15
Iceplant	0.025	0.025
Non-native Grass	0.025	0.025
Total	**0.3**	**0.3**

3.2.3.1 Central Coast Scrub

Central coast scrub is an upland plant community found within the Proposed Action Area. It is often referred to as soft chaparral, but unlike chaparral, it contains species that are mesophyllous and shallow-rooted, and often are drought-deciduous and summer-dormant. Plant growth occurs in winter and spring, when soil moisture is readily available. Central coast scrub is a diverse vegetation type dominated by the shrub California sagebrush (*Artemisia californica*). In disturbed or more mesic areas, the dominant species may be coyote brush (*Baccharis pilularis*). Other species found in this community include poison oak, and straggly gooseberry (*Ribes divaricatum*).

3.2.3.2 Disturbed/Cleared

Disturbed/cleared or anthropogenic habitat consists of dirt roads, paved roadsides, and active agricultural fields. The eastern portion of the Proposed Action Area consists of cleared areas of vegetation-free soil. The Proposed Action Area is adjacent to paved and disturbed surfaces. Vegetation in disturbed habitats are predominately non-native annual grasses and forbs.

3.2.3.3 Iceplant

Iceplant was originally imported from South Africa for landscaping and soil stabilization. It is adept at invading sandy areas and is particularly invasive in coastal California. Iceplant reproduces both vegetatively and by seed. Seeds are spread through the excrement of animals that have consumed iceplant fruits. Once established, iceplant will spread via runners (DiTomaso et al. 2013).

If growing conditions are favorable, iceplant forms large, dense, monotypic mats. Such infestations can dramatically alter dune systems by displacing native species and stabilizing soil. Upon death, iceplant can also increase organic material in the soil, allowing invasion by other non-native species that would not otherwise tolerate sandy conditions (DiTomaso et al. 2013). Iceplant is present within the Proposed Action Area, with extensive iceplant infestations immediately east of the Project's impact area.

3.2.3.4 Non-Native Grass

Non-native grass occurs most commonly in areas that have been subjected to prior disturbance allowing weedy non-native species adapted to frequent disturbance to invade and dominate a site. Non-native annual grasses (*Bromus* spp. and *Avena* spp.) dominate most of the non-native grassland within the Proposed Action Area.

3.2.4 General Wildlife Resources

Common bird species associated with the Proposed Action Area and adjacent habitats include a variety of birds associated with coastal scrub and beach habitat. In the coastal scrub habitat, nesting native birds such as spotted towhees (*Papilo maculatus*), song sparrow (*Melospiza melodia*), and Allen's hummingbird (*Selasphorus sasin*) would also be expected within the Proposed Action Area. At the beach, a variety of shorebirds, including sanderling (*Calidris alba*),

marbled godwit (*Limosa fedoa*), long-billed curlew (*Numenius americanus*), and willet (*Tringa semipalmata*) are present at various times of the year. California gulls (*Larus californicus*) and western gulls (*Larus occidentalis*) are common in the area. Peregrine falcon (*Falco peregrinus anatum*), American crow (*Corvus brachyrhynchos*) and common raven (*Corvus corax*) may also be observed at the site.

Amphibians that may occur at the site include Baja California chorus frogs (*Pseudacris hypochondriaca*), western toads (*Anaxyrus boreas*), and lungless salamanders such as the Monterey ensatina (*Ensatina eschescholtzii eschescholtzii*) and arboreal salamanders (*Aneides lugubris*). Reptile species expected to occur within the project area include western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), western skink (*Plestiodon skiltonianus*), San Diego gopher snake (*Pituophis catenifer annectens)*, and southern pacific rattlesnake (*Crotalus oreganus helleri*), among others.

Various mammal species are also expected to occur within the project area. These include brush rabbit (*Sylvilagus bachmani*), coyote (*Canis latrans*), and black-tailed deer (*Odocoileus hemionus hemionus*). Small mammals include various species of mice and pocket gopher (*Thomomys bottae*).

3.2.5 Special Status Species

Table 3-4 lists Federal and state listed species that occur or have the potential to occur within the Proposed Action Area and its vicinity. Potential occurrence was determined based on past documentation of special status species within the vicinity of the Proposed Action Area and on suitability of habitat and occurrence within the region of a particular species. Several species were excluded from potential occurrence because they either do not occur at the site when project activities would occur, they do not breed within the Proposed Action Area and their special status affords them protection during their breeding period, or they do not occur in a manner (rookeries or nesting colonies) that affords them special status protection.

Table 3-3. Federal and state special status terrestrial species with potential to occur within the Proposed Action Area.

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Reptiles			
Blainville's horned lizard (*Phrynosoma blainvillii*)	-	CSC	Rare
Silvery legless lizard (*Anniella pulchra pulchra*)	-	CSC	Potential
Mammals			
American badger (*Taxidea taxus*)	-	CSC	Potential
Birds			
Allen's Hummingbird (*Selasphorus sasin*)	BCC	-	Likely

Bald Eagle (*Haliaeetus leucocephalus*)	BGEPA	Fully Protected	Rare
Black Oystercatcher (*Haematopus bachmani*)	BCC	-	Potential
Black Skimmer (*Rynchops niger*)	BCC	-	Potential
Black Turnstone (*Arenaria melanocephala*)	BCC	-	Likely
Belding's Savannah Sparrow (*Passerculus sandwichensis alaudinus*)	-	SE	Potential
Bell's Sage Sparrow (*Artemisiospiza belli belli*)	BCC	-	Likely
Burrowing Owl (*Athene cunicularia*)	BCC	CSC	Potential
California least tern (*Sternula antillarum browni*)	FE	SE	Seasonal habitat near the Proposed Action Area
Clark's Grebe (*Aechmoporus clarkii*)	BCC	-	
Common Yellowthroat (*Geothlypis trichas sinuosa*)	BCC	SSC	Likely
Golden Eagle (*Aquila chrysaetos*)	BCC	Fully Protected	Rare
Lawrence's Goldfinch (*Carduelis lawrencei*)	BCC	-	Potential
Long-billed Curlew (*Numenius americanus*)	BCC	-	Likely in habitat adjacent to Proposed Action Area
Marbled Godwit (*Limosa fedoa*)	BCC	-	Likely
Mountain Plover (*Charadrium montanus*)	BCC	CSC	Potential
Peregrine Falcon (*Falco peregrinus anatum*)	BCC	Fully Protected	Likely
Rufous Hummingbird (*Selasphorus rufus*)	BCC	-	Potential
Short-billed Dowitcher (*Limnodromus griseus*)	BCC	-	Potential
Song Sparrow (*Melospiza melodia*)	BCC	-	Likely
Spotted Towhee (*Pipilo maculatus clementae*)	BCC	SSC	Likely
Whimbrel (*Numenius phaeopus*)	BCC	-	Likely in habitat adjacent to Proposed Action Area
Western snowy plover (*Charadrius nivosus*)	FT; BCC	SSC	Known in habitat adjacent to Proposed Action Area

Willet (*Tringa semipalmata*)	BCC	-	Likely in habitat adjacent to Proposed Action Area
Wrentit (*Chamaea fasciata*)	BCC	-	Potential

Notes: BGEPA = Bald and Golden Eagle Protection Act; FE = Federal Endangered Species; FT = Federal Threatened Species; SE = State Endangered Species; CSC = California Species of Special Concern; SSC = State Candidate Species; BCC = Federal Bird of Conservation Concern

3.2.5.1 Western Snowy Plover (*Charadrius nivosus*)

Current Status

The USFWS listed the Pacific coast population of the western snowy plover as Federally threatened in March of 1993 (58 FR 12864–12874). A Recovery Plan was issued for the Pacific coast population of western snowy plover in 2007 (USFWS 2007).

Life History

The western snowy plover is a small shorebird with pale tan back, white underparts, and dark patches on the sides of the neck reaching around to the top of the chest. The Pacific coast population of snowy plovers is limited to individuals that nest adjacent to tidal waters. The population's range extends from Southern Washington to Baja California, Mexico.

VAFB provides important breeding and wintering habitat for western snowy plover, which includes all sandy beaches and adjacent coastal dunes from the rocky headlands at the north end of Minuteman Beach to the pocket beaches and dune areas adjacent to Purisima Point on north VAFB (approximately 7.7 mi. [12.4 km]). Also included are all sandy beaches and adjacent coastal dunes from the rocky headlands at the north end of Wall Beach south to the rock cliffs at the south end of Surf Beach on South VAFB (approximately 4.8 mi. [7.7 km]). VAFB has consistently supported one of the largest populations of breeding western snowy plover along the west coast of the United States (Robinette et al. 2016).

Diet

Western snowy plover diet consists of aquatic and terrestrial insects (USFWS 2007).

Occurrence within the Action Area

Western snowy plovers nest and overwinter along the coast of VAFB. VAFB has performed annual monitoring of western snowy plovers since 1993 (Robinette et al. 2016). In 2014, VAFB supported an estimated 11-percent of California's breeding population (USFWS 2014). The breeding population of western snowy plovers on VAFB has been highly variable but relatively stable since 2007. The smallest population was recorded in 1999 (78 adults) (Robinette et al. 2016). The Proposed Action Area was analyzed for western snowy plover presence within a 1,312 ft. (400 m) radius of the Proposed Action (Figure 3-1). On average, there were 24 nests identified annually in the past 6-year period, with approximately 91-percent occurring within the closed area and 9-percent in the open area. The nearest observation of a western snowy plover nest is approximately 94 ft. (28.7 m) west of the Action Area (Figure 3-1).

Critical Habitat

The USFWS designated Critical Habitat for this species on 7 December 1999 and revised this designation on 29 September 2005 (70 FR 56969–57119) and again on 19 June 2012 (77 FR 36727). VAFB was exempted from Critical Habitat designation under section 4(a)(3) of the ESA on 19 June 2012.

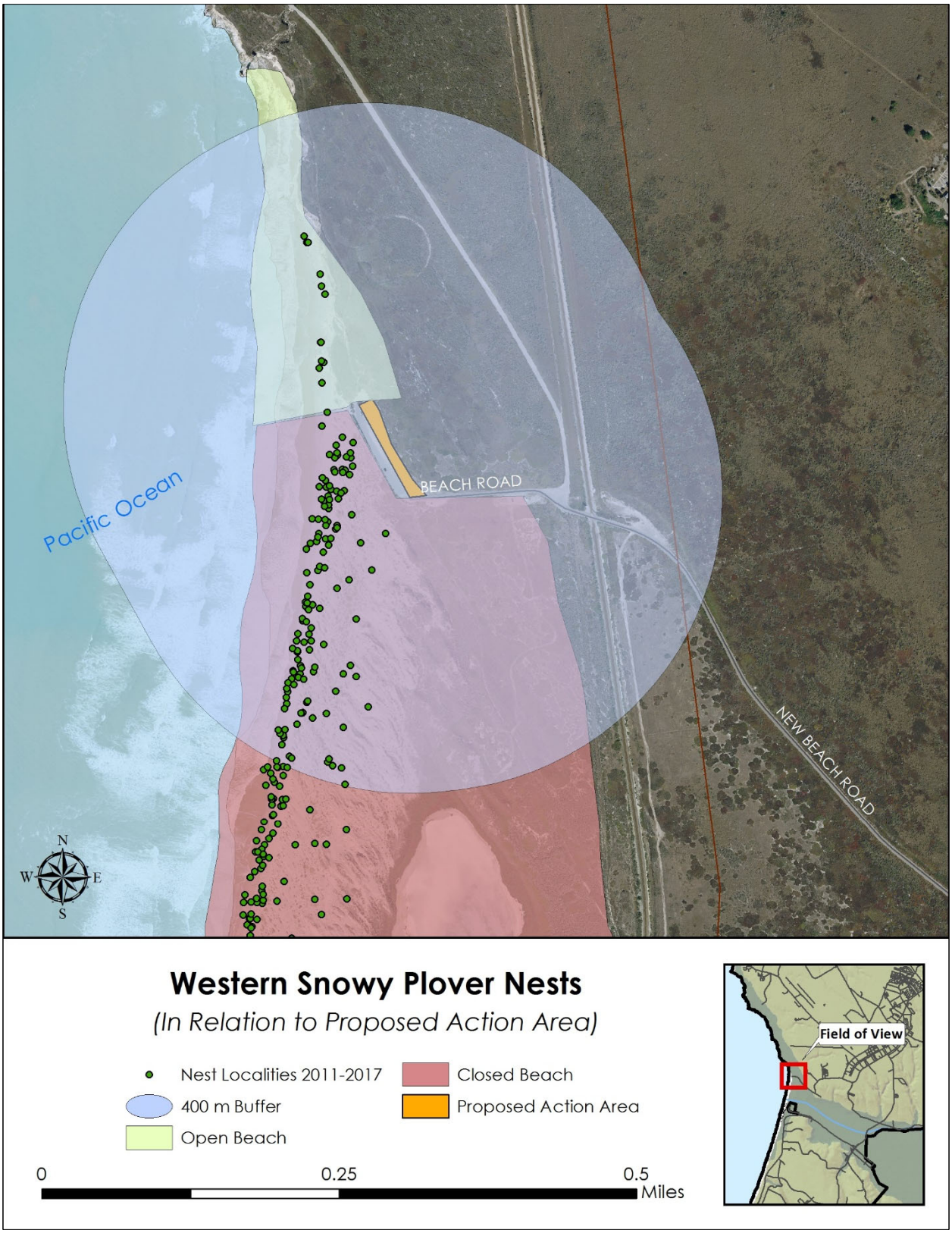

Figure 3-1. Nest localities near the Proposed Action Area.

3.2.5.2 Marine Mammals

Several marine mammal species are rarely observed at Wall Beach, including California sea lions (*Zalophus californianus*) and northern elephant seals (*Mirounga angustirostris*). Both have been limited to very few observations, with the California sea lions tending to correspond to domoic acid outbreaks and the elephant seals corresponding to molting/weaning (R. Evans, pers. comm.). In total, fewer than 20 individuals have been observed in the past 10 years (not including deceased animals). Because of their rare occurrence and very limited potential for any proposed activity to have any effect on marine mammals, they are not carried forward for analysis.

3.3 Cultural Resources

This section begins with a summary of the regional cultural setting and then describes known cultural resources and previously completed cultural resources studies in the vicinity of the Proposed Action Area.

3.3.1 Region of Influence

The prehistory of California's Central Coast spans the entire Holocene and extends back to late Pleistocene times. The Arlington Springs Site on Santa Rosa Islands dates to around 12,000–13,000 years ago (Erlandson et al. 2008, Johnson et al. 1999, 2002) and Daisy Cave on San Miguel Island was occupied as early as 11,500 years ago (Erlandson 2007, Rick et al. 2001). Occupations on VAFB occurred as early as 10,725 years ago, as revealed by excavations at the Sudden Flats Site (Lebow et al. 2015). Early occupants are thought to have lived in small groups that had a relatively egalitarian social organization and a forager-type land-use strategy (Erlandson 1994, Glassow 1996, Greenwood 1972, Moratto 1984). Human population density was low throughout the early and middle Holocene (Lebow et al. 2007). Cultural complexity appears to have increased around 3,000 to 2,500 years ago (King 1981, 1990). At VAFB that interval also marks the beginning of increasing human population densities and appears to mark the shift from a foraging to a collecting land-use strategy (Lebow et al. 2006, 2007). Population densities reach their peak around 600-800 years ago, corresponding to the full emergence of Chumash cultural complexity (Arnold 1992).

People living in the VAFB area prior to historic contact are grouped with the Purisimeño Chumash (Greenwood 1978, King 1984, Landberg 1965), one of several linguistically related members of the Chumash culture. In the Santa Barbara Channel area, the Chumash people lived in large, densely populated villages and had a culture that "was as elaborate as that of any hunter-gatherer society on earth" (Moratto 1984). Relatively little is known about the Chumash in the VAFB region. Explorers noted that villages were smaller and lacked the formal structure found in the channel area (Greenwood 1978). About five ethnohistoric villages are identified by King (1984) on VAFB, along with another five villages in the general vicinity. Contact with early Euro-American explorers, beginning with the maritime voyages of Cabrillo in A.D. 1542–1543, undoubtedly had an effect on the Chumash culture. The effect may have been profound. Erlandson and Bartoy (1995, 1996) and Preston (1996) convincingly argue that Old World diseases substantially impacted Chumash populations more than 200 years before Spanish

occupation began in the 1770s. Drastic changes to Chumash lifeways resulted from the Spanish occupation that began with the Portolá expedition in A.D. 1769.

VAFB history is divided into the Mission, Rancho, Anglo-Mexican, Americanization, Regional Culture, and Suburban periods. The Mission Period began with the early Spanish explorers and continued until 1820. Mission La Purísima encompassed the VAFB area. Farming and ranching were the primary economic activities at the mission. The Rancho Period began in 1820 and continued until 1845. Following secularization in 1834, the Alta California government granted former mission lands to Mexican citizens as ranchos. Cattle ranching was the primary economic activity during this period. The Bear Flag Revolt and the Mexican- American War marked the beginning of the Anglo-Mexican Period (1845–1880). Cattle ranching continued to flourish during the early part of this period, but severe droughts during the 1860s decimated cattle herds. The combination of drought and change in government from Mexico to the United States caused substantial changes in land ownership. Sheep ranching and grain farming replaced the old rancho system. Increased population densities characterize the Americanization Period (1880–1915). Beginning in the late 1890s, the railroad provided a more efficient means of shipping and receiving goods and supplies, which in turn increased economic activity. Ranching and farming continued during the early part of the Period of Regional Culture (1915–1945), until property was condemned for Camp Cooke. The Suburban Period (1945– 1965) began with the end of World War II. In 1956, the Army transferred 64,000 acres of North Camp Cooke to the USAF, and it was renamed Cooke AFB. In 1958 the base had its first missile launch, the Thor, and was renamed Vandenberg AFB (Palmer 1999a).

3.3.2 Known Cultural Resources

An archaeological site record and literature search for the affected environment was completed at the 30th CES/CEIEA at VAFB. Background research included a review of archaeological site records, reports, condition assessments, and the Base Comprehensive Plan GIS. Previous archaeological studies and archaeological resources within a 0.25-mi. (0.4 km) radius around the proposed action area were identified during the records search (Table 3-5).

Seven archaeological studies have been conducted within 0.25 mi. (0.4 km) of the Proposed Action: CA-SBA-1040, -1134, -1888, -1994, -1996, -2877-, 2878/H, and -3551H. The Proposed Action itself is within historical site CA-SBA-3551H. Prehistoric archaeological sites CA-SBA-1888 and -1996 are near but outside the Proposed Action Area. CA-SBA-3551H was first recorded by Kevin Palmer in 1999 and later updated by Smallwood in 2016 (Palmer 1999b, Smallwood 2016). It is the remnants of a small arms firing range used for training during the Camp Cooke era. Specifically, it was a part of Camp Cooke's "M" Range, Carbine Known Distance Range (Camp Cooke Planning Board 1948). The range was constructed in 1941–1942 and consists of a 450-ft. (137-m) long, poured concrete wall with two attached 16-ft. (4.9 m) long, 45-degree angle wing walls, and two earthen berms that run parallel to and east of the concrete wall at 100 and 200-yard (91 and 182 m) distances. The original site record notes an associated partially collapsed observation tower located 60 yards (55 m) east of the wall; however, recent survey could not relocate the tower's remains. The reference to "Wall Beach" refers to the remains of this firing range's wall (Palmer 1999b).

CA-SBA-1996 is near CA-SBA-3551H; it was discovered by URS in 1985 as a result of shovel test pit excavation along Project Irene's pipeline right of way (Bowser et al. 1996). Forty-three shovel test pits and two 3.3- by 3.3 ft. (1- by 1-m) test excavation units were excavated to evaluate site significance. That effort revealed a sparse scatter of unmodified flakes, shatter, a utilized flake, and marine shell. The site is intact below 20 centimeters (Bowser et al. 1996). Although the site was recommended as eligible for the National Register of Historic Places, it was not determined eligible in consultation with the California SHPO.

CA-SBA-1888 is also near CA-SBA-3551, located in the coastal dunes approximately (492 ft.) 150 m inland from the tidal zone. It was first recorded in 1984 during Phase 1 investigations for Project Irene's pipeline (Gibson 1984, 1985a, b). The site was within the pipeline's right of way and shovel test pits were excavated to define boundaries for project avoidance. Additional units were excavated later to evaluate site significance, including 34 shovel test pits and three 3.3- by 3.3 ft. (1- by 1-m) units. Recovered materials included unmodified flakes, a utilized flake, flaked stone tools, fire-cracked rock, vertebrate faunal remains, marine shell, and asphalt. Radiocarbon analysis reflect use of the site around 1110 and 2550 years ago. The site was recommended as eligible for the National Register of Historic Places (Bowser et al. 1996) but was not determined eligible in consultation with the California State Historic Preservation Officer.

Table 3-4. Previous archaeological studies within 0.25 mi. (0.40 km) of the Proposed Action

Author(s)/Date (in alphabetical order)	VAFB Report No.	Report Title
Glassow et al. (1976)	1976-01	*Evaluation of Archaeological Sites on Vandenberg Air Force Base, Santa Barbara County, California. Department of Anthropology, University of California, Santa Barbara.*
WESTEC Services, Inc. (1981)	1981-04	*Geophysical Evaluation, Vandenberg Air Force Base, Santa Barbara County, California, for Union Oil Company of California.*
Erlandson (1984)	1984-11	*A Summary of Phase I Cultural Resource Investigations Conducted in Support of the Proposed Union Oil Santa Maria Basin Pipeline, Santa Barbara County, California.*
Arthur D. Little, Inc. (1985)	1985-25	*Union Oil Project/Exxon Project Shamrock and Central Santa Maria Basin Area Study EIS/EIR.*
Gibson (1985)	1985-27	*Field Notes and Field Maps Compiled During the Union Oil Project Archaeological Surface Survey and Limited Subsurface Testing Done Along the Proposed Routes, Santa Barbara County, California.*
Bowser et al.	1986-02	*Phase II Archaeological Investigations and Mitigation Planning, Union Oil Company of California, Santa Maria Basin Pipeline (Platform Irene Project), Santa Barbara California.*
Glassow et al. (1990)	1990-21	*Archaeological Investigations on Vandenberg Air Force Base in Connection with the Development of Space Transportation System Facilities.*
Lebow (2000)	2000-11	*Stabilization of Four Archaeological Sites on Vandenberg Air Force Base, Santa Barbara County, California.*

Palmer (2000)	2000-15	*Vandenberg Air Force Base Cultural Resources Historic Sites Management Notebook.*
Gibson and Parson (2002)	2002-02	*Results of Presence/Absence Testing for Cultural Resources at SBA-912, SBA-1040, SBA-1131, SBA-1146, SBA-1889, SBA-2880, and SBA-2953 Vandenberg Air Force Base, Santa Barbara County, California.*
Lebow and Ryan (2006)	2006-08	*Archaeological Survey of the Coastline and Lower Drainages, Vandenberg Air Force Base, Santa Barbara County, California.*
Lebow (2007)	2007-06	*Stabilization of Fifteen Archaeological Sites on Vandenberg Air Force Base, Santa Barbara County, California.*
Enright and Lebow (2009)	2009-01	*Boundary Definition at Selected Sites along Beach Boulevard, Vandenberg Air Force Base, Santa Barbara County, California. Applied EarthWorks, Inc., Lompoc, California.*
Enright and Lebow (2011)	2011-02	*Archaeological Studies in Support of the N1, N3, and N6 Feeder Lines, Vandenberg Air Force Base, Santa Barbara County, California. Applied EarthWorks, Inc., Lompoc, California.*

3.4 Earth Resources

3.4.1 Geology and Soils

VAFB is a geologically complex area that includes the transition zone between the Southern Coast Range and Western Transverse Range geomorphic provinces of California. The geologic features of VAFB have been an important factor in the development of the diverse natural habitats found in this primarily undeveloped stretch of California coastline. VAFB is underlain predominantly by marine sedimentary rocks of Late Mesozoic age (140 to 70 million years before the present) and Cenozoic age (70 million years to the present). The basal unit underlying the entire base is the Franciscan Formation of upper Jurassic age (Dibblee 1950). The Franciscan Formation consists of a series of sedimentary and volcanic rocks with numerous serpentine intrusions. Extensive folding and faulting throughout the VAFB area has created four structural regions: the Santa Ynez range, the Lompoc lowland, the Los Alamos syncline, and the San Rafael Mountain uplift (Reynolds et al. 1985). The Santa Ynez range consists of a very thick Cretaceous-Tertiary sedimentary section uplifted along the Santa Ynez fault; it was then subsequently folded. The Lompoc lowland is an area of low relief that is structurally synclinal but has Franciscan basement relatively close to the surface. The Los Alamos syncline is a deep structural down warp traversing the Los Alamos and upper Santa Ynez valleys. Faulting along the southwestern margin of the mountain range uplifted the San Rafael Mountains. The majority of the folds in these structural regions are oriented to the northwest.

The Proposed Action is located in an area that is dominated by sandy beaches and soils. Two sand-soil series occur within the Proposed Action Area: Narlon soils, which form the southern half of the soil profile, and Oceano soils, found in the northern half (Figure 3-2). The Narlon series is a member of the clayey, mixed, thermic family of Typic Albaquults. They are generally found on partially dissected terraces of nearly level to moderate slopes at elevations of 20–800 ft. (6-244 m) (USDA 2016). The Oceano series consists of deep, excessively drained soils that formed

in material weathered from sandy eolian deposits. Oceano soils are on rolling dune-like topography, near the ocean and have slopes of 0–50 percent (USDA 2016).

3.4.2 Seismology

The Santa Barbara County region is seismically active with a major earthquake occurring in the region about every 15–20 years (USAF 1987; Alterman et al. 1994). The Santa Ynez-Pacifico Fault Zone, the Lompoc-Solvang (Santa Ynez River)-Honda Fault Zone, the Lions Head-Los Alamos-Baseline Fault Zones, and their potential offshore extensions, are three of the primary fault zones that project through VAFB (Alterman et al. 1994).

These fault systems within the Transverse Ranges are considered active (Jennings 1994) and capable of generating damaging earthquakes. Moderate or major earthquakes along these systems could generate strong or intense ground motions in the area, and possibly result in surface ruptures of unmapped faults along the northern and southern boundaries, as well as the central part of VAFB.

3.4.3 Geological Hazards

The ROI considered for purposes of this EA is Santa Barbara County. The Proposed Action Area is located in a seismically active portion of Central California. Potential hazards that could affect the site and result in structural damage include faulting, ground shaking, lateral spreading and flooding. The hazards consist of seismically induced settlement, collapse (hydroconsolidation), and tsunami potential.

The potential for surface fault rupture on VAFB is generally considered to be low (USAF 1987). At the present, there are no known areas where liquefaction has occurred. Areas most prone to liquefaction are those in which there is sandy to silty soil, the water table is within 50 ft. (15 m) of the surface, and earthquake loading exceeds 20 percent of gravity. The areas that are most prone to liquefaction on VAFB are near San Antonio Creek and the Santa Ynez River. The potential for liquefaction on VAFB, despite these areas, is still considered low (USAF 1987).

Tsunamis, sea waves associated with offshore earthquakes, along the Central and Southern California coast have not been well recorded and documented until recently. Since 1946, only five significant tsunamis have been recorded, and each was associated with distant earthquakes. Tsunami flooding of the VAFB coastline could occur in low-lying areas such as the Proposed Action Area, the mouth of the Santa Ynez River, and San Antonio Creek Lagoon. The recurrence intervals for tsunamis have not been predicted for the VAFB coastline (USAF 1987).

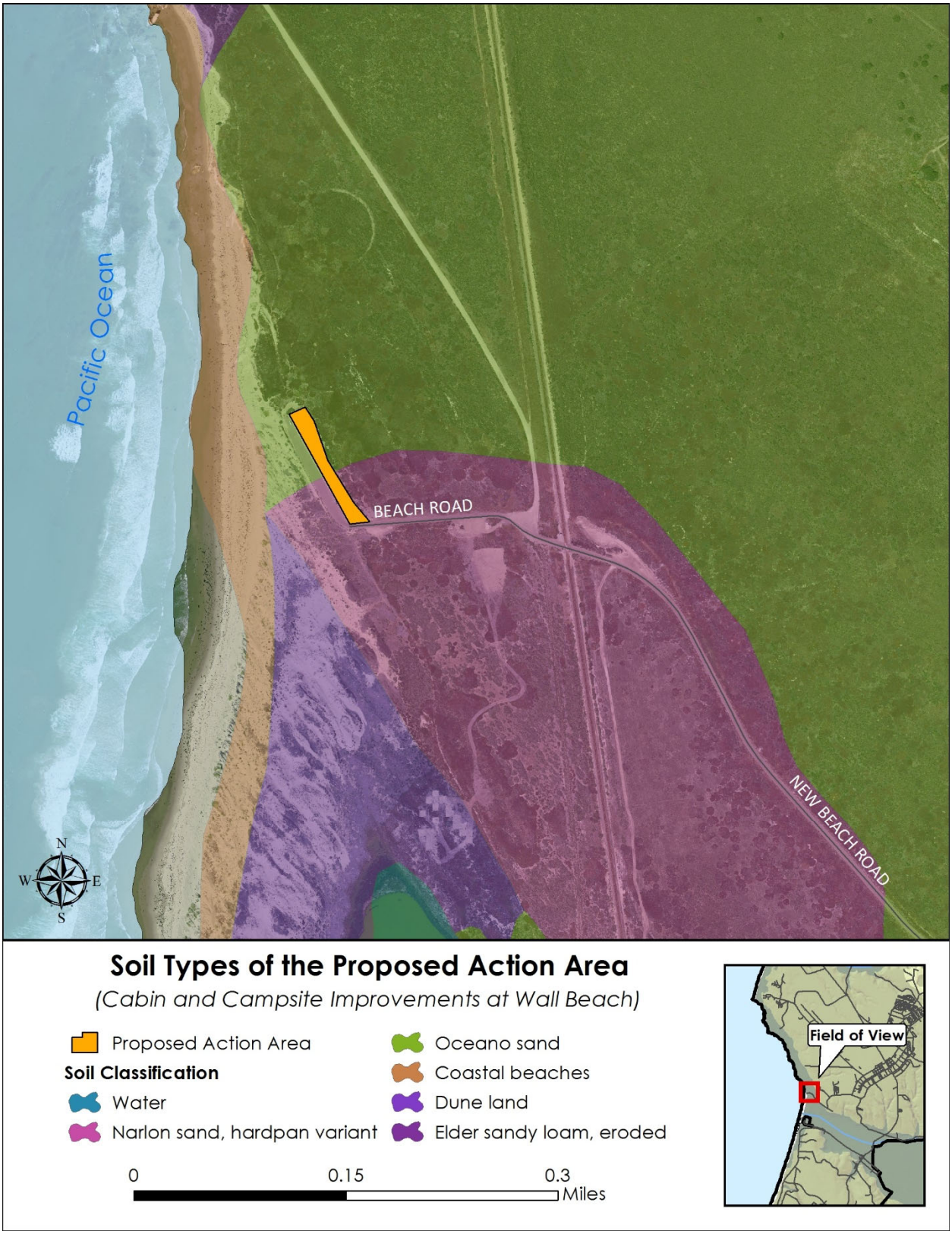

Figure 3-2. Soil types of the Proposed Action and vicinity.

3.5 Hazardous Materials and Waste Management

Hazardous materials and wastes are those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601-9675), the Toxic Substances Control Act) (15 USC 2601–2692), the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA; 42 USC 6901-6992k), and Title 22 of the California Code of Regulations (CCR). In addition, Federal and state OSHA regulations govern protection of personnel in the workplace. In general, the definitions within these citations include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health (to workers), welfare, or the environment, when released into the environment. The ROI for hazardous materials and waste management for the Proposed Action is VAFB.

3.5.1 Hazardous Materials Management

Hazardous material use on VAFB is regulated by a Hazardous Materials Management Plan (USAF 2006), and emergency response procedures for hazardous materials spills are established in VAFB's Hazardous Materials Emergency Response Plan (USAF 2014). Per the Hazardous Materials Management Plan, VAFB requires that all hazardous materials be obtained through the HAZMART, a base function that centrally manages the procurement of hazardous materials. Specifically, the HAZMART approves the use of hazardous materials only after it reviews the composition of the commodity and how it is to be used to ensure compliance with environmental, safety, and occupational health regulations and policies. Hazardous materials potentially used during construction projects are petroleum, oils and lubricants in equipment and vehicles, solvents for paint abatement or equipment cleaning, and compressed gases for welding or cutting equipment.

3.5.2 Hazardous Waste Management

Management of hazardous waste at VAFB complies with the RCRA Subtitle C (40 CFR Part 240-299) and with California Hazardous Waste Control Laws as administered by the California Environmental Protection Agency Department of Toxic Substances Control, under CCR Title 22, Division 4.5. These regulations require that hazardous wastes be handled, stored, transported, disposed of, or recycled according to defined procedures. The VAFB HWMP (USAF 2002) outlines the procedures to be followed for hazardous waste management on VAFB.

3.5.3 Installation Restoration Program

The Federal Installation Restoration Program (IRP) was implemented at DoD facilities to identify, characterize, and restore hazardous substance release sites. There are currently 136 IRP sites throughout VAFB grouped into six Operable Units based on similarity of their characteristics. The IRP sites are remediated through the Federal Facilities Site Remediation Agreement, a working agreement between the USAF, the Regional Water Quality Control Board (RWQCB) – Central Region, and the Department of Toxic Substances Control. In addition to IRP sites, there are identified Areas of Concern (AOC), where potential hazardous material releases are suspected;

and Areas of Interest (AOI), defined as areas with the potential for use or presence of a hazardous substance.

To ensure the health and safety of future patrons, an analysis of IRP sites, AOCs, and AOIs within 2,000 ft. (610 m) of the Proposed Action Area was performed. No sites occur within 2,000 ft. (610 m) of the Proposed Action Area; therefore, potential impacts of hazardous materials resulting from IRP sites, AOCs, and AOIs are not carried forward for analysis.

3.5.4 Hazardous Materials and Waste Transport

The Department of Transportation (DOT) regulates the transport of hazardous materials and waste. Anyone transporting hazardous materials or waste must obtain USEPA identification numbers as transporters. The USEPA has incorporated DOT statutes (49 U.S.C.) into its regulatory scheme and has added other requirements such as record keeping and cleanup of spills. Transporters of hazardous materials and waste at VAFB are regulated by the aforementioned laws and are DOT-certified transporters. VAFB follows the California Department of Transportation requirements for traveling with hazardous materials on State Route (SR) 1, which runs through part of the eastern edge of VAFB, and SR 246, which physically divides the base into North and South VAFB.

3.6 Human Health and Safety

Hazards associated with some past and present mission activities and operations on VAFB can constrain locations where projects can be sited in order to ensure the health and safety of workers. The following hazard zones have been established on VAFB to protect workers from various hazards:

- **Toxic hazard zones** are areas established downwind of launch site operations to protect workers from exposure to toxic vapors emitted during the transfer or loading of liquid propellants or maintenance of launch systems. These zones can extend 20,000 or more ft. (6,096 m) from a launch site.
- **Missile/Space Launch Vehicle Flight Hazard Zones and Explosive Safety Zones** are established under the flight path of missile or space launch vehicle launches to protect personnel from debris fall-out under the launch trajectory. Explosive safety zones are established from 75 ft. (23 m) to 5,000 ft. (1,524 m) around launch sites and buildings where rocket propellants are stored to protect personnel from potential explosive hazards. Both of these hazard zones must be evacuated before any launch.
- **Radiofrequency Radiation Hazard Areas** are established around transmitters on VAFB that can present radiation hazards to people and potentially detonate electro-explosive devices. The size of the hazard areas vary, depending on the transmitter power and antenna reception.
- **Airfield Clear Zones, Lateral Clear Zones (LCZs), and Accident Potential Zones (APZs)** are established around the VAFB airfield runway and contain restrictions on certain land uses. Clear zones and LCZs are areas where the accident potential is so high that land use restrictions prohibit reasonable use of the land. Clear zones occur at both ends of the

runway, and LCZs extend 1,000 ft. (304 m) from both sides of the centerline along the length of the runway. The ground surface within the LCZ must be graded to certain requirements and kept clear of fixed or mobile objects, except for necessary navigational aids and meteorological equipment. There are two Accident Potential Zones (APZs), APZs I and II, which are less critical than clear zones but still possess significant potential for accidents. Acceptable uses within APZ I areas include industrial or manufacturing, communication and utilities transportation, wholesale trade, open space, recreation, and agriculture, but not uses that concentrate people in small areas. Acceptable uses within APZ II areas include low business services and commercial retail trade uses of low intensity or scale of operation, but not high-density operations.

- **Air Installation Compatible Use Zones** are areas where certain land uses are restricted due to the combination of the potential for accidents and noise and the need for clearance of obstacles.
- **Unexploded Ordnance Closure Areas** are areas on VAFB that were used as ordnance training ranges and have the potential to contain unexploded ordnance (UXO). On 27 September 2010, all areas known or suspected to contain UXO on VAFB were closed to non-mission/recreational activities. Any proposed work in these areas must be coordinated with the Weapons Safety and Explosive Ordnance Disposal offices. Depending on the area, escorts may or may not be required.

The affected environment for Health and Safety is the regulatory environment for health and safety issues established to minimize or eliminate potential risk to the general public and personnel involved in the Proposed Action, which includes activities where workers would potentially be exposed to conditions that may adversely impact their health and safety. The ROI of these potential impacts is the Proposed Action Area and surrounding vicinity.

- Hazardous materials, primarily petroleum, oil, and lubricants (POLs), would be used for operating heavy equipment under the Proposed Action. The potential exists for unexpected releases of these POLs, which would generate hazardous waste.
- The construction contractor would transport hazardous material used in or resulting from the Proposed Action. A permitted hazardous waste hauler would transport hazardous waste. The transportation of these materials is discussed in Section 3.5.4 (Hazardous Materials and Waste Transport) of this EA.
- Heavy equipment operation activities create noise, discussed below.

Because of the above conditions, the potential exists for persons participating in installing cabins and campsites to become exposed to hazardous materials and hazardous waste. In addition to these more obvious risks to human health and safety, the following, more mundane, physical features, which have the potential to be present in the vicinity of the Proposed Action, also have the potential to adversely impact the health and safety of the site workers:

- Physical hazards including road traffic, holes and ditches, uneven terrain, sharp or protruding objects, slippery soils or mud, unstable ground, and falling construction objects.

- Biological hazards such as animals (insects, spiders, and snakes), and disease vectors (ticks and rodents).

3.6.1 Noise

3.6.1.1 Quantifying and Mitigating Noise

The Noise Control Act (NCA; 42 U.S.C. 4901 *et seq.*) sought to limit the exposure and disturbance that individuals and communities experience from noise. It focuses on surface transportation and construction sources, particularly near airport environments. The NCA also specifies that performance standards for transportation equipment be established with the assistance of the DOT. In addition, the 1987 Quiet Community amendment gave state and local authorities greater involvement in controlling noise.

Noise is often defined as unwanted sound that can interfere with normal activities or otherwise diminish the quality of the environment. Depending on the noise level, it has the potential to disrupt sleep, interfere with speech communication, or cause temporary or permanent changes in hearing sensitivity in humans and wildlife. Noise sources can be continuous (e.g., constant noise from traffic or air conditioning units) or transient (e.g., a jet overflight or an explosion) in nature. Noise sources also have a broad range of frequency content (pitch) and can be nondescript, such as noise from traffic or be specific and readily definable such as a whistle or a horn. The way the acoustic environment is perceived by a receptor (animal or person) is dependent on the hearing capabilities of the receptor at the frequency of the noise, and their perception of the noise.

The amplitude of sound is described in a unit called the decibel (dB). Because the human ear covers a broad range of encountered sound pressures, decibels are measured on a quasi-logarithmic scale. The dB scale simplifies this range of sound pressures and allows the measurement of sound to be more easily understood. There are many methods for quantifying noise, depending on the potential impacts in question and on the type of noise. One useful noise measurement in determining the effects of noise is the 1-hour average sound level, abbreviated L_{eq1H}. The L_{eq1H} can be thought of in terms of *equivalent* sound; that is, if a L_{eq1H} is 45.3 dB, this is what would be measured if a sound measurement device were placed in a sound field of 45.3 dB for 1 hour. The L_{eq1H} is usually A-weighted unless specified otherwise (dBA). A-weighting is a standard filter used in acoustics that approximates human hearing and in some cases is the most appropriate weighting filter when investigating the impacts of noise on wildlife as well as humans. Examples of A-weighted noise levels for various common noise sources are shown in Table 3-6.

3.6.1.2 Ambient Noise Levels of the Proposed Action Area

Existing noise levels on VAFB are generally quite low due to the large areas of undeveloped landscape and relatively sparse noise sources. Background noise levels are primarily driven by wind noise; however, louder noise levels can be found near industrial facilities and transportation routes. Rocket launches and aircraft overflights create louder intermittent noise levels. On VAFB, general ambient L_{eq1H} measurements have been found to range from around 35 to 57 dBA (Berg

et al. 2002). The Proposed Action Area is located in a rural, relatively undeveloped, low population density area. Ambient noise in rural areas typically range between 35 and 40 dBA (Washington State Department of Transportation [WSDOT] 2018).

Regularly occurring sources of instantaneous noise near the Proposed Action Area include crashing ocean surf, which generates approximately 78 dBA (6.6 ft. [2 m] tall waves; Bolin and Åbom 2010) and can be louder during high surf events. Additionally, a north-south Union Pacific Railroad right-of-way passes approximately 800 ft. (243.8 m) to the east of the Proposed Action Area, generating semi-frequent line source noise and ground vibrations. Train noises, including the warning horn sounding at the grade crossing at New Beach Road, can generate up to 113 dBA of sound (Hanson et al. 2006). Amtrak passenger and Union Pacific freight trains travel through the area 0 to 20 times per day (City of San Luis Obispo 2005, Southern California Association of Governments 2008) and therefore contribute a significant role in the location's existing sound profile. Space launch operations also contribute to the semi-frequent background noise profile of the area.

Wall Beach normally experiences significant winds and crashing waves, both of which would increase ambient sound levels. In fact, ambient sound levels were characterized at Surf Beach, approximately 1 mi. (1.6 km) south of the Proposed Action Area in a very similar location and reported at 45.5 dBA Equivalent Sound Level (L_{eq}) at night (10:00 p.m. to 7:00 a.m.), 51.8 dBA L_{eq} during the day (7:00 a.m. to 5:00 p.m.), and 53.1 dBA L_{eq} during the evening (5:00 p.m. to 10:00 p.m.) (County of Santa Barbara Planning and Development 2008). Most activities associated with the Proposed Action would generate relatively continuous noise throughout the implementation period.

Table 3-5. Comparative A-weighted Sound Levels.

Noise Level (dBA)	Common Noise Levels	
	Indoor	**Outdoor**
100–110	Rock band inside New York subway	Jet flyover at 304 m
90–100	Food blender at one meter	Gas lawnmower at 1 m
80–90	Garbage disposal at one meter	Diesel truck at 15 m; noisy urban daytime
70–80	Shouting at 1 m; vacuum cleaner at 3 m	Gas lawnmower at 30 m
60–70	Normal speech at one meter	Commercial area heavy traffic at 100 m
50–60	Large business office; dishwasher next room	
40–50	Small theater or large conference room (background)	Quiet urban nighttime
30–40	Library (background)	Quiet suburban nighttime
20–30	Bedroom at night	Quiet rural nighttime
10–20	Broadcast and recording studio (background)	
0–10	Threshold of hearing	

3.7 Coastal Zone Management

The California Coastal Act of 1976 (CCA) defines the coastal zone as the water extending seaward to the outer limits of the state's jurisdiction; land extending inland approximately 1,000 yards from the mean high tide line; or land in significant coastal estuarine, habitat, and recreational areas, extending inland to the first major ridgeline paralleling the sea or 5 mi. (0.8 km) from the mean high tide line of the sea, whichever is less (Div. 20 P.R.C. California Coastal Act, 1976 §30103).

Federal activity in, or affecting a coastal zone requires preparing a coastal zone consistency determination or a negative determination, per the CZMA of 1972. The USAF is responsible for making final coastal zone consistency determinations or negative determinations for its activities occurring within the state coastal zone or having effects on it. The California Coastal Commission reviews Federally authorized projects for consistency with the California CZMA.

As defined in Section 304 of the CZMA, the term "coastal zone" 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 Proposed Action will occur within VAFB, which is wholly owned and operated by the DoD, and therefore is excluded from the coastal zone. However, the USAF recognizes that actions outside the state coastal zone may affect land or water uses, or natural resources within the state coastal zone, and therefore are subject to the provisions of the Act. The USAF has determined that coastal resources may be affected. Consequently, an analysis of the impacts of the Proposed Action on the coastal zone was conducted and detailed further in Section 4.7 (Coastal Zone Management) (Appendix D).

3.8 Solid Waste Management

In 1989, the California Integrated Waste Management Act (Assembly Bill 939) mandated a 50-percent reduction of the quantity of solid waste disposed of in California landfills from a 1990 baseline. The 50-percent reduction was to be accomplished by 1 January 2000. The most recent USAF mandate regarding solid waste diversion came from Headquarters Air Force Space Command in 2008, requiring a 50-percent diversion rate goal for all solid waste generated at AFSC installations (USAF 2012).

The Pollution Prevention Act of 1990 focused the national approach to environmental protection toward P2. Implementation of the USAF EMS carries P2 a step further toward mission sustainability principles. The P2 program is defined in detail in the VAFB Pollution Prevention Management Plan, 30 SW Plan 32-7001 and is aimed at achieving 30 SW EMS objectives and targets, through documented practices, procedures, and operational requirements. VAFB implements EMS and its associated P2 program elements by following the P2 hierarchy:

- Reduce (source reduction to prevent the creation of wastes)
- Reuse (keep item or material for its intended purpose)
- Recycle (use item or material for some other beneficial purpose)
- Disposal (in an environmentally compliant manner, only as a last resort)

The State of California passed Senate Bill 1374, amending the Public Resources Code, Section 42912, which addresses the issue of C&D debris, diversion requirements, and the development of a model ordinance to be implemented by local jurisdictions (i.e., Santa Barbara County). EO 13693 Section 3(j)(iii), *Planning for Federal Sustainability in the Next Decade,* mandates the diversion of at least 50-percent of non-hazardous construction and demolition materials and debris by Federal agencies. In August 2010, the DoD issued its updated Strategic Sustainability and Performance Plan (SSPP), which was followed up by Headquarters USAF releasing its SSPP Implementation Plan in October 2011. The established diversion goals of the SSPP are 60-percent diversion, by weight, for construction and demolition debris by 2015. AFI 32-7042 requires installations to strive to divert as much solid waste as economically feasible and the VAFB Integrated Solid Waste Management Guide (USAF 2012) requires source segregation of recyclable materials to the greatest extent possible. The ROI of potential impacts to solid waste management as a result of the Proposed Action is VAFB.

3.9 Transportation

For the purpose of this EA, the ROI for transportation would be the combination of highway, arterial, and local roads that provide service to VAFB and the Proposed Action Area. Existing roadway conditions are evaluated based on roadway capacity and traffic volume. The capacity, which reflects the ability of the network to serve the traffic demand of a roadway, depends on the roadway width, number of lanes, intersection control, and other physical factors. Traffic volumes can be reported as the number of vehicles averaged over a daily period (Average Daily Traffic or ADT) or an annual period (Annual Average Daily Traffic or AADT). Peak-hour volume is defined as the highest volume of traffic in a 24-hour period that is recorded on a roadway or intersection during a 1-hour period.

The performance of a roadway is generally expressed in terms of Level of Service (LOS). As shown in Table 3-7, the LOS scale ranges from A to F, with each level defined by a range of volume-to-capacity (V/C) ratios. LOS A, B, and C are considered good operating conditions with minor to tolerable delays experienced by motorists. LOS D represents below-average conditions. LOS E reflects a roadway at maximum capacity, and LOS F represents traffic congestion.

Table 3-6. Level of Service Scale.

LOS	Description	Criteria (V/C)		
		Multi-Lane Arterial	Two-Lane Highway	Delays[(a)]
A	Free flow with users unaffected by presence of other roadway users	0–0.30	0–0.15	<10.0
B	Stable flow, but presence of the users in traffic stream becomes noticeable	0.31–0.50	0.16–0.27	10.0–20.0
C	Stable flow, but operations of single users becomes affected by interaction with others in traffic stream	0.51–0.70	0.28–0.43	20.0–35.0

D	High density, but stable flow, speed and freedom of movement are severely restricted; poor level of comfort and convenience	0.71–0.84	0.44–0.64	35.0–55.0
E	Unstable flow; operating conditions at capacity with reduced speeds; maneuvering difficult and extremely poor levels of comfort and convenience	0.85–1.00	0.65–1.00	55.0–80.0
F	Forced breakdown flow with traffic demand exceeding capacity; unstable stop-and-go traffic	>1.00	>1.00	>80.0

Notes: (a) = Average stop delay at intersections.

3.9.1 Region of Influence

VAFB is located approximately 5 mi. (8 km) west of the City of Lompoc. As shown in Figure 1-1, the main access route to VAFB is Highway (Hwy) 101. Hwy 101 is a coastal four-lane divided freeway connecting northern California to southern California. The VAFB connections to Hwy 101 are Hwy 1, SR 135, and SR 246. Hwy 1, a north-south highway, traverses VAFB and provides access to Santa Maria to the northeast, and Santa Barbara to the southeast. When used in conjunction with Hwy 101, SR 246, an east-west highway, provides access to Lompoc to the east, and Santa Barbara to the southeast. SR 135 and SR 246 are mostly two-lane undivided highways with four-lane rural expressway portions.

VAFB is a Federal military installation. Access to parts of VAFB is only permitted to authorized military personnel and their families, Base civilian employees with approved identification, and visitors with pre-approved authorization. Roadways within the Proposed Action Area are restricted to public access.

Exiting roadway conditions are evaluated based on roadway capacity and traffic volume. The capacity, which reflects the ability of the network to serve the traffic demand of a roadway, depends on the roadway width, number of lanes, intersection control, and other physical factors. A road's ability to accommodate different volumes of traffic is generally expressed in terms of LOS. Most roads on VAFB operate at a LOS between A and C, see Table 3-8 (VAFB 2007).

The Proposed Action Area is located within north VAFB and is accessible by paved roads from the Santa Maria Gate, Lompoc Gate, and Solvang Gate (Figure 3-4). Project personnel and equipment would most likely access the location by entering VAFB through the Lompoc Gate, traveling north on Pine Canyon Road, west on New Mexico Avenue to 35th Street, and continuing to the destination on New Beach Boulevard. Recreational users of the new facility would access through any of the three gates and using roads through the cantonment area or 13th Street and potentially Terra Road to access New Beach Boulevard and reach Wall Beach.

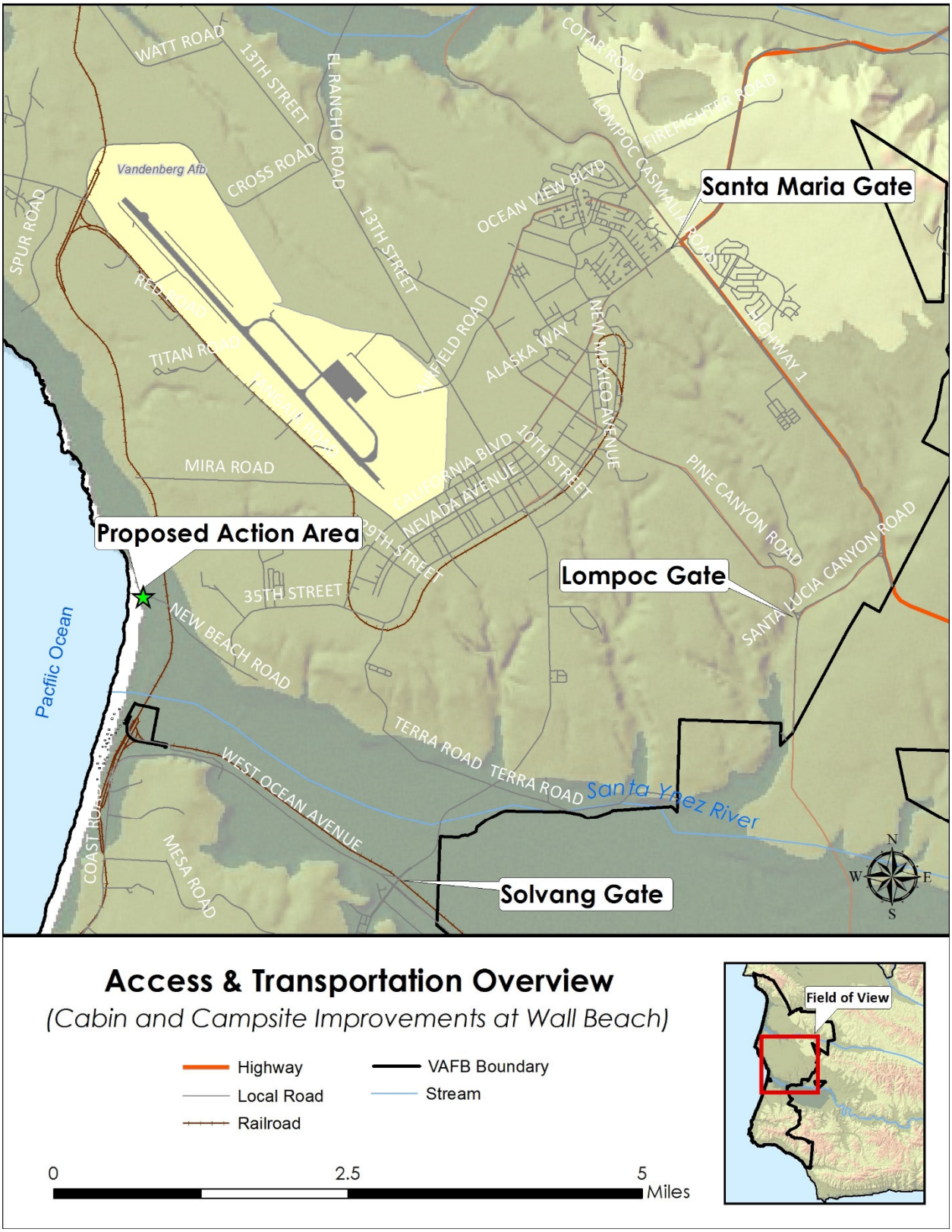

Figure 3-3. Main access and transportation routes associated with the Proposed Action.

3.10 Water Resources

In California, the State Water Resources Control Board and the RWQCB administer the Clean Water Act (CWA) and state water regulations. The CWA mandates that point source discharges to surface water or to the ocean are subject to the National Pollutant Discharge Elimination System (NPDES) permit program. The RWQCB is responsible for managing the NPDES Construction General Permit process for California. The Central Coast RWQCB is the local agency responsible for the VAFB area. The NPDES Construction General Permit for construction activities ensures that water discharged from a site meets water quality standards at the point of discharge. The NPDES Construction General Permit also reduces and eliminates storm water and non-storm water discharges associated with construction activities through BMP controls, site inspections, and monitoring to evaluate the effectiveness of the permit implementation actions.

The California Porter-Cologne Water Quality Act provides a framework for establishing beneficial uses of water resources and the development of local water quality objectives to protect these beneficial uses. State regulations require a Waste Discharge Requirements (WDR) for permitting discharge. The California Porter-Cologne Water Quality Act implements the NPDES program for the state. The RWQCB is responsible for enforcing the CWA at VAFB.

NPDES General Permit coverage for Construction Activities is required for construction projects equal to or greater than one acre in size and requires the development of a Storm Water Pollution Prevention Plan, which describes BMPs to prevent pollutant and sediment discharges from the construction site (Note: Soil disturbance acreage and land disturbance activities are included under the Construction General Permit). Under Section 401 of the CWA, a Federal agency cannot issue a permit or license for an activity that may result in a discharge to Waters of the United States until the state where the discharge would originate has granted or waived Section 401 Water Quality Certification. A CWA Section 401 Water Quality Certification from the Central Coast RWQCB is not required under the Proposed Action because no direct impacts to water bodies or wetlands would occur.

Section 404 of the CWA regulates the discharge of dredged or fill material into Waters of the United States (U.S.), including wetlands. Section 404 permits are reviewed and issued by the U.S. Army Corps of Engineers (USACE). A CWA Section 404 Permit from the USACE is not required under the Proposed Action because no direct impacts to water bodies or wetlands would occur.

The Water Quality Control Plan for Ocean Waters of California (Ocean Plan) controls the discharge of waste to the ocean to prevent degradation of marine communities or threats to public health. It establishes beneficial uses and water quality objectives for the protection of ocean waters. The Ocean Plan and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California were amended in 2015 to prohibit the discharge of trash.

3.10.1 Region of Influence

VAFB encompasses portions of two major and four minor drainage basins. San Antonio Creek and the Santa Ynez River represent the major basins, while Shuman Creek, Bear Creek, Canada

Honda Creek, and Jalama Creek comprise the minor basins on VAFB. The Pacific Ocean and the Santa Ynez River Lagoon are within the vicinity of the Proposed Action Area.

3.10.2 Groundwater

VAFB includes parts of two major groundwater basins, and at least two sub-basins. Most of the northern third of the base is within the San Antonio Creek Basin, while most of the southern two-thirds of the base are within the Santa Ynez River Basin and associated Lompoc Terrace and Cañada Honda Sub-basins.

The VAFB water supply primarily comes from the State Water Project (80–90%) in non-drought years. During drought periods (most recently 2007–2009 and 2014–current), groundwater supply is primarily provided by the San Antonio Groundwater Basin. Aquifers capable of yielding large quantities of water usable for water supply are generally restricted to the deeper portions of the Santa Ynez River and San Antonio Creek (USAF 1998). Four groundwater production wells located in the San Antonio Creek-Barka Slough area are used to supplement the VAFB state water during annual maintenance periods and periods of drought as mentioned above. The greatest threat to groundwater is contamination from hazardous material or waste releases that could infiltrate an aquifer.

The Sustainable Groundwater Management Act of 2014 (SGMA 2014), and its subsequent enactment in January 2015 mandate that all California groundwater basins designated as high- or medium-priority by the California Department of Water Resources, be managed under a groundwater sustainability plan ([GSP] Section § 10720.7 California Water Code). GSPs are currently being formed for the medium-priority Santa Ynez and San Antonio groundwater basins by their associated groundwater sustainability agencies (GSA). VAFB is a Federal institution that is exempt from mandatory SGMA compliance yet has expressed intent to collaborate and assist with pertinent GSAs in their GSP formations as per Water Code §10720.3.

Groundwater quality in the region meets all National Primary Drinking Water Regulation standards (California Department of Water Resources 2004). Continued overdraft of the groundwater basins could lead to degradation in the water table levels and a compaction of the basins. Groundwater monitoring is conducted for basins that are used for drinking water.

3.10.3 Waters of the United States and Wetlands

Waters of the (U.S.) encompass the jurisdictional limits of the authority of the USACE and include streams and their tributaries that have defined bed and banks or that have an ordinary high-water mark (OHWM), which is a line on the shore established by the fluctuations of ordinary water flows, as well as adjacent jurisdictional wetlands (FR 33 CFR 320-330). No construction or demolition would occur within the bounds of Waters of the U.S. or a delineated wetland.

4 Environmental Consequences

The following analysis of environmental consequences is based on the potential direct, indirect, short-term, long-term, and cumulative effects of the Proposed Action and the No-Action

Alternative as described in Chapter 2. A list of factors to be considered in determining whether impacts are significant, for purposes of NEPA, are provided in each subsection. Both beneficial and adverse effects are considered. Whether beneficial impacts may occur will be discussed in the analysis of each subsection since the listing of factors to be considered in each subsection is normally focused on the potential for adverse impacts. The decision whether or not to prepare an Environmental Impact Statement is based on the potential impacts of the action as a whole considering context and intensity.

4.1 Air Quality

Factors considered in determining whether implementing an alternative may result in significant impacts to air quality include the extent or degree to which implementation of an alternative would:

- Expose people to localized (as opposed to regional) air pollutant concentrations that potentially violate Federal or state ambient air quality standards; or
- Exceed caps (limits) as imposed by Federal and state GHG regulations.

To determine the significance of operational impacts, emissions from the project were compared with the Federal major source thresholds. The Federal major source threshold for criteria pollutants is 100 tons per year, which is the major source threshold under 40 CFR 70, the Federal Operating Permit Program, for all pollutants.

Standard dust control measures (Section 2.2.7.1, Air Quality) must be implemented for any discretionary project involving earth-moving activities. Some projects have the potential for construction-related dust to cause a nuisance. Since Santa Barbara County violates the state standard for PM_{10}, dust mitigation measures are required for all discretionary construction activities regardless of the significance of the fugitive dust impacts based on the policies in the 1979 Air Quality Attainment Plan.

On 1 August 2016, the CEQ released final guidance on addressing climate change in NEPA documents. Although similar, this provides a more comprehensive climate policy than the 2010 draft guidance, which recommended quantification of GHG emissions and proposed a threshold of 25,000 metric tons of carbon dioxide equivalent (CO_2e) emissions. The 2010 guidance indicated that use of 25,000 metric tons of CO_2e emissions as a reference point would provide Federal agencies with a useful indicator, rather than an absolute standard of significance, to provide action-specific evaluation of GHG emissions and disclosure of potential impacts. This analysis complies with the recommendations of both the 2010 and 2014 versions of the draft guidance.

For purposes of this air quality analysis, project emissions within the VAFB region would be potentially significant if they exceed these thresholds. This is a conservative approach, as the analysis compares emissions from both project-related stationary and mobile sources to these thresholds.

4.1.1 Proposed Action

4.1.1.1 Criteria Pollutant Emissions

Impacts to air quality from the construction of cabins and campsites would be generated primarily from the combustive emissions of fossil fuel powered equipment and fugitive dust emissions from the operation of equipment on exposed soil. The analysis therefore involves estimating emissions generated from the Proposed Action and assessing potential impacts on air quality. The construction would occur over a period of approximately three to four months. The assumptions of construction equipment, vehicles, and workforce required to implement the Proposed Action that were used for the analysis are shown in Table 2-1.

To calculate emissions associated with construction, the CalEEMod Model, Version 2013.2.2 (ENVIRON 2016) was used. The CalEEMod Model is the latest version of the land use model in California and considers emission factors for construction equipment from the ARB's OFFROAD model and emission factors for on-road vehicles from the ARB's EMFAC2011 model. Table 4-1 shows emissions produced during implementation of the Proposed Action would not exceed the significance thresholds for any criteria pollutant. Moreover, the implementation of EPMs, including fugitive dust control and diesel emission mitigation measures, described in detail in Section 2.2.7.1 (Air Quality), would reduce potential emissions. The increase in construction-related PM_{10} emissions will not have a substantial effect on the 24-hour CAAQS and will not exacerbate the annual standard. Therefore, the Proposed Action will not have a significant effect on air quality.

Table 4-1. Proposed Action emissions (tons/year).

Emissions, tons/year						
Equipment	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Front-end loader w/ auger	0.006947	0.022354	0.028729	0.00002	0.002266	0.002085
2 Concrete trucks (Class IIX)	0.000083	0.001111	0.000237	0.000002	0.000029	0.000028
All-terrain forklift	0.000420	0.005375	0.006177	0.000009	0.000257	0.000236
Flatbed truck (Class VI)	0.000181	0.001875	0.000432	0.000004	0.000069	0.000066
Pickup trucks (Class II)	0.002633	0.048548	0.012770	0.000105	0.000498	0.000476
Total Annual Emissions						
Total Emissions	**0.010263**	**0.079262**	**0.048347**	**0.000142**	**0.003119**	**0.002891**
Significance threshold	25	25	25	25	25	25
Exceeds threshold?	No	No	No	No	No	No

Notes: CY = cubic yards, ROG = reactive organic gases, NO_x = oxides of nitrogen, CO = carbon monoxide, SO_x = oxides of sulfur, PM_{10} = particulate matter less than 10 microns, $PM_{2.5}$ = particulate matter less than 2.5 microns

4.1.1.2 Greenhouse Gas Emissions

Emissions of GHGs are considered to have a potential cumulative impact on global climate. The emissions associated with the installation of cabins and campsites at Wall Beach would generate a diminutive amount of regional emissions of CO_2 and other GHGs. Scientists are in general agreement that the Earth's climate is gradually changing, and that change is due, at least in part, to emissions of CO_2 and other GHG from manmade sources. The anticipated magnitude of global climate change is such that a significant cumulative impact on global climate exists.

On the issue of global climate change, however, there are no adopted Federal plans, policies, regulations, or laws mandating reductions in the GHG emissions that cause global climate change. The climate change research community has not yet developed tools specifically intended to evaluate or quantify end-point impacts attributable to the emissions of GHGs from a single source. In particular, because of the uncertainties involving the assessment of such emissions regionally and locally, the very minor incremental contribution of the Proposed Action to climate change cannot be determined given the current state of the science and assessment methodology.

On 1 August 2016, the CEQ released final guidance on addressing climate change in NEPA documents. This EO adopted much of what the draft guidance proposed, recommending quantification of GHG emissions, and a threshold of 25,000 metric tons of CO_2e emissions per year for a source. The CEQ indicates that use of 25,000 metric tons of CO_2e emissions as a reference point provides Federal agencies with a useful indicator, rather than an absolute standard of significance, for agencies to provide action-specific evaluation of GHG emissions and disclosure of potential impacts.

The Proposed Action's emissions have been compared with the proposed Federal threshold of 25,000 metric tons of CO_2e emissions. Table 4-2 summarizes the annual GHG emissions associated with installation of the cabins and campsites. These data show that the annual CO_{2e} emissions estimated for the Preferred Alternative would be less than the proposed significance

threshold of 25,000 metric tons of CO2e. Cumulative impacts to global climate change would not be significant.

Table 4-2. Proposed Action GHG emissions.

Scenario/Activity	Metric Tons per Year[1]			
	CO_2	CH_4	N_2O	CO_2e
Front-end loader w/ auger	2.18021	0.00068	0.00000	2.19718
2 Concrete trucks (Class IIX)	0.22789	0.00000	0.00004	0.23857
All-terrain forklift	0.94312	0.00029	0.00000	0.95046
Flatbed truck (Class VI)	0.46777	0.00000	0.00007	0.48968
Pickup trucks (Class II)	11.26263	0.00000	0.00177	11.79019
Total GHG Emissions	**15.08163**	**0.00097**	**0.00188**	**15.66608**

[1] CO_2e = (CO_2 * 1) + (CH4* 21) + (N2O * 298).
Notes: CO_2 = carbon dioxide, GHG = greenhouse gases, CH_4 = methane, N_2O = nitrous oxide, CO_2e = carbon dioxide equivalent

In sum, net emissions would not significantly affect regional air quality would result in less than significant impacts.

4.1.2 No-Action Alternative

Under the No-Action Alternative, cabins and campsites would not be installed at Wall Beach. There would be no change to baseline air emissions and no additional impacts associated with the No-Action Alternative. Therefore, implementing the No Action Alternative would not have a significant effect on air quality.

4.2 Biological Resources

Factors considered in determining whether implementing an alternative may result in significant impacts on biological resources include the extent or degree to which implementation of an alternative would result in:

- Unmitigable loss of important quantities of declining vegetation communities (including wetlands) that are considered rare;
- Impacts to endangered, threatened, or protected species; or
- Alteration of regionally- and locally-important wildlife corridors that would severely and permanently limit their use.

Impacts to biological resources would occur if species (endangered, threatened, rare, candidate, or species of concern) or their habitats, as designated by Federal and state agencies, would be affected directly or indirectly by project-related activities. These impacts can be short- or long-term impacts, for example, short-term or temporary impacts from noise and dust during maintenance activities and berm construction, and long-term impacts from the loss of habitat to support wildlife populations.

VAFB reinitiated section 7 consultation with the USFWS under the VAFB Beach Management Plan and Water Rescue Training BO (8-8-12-F-11R; Appendix C) to address potential adverse impacts to Federally protected wildlife species associated with the construction and utilization of the facilities at Wall Beach. The USFWS determined that operating the cabins would be covered under this existing BO; however, it was necessary for VAFB to consult for constructing the cabins. The USFWS issued a resultant BO for the construction portion of the action (BO 2018-F-0845; Appendix C).

4.2.1 Proposed Action

Potential impacts to biological resources as a result of the Proposed Action include:

- long-term (permanent) loss of habitat from construction-related activities such as access, pole installation;
- loss of individuals within the work area due to excavation, crushing, or burial;
- abandonment of breeding or roosting sites due to project-related noise and associated disturbance; and
- disruption of foraging or roosting activities due to project-related noise and associated disturbance.

4.2.1.1 Vegetation Resources

As discussed in Section 3.2.3 (Vegetation Resources), central coast scrub was identified as the native vegetation community within the Proposed Action Area (Table 3-3). Disturbances to the native plant community in the impacted area would be unavoidable. Permanent losses within the project impact area would occur as a result of vegetation removal for the installation of cabin and campsite foundations.

A total of 0.3 ac. (0.12 ha) of native vegetation (central coast scrub) would be permanently removed during the construction of the cabins and campsites. BMPs would be implemented as necessary to control erosion as a result of disturbed soils.

The small amount of native vegetation loss associated with the construction of the cabins and campsites would not be considered adverse due to the abundance of these communities within the Proposed Action's vicinity. Large-scale restoration of coastal scrub and other natural plant communities, including invasive species removal and outplantings, is being conducted Base-wide and in the project vicinity. Additionally, by implementing the environmental protection and monitoring measures, impacts to native plant communities would be less than significant.

No special-status plant species have been documented within the impact area of the Proposed Action during the biological surveys in support of this project (MSRS 2016) or prior surveys of the project area.

4.2.1.2 General Wildlife Resources

Construction Direct Impacts

Permanent loss of central coast scrub habitat as a result of construction of the cabins and campsites would have potential adverse effects on wildlife species. A total of 0.3 ac. (0.12 ha) of central coast scrub would be removed as a result of the Proposed Action. During vegetation clearing and construction, individuals may be injured or killed due to use of heavy equipment in this area. However, a qualified biological monitor would be present during construction activities to ensure the extent of the construction activities are limited to the minimum area necessary to accomplish project activities. In addition, native wildlife species would be removed to the nearest suitable habitat to avoid direct impacts. If practicable, vegetation clearing will occur outside of bird nesting season. If vegetation clearing occurs during nesting season, a qualified biologist would survey the area for nesting birds and delineate buffers around any nests that are found that are of sufficient size to prevent disturbance. Additional EPMs described in Section 2.2.7.2 (Biological Resources), would be implemented to further minimize and avoid impacts to wildlife resources. As a result, potential impacts to wildlife species as a result of construction would be less than significant.

Construction Noise Impacts

Construction of the cabins and campsites would also generate noise and disturbance that could result in temporary impacts to wildlife species. Temporary disturbances due to noise and human presence could disrupt foraging and roosting activities or cause common wildlife species to avoid the work areas. Cabin and campsite construction and installation would increase noise levels at the Proposed Action Area and surrounding area. The proposed construction equipment are non-impact devices (no ground contact/shaking) and their probable sound outputs are listed in Table 4-3. In an ideal setting without any outside influence (e.g., a barrier reflecting or attenuating the sound), sound propagates away from a point source in a uniform, outward direction (spherical spreading). As sound energy propagates away from the sound source, both the sound level and frequency change. For each doubling of distance from the source, the sound level attenuates (or diminishes) at a rate of 6 dBA. Furthermore, surrounding absorptive ground can attenuate sound levels by an additional 1.5 dBA per each doubling of distance from the source (WSDOT 2018). When a sound is not from a single point source, but is instead from multiple sources along a line, like the noise made by the continuous movement of vehicles on a highway, the source of the sound appears to emanate from a linear source rather than from a point source. The sound level from a linear source decreases by approximately 3–4 dBA with each doubling of the distance from the source (Goelzer et al. 2001). In a real-world setting, a number of factors can influence how sound propagates in the environment; the ideal case of spherical spreading is at best only an approximation of attenuation with distance. Wind has been shown to be the single most important meteorological factor within approximately 500 ft. (152 m) of the sound source, while vertical air temperature gradients are more important in sound propagation over longer distances. Other atmospheric conditions such as air temperature, humidity, and turbulence also can have a major effect on received sound levels.

Included in the sound analyses is the attenuation caused by a 450 ft. (137.2 m) long, pre-existing concrete wall, about 8 ft. (2.4 m) tall, that would reduce sound levels as they traveled west

towards Wall Beach. The wall is located along the western boundary of the Proposed Action Area, less than 20 ft. (6.1 m) from the cabins and campsites and would attenuate all background sounds originating from the cabins and campsites by at least 5 dBA (Harris 1978). Natural sound barriers are also present between the Proposed Action Area and Wall Beach, including persistent, strong northwest winds, sand dune topography, and scrub vegetation. These natural barriers aid in construction and recreation sound attenuation originating from the Proposed Action Area but are not easily quantifiable without site-specific studies. Therefore, analysis of noise herein is conservative in its estimation of the amount of area potentially impacted by noises above ambient levels.

With the assumption that all equipment would be operating simultaneously during the day time only and discounting unquantified attenuation from natural sound barriers (e.g. wind, vegetation, dunes, etc.), construction equipment would produce approximately 65 dBA at 400 ft. (122 m) from the Proposed Action Area (Table 4-3) and reach day time ambient noise levels (51.8 dBA) at 1,279 ft. (389.8 m) (Figure 4-1).

Wildlife species would be expected to experience some level of noise disturbance during the day; however, construction would be temporary (90 to 120 days) and create noise above ambient levels over a relatively small area (Figure 4-1). Individuals are expected to experience temporary behavioral disruption and likely acclimate to construction noises; however, if not they are expected move to adjacent suitable habitat until the noise disturbance ceases. A qualified biological monitor would be present to ensure implementation of In EPMs designed to minimize and avoid impacts to native wildlife species (Section 2.2.7.2, Biological Resources). As a result, potential impacts to wildlife species resulting from construction noise would be less than significant.

Table 4-3. Typical noise levels produced by Proposed Action construction equipment.

Construction Noise (point source, non-impact, with barriers)						
Source	**Expected Noise Level (dBA) @ 50' (15.2 m)**	**Combined Noise Output (dBA) @ 50' (15.2 m)**	**Expected Noise Level (dBA) @ 100' (30.5 m)**	**Expected Noise Level (dBA) @ 400' (121.9 m)**	**Expected Noise Level (dBA) @ 800' (243.8 m)**	**Expected Noise Level (dBA) @ 1600' (487.7 m)**
Front-end loader	74	80	72.5	57.5	50	42.5
Auger attachment	79					
Two (2) concrete mixer trucks	76	79	71.5	56.5	49	41.5
All-terrain forklift	80	--	72.5	57.5	50	42.5
Flatbed truck (Class VI)	89	--	81.5	66.5	59	51.5
Two (2) Pickup trucks – crew	70	73	65.5	50.5	43	35.5
10 HP compressor	73	78	70.5	55.5	48	40.5
35 HP generator	76					
Pneumatic air nail gun	80	--	72.5	57.5	50	42.5
Two (2) electric drills (12 amp)	51.5	54.5	47	32	24.5	17
Circular saw	70.5	--	63	48	40.5	33
All equipment (operating simultaneously)		87	79.5	64.5	57	49.5

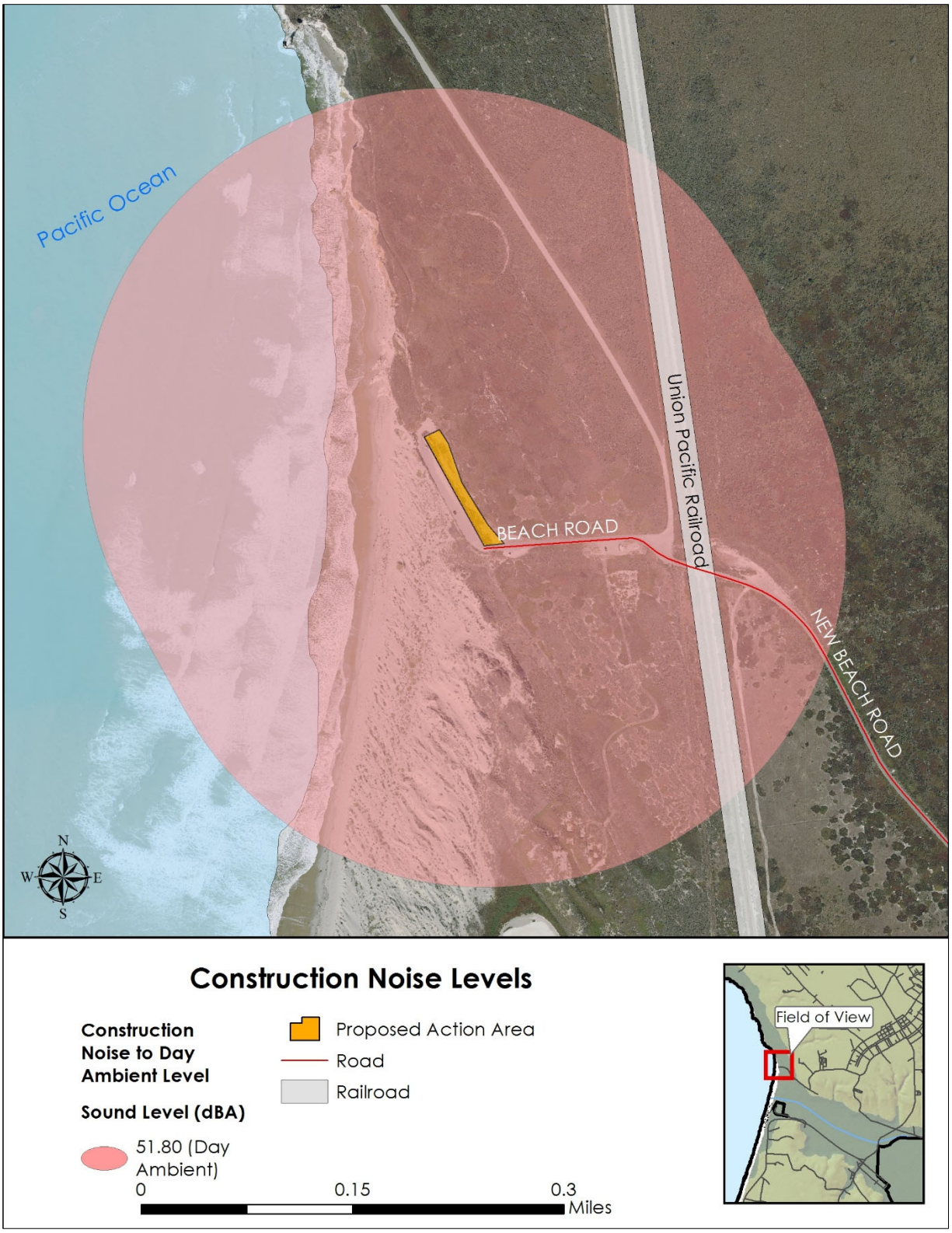

Figure 4-1. Estimated maximum extent of construction noise attenuation to ambient daytime levels.

Cabin and Campsite Recreational Use

Typical recreational sound sources are expected during routine use of the camping facilities (Table 4-4). Occasional loud noises would include shouting, barking dogs, or radio music (Table 4-4). Under the improbable assumption that all typical recreational use noises are being emitted simultaneously and discounting natural sound barriers such as wind and topography, approximately 51.5 dBA of sound would be present 400 ft. (122 m) from the Proposed Action Area (Table 4-4). Recreational noise levels would attenuate to ambient day time sound levels of 51.8 dBA at 379 ft. (115 m) and evening ambient sound levels (53.1 dBA) at 343 ft. (104 m) (Figure 4-2). This represents approximately a relatively small area of the available habitat. Individuals would likely acclimate to noise as a result of recreational use; however, if not, are expected to move to adjacent suitable habitat until the noise or disturbance ceases. EPMs would be implemented that are designed to minimize and avoid impacts to native wildlife species (Section 2.2.7.2, Biological Resources). Therefore, potential impacts to wildlife species as a result of noise produced during recreational use of the cabins and campsites would be less than significant.

Table 4-4. Typical noise levels produced during recreational use of Proposed Action.

Rural Recreation Sound Sources						
Source	**Expected Noise Level (dBA) @ 50' (15.2 m)**	**Combined Noise Output (dBA) @ 50' (15.2 m)**	**Expected Noise Level (dBA) @ 100' (30.5 m)**	**Expected Noise Level (dBA) @ 400' (121.9 m)**	**Expected Noise Level (dBA) @ 800' (243.8 m)**	**Expected Noise Level (dBA) @ 1600' (487.7 m)**
Camp chores	63	--	55.5	40.5	33	25.5
Conversations	39	--	31.5	16.5	9	1.5
Conversation	63	--	55.5	40.5	33	25.5
Dog (barking)	55	--	47.5	32.5	25	17.5
Radio playing	47	--	39.5	24.5	17	9.5
Shouting	73	--	65.5	50.5	43	35.5
All sources (simultaneously emitting)		74	66.5	51.5	44	36.5

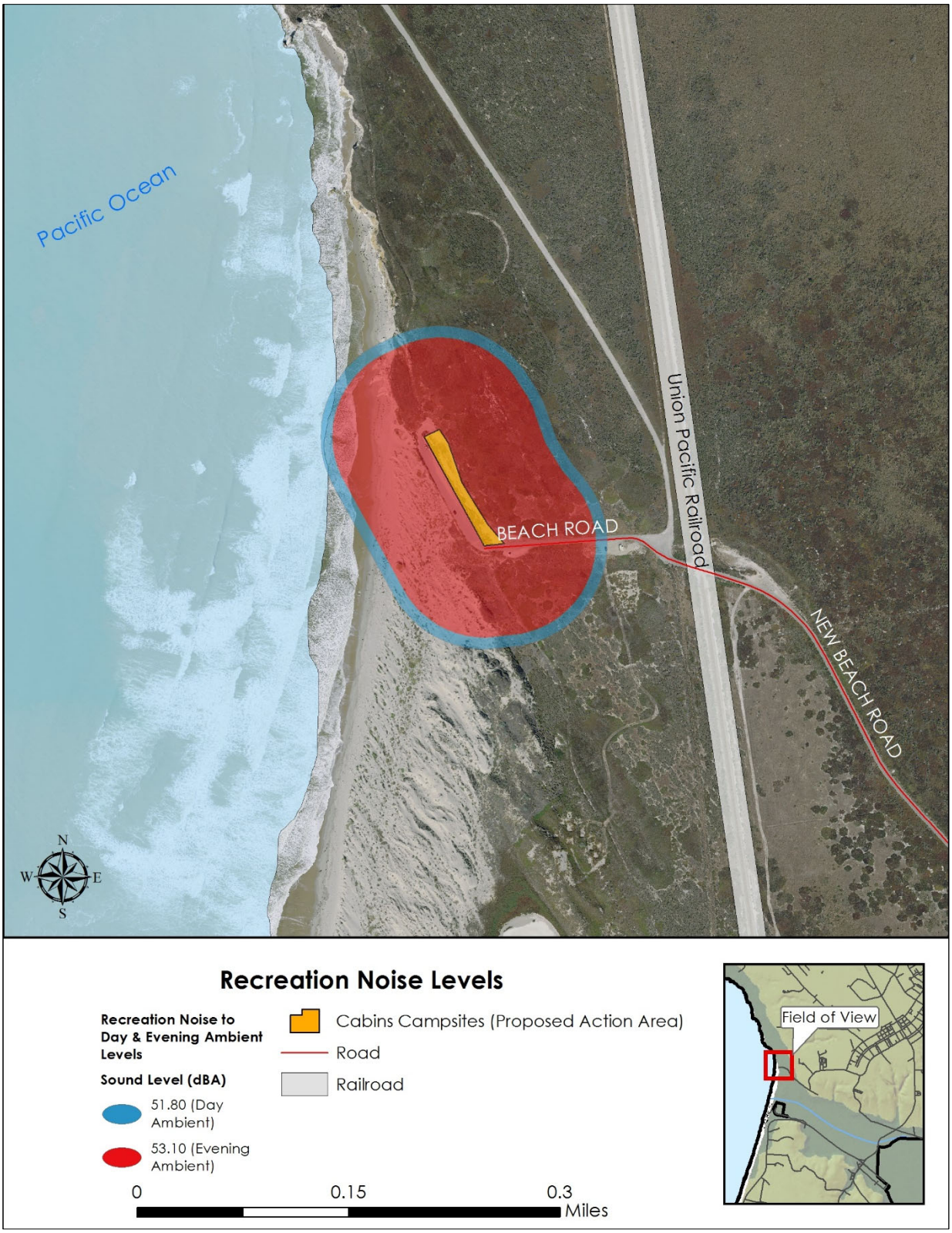

Figure 4-2. Estimated maximum extent of recreation noise attenuation to ambient daytime and evening levels.

4.2.1.3 Special Status Wildlife Species

Special status wildlife species occur or have the potential to occur within or near the Proposed Action Area. Activities associated with the Proposed Action have the potential to result in permanent and temporary adverse effects to special status species. Table 4-5 presents a summary of potential project-related impacts on special status wildlife species.

The Proposed Action Area is not located within designated or proposed Critical Habitat for any species; therefore, the Proposed Action would not affect Critical Habitat.

Table 4-5. Potential impacts to special status wildlife observed within Proposed Action Area.

Species	Status		Potential Impacts
	USFWS	CDFW	
Reptiles			
Blainville's horned lizard (*Phrynosoma blainvillii*)	-	CSC	Disturbance from noise, direct physical impacts, loss of habitat.
Silvery legless lizard (*Anniella pulchra pulchra*)	-	CSC	Disturbance from noise, direct physical impacts, loss of habitat.
Birds			
Allen's Hummingbird (*Selasphorus sasin*)	BCC	-	Disturbance from noise, loss of habitat.
Bald Eagle (*Haliaeetus leucocephalus*)	BGEPA	Fully Protected	Disturbance from noise.
Black Oystercatcher (*Haematopus bachmani*)	BCC	-	Disturbance from noise.
Black Skimmer (*Rynchops niger*)	BCC	-	Disturbance from noise.
Black Turnstone (*Arenaria melanocephala*)	BCC	-	Disturbance from noise.
Belding's Savannah Sparrow (*Passerculus sandwichensis alaudinus*)	-	SE	Disturbance from noise, loss of habitat.
Bell's Sage Sparrow (*Artemisiospiza belli belli*)	BCC	-	Disturbance from noise, loss of habitat.
Burrowing Owl (*Athene cunicularia*)	BCC	CSC	Disturbance from noise, loss of habitat.

Clark's Grebe (*Aechmoporus clarkii)*	BCC	-	Disturbance from noise.
Common Yellowthroat (*Geothlypis trichas sinuosa*)	BCC	SSC	Disturbance from noise, loss of habitat.
Golden Eagle (*Aquila chrysaetos*)	BCC	Fully Protected	Disturbance from noise.
Lawrence's Goldfinch (*Carduelis lawrencei*)	BCC	-	Disturbance from noise, loss of habitat.
Long-billed Curlew (*Numenius americanus*)	BCC	-	Disturbance from noise.
Marbled Godwit (*Limosa fedoa*)	BCC	-	Disturbance from noise.
Mountain Plover (*Charadrium montanus*)	BCC	CSC	Disturbance from noise.
Peregrine Falcon (*Falco peregrinus anatum*)	BCC	Fully Protected	Disturbance from noise.
Rufous Hummingbird (*Selasphorus rufus*)	BCC	-	Disturbance from noise, loss of habitat.
Short-billed Dowitcher (*Limnodromus griseus*)	BCC	-	Disturbance from noise.
Song Sparrow (*Melospiza melodia*)	BCC	-	Disturbance from noise, loss of habitat.
Spotted Towhee (*Pipilo maculatus clementae*)	BCC	SSC	Disturbance from noise, loss of habitat.
Whimbrel (*Numenius phaeopus*)	BCC	-	Disturbance from noise.
Western snowy plover (*Charadrius nivosus*)	FT; BCC	SSC	Disturbance from noise.
Willet (*Tringa semipalmata*)	BCC	-	Disturbance from noise.

Wrentit (*Chamaea fasciata*)	BCC	-	Disturbance from noise, loss of habitat.

Notes: BGEPA = Bald and Golden Eagle Protection Act; FE = Federal Endangered Species; FT = Federal Threatened Species; SE = State Endangered Species; CSC = California Species of Special Concern; SSC = State Candidate Species; BCC = Federal Bird of Conservation Concern

4.2.1.3.1 Western Snowy Plover

The western snowy plover would be exposed to increased human disturbance due to noise and human presence. The increase in human presence would be greater than what is currently experienced at Wall Beach, since the Proposed Action would result in more people using Wall Beach during the day and, although use of the beach would still be prohibited between sunset and sunrise, introduce new human disturbances (i.e. noise and light) at night at the cabins and campsites. Visual and noise impacts from human activity may trigger a startle response that alerts predators to nest locations, cause temporary abandonment of nests, mask biologically significant sounds (e.g. predators) that make abandoned eggs or young more vulnerable and reduce overall fitness.

Noise would be created during two components of the Proposed Action: the temporary construction and installation of the cabins and campsites and the ongoing recreational use of the cabins and campsites. Ambient noise levels were described in Section 3.6.1.2 (Ambient Noise Levels of the Proposed Action Area). To assess potential impacts of these sources of noise, the ambient sound levels were compared to noise levels created by these two components of the Proposed Action, with consideration of factors that would attenuate sound levels where quantifiable.

Construction Noise Impacts

As described previously, the use of heavy equipment associated with the cabin and campsite construction would increase noise levels at the Proposed Action Area and surrounding area (Table 4-3; Figure 4-1). Also, as described in Section 4.2.1.2 (General Wildlife Resources), noise analyses presented herein include the estimated attenuation caused by a 450 ft. (137.2 m) long, pre-existing concrete wall, about 8 ft. (2.4 m) tall, that would reduce sound levels as they traveled west towards Wall Beach. Assuming again that all equipment would be operating simultaneously during the day time only and discounting unquantified attenuation from natural sound barriers (e.g. wind, vegetation, dunes, etc.), construction equipment would produce approximately 64 dBA at 400 ft. (122 m) from the Proposed Action Area (Table 4-3) and reach day time ambient noise levels (51.8 dBA) at 1,279 ft. (389.8 m) (Figure 4-1).

If construction occurs outside of breeding season, adults and juveniles would be expected to experience some level of noise disturbance during the day; however, construction would be temporary (90 to 120 days) and create noise above ambient levels over an approximately 25.7 ac. (10.4 ha) of beach (Figure 4-3), which is 1 percent of the total area of beach habitat available

on VAFB. Individuals are expected to experience temporary behavioral disruption, and likely acclimate to construction noises; however, if not they are expected move to adjacent suitable habitat until the noise disturbance ceases.

If construction occurs during western snowy plover breeding season, it is difficult to generalize the anticipated behavioral reaction of breeding plovers to construction noise levels, and no observational data of plovers exposed to construction noise on VAFB currently exits. Based on past nest data from 2001 – 2017, an average of 20.14 nests are present per year within 1,279 ft. (389.8 m) of the construction activity. These nests could be adversely affected by construction noise and visual impacts of equipment operations.

These effects during the breeding season could provoke temporary or permanent emigration from nesting sites, trigger a startle response that alerts predators to nest locations, cause temporary abandonment of nests, mask biologically significant sounds (e.g. predators) that make abandoned eggs or young more vulnerable and reduce overall fitness. Therefore, construction of the cabin and campsites during the breeding season may affect, and is likely to adversely affect, the Western snowy plover.

Therefore, the Proposed Action may result in adverse effects to the western snowy plover from construction disturbance, but it would be implemented with EPMs designed to avoid or minimize the potential adverse effects to the maximum extent practicable (Section 2.2.7.2, Biological Resources).

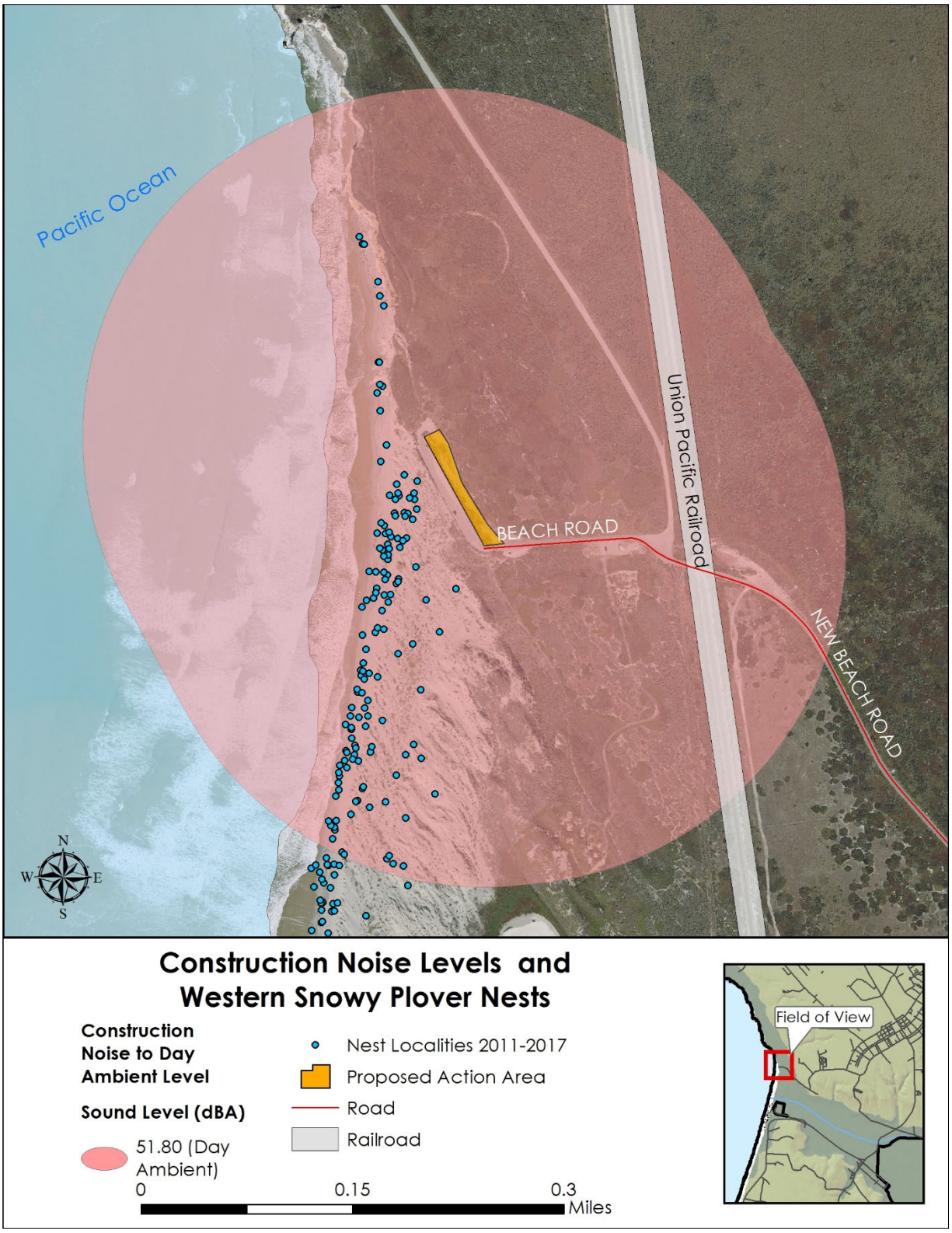

Figure 4-3. Estimated maximum extent of construction noise attenuation to ambient daytime levels compared to western snowy plover habitat.

Cabin and Campsite Recreational Use

Recreational sound levels are described above (Table 4-4). These occasional loud noises conservatively produce approximately 51.5 dBA of sound at 400 ft. (122 m) from the Proposed Action Area (Table 4-4). However, the noise levels would attenuate to ambient day time sound levels of 51.8 dBA at 379 ft. (115 m) and evening ambient sound levels (53.1 dBA) at 343 ft. (104 m) (Figure 4-4). This is a relatively small portion of available western snowy plover habitat on VAFB. Individuals would likely acclimate to noise as a result of recreational use; however, if not, are expected to move to adjacent suitable habitat until the noise or disturbance ceases.

Conservatively, the area of nesting habitat that would be impacted by recreational use noises over ambient levels (51.8 dBA) has included an average of nine western snowy plover nests per year from 2011 to 2017. This represents approximately two percent of the average total number of nests per year on VAFB during the same period. Although individual plovers may be expected to acclimate to the recreational sound levels, these noises may startle individuals and cause them to flee, resulting in temporary nest abandonment, nest loss, and increased levels of predation. Therefore, recreational noise generated during routine use of the cabins and campsites may affect, and is likely to adversely affect, the western snowy plover.

Thus, the Proposed Action may result in adverse effects to the western snowy plover from disturbance resulting from routine recreational use of the cabins and campsites, but EPMs designed to avoid or minimize the potential adverse effects would be implemented (Section 2.2.7.2, Biological Resources).

Conclusion

Although the Proposed Action may result in adverse effects to the western snowy plover, these impacts would be temporary (i.e. temporary disruption of behaviors) and affect a small proportion of available habitat. Furthermore, individuals are likely to become acclimated to the increased noise levels. Implementing EPMs designed to minimize and avoid these adverse effects will further decrease the overall impact of the Proposed Action. In addition, VAFB has conducted Section 7 consultation with the USFWS (Appendix C; BO 2018-F-0845) for potential adverse effects to the western snowy plover resulting from the Proposed Action. Potential impacts to the western snowy plover would therefore not be significant.

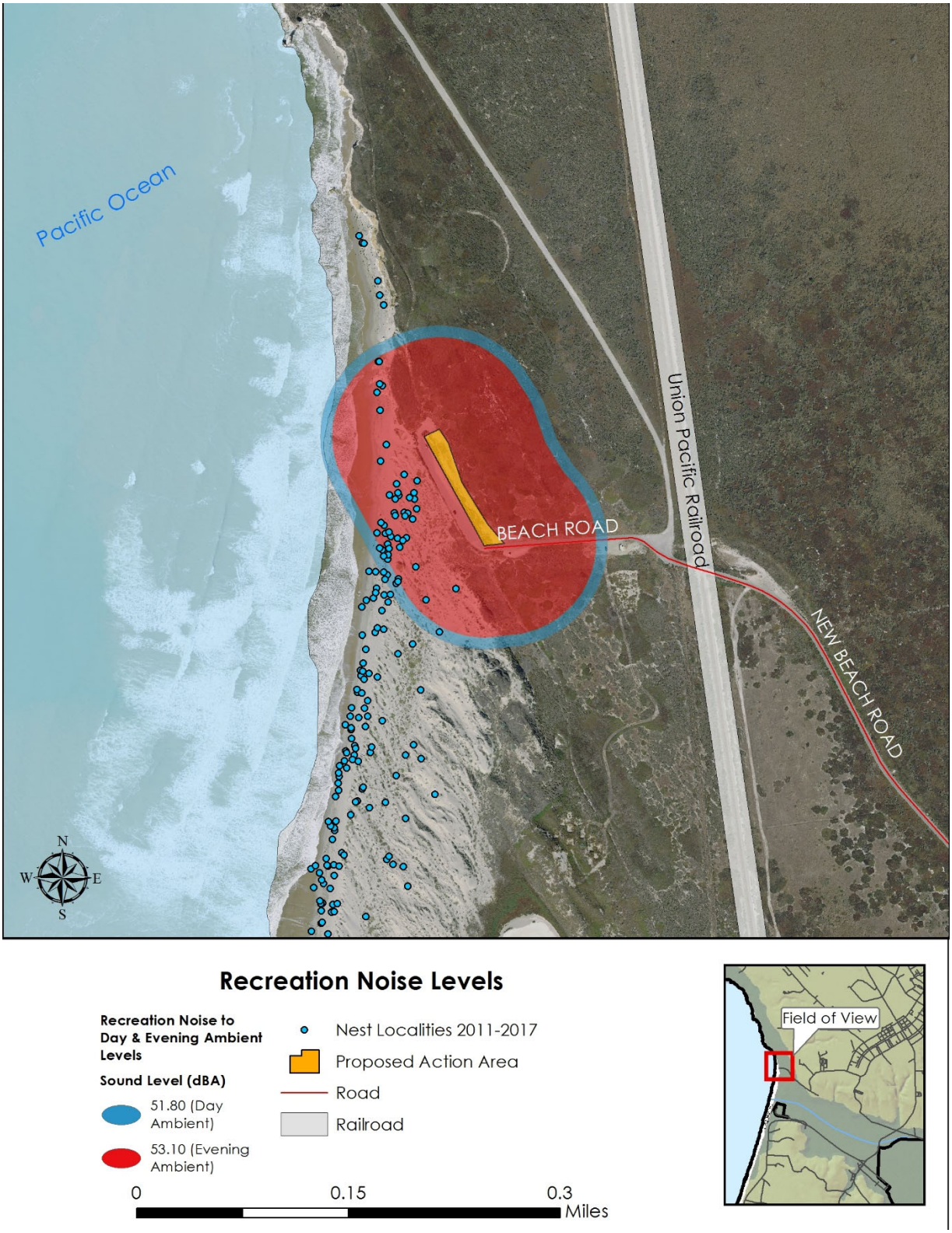

Figure 4-4. Estimated maximum extent of recreation noise attenuation to ambient daytime levels compared to western snowy plover habitat.

4.2.1.3.2 Migratory Birds

Removing vegetation from the Proposed Action Area during cabins and campsites construction would result in the temporary and permanent loss of existing breeding and roosting habitat for migratory birds. However, given the abundance of suitable habitat in the vicinity this adverse impact would be less than significant. In addition, removing vegetation during the non-breeding season for avian species (September through February) would prevent adverse effects on these species.

Increased levels of human activity and associated noise could potentially displace special status species from adjacent nesting habitat. Disturbances to nearby breeding birds include abandonment of breeding sites, egg breakage by "panicked" adults, physical damage to the eggs due to noise, heating and cooling from exposure during periods of nest abandonment, and increased vulnerability to predation. Impact severity would mostly depend on the timing of the activity related disturbance. If disturbance occurs after nesting has already been initiated, project-related noise could adversely impact reproductive success.

The protection measures outlined in Section 2.2.7.2 (Biological Resources) should serve to avoid or minimize potential adverse effects to special status avian species, including special status wildlife species, during implementation of the Proposed Action. Thus, implementing these measures should result in less than significant adverse effects to avian species. Therefore, the Proposed Action would not have a significant effect on special status avian species.

4.2.2 No-Action Alternative

Under the No-Action Alternative, cabins and campsites would not be installed at Wall Beach – rendering facilities and natural resources unaffected from their current condition(s). Recreational opportunities at Wall Beach for authorized patrons would be limited to current levels.

4.3 Cultural Resources

4.3.1 Proposed Action

The Proposed Action has been previously surveyed for cultural resources. One historic archaeological site, CA-SBA-3551H, is within the Proposed Action. As part of their compliance with Section 106 of the National Historic Preservation Act for the Proposed Action, VAFB evaluated CA-SBA-3551H as not eligible for the National Register of Historic Places (NRHP; Smallwood 2017). In a letter dated 20 April 2017 (Reference No. USAF_2017_0407_001), the California SHPO agreed with that evaluation (Appendix A). Cultural resources that are not eligible for the NRHP lack regulatory standing.

Two other archaeological resources, CA-SBA-1888 and CA-SBA-1999, are near the Proposed Action but previous investigations at those sites defined their boundaries (Bowser et al. 1996) and they do not extend into the Proposed Action. No other sites or cultural resources are present within the Proposed Action. In their letter dated 20 April 2017, the California SHPO concurred with VAFB that no significant cultural resources are present within the area of potential effects.

Additionally, implementation of the EPMs described in Section 2.2.7.2 (Cultural Resources) would serve to minimize and avoid potential impacts to cultural resources. Consequently, the Proposed Action will have no consequences for cultural resources.

The Santa Ynez Band of the Chumash Indians was consulted on the Proposed Action and expressed concern that persons renting the Wall Beach Cabins could walk into nearby archaeological sites and collect artifacts on the ground surface. VAFB Cultural Resources Managers are consulting with the Tribe to develop measures that would prevent beach-goers from collecting artifacts from nearby sites (Appendix B). If previously undocumented cultural resources are discovered during construction activities monitoring, procedures established in 36 CFR 800.13 would be followed.

4.3.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur. Thus, known and potential cultural resources would remain unaffected from their current conditions.

4.4 Earth Resources

Factors considered in determining whether implementing an alternative may have a significant adverse impact on geology and earth resources include the extent or degree to which implementation of an alternative would:

- Result in substantial soil erosion or the loss of topsoil; or
- Expose people or structures to potential substantial adverse effects, involving rupture of a known earthquake fault, strong seismic ground shaking, or liquefaction.

4.4.1 Proposed Action

Implementing the Proposed Action would require removing vegetation and disturbing soil during installing cabins and campsites. These activities typically loosen the soil and tend to promote erosion during periods of wind or rainfall. Because soils in the area are subject to high wind erosion, appropriate sediment control techniques would be used to minimize soil loss, if needed. In addition, the EPMs described in Section 2.2.7.4 (Earth Resources) would be implemented, including implementing BMPs. Therefore, based on a review of the documentation available on the geological characteristics and seismic activity of the region, no significant impacts on geology and soils are anticipated from implementing the Proposed Action.

4.4.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur, rendering earth resources unaffected from their current condition(s).

4.5 Hazardous Materials and Waste Management

Factors considered in determining whether implementing an alternative may have significant adverse impacts on hazardous materials and waste management include the extent or degree to which implementation of an alternative would result in:

- Non-compliance with applicable regulatory requirements; or
- Human exposure to hazardous materials and wastes, or environmental release above permitted limits.

Potential impacts as a result of hazardous materials and hazardous waste are evaluated using Federal, state and local regulatory requirements, contract specifications, and base operating constraints, as outlined in Chapter 3. Hazardous materials management requirements are found in Federal and state EPA and OSHA regulations and the AFI 32-7086, Hazardous Materials Management (USAF 2006). Hazardous waste management requirements are found in Federal, state, and local regulations and the VAFB HWMP (USAF 2002). Non-compliance with applicable regulatory requirements, human exposure to hazardous materials and wastes, or environmental release above permitted limits, would be considered adverse impacts.

4.5.1 Proposed Action

Implementing the Proposed Action would require the use of hazardous materials. As described in Chapter 3, these hazardous materials are commonly used for construction projects and would be the same as the types that are currently used and managed on VAFB. The Proposed Action would not cause a significant increase in the amounts of hazardous materials present on VAFB. Thus, no significant adverse impacts are anticipated.

Accidental releases of POLs from vehicles and equipment, and transformer leaks, would generate hazardous wastes thus resulting in adverse impacts to the Proposed Action Area. The contractor would be subject to hazardous materials and waste management regulations as required by Federal, state and local laws and regulations, and would follow procedures as outlined in the AFI 32-7086, Hazardous Materials Management and VAFB HWMP (30th Space Wing Plan [30 SWP] 32-7043A). All hazardous wastes would be properly managed and disposed of per applicable Federal, state and local hazardous waste regulations, and the VAFB HWMP (30 SWP 32-7043A). Before implementing the project, the contractor would prepare a hazardous material Spill Prevention and Response Plan and obtain 30 CES/CEI concurrence. In addition, the EPMs described in Section 2.2.7.5 (Hazardous Materials and Waste Management) would be implemented. Therefore, the Proposed Action would not have a significant impact due to using and generating hazardous materials and hazardous wastes.

4.5.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur. The No-Action Alternative would create no additional hazardous materials or waste on VAFB than current baseline conditions. Therefore, no significant impacts to hazardous materials or waste management would occur in the foreseeable future.

4.6 Human Health and Safety

Factors considered in determining whether implementing an alternative may have significant adverse impacts on human health and safety include adherence with applicable local, state, Federal and Base regulatory requirements. Non-compliance with regulatory requirements or human exposure to hazardous materials and wastes would be considered adverse impacts.

4.6.1 Proposed Action

Construction sites, in general, can be dangerous to the public. For the activities associated with the Proposed Action, the contractor would comply with Federal OSHA and AFOSH regulations, as required and appropriate, to provide for the health and safety of the public who may be exposed to the operations, hazardous materials in use, and hazardous wastes generated and transported. Therefore, human health and safety would not be adversely impacted by general construction hazards.

The Proposed Action Area is outside of designated UXO closure areas, the nearest being approximately 0.62 mi. (1.7 km) north; however, there is potential to find UXO anywhere on VAFB. The safety program would include coordination with the Environmental Operations Division (AFCEC/CZO) Military Munitions Response Program (MMRP) manager and contact with the weapons safety specialist for 30 SW for information on VAFB policies on UXO safety for construction work at VAFB.

Health and safety guidelines that would be followed in the handling and transportation of hazardous materials and waste are described in Section 3.5 (Hazardous Materials and Waste Management) of this EA.

Several known health and safety issues occur within the Proposed Action Area:

- Physical hazards, including holes or ditches, uneven terrain, sharp or protruding objects, slippery soils or mud, loose soil, and unstable ground could be present throughout the Proposed Action Area.
- Biological hazards, including vegetation (e.g., poison oak and stinging nettle), animals (e.g., insects, spiders, and snakes), and disease vectors (e.g., ticks, rodents), exist at and in the vicinity of the Proposed Action Area and have the potential to adversely impact human health and safety.

Adherence to Federal OSHA and AFOSH regulations would minimize the exposure of the public to these hazards and result in no significant effects as they relate to human health and safety from the Proposed Action.

4.6.1.1 Noise

The Proposed Action Area is located in a rural setting of North VAFB. As described in Section 3.6.1 (Noise), ambient noise levels of the Proposed Action Area and vicinity are relatively low due to the small population density and remote setting of the area. Background sounds occasionally produce intermittent, loud noises originating from launch operations and/or train passages.

The Proposed Action would temporarily increase the background noise levels within the Proposed Action Area and in neighboring areas during project implementation (construction) activities. Hourly average L_{eq} were estimated for the Proposed Action based on the types and numbers of equipment anticipated to be onsite during construction. Overall noise levels would result from the combined effect of the noise contributions from multiple pieces of equipment in use at a given time. Construction equipment would generate relatively continuous noise ranging from 70 to 89 dBA at 50 ft. (15 m) from the source (Table 4-6).

Table 4-6. Estimated construction equipment noise levels.

Equipment	Estimated Noise Level (dBA) at 50 ft.
Air compressor (10 hp)	73
Concrete mixer truck	76
Circular saw	70.5
Flatbed truck	89
All-terrain forklift	80
Front end loader (with auger attachment)	80
Generator (more than 25 kVA)	76
Pickup truck	70
Pneumatic air nail gun	80
Electric drill (12 amp)	51.5
Notes: amp = ampere; dBA = A-weighted decibel(s); ft. = feet; hp = horsepower; kVA = kilovolt-amps	

Estimated noise levels originating from the construction of the Proposed Action were analyzed in Section 4.2.1.2.1 (Noise Analysis of the Proposed Action Area) and determined that there would be no substantial increase in noise levels exceeding OSHA regulations of 90 dBA in an 8-hour period. Therefore, adverse impacts as a result of construction noise are expected to be less than significant. Recreational noise levels were also analyzed and would range between 39 and 73 dBA (Table 4-4), resulting in less than significant impacts to human health and safety.

4.6.2 No-Action Alternative

Under the No-Action Alternative, cabins and campsites would not be installed at Wall Beach – rendering facilities and natural resources unaffected from their current condition(s). Recreational opportunities at Wall Beach for authorized patrons would be limited to current levels. Therefore, there would be no negative impacts to human health and safety in relation to cabins and campsites construction.

4.7 Coastal Zone Management

4.7.1 Proposed Action

The CZMA and the CCA mandate that the scenic and visual qualities of coastal areas be considered and protected as a resource of public importance. The USAF conducted an analysis

of the Proposed Action to determine whether there would be adverse impacts to the coastal zone, as defined by the CZMA and CCA. The USAF determined that there would be potential significant impacts to the coastal zone as a result of the Proposed Action and prepared a Consistency Determination. The California Coastal Commission concurred with the USAF determination (Appendix D; CD- 0004-18) based on the proposed EPMs, incorporated into the Proposed Action.

4.7.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabins and campsites would not occur. Therefore, no changes to coastal resources, such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works would result.

4.8 Solid Waste Management

Factors considered in determining if implementing an alternative may have significant adverse impacts on solid waste management include the extent or degree to which implementation of an alternative would result in non-compliance with applicable regulatory requirements.

Solid waste impacts are evaluated using Federal, state, and local regulatory requirements, permit conditions, contract specifications, VAFB Solid Waste Management Guide, and operating constraints as outlined in Section 3.8 (Solid Waste Management).

4.8.1 Proposed Action

The Proposed Action would likely include small amounts of debris and trash removal as a result of vegetation clearing, construction, and recreation-generated waste. The generation of construction waste during Proposed Action implementation does not have the potential to adversely affect waste diversion rates on VAFB as any solid waste would be transported to a municipal landfill. Unrecyclable wastes generated during site remediation and construction would be disposed of off-base by the contractor. However, to the greatest extent practicable, the contractor would segregate all waste generated during the Proposed Action and manage the wastes separately. To the extent practicable, waste and debris would be reused or transported to a recycler. In addition, all metals would be recycled at the VAFB Materials Diversion Center.

The evaluation of potential P2 impacts includes solid waste diversion requirements. Non-compliance with applicable regulatory requirements or disposal of quantities of solid waste that would cause the Proposed Action to not meet mandate diversion rates would be considered an adverse impact. Debris would be segregated to facilitate subsequent P2 options. P2 options would be exercised in the following order: reuse of materials, recycling of materials, and then regulatory compliant disposal.

Compliance with all applicable Federal, state and local regulations, rules and requirements, and applicable VAFB plans would govern all actions associated with implementing the Proposed Action; therefore, no significant effects to solid waste management are anticipated.

4.8.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur. Because no solid wastes would be generated, there would be no significant impact to solid waste management in the foreseeable future.

4.9 Transportation

Factors considered in determining if implementing an alternative may have significant adverse impacts on transportation include the extent or degree to which implementation of an alternative would:

- Result in a primary roadway no longer being able to service existing traffic demands; or
- Result in traffic to shift to a roadway that was incompatible with those traffic increases (e.g., inadequate pavement structure or design capacity), or could cause potential safety problems.

The criteria for determining the significance of project-generated traffic were obtained from Santa Barbara County Planning and Development Department guidelines (Santa Barbara County Planning and Development Department 1992). Impacts would be considered adverse if:

- The addition of project trips at an intersection causes an increase in the V/C ratio by the value shown in Table 4-7 or the number of project trips using an intersection is greater than the values shown in Table 4-7. Project traffic would use a substantial portion of an intersection(s) capacity where the intersection is currently operating at acceptable levels of service (A-C) but with cumulative traffic would degrade to or approach LOS D (V/C 0.81) or lower. Substantial is defined as a minimum change of 0.03 for intersections that would operate from 0.80 to 0.85 and a change of 0.02 for intersections that would operate from 0.86 to 0.90, and 0.01 for intersections operating at anything lower.
- Project access to a major road or arterial road would require a driveway that would create an unsafe situation or a new traffic signal or major revisions to an existing traffic signal.
- Project adds traffic to a roadway that has limiting design features or receives use that would be incompatible with substantial increases in traffic, which would become potential safety problems with the addition of project or cumulative traffic. Limiting design features include, but are not limited to narrow width, roadside ditches, sharp curves, poor sight distance, and inadequate pavement structure. Some examples of a roadway receiving incompatible use are large number of heavy trucks on rural roads used by farm equipment, livestock, horseback riding, or residential roads with heavy pedestrian or recreational use.

Table 4-7. LOS Significance Thresholds.

LOS	Threshold
A	An increase of V/C > 0.20
B	An increase of V/C > 0.15
C	An increase of V/C > 0.10
D	Adding 15 Trips to baseline conditions
E	Adding 10 Trips to baseline conditions
F	Adding 5 Trips to baseline conditions

Note: V/C = Volume-to-Capacity

4.9.1 Proposed Action

Given the short duration low ADT volumes and good LOS currently experienced on the roadways that would be affected by project activities on VAFB and its vicinity, and the relatively small increase in daily vehicle traffic that would be generated by the Proposed Action, no adverse effects to capacity would occur in the study-area roadways. However, brief restrictions to traffic may occur occasionally throughout project duration. Alternate routes during this time will not be necessary. All roadway sections would continue to operate at a LOS in the range of A to B with project-added traffic. Increased vehicle activity affects the integrity of roadway sections by increasing the flexures of the pavement. The design life for asphalt pavement, generally selected as either 10 or 20 years, drives engineering specifications for the road based upon the strength of the base soil and the Traffic Index (TI) for the design life. The TI is calculated based upon the number of truck trips that are expected during the design life of the pavement. The theory states that the pavement, during its lifetime, can tolerate a finite number of flexures due to loaded trucks. If the number of truck trips is increased, the life of the pavement is shortened. For example, if a 20-year design were based upon an AADT of 1,000 trucks for 20 years and the volume increases to 2,000 ADT, the structural life of the pavement would be reduced to 10 years. While the current condition of the pavement on all of the affected roads is fair to good, added project-related vehicle traffic could cause faster than estimated deterioration of the pavement surface and require additional maintenance. Although an adverse effect, it would not be considered significant given that the number of vehicle trips per day anticipated from the Proposed Action are not high. Therefore, the Proposed Action is not anticipated to create any significant impacts to transportation. In addition, the recommended EPMs, described in Section 2.2.7.9 (Transportation) would further reduce the potential for adverse effects on transportation.

4.9.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur. Therefore, there would be no effect on existing transportation beyond baseline conditions.

4.10 Water Resources

Factors considered in determining whether implementing an alternative may have significant adverse impacts on water resources include the extent or degree to which implementation of an alternative would:

- Cause substantial flooding or erosion;
- Reduce surface water quality to creeks, rivers, streams, lakes, or the ocean; or
- Reduce surface or groundwater quality or quantity.

4.10.1 Proposed Action

Implementing EPMs described in Section 2.2.7.10 (Water Resources) would reduce and minimize potential impacts to water resources.

4.10.1.1 Surface Water and Floodplains

Surface water quality of the Pacific Ocean and the Santa Ynez River Lagoon could potentially be degraded as a result of trash discharge during construction and operations as a result of accidental release of contaminates during demolition and construction, trash that is improperly disposed, or accidental discharge from portable toilets. No project-related activities would occur in a water body; however, the Santa Ynez River Lagoon is approximately 1 mi. (1.6 km) south of the Proposed Action Area and the Pacific Ocean is 0.07 mi. (0.11 km). The amount of construction-related contaminants, such as an oil leak from a vehicle, would be minimal and any accidental spills would be localized. All hazardous wastes would be managed and disposed of in accordance with applicable Federal, state, and local hazardous waste regulations to include the VAFB HWMP. The contractor would follow a spill prevention and response plan, have spill kits, and clean up spills immediately. Any resulting hazardous waste would be properly disposed of in accordance with VAFB procedures. Campers would be instructed on properly containing and disposing of trash and portable toilets would be secured with secondary containment and anti-tipping devices. Additionally, EPMs would ensure that the facility is properly maintained and that all trash is removed through daily inspections. Therefore, no adverse impacts to surface water quality would occur.

The Proposed Action would not negatively affect the volumes or patterns of surface flows within the immediate drainage area. The construction of the new cabins would create approximately 1,300 ft^2 (121 m^2) of impervious area, which is below the threshold for NPDES Construction General Permit coverage or a Storm Water Control Plan for post-construction storm water runoff.

Grading and construction activities associated with the Proposed Action would result in temporary soil disturbance, thus creating the potential for minimal erosion within the impact area. Vegetation removal associated with site clearing would also increase the potential for erosion from the project site. Implementing EPMs described in Section 2.2.7.10 (Water Resources) would reduce and minimize potential impacts to water resources.

EOs 11988 and 13690 require Federal agencies to reduce the risk of flood loss, minimize the impact of flood on human safety, and to restore and preserve the natural and beneficial values

served by floodplains. EO 13690 would modify EO 11988 by establishing a flood reduction standard (identifying the floodplain based on three approaches) by which Federal agencies would ensure Federally funded actions improve the resilience of communities and Federal assets against the impacts of flooding. Additionally, EO 13690 requires Federal agencies follow three approaches for establishing flood elevations and hazard areas to be used to, generally, inform planning for projects within floodplains. EOs 11988 and 13690 require an evaluation of alternatives prior to proceeding with Federal actions that may affect floodplains.

Due to the relatively small footprint of the cabins and campsites, the Proposed Action would not significantly alter run-off or drainages to floodplains, therefore no negative effects to floodplains would occur.

4.10.1.2 Groundwater

Groundwater is not likely to be encountered under the Proposed Action, as there are no significant groundwater sources within the Proposed Action Area. No project activity requires removing soil or excavating to a depth that would disturb groundwater. Therefore, the Proposed Action is not anticipated to have a significant effect on groundwater resources.

4.10.1.3 Waters of the United States and Wetlands

EO 11990, *Protection of Wetlands*, is focused on minimizing the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. EO 11990 requires an evaluation of alternatives prior to proceeding with Federal actions that may affect wetlands. Because the Proposed Action is not located within Waters of the U.S. or a jurisdictional wetland, there would be no negative impacts to either resource.

There are no Waters of the U.S. or jurisdictional wetlands within the Proposed Action Area or near enough that they would be affected by the project. Therefore, a CWA Section 401 Water Quality Certification from the Central Coast RWQCB and CWA Section 404 Permit from USACE would not be required for the Proposed Action.

4.10.2 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur; therefore, there would be no negative impacts to water resources.

4.11 Cumulative Impacts

The effects of the Proposed Action and No-Action Alternative in combination with the effects of other relevant past, present, and reasonably foreseeable future projects have been evaluated in a cumulative effects analysis. A list of relevant past, present, and reasonably foreseeable projects that have been/would be constructed on VAFB is provided in Table 4-8. The foregoing analysis is based on the same resource thresholds as discussed in Sections 4.1 to 4.10.

4.11.1 Past, Present, and Reasonably Foreseeable Future Actions in the Region of Influence

The region of influence for the Proposed Action is defined as the area over which effects of the Proposed Action could contribute to cumulative impacts on the environment. Therefore, the region of influence includes both North and South VAFB. Future large projects on VAFB that are currently projected for the next several years have the greatest potential to result in cumulative impacts. VAFB projects contain environmental contract specifications and are individually evaluated for their environmental impacts. Based on the environmental impacts associated with each specific project, EPMs and requirements are included in the project activities to reduce adverse environmental effects. Thus, individually implemented measures provide cumulative protection reducing overall adverse effects on VAFB environmental resources. Table 4-8 lists the past, present, and reasonably foreseeable future Federal actions that may contribute to cumulative effects of the Proposed Action and may be under construction at the same time as the Proposed Action.

Table 4-8. Past, Present, and Reasonably Foreseeable Future Actions in the Region of Influence.

Federal Projects	Status
13th Street Bridge Replacement	NEPA complete. Action completed in 2017.
Falcon 9 and Falcon 9 Heavy Launch Vehicle Programs from Space Launch Complex (SLC) 4 East	NEPA complete. Actions ongoing.
Boost-back and Landing of the Falcon 9 First Stage at SLC-4 West and Offshore	NEPA complete. Actions ongoing.
Atlas V System from SLC-3E	NEPA complete. Actions ongoing.
D1 Powerline Replacement	NEPA underway.
South VAFB Wastewater Treatment Plant	NEPA underway.
Repairs to San Antonio Road West Bridge	NEPA underway.
Golf Course	NEPA underway.
SLC-2 Deactivation	NEPA beginning.

4.11.2 Proposed Action

4.11.2.1 Air Quality

VAFB has other projects in the region of influence for the Proposed Action. Long-term emissions from the projects are not anticipated to increase. Cumulative emissions from the Proposed Action combined with other concurrent projects and launch operations would not exceed the significance thresholds in Santa Barbara County and would not produce any significant cumulative air quality impacts. This determination was made by reviewing the total emission impact of this project with the cumulative emissions from all planned concurrent projects.

4.11.2.2 Biological Resources

The Proposed Action and other construction and launch projects that involve ground-disturbing activities and related noise and traffic impacts could have temporary and localized effects on biological resources. Cumulative adverse impacts could result if concurrent projects, along with the Proposed Action, cause disturbances to special-status species or their habitats. Implementation of the Proposed Action would result in temporary loss of habitat, potential loss of individual special status species, and potential disruption of foraging and breeding activities. Although the Proposed Action and other concurrent projects may disturb wildlife, these disturbances would be temporary and wildlife would continue to use habitat in the periphery of the projects. By implementing the EPMs listed in Section 2.2.7.2 (Biological Resources) and the USFWS BO requirements issued for the Proposed Action, potential adverse effects would be less than significant and they would not adversely affect the western snowy plover or other special status species. Additionally, VAFB routinely implements projects and specific measures and procedures set forth in the *Integrated Natural Resources Management Plan* (USAF 2011), which would tend to ensure project-specific and cumulative adverse effects to biological resources are avoided and minimized. Therefore, the Proposed Action, in combination with other past and planned activities, should not result in significant adverse cumulative impacts on biological resources.

4.11.2.3 Cultural Resources

Implementing the Proposed Action and other construction activities on VAFB involving activities that disturb intact, native soils or demolish structures over 50 years of age could result in impacts to cultural resources. Cumulative impacts would result if project activities cause major ground disturbances in areas of high paleontological sensitivity that may contain intact subsurface prehistoric or historic archaeological resources. Cumulative impacts would result from incremental changes that individually would not impact the NRHP eligibility or listing status of a historic property, but collectively and over time, would.

EPMs would be implemented to minimize impacts on sensitive archaeological resources to include presence of an archaeologist and Native American monitor during all ground-disturbing activities, if required by the ICRMP. If cultural resources are discovered during project-related ground-disturbing activities, all excavation would be halted until the significance of the find is assessed. Significant cumulative impacts from other projects and the Proposed Action are not expected.

4.11.2.4 Earth Resources

Cumulative projects at VAFB involving grading, excavations, and construction or demolition could result in erosion-induced sedimentation of adjacent drainages and water bodies. Potential cumulative effects would include an increase in soil disturbance associated with construction, demolition, and road building activities, substantially increased erosion, landslides, soil creep, mudslides, and unstable slopes. These impacts would be minimized by implementing EPMs and

using BMPs to minimize soil erosion and reduce fugitive dust. Erosion-induced sedimentation of surface drainages could occur as a result of cumulative projects at VAFB.

All projects located in the region are subject to seismically induced ground shaking due to an earthquake on a local or regional fault. By incorporating modern construction engineering and safety standards, all adverse seismic-related impacts at the project sites, as well as the projects in the region should be avoided. Therefore, the Proposed Action would not result in significant adverse cumulative impacts to geology and earth resources.

4.11.2.5 Hazardous Materials and Waste Management

Managing any hazardous materials would occur by complying with VAFB Hazardous Materials Management Plan, and emergency responses to spills would follow the Hazardous Materials Emergency Response Plan for all projects. Projects must also follow the Integrated Solid Waste Management Plan. EPMs would be implemented to minimize hazardous materials or hazardous waste management impacts. The Proposed Action would not contribute to cumulative effects to hazardous materials and wastes in or around VAFB. Therefore, the Proposed Action and other projects would not result in significant cumulative impacts.

4.11.2.6 Human Health and Safety

The Proposed Action and other concurrent projects on VAFB could result in increased risks to human health and safety. Implementing the Proposed Action and other similar actions at VAFB would slightly increase the short-term risk associated with construction contractors performing work at project locations. Contractors would be required to establish and maintain safety programs that would provide protection to their workers and limit the exposure of Base personnel to construction hazards. Impacts would be minimal and confined to the immediate project site.

The safety program would include coordination with the AFCEC/CZO MMRP manager and contact with the weapons safety specialist for 30 SW for information on VAFB policies on UXO safety for construction work at VAFB. By implementing required safety measures, there would be no significant cumulative impacts resulting from the Proposed Action and other anticipated projects.

4.11.2.7 Noise

Construction and demolition activities within the Proposed Action Area and for other projects would result in temporary, intermittent impacts localized to each project site. Construction projects are typically temporary in duration, and the noise impact from the Proposed Action would not be a major contributor to the noise setting on VAFB.

4.11.2.8 Coastal Zone Management

The Proposed Action would not adversely affect land use or CZMA and CCA policies. The cumulative projects identified in Table 4-7 would conform to USAF regulations and planning principles or comply with County/State requirements. Cumulative projects would be modified during the project review process to ensure compatibility with existing land uses and consistency with management plans. These projects have been and would be assessed separately under

NEPA and the effects would be analyzed and disclosed. The Proposed Action and other cumulative projects are not expected to result in significant adverse cumulative effects on land use or coastal zone resources.

4.11.2.9 Solid Waste

The cumulative projects listed in Table 4-7, including the Proposed Action will result in an overall increase in solid waste generation resulting from vegetation clearing, construction, and waste produced during the use of the cabins. Solid waste would be minimized by compliance with VAFB's Integrated Solid Waste Management Plan and the implementation of EPMs, including segregating, reusing, and recycling waste to the greatest extent practicable, would reduce cumulative impacts of solid waste. Local landfills would be able to process the projected temporary increases in solid waste. No significant cumulative impacts on solid waste management are expected.

4.11.2.10 Transportation

Cumulative construction and demolition projects on VAFB would contribute to increased traffic volumes in the region. However, given the low ADT volumes and good levels of service currently experienced on the roadways that would be affected by project activities on VAFB and its vicinity, and the relatively small and temporary increase in daily vehicle traffic that would be generated by the Proposed Action, no cumulative adverse effects to capacity are expected to occur as a result of the Proposed Action.

4.11.2.11 Water Resources

Cumulative impacts to water resources could occur if other projects were to inadequately address water resources at project locations. However, projects on VAFB, including the Proposed Action, are required to utilize site-specific BMPs and conduct site restoration, as necessary, to minimize impacts to water quality. Impacts tend to be localized and temporary during the project duration. Additionally, the Proposed Action would not occur in any waterbody. Therefore, the Proposed Action would not contribute to cumulative negative effects to water resources.

4.11.3 No-Action Alternative

Under the No-Action Alternative, the proposed cabin and campsite installations would not occur. Therefore, no impacts to cumulative impacts would be expected in the short-term.

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APPENDIX A: State Historic Preservation Office Consultation

APR 0 4 2017

Lieutenant Colonel Ryan J. Novotny
Commander, 30th Civil Engineer Squadron
1172 Iceland Ave
Vandenberg AFB CA 93437-6011

Ms. Julianne Polanco
State Historic Preservation Officer
Department of Parks and Recreation
Office of Historic Preservation
P.O. Box 942896
Sacramento CA 94296-0001

Dear Ms. Polanco

The 30th Space Wing of the United States Air Force, Vandenberg Air Force Base (VAFB), proposes to install four pre-fabricated cabins and establish up to five campsites at one of two locations: at Wall Beach just north of the mouth of the Santa Ynez River or in the vicinity of the Boathouse harbor on South Base. VAFB determined the *Outdoor Recreation Cabins Project* is an undertaking subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and will comply with Section 106 using the implementing regulations [36 CFR Part 800]. With this letter and its attachment, VAFB is initiating consultation with you.

VAFB carried out a reasonable and good-faith cultural resources investigation that fulfills federal agency responsibilities pursuant to 36 CFR 800.4(a)-(d) and 36 CFR 800.5(a)-(d). VAFB identified two previously recorded built-environment resources within the Area of Potential Effects (APE): a former small-arms target practice range at the Wall Beach location (P-42-003551) and the former Point Arguello U.S. Coast Guard Lifeboat Rescue Station at the Boathouse harbor location (P-42-003547; P-42-040495). The Carbine Known Distance Range was evaluated for the proposed undertaking and found to be not eligible for listing in the Natonal Register of Historic Places (NRHP). The former Coast Guard Station has been determined eligible for the NRHP under Criterion C for its architectural merits as an example of a Depression-era federal building complex constructed in the Colonial Revival style. None of the buildings or structures at the former Coast Guard Station complex will be physically altered as part of the proposed undertaking. Analysis to assess potential indirect effects on the former Lifeboat Rescue Station complex was carried out during this study. Additionally, a historic-period refuse deposit at P-42-003547 exists within the APE. The historical significance of the refuse deposit was not previously known and therefore was evaluated for significance as part of the study supporting the proposed project. Details of the investigation are provided in the attachment.

VAFB presents the following federal agency determinations for concurrence from the State Historic Preservation Officer:

a. The Area of Potential Effects for the Boathouse Cabins Project is adequately delineated;

b. The Carbine Known Distance Range (P-42-003551, CA-SBA-3551H) does not meet any of the NRHP criteria for significance and, as such, is not eligible for listing on the NRHP;

c. The refuse deposit at P-42-003547/P-42-040495 does not meet any of the NRHP criteria for significance and, as such, does not contribute to the significance of the larger historic property, and

d. The undertaking would have no direct or indirect effects on any of the characteristics of the former Coast Guard Station complex that would diminish its integrity and qualification for inclusion in the National Register of Historic Places.

Pending concurrence with the above determinations, VAFB's federal agency Section 106 finding for the proposed project is no adverse effect to historic properties. If you do not object to this finding, VAFB has fulfilled its Section 106 responsibilities for this undertaking and no further consultation is required. If project implementation results in a discovery during construction, VAFB would re-open Section 106 consultation.

If you have any questions or require additional information, please contact Mr. Christopher Ryan at (805) 605-0748 or via e-mail at christopher.ryan.7@us.af.mil. Thank you for your assistance with this undertaking.

Sincerely

RYAN J. NOVOTNY, Lt Col, USAF
Commander

Attachment:
Identification of Historic Properties and Assessment of Effects, Outdoor Recreation Cabins Project

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
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April 20, 2017

Reply In Reference To: USAF_2017_0407_001

Lieutenant Colonel Ryan J. Novotny
Commander, 30th Civil Engineer Squadron
Vandenberg Air Force Base
1172 Iceland Avenue
Vandenberg AFB, CA 93437-6011

RE: Section 106 Consultation for Installation of Four Recreational Cabins, Restrooms, and Campsites at Two Potential Locations, Vandenberg Air Force Base

Dear Lt. Col. Novotny:

The United States Air Force (USAF) is initiating consultation regarding their 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 USAF are proposing to install four prefabricated recreational cabins, restrooms and a maximum of five campsites at Wall Beach or near the Boathouse Harbor on South Base. Site grading and preparation will be required prior to mounting the cabins on concrete pillars. Additional activities include landscaping and creation of parking areas and access roads.

SHPO understands the USAF initiated consultation with the Santa Ynez Band of Chumash Indians regarding this undertaking and have received no comments to date. Pursuant to 36 CFR Part 800.4, the USAF performed property identification efforts within the undertaking's two potential APEs and identified the following resources:

- The former Point Arguello U.S. Coast Guard Lifeboat Rescue Station, a property previously determined eligible for NRHP inclusion.
- A refuse deposit (P-42-003547/P-42-040495) associated with the Point Arguello U.S. Coast Guard Lifeboat Rescue Station.
- A concrete target wall recorded as a component of Camp Cooke's M Range, Carbine Known Distance Range (P-42-003551/CA-SBA-3551H) constructed ca. 1941.

The USAF is requesting SHPO concurrence with their APE determination, their determination that P-42-003547/P-42-040495 and P-42-003551/CA-SBA-3551H do not meet NRHP inclusion requirements and with their finding of No Adverse Effect. After reviewing the information provided by the USAF, SHPO has the following comments:

1) SHPO has no objections to the USAF's identification and delineation of both APE's pursuant to 36 CFR Parts 800.4(a)(1) and 800.16(d).

2) SHPO concurs with the USAF's determination that the refuse deposit (P-42-003547/P-42-040495) is not eligible for NRHP inclusion.

3) The USAF'S evaluation characterizes the target wall as an individual property. Due to its integral relation to the former range and the lack of context when evaluated for significance without consideration of the range's original features (berms, latrines, observation towers and other elements), the USAF might more effectively evaluate the wall as a potential contributor to the as yet undocumented Camp Cooke M Range, Carbine Known Distance Range Historic District. However, as the undertaking will not affect any characteristics that would render the wall (P-42-003551/CA-SBA-3551H) or range ineligible for NRHP inclusion, SHPO recommends that for the purposes of this undertaking only, the range and its contributing elements are eligible for NRHP inclusion as a historic district. If they agree with this course of action, the USAF may submit an updated evaluation incorporating SHPO recommendations at their convenience or as supporting documentation for a future undertaking directly affecting the range or in which the range is within the APE.

4) SHPO recommends that a finding of no adverse effect pursuant to 36 CFR Part 800.5(b) is appropriate for the proposed cabin installation at Point Arguello.

5) As no NRHP listed or eligible properties are within the APE for the Wall Beach alternative, SHPO recommends that a finding of no historic properties is appropriate pursuant to 36 CFR Part 800.4 (d)(1).

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

If you have any questions or concerns, please contact SHPO historian Ed Carroll at (916) 445-7006 / Ed.Carroll@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

APPENDIX B: Native American Tribal Consultation

DEPARTMENT OF THE AIR FORCE
30TH SPACE WING (AFSPC)

Christopher Ryan
30th Civil Engineer Squadron
1028 Iceland Avenue
Vandenberg AFB, CA 93437-6010

April 3, 2017

Mr. Sam Cohen
Mr. Freddie Romero
Santa Ynez Band of Chumash Indians
P.O. Box 517
Santa Ynez, CA 93460

Hello Sam, Hello Freddie:

The 30th Space Wing of the United States Air Force, Vandenberg Air Force Base (VAFB), proposes to install four pre-fabricated cabins and establish up to five campsites at one of two locations, at Wall Beach just north of the mouth of the Santa Ynez River, or just north of the Boathouse on South Vandenberg AFB. VAFB determined the *Outdoor Recreation Cabins Project* constitutes an undertaking subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. Archaeological survey supporting the proposed project was conducted by Mr. Josh Smallwood of the Center for the Environmental Management of Military Lands (CEMML). With this letter and the accompanying report, VAFB is initiating consultation with the Tribe regarding eligibility determinations and potential impacts to cultural resources.

VAFB delineated the area of potential effects (APE) and carried out a reasonable and good faith effort to identify historic properties within the APE. Two previously recorded historic built-environment resources are within the APE: a former small arms target practice site at the Wall Beach location, and the Boathouse complex at the South Base location along with a historical archaeological deposit. The attached report describes the proposed project, the built-environment resources, and the historical archaeological deposit, along with an assessment of potential project effects to the Boathouse. I am requesting your written views regarding the project. If I could receive your comments within 20 calendar days I would be grateful. If you have any questions, please contact me at 605-0748. Thank you for your assistance.

Sincerely

CHRISTOPHER RYAN
Cultural Resources Manager

Attachment: Identification of Historic Properties, Outdoor Recreation Cabins Project

APPENDIX C: United States Fish and Wildlife Service Consultation

Biological Assessment for Cabin and Campsite Improvements at Wall Beach, Vandenberg Air Force Base, California

12 July 2018

Prepared for

30th Space Wing, Installation Management Flight
1028 Iceland Avenue, Bldg. 11146
Vandenberg Air Force Base, California 93437

Prepared by

ManTech SRS Technologies, Inc.
300 North G Street
Lompoc, CA 93436

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ACRONYMS AND ABBREVIATIONS

ac.	acre(s)
BA	Biological Assessment
BO	Biological Opinion
cm	centimeter(s)
CY	cubic yards
C.F.R.	Code of Federal Regulations
dBA	A-weighted decibel
ESA	Endangered Species Act
ESBB	El Segundo blue butterfly
FR	Federal Register
ft	foot or feet
ft^2	square feet
ha	hectare(s)
in	inch or inches
km	kilometer(s)
L_{eq}	Equivalent Sound Level
mi.	mile(s)
m	meter(s)
m^2	square meters
m^3	cubic meters
U.S.	United States
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
VAFB	Vandenberg Air Force Base
WSDOT	Washington State Department of Transportation

1 Introduction

The purpose of this Biological Assessment (BA) is to reinitiate consultation to address proposed changes in the Biological Opinion on the Vandenberg Air Force Base (VAFB) Beach Management Plan (8-8-12-F-11R). This BA address the effects on federally listed (endangered and threatened) species and their Critical Habitat as required by Section 7 of the Endangered Species Act (ESA) of 1973 (16 United States Code § 1536) as a result of proposed changes in the Beach Management Plan (herein referred to as the Proposed Action). The Proposed Action includes the installation of four separate pre-fabricated cabins and five tent camping sites, to allow military recreational access for overnight camping. The Action Area is located at Wall Beach on VAFB (Figure 1-1). The U.S. Air Force (USAF) is the lead agency responsible for the implementation of the proposed change in the action.

VAFB has previously completed formal consultations with the United States (U.S.) Fish and Wildlife Service (USFWS) per section 7 of the ESA on its Beach Management Plan, which includes recreational access. VAFB has been issued several Biological Opinions (BO) by the USFWS (1-8-01-F-13, 1-8-092-F-7, 1-9-03-F-13, 1-8-05-F-5R, and 8-8-12-F-11R) and amendments, for the potential effects of the Beach Management Plan on the federally threatened western snowy plover (*Charadrius nivosus*). The USAF identified that following proposed changes in the action that may result in effects that have not been considered in prior consultations:

1. Developing cabins and campsites in a previously disturbed area east of Wall Beach;
2. Allowing year-round overnight camping at the cabins and campsites; and
3. Increased human use that may result in greater noise and visual disturbance at Wall Beach.

This BA examines the potential effects of the proposed change in the action on the western snowy plover. There is no designated Critical Habitat for the western snowy plover on VAFB, thus there are no effects to critical habitat.

Figure 1-1. Regional location of VAFB.

2 Project Description

2.1 Project Location

The project location is on North VAFB at Wall Beach, which is centrally located within VAFB, less than 5 miles (mi.) (8 kilometers [km]) from the Base Cantonment Area and California Boulevard (Figures 1-1 and 2-1). Wall Beach is accessible by existing paved roads such as New Beach Road and 35th Street (Figure 2-1). The proposed cabins and campsites would be installed immediately east of the parking area. The parking area is the existing paved lot for Wall Beach. The Proposed Action would disturb a total area of approximately 0.60 ac (0.24 ha) (Table 2-1; Figure 2-2). Vegetation in the area is currently dominated by non-native and invasive species.

Table 2-1. Project Impact Area.

Land Condition	Cabin Area (acres)	Campsite Area (acres)
To Be Cleared	0.2	0.2
Currently Disturbed/ Cleared	0.1	0.1
Currently Developed	0	0
Total	**0.3**	**0.3**

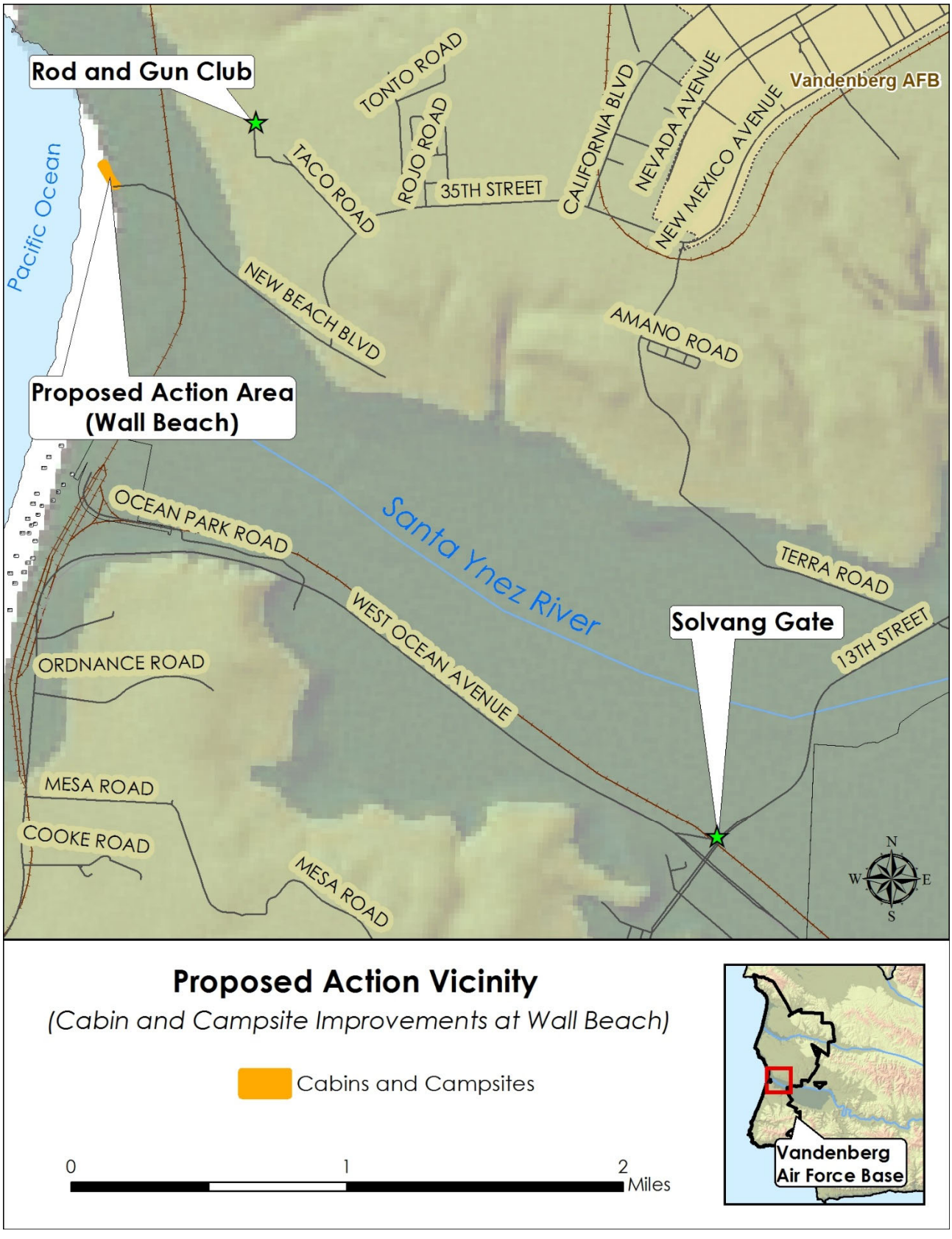

Figure 2-1. Proposed Action Area.

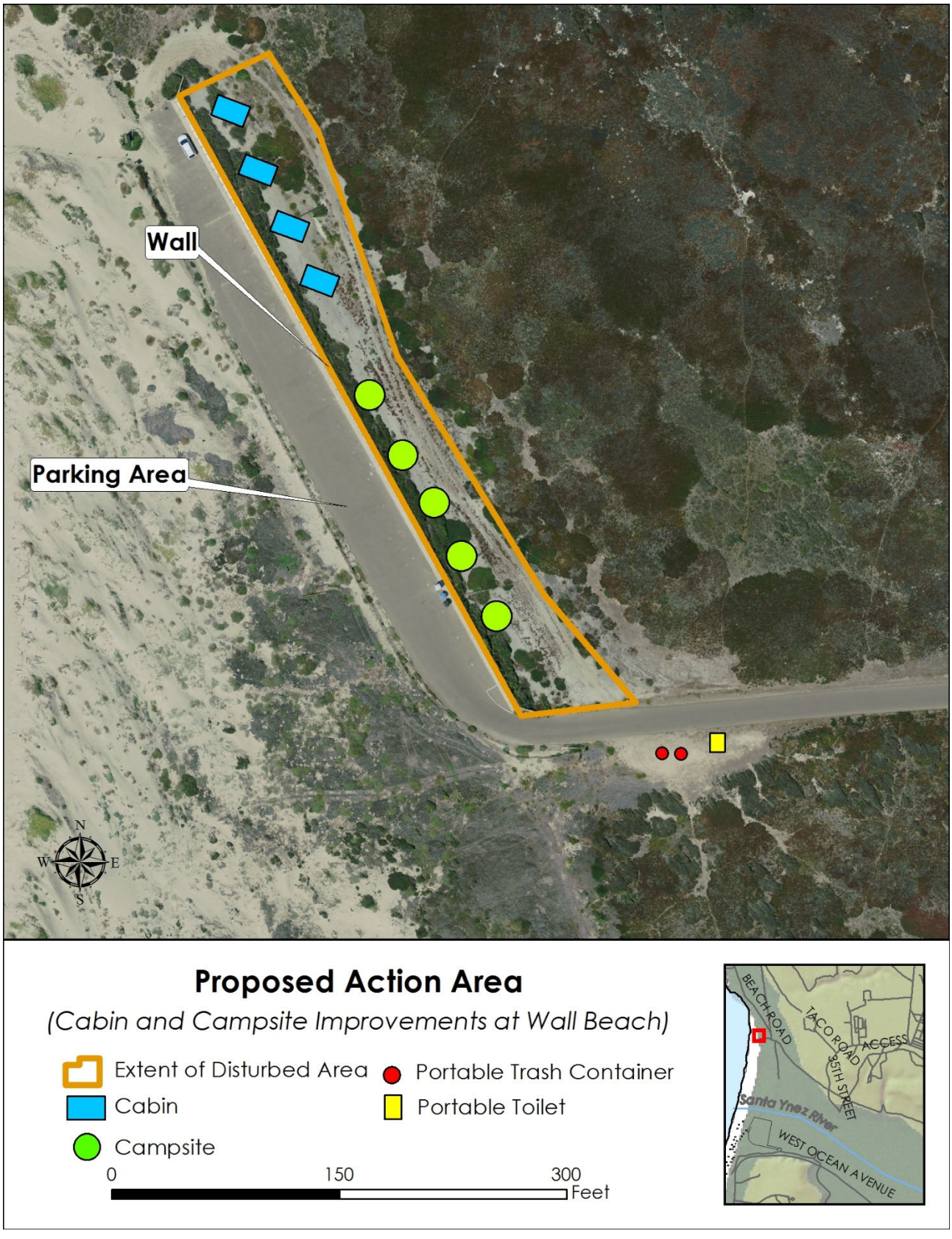

Figure 2-2. Proposed location of cabin and campsite improvements.

2.2 Cabin and Campsite Installation

2.2.1 Cabin Overview

The Proposed Action includes the installation of four separate, pre-fabricated kit cabins immediately northeast of the existing parking area and wall at Wall Beach (Figure 2-2). Each cabin would be approximately 23 feet (ft) long by 14 ft wide by 10.5 ft high (6.9 x 4.3 x 3.2 meters [m]) (Figures 2-3 through 2-5) and supported by 16 concrete pier foundations, 8 to 16 inches (in) (20.3 to 40.6 centimeters [cm]) above grade (Figures 2-5 and 2-6). Thus, the overall height above grade of each cabin would be approximately 12 ft (3.7 m). Each cabin would have approximately 232 square feet (ft^2) (21.6 square meters [m^2]) of indoor living space and 84 ft^2 (7.8 m^2) of covered porch space. Each cabin would cover 316 ft^2 (29.4 m^2) but would require approximately 350 ft^2 (32.5 m^2) of cleared space for installation. All four cabins would cover a total area of approximately 1,264 ft^2 (117.4 m^2) and require 1,400 ft^2 (130 m^2) of cleared space for installation. Cabin building materials would primarily consist of treated logs and wooden materials, complete with metal roofing and trim. Routine inspection and maintenance of cabin facilities would be required to ensure cabins are in good condition. In addition, regular care of the grounds would include removal of weeds and any trash left by campers.

2.2.2 Campsite Overview

Five tent camping sites would be established at Wall Beach within the project area (Figure 2-2). Campsites would be located immediately southeast of the proposed cabins and require minor clearing of vegetation and debris to prepare the sites. Each campsite would require less than 300 ft^2 (27.9 m^2) for camping activities. One vehicle would be allowed per cabin or campsite and would park next to each cabin or campsite within the area the extent of the disturbed area delineated in Figure 2-2. Campsites would not have any facilities or amenities other than picnic tables and would not include fire pits. All open fires would be prohibited. The campsites would also require routine inspection and maintenance of facilities to ensure cabins are in good condition, as well as regular weeding to maintain the grounds and removal of trash left by campers (see Section 2.3.1).

2.2.3 Construction Overview

All equipment and materials would be staged on paved surfaces within the project area, including the exiting parking area (Figure 2-2). The period of construction would be 90 to 120 days and take place between 1 October and 28 February, outside of western snowy plover nesting season. A four-person construction crew would be on site for 90 days. A 40 CY (30.6 m^3) roll-off dumpster would be utilized for construction-generated waste during the entire construction period. A temporary portable toilet would remain onsite for 120 days for construction workers. Initial vegetation clearing will be performed by scraping and grubbing the vegetation to ground level with a front-end loader. Pier construction would require approximately 20 cubic yards (CYs) (15.3 cubic meters [m^3]) of concrete, which would be poured into holes drilled by an auger (Figure 2-7). If it is necessary to leave holes open overnight, they would be covered.

Figure 2-3. Cabin – front view.

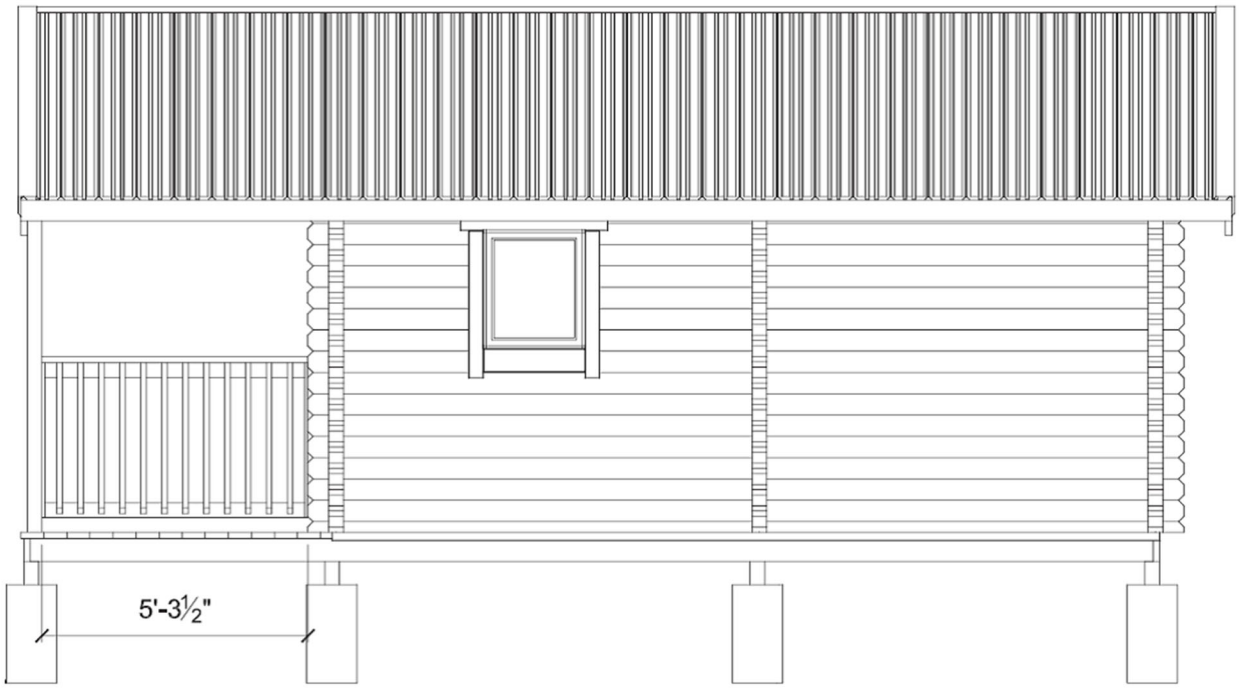

Figure 2-4. Cabin – side view.

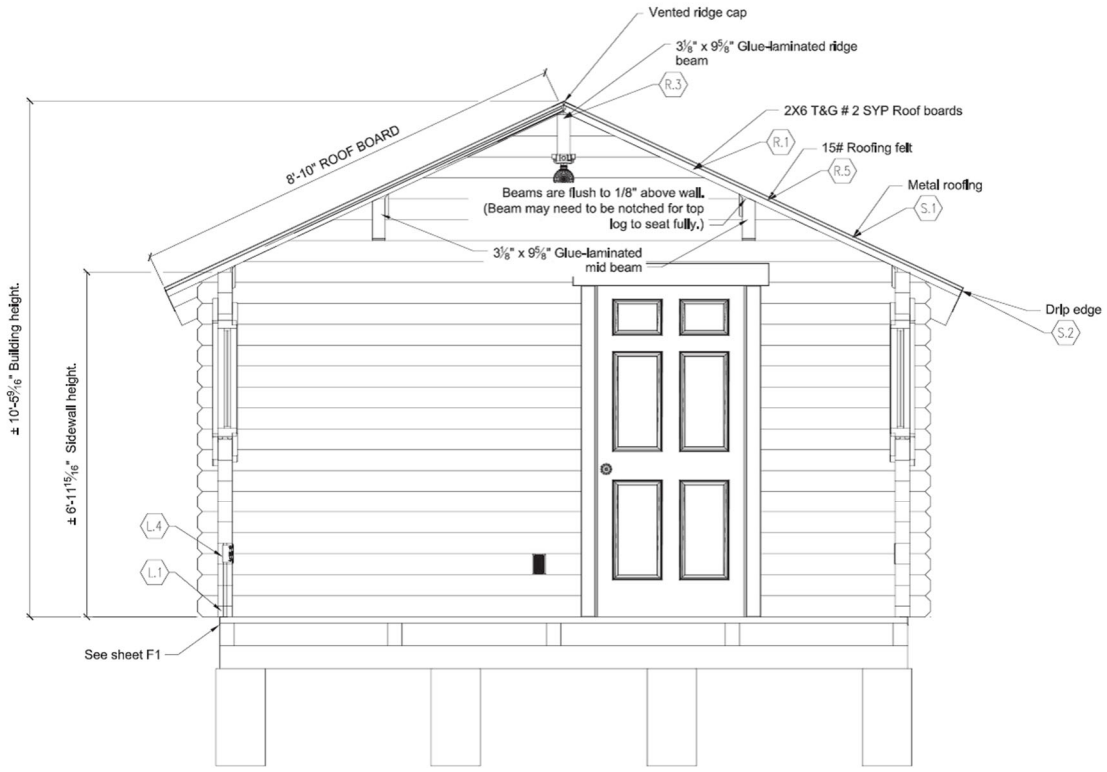

Figure 2-5. Cabin elevation.

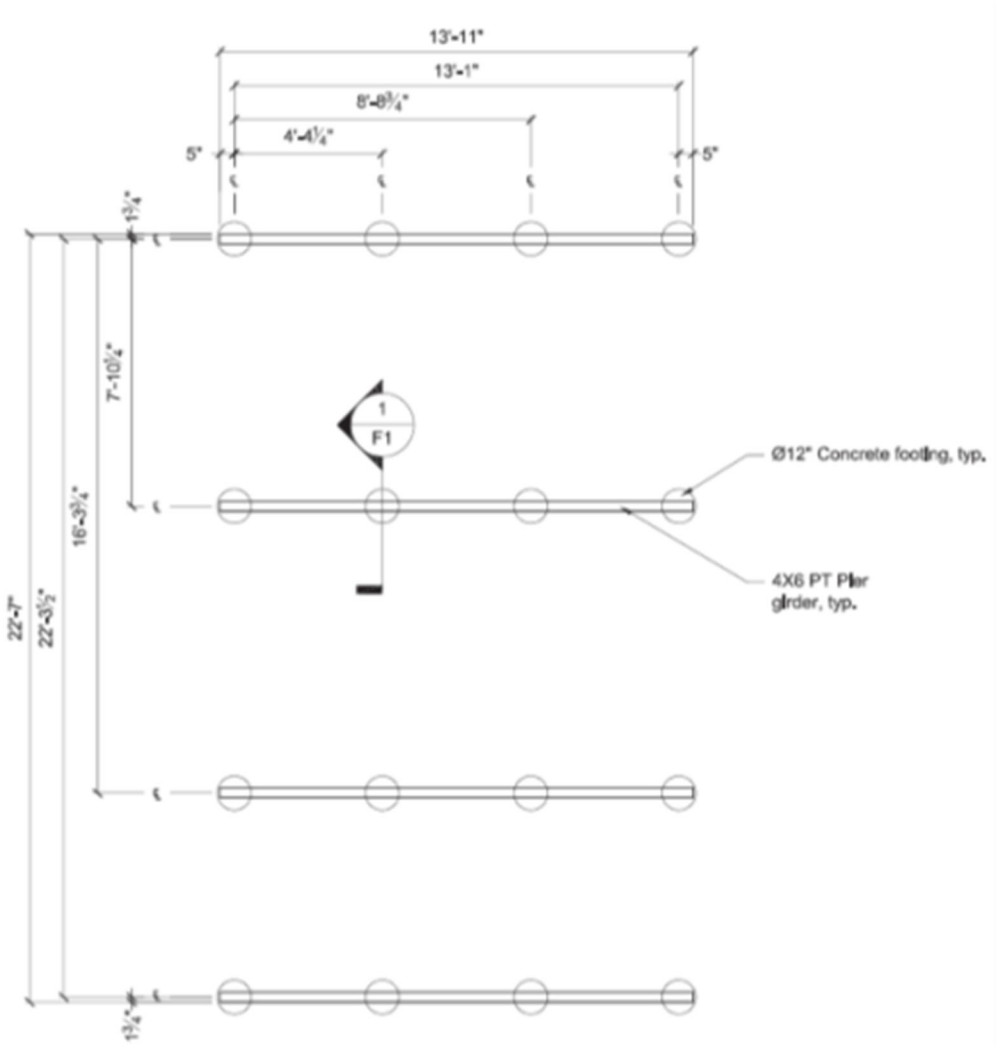

Figure 2-6. Pier foundation layout.

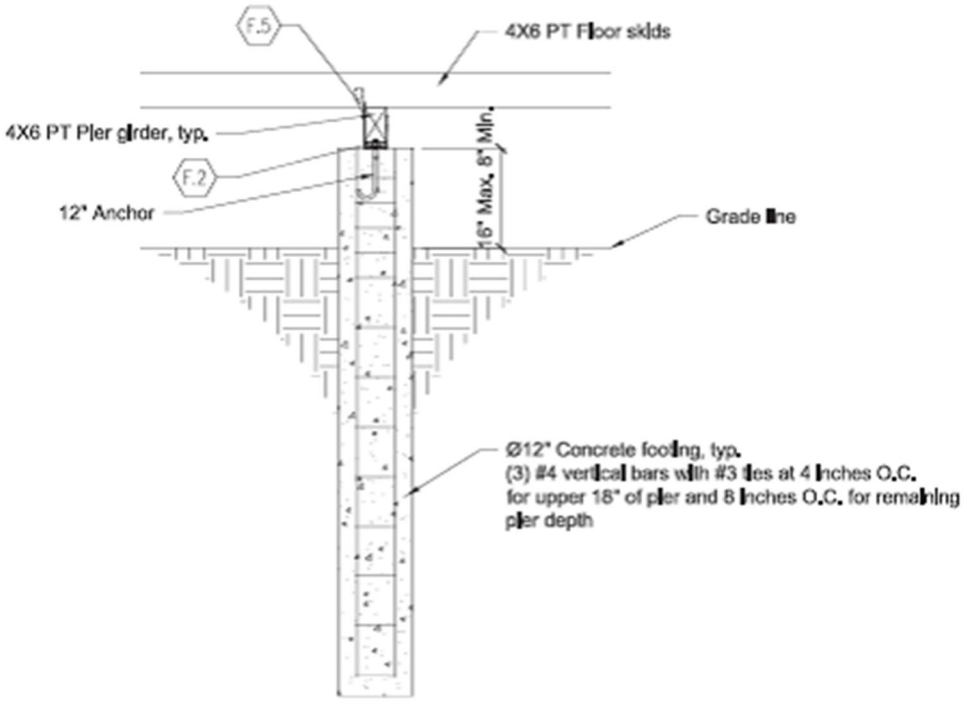

Figure 2-7. Pier foundation detail.

2.2.4 Cabin and Facility Usage

One cabin is intended to sleep a maximum of four people. Each cabin would accommodate an estimated 150 rental nights per year. Reservations during the late fall and winter months are expected to be few since the cabins would not have central heating or electricity. One vehicle per cabin would be permitted. There would be no utilities or plumbing associated with the cabins. The cabins are intended to serve only as protection against the elements. Patrons would be required to bring their own drinking water. The nearest potable water is located approximately 2.0 mi. (3.2 km) by road at the Rod and Gun Club facility on Taco Road (Figure 2-1). Patrons would use an existing portable restroom and trash containers, located immediately south of the proposed cabins and campsites (Figure 2-2). Cabins and campsites would utilize battery-powered LED lanterns for lighting.

2.2.5 Beach Access Adjacent to Cabins

Wall Beach is only open to military recreation (active military and their dependents, retired military and their dependents, DoD and VAFB contractor employees). However, during the western snowy plover breeding season (1 March to 30 September) at Wall Beach, recreational beach access is limited to a 0.25 mi. (0.4 km) stretch of the northernmost section. This section of beach (open area) is differentiated from the closed section of Wall Beach (closed area) by yellow ropes with signs delineating the closure. Ropes run perpendicular to the ocean from the back dunes to the mean high tide line. The closed area opens for recreational use during the western snowy plover non-breeding season (October 1 to February 28).

2.3 Avoidance, Minimization, and Monitoring Measures

The minimization and monitoring measures listed below would be implemented to avoid, or minimize the effects of the Proposed Action on the western snowy plover.

2.3.1 General Measures

- Pamphlets detailing beach rules would be printed and distributed to patrons during the check-in process. Patrons would be required to sign a letter of understanding during check-in at the VAFB Outdoor Recreation center.
- Trash and litter best management practices would be detailed in check-in pamphlets and explained to patrons by FSS recreation staff during the check-in process.
- A VAFB grounds crew would be responsible for daily inspections of the area to remove any trash around the facilities.
- A VAFB grounds crew would be responsible for performing grounds maintenance in the areas around the cabins and campsites at least once a week.
- VAFB Outdoor Recreation staff would perform post-stay inspections of the interior of the cabins after every rental.
- All open fires would be prohibited.
- Any open holes or trenches would be covered with plywood or metal sheets if left over night to minimize the risk of entrapment of animals.

2.3.2 Western Snowy Plover

- The cabins and campsites would be installed outside of western snowy plover nesting season (1 March to 30 September) to avoid noise and visual impacts from construction equipment;
- A noise curfew would be established from 10:00 p.m. to 7:00 a.m. to avoid noise disturbances to western snowy plovers.
- Anti-perching devices would be installed on cabin roofs to deter avian predators.
- Pets would not be allowed during western snowy plover nesting season (1 March to 30 September). Outside of plover nesting season, pets would only be allowed within a designated pet cabin and would be required to be on leash at all times when outside of the cabin.

3 Methods and Action Area

The USFWS's regulations define the “Action Area” as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 Code of Federal Regulations [C.F.R.] § 402.02). Impacts to listed species were considered for all areas potentially affected by the construction and use of cabins and campsites at Wall Beach. The potential occurrence of a species within the Action Area was determined by reviewing prior reports, locality data, and performing a site survey.

Visual and noise disturbances associated with machinery, materials, and humans during the construction and subsequent usage of the planned facilities, were analyzed for impacts to listed species. The Action Areas for species were determined by considering species sensitivity and prior

data and studies on occurrence within the Action Area. The primary stressors caused by the Proposed Action are noise and visual impacts from construction activities and from campground use and operations, which may startle and alert individuals and physical impacts as a result of vegetation removal and loss of habitat. Responses to noise vary largely upon individual circumstances and psychological factors unrelated to the intensity of the sound. It is, therefore, difficult to generalize the anticipated behavioral reactions to various noise levels across species. Available studies and data as well as personal observations by qualified biologists in the field were used as the basis for determining what levels were likely to produce a significant behavioral response. In most cases, however, no directly applicable studies exist. Therefore, reasonable conclusions were deduced from similar species as proxy to the extent possible and by examining evidence of impacts from other types of noise and disturbance.

4 Status of the Species

4.1 Western Snowy Plover [Federal Threatened Species]

4.1.1 Status

The USFWS listed the Pacific coast population of the western snowy plover as federally threatened in March of 1993 (58 FR 12864–12874). A Recovery Plan was issued for the Pacific coast population of western snowy plover in 2007 (U.S. Fish and Wildlife Service 2007). Final Critical Habitat for the western snowy plover was designated 19 June 2012, however VAFB was exempted from Critical Habitat under section 4(a)(3) of the ESA (64 FR 68508).

4.1.2 Life History

The western snowy plover is a small shorebird with pale tan back, white underparts, and dark patches on the sides of the neck reaching around to the top of the chest. The Pacific coast population of snowy plovers is limited to individuals that nest adjacent to tidal waters. The population's range extends from Southern Washington to Baja California, Mexico.

VAFB provides important breeding and wintering habitat for western snowy plover, which includes all sandy beaches and adjacent coastal dunes from the rocky headlands at the north end of Minuteman Beach to the pocket beaches and dune areas adjacent to Purisima Point on north VAFB (approximately 7.7 mi. [12.4 km]). Also included are all sandy beaches and adjacent coastal dunes from the rocky headlands at the north end of Wall Beach south to the rock cliffs at the south end of Surf Beach on South VAFB (approximately 4.8 mi. [7.7 km]). VAFB has consistently supported one of the largest populations of breeding western snowy plover along the west coast of the United States (Robinette et al. 2016).

4.1.3 Diet

Western snowy plover diet consists of aquatic and terrestrial insects (U.S. Fish and Wildlife Service 2007).

4.1.4 Occurrence within the Action Area

Western snowy plovers nest and overwinter along the coast of VAFB (Figure 4-4). VAFB has performed annual monitoring of western snowy plovers since 1993 (Robinette et al. 2016). In 2014, VAFB supported an estimated 11 percent of California's breeding population (U.S. Fish and Wildlife Service 2014). The breeding population of western snowy plovers on VAFB has been highly variable

but relatively stable since 2007. The smallest population was recorded in 1999 (78 adults) (Robinette et al. 2016). The Action Area was analyzed for western snowy plover presence within a 1,312 ft (400 m) radius of the Proposed Action. On average, there were 24 nests identified annually in the past 6-year period, with 91-percent occurring within the closed area and 9-percent within the open area. The nearest observation of a western snowy plover nest is approximately 94 ft (28.7 m) west of the Action Area (Figure 4-5).

4.1.5 Critical Habitat

The USFWS designated Critical Habitat for this species in 1999 and revised this designation on 29 September 2005 (70 FR 56969–57119) and again on 19 June 2012 (77 FR 36727). VAFB was exempted from Critical Habitat designation under section 4(a)(3) of the ESA (64 FR 68508).

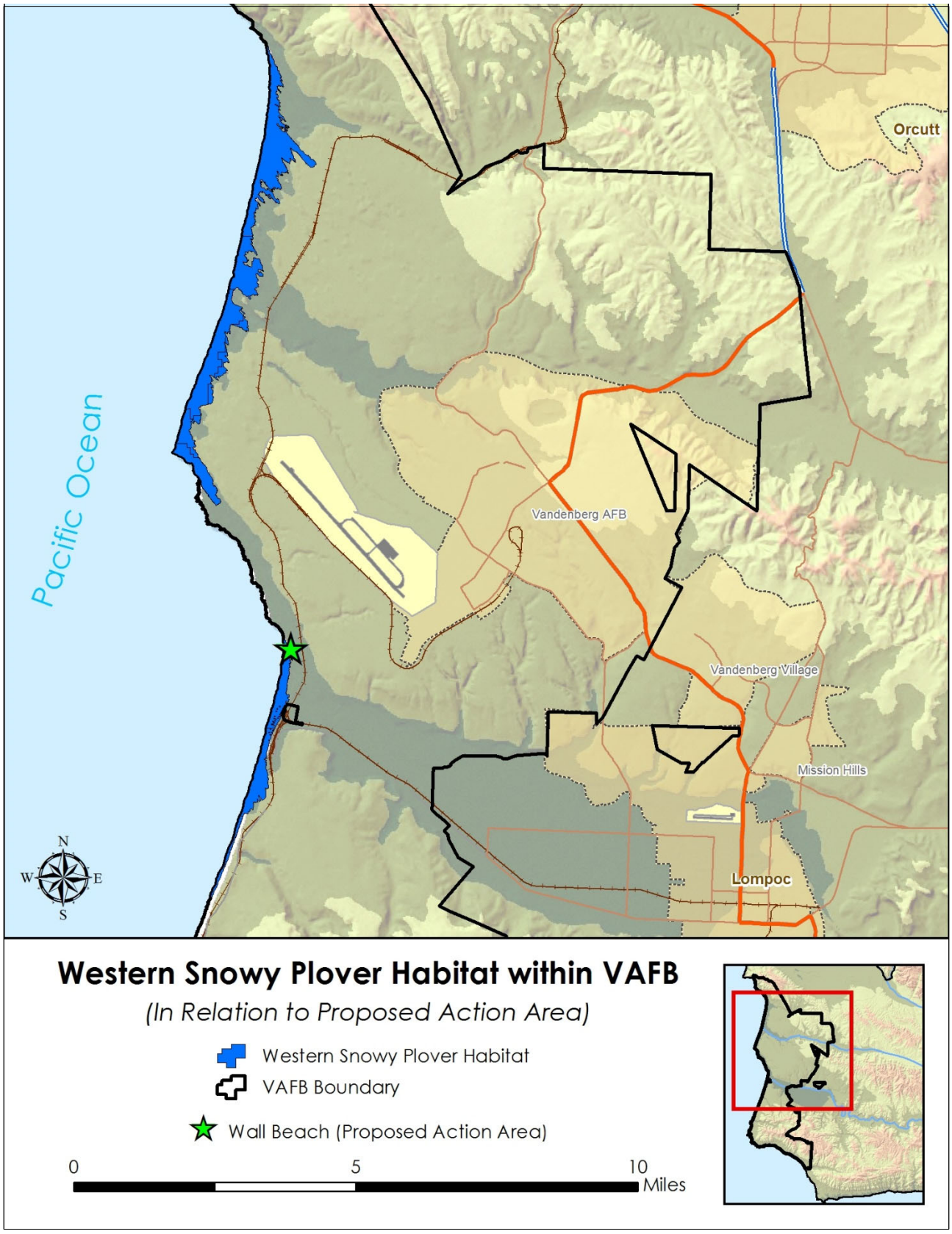

Figure 4-1. VAFB western snowy plover habitat.

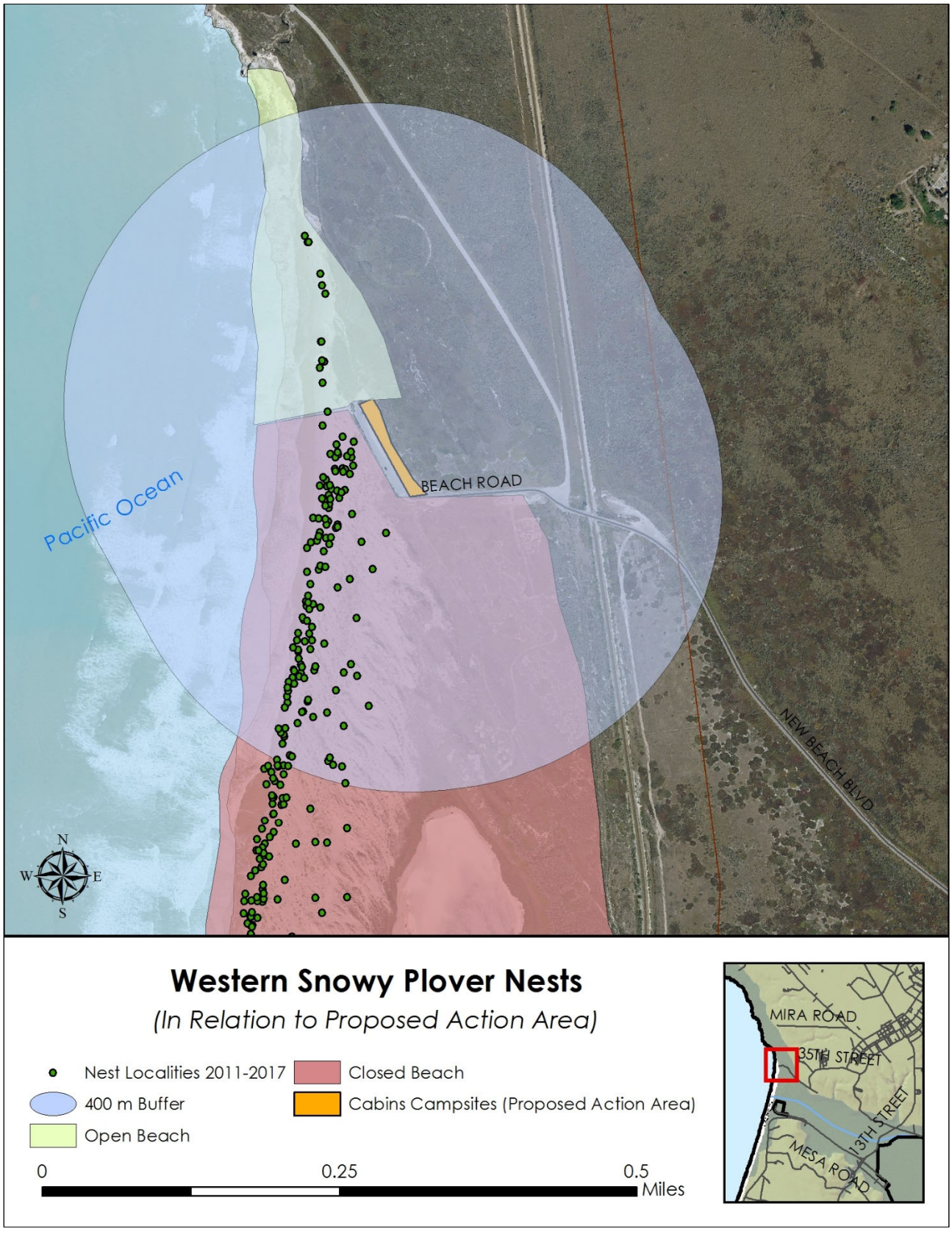

Figure 4-2. Western snowy plover nesting records near the Action Area.

5 Analysis of Effects of the Proposed Action

5.1 Direct and Indirect Effects on Species

Effects of an action include direct and indirect effects. Direct effects are those effects that would be caused by or result from the Proposed Action and occur contemporaneously with the Proposed Action (U.S. Fish and Wildlife Service and National Marine Fisheries Service, 1998). USFWS regulations define indirect effects as "those that are caused by the Proposed Action and are later in time, but still are reasonably certain to occur" (50 C.F.R. § 402.02).

5.1.1 Western Snowy Plover

The western snowy plover would be exposed to increased human disturbance due to noise and human presence. The increase in human presence would be greater than what is currently experienced at Wall Beach, since the Proposed Action would result in more people using Wall Beach during the day and, although use of the beach would still be prohibited between sunset and sunrise, introduce new human disturbances (i.e. noise and light) at night at the cabins and campsites. Visual and noise impacts from human activity may trigger a startle response that alerts predators to nest locations, cause temporary abandonment of nests, mask biologically significant sounds (e.g. predators) that make abandoned eggs or young more vulnerable and reduce overall fitness.

Noise would be created during two components of the Proposed Action: the temporary construction and installation of the cabins and campsites and the ongoing recreational use of the cabins and campsites. In order to assess potential impacts of these sources of noise, the ambient sound levels are characterized below and compared to noise levels created by these two components of the Proposed Action, with consideration of factors that would attenuate sound levels where quantifiable.

Ambient Sound Levels

The Proposed Action Area is located in a rural, relatively undeveloped, low population density area. Ambient noise in rural areas typically range between 35 and 40 A-weighted decibels (dBA; Washington State Department of Transportation [WSDOT] 2018). Wall Beach normally experiences significant winds and crashing waves, both of which would increase ambient sound levels. In fact, ambient sound levels were characterized at Surf Beach, approximately 1 mi (1.6 km) south of the Proposed Action Area in a very similar location, and reported at 45.5 dBA Equivalent Sound Level (L_{eq}) at night (10:00 p.m. to 7:00 a.m.), 51.8 dBA L_{eq} during the day (7:00 a.m. to 5:00 p.m.), and 53.1 dBA L_{eq} during the evening (5:00 p.m. to 10:00 p.m.) (County of Santa Barbara Planning and Development 2008).

L_{eq} measurements are time-weighted sound levels, rather than depictions of instantaneous noises. Regularly occurring sources of instantaneous noise near the Proposed Action Area include crashing ocean surf, which generates approximately 78 dBA (6.6 ft [2 m] tall; Bolin and Åbom 2010) and can be louder during high surf events. Additionally, a north-south Union Pacific Railroad right-of-way passes approximately 800 ft (243.8 m) to the east of the Proposed Action Area, generating semi-frequent line source noise and ground vibrations. Train noises, including the warning horn sounding at the grade crossing at New Beach Road, can generate up to 113 dBA of sound (Hanson et al. 2006). Amtrak passenger and Union Pacific freight trains travel through the area up to 24 times per day (City of San Luis Obispo 2005; Southern California Association of Governments 2008) and therefore contribute a significant role in the location's existing sound profile.

Included in the analyses below is attenuation caused by a 450 ft (137.2 m) long, pre-existing concrete wall, about 8 ft (2.4 m) tall, that would reduce sound levels as they traveled west towards western snowy plover habitat at Wall Beach (Figure 2-2). The wall is located along the western boundary of the Proposed Action Area, less than 20 ft (6.1 m) from the cabins and campsites and would attenuate all background sounds originating from the cabins and campsites by at least 5 dBA (Harris 1978). Natural sound barriers are also present between the Proposed Action Area and plover habitat, including persistent, strong northwest winds, sand dune topography, and scrub vegetation. These natural barriers aid in reducing noises and would reduce sounds originating from construction and recreational activities of the Proposed Action Area but are not easily quantifiable without site specific studies. Therefore, the following analyses are conservative in their estimation of the amount of area potentially impacted by noises above ambient levels.

Cabin & Campsite Construction

Cabin and campsite construction and installation would increase noise levels at the Proposed Action Area and surrounding area. The proposed construction equipment are non-impact devices (no ground contact/shaking) and their probable sound outputs are listed in Table 5-1. In an ideal setting without any outside influence (e.g., a barrier reflecting or attenuating the sound), sound propagates away from a point source in a uniform, outward direction (spherical spreading). As sound energy propagates away from the sound source, both the sound level and frequency change. For each doubling of distance from the source, the sound level attenuates (or diminishes) at a rate of 6 dBA. Furthermore, surrounding absorptive ground can attenuate sound levels by an additional 1.5 dBA per each doubling of distance from the source (WSDOT 2018). When a sound is not from a single point source, but is instead from multiple sources along a line, like the noise made by the continuous movement of vehicles on a highway, the source of the sound appears to emanate from a linear source rather than from a point source. The sound level from a linear source decreases by approximately 3–4 dBA with each doubling of the distance from the source (Goelzer et al. 2001). In a real-world setting, a number of factors can influence how sound propagates in the environment; the ideal case of spherical spreading is at best only an approximation of attenuation with distance. Wind has been shown to be the single most important meteorological factor within approximately 500 ft (152.4 m) of the sound source, while vertical air temperature gradients are more important in sound propagation over longer distances. Other atmospheric conditions such as air temperature, humidity, and turbulence also can have a major effect on received sound levels.

Table 5-1. Typical noise levels produced by construction equipment.

Construction Noise (point Source, non-Impact, with barriers)					
Source	**Expected Noise Level (dBA) @ 50' (15.2 m)**	**Combined Noise Output (dBA) @ 50' (15.2 m)**	**Expected Noise Level (dBA) @ 100' (30.5 m)**	**Expected Noise Level (dBA) @ 400' (121.9 m)**	**Expected Noise Level (dBA) @ 800' (243.8 m)**
Front-end loader	74	80	72.5	57.5	50
Auger attachment	79				
Two (2) concrete mixer trucks (Class IIX)	76	79	71.5	56.5	49
All-terrain forklift	80	--	72.5	57.5	50
Flatbed truck (Class VI)	89	--	81.5	66.5	59
Two (2) Pickup trucks – crew transport & tool storage (Class II)	70	73	65.5	50.5	43
10 HP compressor	73	78	70.5	55.5	48
35 HP generator	76				
Pneumatic air nail gun	80	--	72.5	57.5	50
Two (2) electric drills (12 amp)	51.5	54.5	47	32	24.5
Circular saw	70.5	--	63	48	40.5
All equipment (operating simultaneously)		87	79.5	64.5	57

With the assumption that all equipment would be operating simultaneously during the day time only and discounting unquantified attenuation from natural sound barriers (e.g. wind, vegetation, dunes, etc.), construction equipment would produce approximately 64 dBA at 400 ft (122 m) from the Proposed Action Area (Table 5-1) and reach day time ambient noise levels (51.8 dBA) at 1,279 ft (389.8 m) (Figure 5-1).

Since construction would occur outside of western snowy plover nesting season, there would be no impact to nesting birds, although Figure 5-1 shows nesting records for reference. Adults and juveniles would be expected to experience some level of noise disturbance during the day; however, construction would be temporary (90 to 120 days) and create noise above ambient levels over an approximately 25.7 ac (10.4 ha) of beach (Figure 5-1), which is 1 percent of the total area of beach habitat available on VAFB. Individuals are expected to experience temporary behavioral disruption, and likely acclimate to construction noises; however, if not they are expected move to adjacent suitable habitat until the noise disturbance ceases. As a result, construction noise may affect, and is likely to adversely affect, the western snowy plover at Wall Beach.

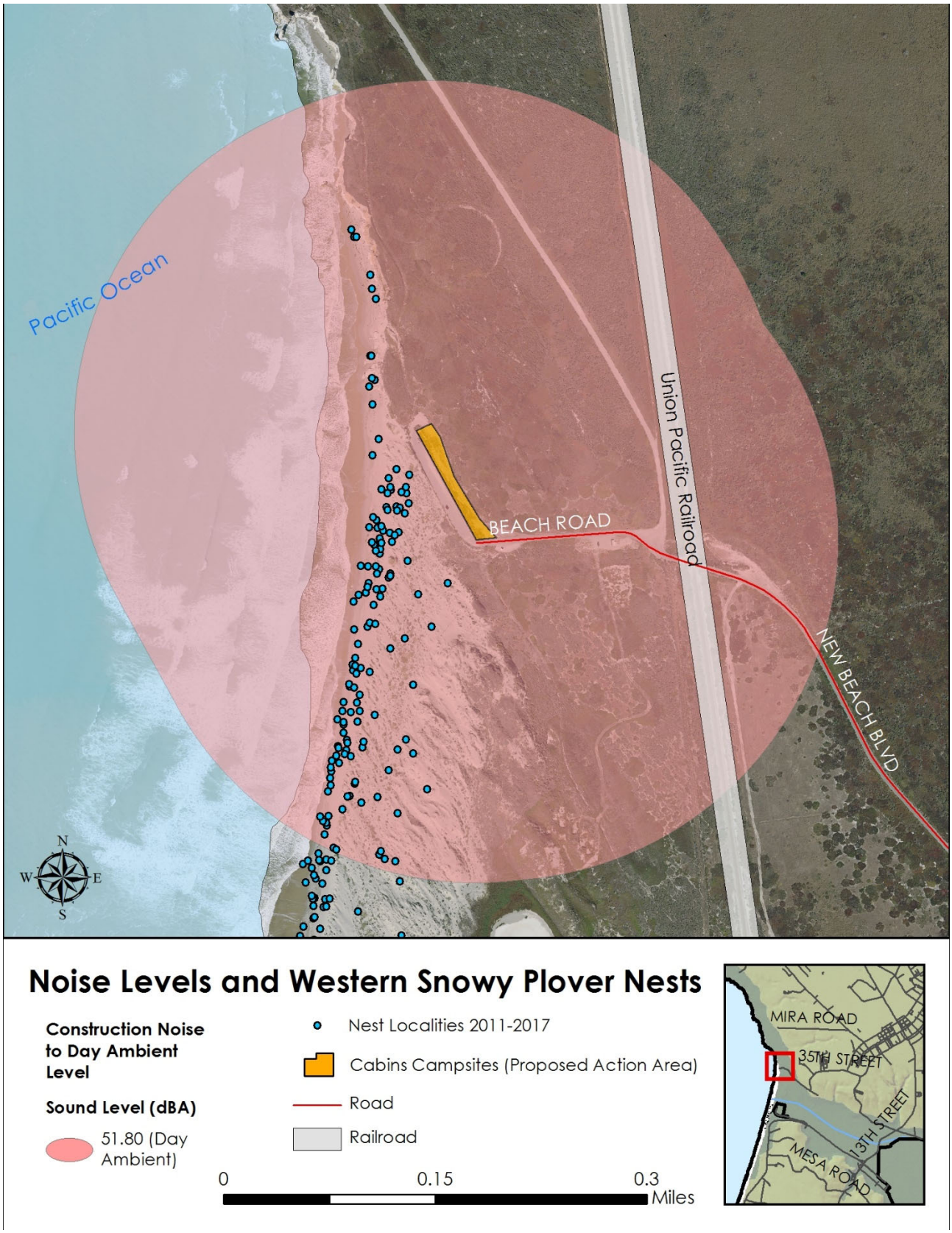

Figure 5-1. Estimated maximum extent of construction noise attenuation to ambient daytime levels.

Cabin & Campsite Recreational Use

Typical recreational sound sources are expected during routine use of the camping facilities (Table 5-2). Occasional loud noises from the cabins or campsites would include shouting, barking dogs, or radio music (Table 5-2). Under the improbable assumption that all typical recreational use noises are being emitted simultaneously and discounting natural sound barriers such as wind and topography, approximately 51.5 dBA of sound would be present 400 ft (122 m) from the Proposed Action Area (Table 5-2) and would attenuate to ambient day time sound levels of 51.8 dBA at 379 ft (115 m) and would attenuate to evening ambient sound levels (53.1 dBA) at 343 ft (104 m) (Figure 5-2).

Table 5-2. Typical noise levels produced during recreational use.

Rural Recreation Sound Sources						
Source	**Expected Noise Level (dBA) @ 50' (15.2 m)**	**Combined Noise Output (dBA) @ 50' (15.2 m)**	**Expected Noise Level (dBA) @ 100' (30.5 m)**	**Expected Noise Level (dBA) @ 400' (121.9 m)**	**Expected Noise Level (dBA) @ 800' (243.8 m)**	**Expected Noise Level (dBA) @ 1600' (487.7 m)**
Camp chores	63	--	55.5	40.5	33	25.5
Conversations around a campfire	39	--	31.5	16.5	9	1.5
Conversation	63	--	55.5	40.5	33	25.5
Dog (barking)	55	--	47.5	32.5	25	17.5
Radio playing music	47	--	39.5	24.5	17	9.5
Shouting	73	--	65.5	50.5	43	35.5
All sources (simultaneously emitting)		74	66.5	51.5	44	36.5

Conservatively, the area of nesting habitat that would be impacted by recreational use noises over ambient levels (51.8 dBA) has included an average of nine western snowy plover nests per year from 2011 to 2017. This represents approximately two percent of the average total number of nests per year on VAFB during the same period. Although individual plovers may be expected to acclimate to the recreational sound levels, these noises may startle individuals and cause them to flee, resulting in temporary nest abandonment, nest loss, and increased levels of predation. As a result, recreational noise generated during routine use of the cabins and campsites may affect, and is likely to adversely affect, the western snowy plover.

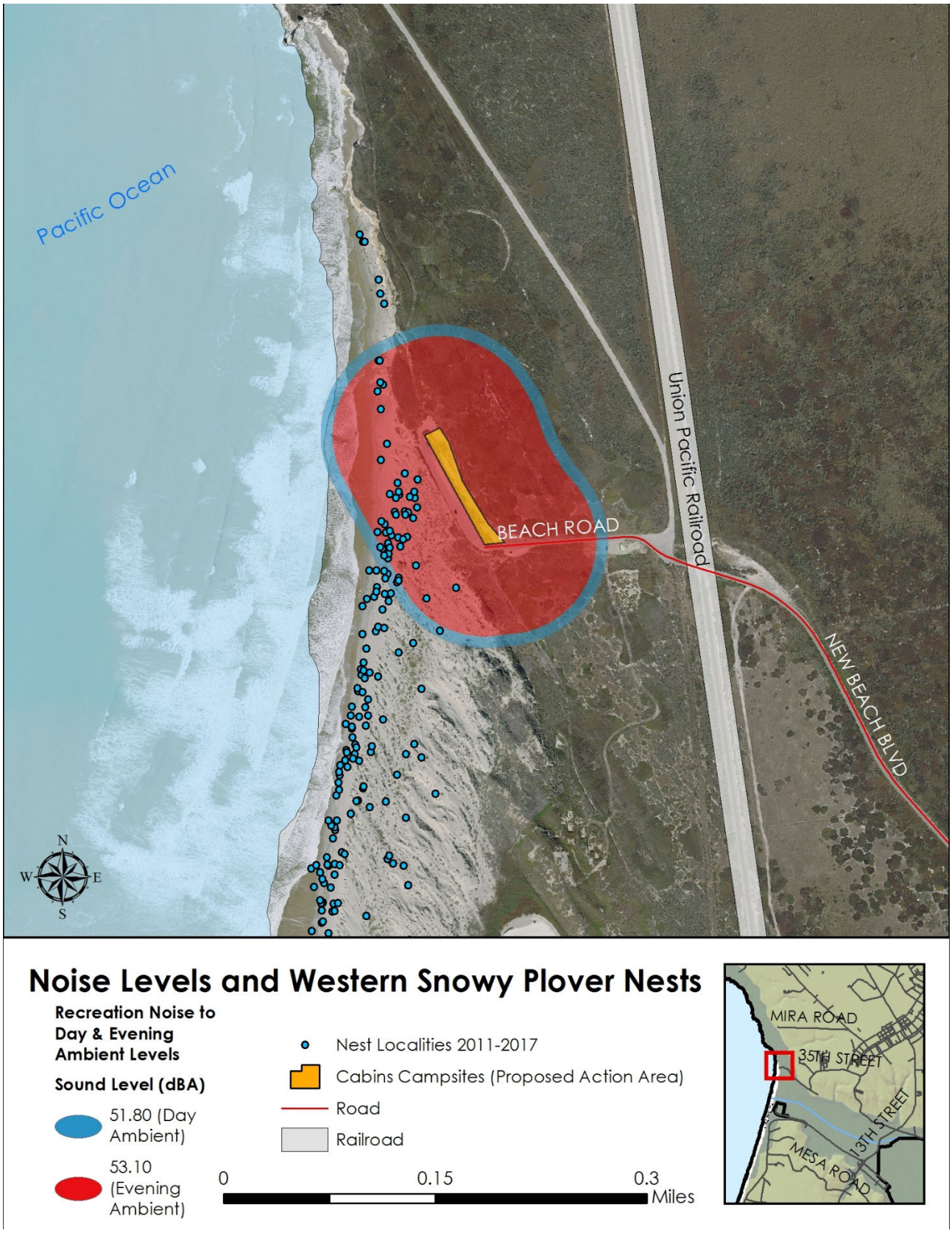

Figure 5-2. Estimated maximum extent of recreational noise attenuation to ambient daytime and evening levels.

5.2 Direct and Indirect Effects on Critical Habitat

5.2.1 Western Snowy Plover

Critical Habitat for the western snowy plover does not occur within or near the Action Area. Therefore, the Proposed Action would have no effect on Critical Habitat for this species.

5.3 Cumulative Effects

Cumulative effects are defined in 50 C.F.R. § 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the Action Area of the Federal action subject to consultation." Reasonable foreseeable future federal actions and potential future federal actions that are unrelated to the Proposed Action are not considered in the analysis of cumulative effects because they would require separate consultation pursuant to section 7 of the ESA. There are no known proposed State or private activities within or near the Proposed Action Area that would affect ESA listed species. Therefore, the Proposed Action would not be considered an additional action pursuant to section 7 and would therefore not result in cumulative indirect impacts.

5.4 Interrelated and Interdependent Effects

Under USFWS's regulations, interrelated actions are "those that are part of a larger action and depend on the larger action for their justification." Interdependent actions are "those that have no independent utility apart from the action under consideration" (50 C.F.R. § 402.02). The installation of cabins and campsites at Wall Beach is directly related to the beach management plan and facilitation of military recreational access. There are no interrelated and interdependent effects associated with this Proposed Action.

6 Conclusion

VAFB proposes to install pre-fabricated cabins and tent camping sites at Wall Beach and allow for overnight camping. The Proposed Action was not previously considered in prior consultations. Therefore, USAF is required to re-initiate consultation with USFWS under section 7 of the ESA (50 C.F.R. § 402.16).

After reviewing the proposed change in the action, including the existing avoidance, minimization, and monitoring measures, as required under BO 8-8-12-F-11R and the proposed changes to avoidance, minimization, and monitoring measures, as described in Section 2.3, the USAF has determined that the Proposed Action may affect, and is likely to adversely affect, the western snowy plover.

7 Bibliography

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FW: FW: [EXTERNAL] RE: [Non-DoD Source] Wall Beach Consultation - Upcoming Changes

YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil>

Thu 12/6/2018 8:33 AM

To:LaBonte, John P <John.LaBonte@ManTech.com>;

Additional information for the EA.

From: Tipton, Heather <heather_tipton@fws.gov>
Sent: Tuesday, November 13, 2018 10:33 AM
To: YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil>
Cc: Lena Chang <lena_chang@fws.gov>; Christopher Diel <christopher_diel@fws.gov>
Subject: Re: FW: [EXTERNAL] RE: [Non-DoD Source] Wall Beach Consultation - Upcoming Changes

Yes, thanks Darryl.

Heather Tipton
U.S. Fish and Wildlife Service
South Coast Division, Ventura Fish & Wildlife Office
phone: 805-677-3326
heather_tipton@fws.gov

On Thu, Nov 8, 2018 at 4:49 PM YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil> wrote:

> Heather:
>
> Did you receive all the information you need to complete this consultation?
>
> Thx
>
> Darryl
>
> -----Original Message-----
> From: YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA
> Sent: Monday, November 05, 2018 8:14 AM
> To: 'Tipton, Heather' <heather_tipton@fws.gov>
> Cc: Lena Chang <lena_chang@fws.gov>; Christopher Diel <christopher_diel@fws.gov>
> Subject: RE: [EXTERNAL] RE: [Non-DoD Source] Wall Beach Consultation - Upcoming Changes
>
> The standard deviation is 2.6. There are fairly long periods at the beginning and end of the seasons (1 Mar - 30 Sept) where no nests may be present.

The high over this period is 12 simultaneous nests.
If we define peak season as 1 Apr - 31 July, the average is 3.48. If we define peak season as 1 May - 30 June, the average is 4.45

-----Original Message-----
From: Tipton, Heather [mailto:heather_tipton@fws.gov]
Sent: Thursday, November 01, 2018 4:06 PM
To: YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil>
Cc: Lena Chang <lena_chang@fws.gov>; Christopher Diel <christopher_diel@fws.gov>
Subject: Re: [EXTERNAL] RE: [Non-DoD Source] Wall Beach Consultation - Upcoming Changes

Thanks Darryl. That is much lower than I expected. Is there much variation around this average, especially the maximum number of active nests at one time?

Heather Tipton
U.S. Fish and Wildlife Service
South Coast Division, Ventura Fish & Wildlife Office
phone: 805-677-3326

heather_tipton@fws.gov <mailto:heather_tipton@fws.gov>

On Thu, Nov 1, 2018 at 5:13 PM YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil <mailto:darryl.york@us.af.mil> > wrote:

From 2011-2017, the average number of simultaneous nests per day between 1 Mar and 30 Sept within the 390 m buffer is 2.02 nest per day. Also, slight correction to the number of nests per year, it is 20.14 nests per year (not 23.5).

-----Original Message-----
From: Tipton, Heather [mailto:heather_tipton@fws.gov <mailto:heather_tipton@fws.gov>]
Sent: Wednesday, October 31, 2018 11:43 AM
To: Lena Chang <lena_chang@fws.gov <mailto:lena_chang@fws.gov> >
Cc: YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil <mailto:darryl.york@us.af.mil> >; Christopher Diel <christopher_diel@fws.gov <mailto:christopher_diel@fws.gov> >
Subject: Re: [EXTERNAL] RE: [Non-DoD Source] Wall Beach Consultation - Upcoming Changes

Hi Darryl,

Thanks for speaking with me yesterday and this morning. As we discussed, some additional information regarding nesting snowy plover numbers is needed to determine the amount of incidental take that may occur as a result of the proposed project. Specifically, could we please get the number (min, max, and average) of plover nests simultaneously active within 390 meters of the project site? This information will help us better determine the number of snowy plovers we expect could be disturbed if construction commences during the breeding season. The 390 m radius requested is based on the distance at which the combined noise of construction equipment would be above daytime ambient noise levels (51.8 dBA) according to the BA. While

we agree that construction noise will likely be attenuated by the existing wall and dunes, we do not have any data that indicate the degree to which noise may be decreased and therefore must rely on the data presented in the BA (unless other data become available). If you or others have any questions about our request, please don't hesitate to contact me.

Thanks,
Heather

Heather Tipton
U.S. Fish and Wildlife Service
South Coast Division, Ventura Fish & Wildlife Office
phone: 805-677-3326

heather_tipton@fws.gov <mailto:heather_tipton@fws.gov> <mailto:heather_tipton@fws.gov <mailto:heather_tipton@fws.gov> >

On Tue, Oct 30, 2018 at 1:31 PM Chang, Lena <lena_chang@fws.gov <mailto:lena_chang@fws.gov> <mailto:lena_chang@fws.gov <mailto:lena_chang@fws.gov> > > wrote:

Thanks very much, Darryl.

We will review the information and Heather will coordinate with you if there are any additional informational needs. We will then follow up with you on a projected timeline for a draft BO.

Regards,
Lena

Lena Chang|Senior Fish & Wildlife Biologist

U.S. Fish & Wildlife Service|Ventura Fish & Wildlife Office

2493 Portola Road, Suite B|Ventura, California 93003
Direct: 805.677.3305 Main: 805.644.1766|lena_chang@fws.gov <mailto:lena_chang@fws.gov> <mailto:lena_chang@fws.gov <mailto:lena_chang@fws.gov> >
Facebook <https://www.facebook.com/pages/Ventura-Fish-and-Wildlife-Office/684176251665713> •Ventura Fish & Wildlife Office <http://www.fws.gov/ventura/> •U.S. Fish & Wildlife Service
<http://www.fws.gov/>

On Tue, Oct 30, 2018 at 11:05 AM YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil <mailto:darryl.york@us.af.mil> <mailto:darryl.york@us.af.mil <mailto:darryl.york@us.af.mil> > > wrote:

Hi Lena:

Following is the additional information you requested to include construction activity for the Wall Beach Cabins during the plover breeding season. Most of the information on construction related impacts were included in the original BA submitted to your office on July 23, 2018; we just didn't follow through on an effects determination since we didn't anticipate the need to construct during the breeding season at the time. Nevertheless, let me know if you require additional information or need to this sent in a formal letter. Unfortunately we will not have control over when the construction begins in relation to plover nesting season.

Thx

Darryl

Revised Project Description

Temporary construction activity will remain the same as described in the Biological Assessment (BA) for the Cabin and Campsite Project at Wall Beach (pgs 9-12) with the exception that the period of construction could now occur any time of the year including western snowy plover breeding season (01 March – 30 September). The BA describes required equipment, number of personnel, anticipated construction noise levels, ambient noise levels and attenuated noise levels within a 390 m buffer around the project area (BA Figure 5-1).

Additional Associated Potential Effects

As specified in the BA (Table 5-1) the nearest recorded plover nest (28.7 m from the construction area) would experience noise levels of 79.5 dBA when all construction equipment operates

simultaneously. Of course with distance, and as ambient noise attenuates construction noise, the construction dBA level decreases to 51.8 dBA at 390 m.

It is difficult to generalize the anticipated behavioral reaction of breeding plovers to construction noise levels, and no observational data of plovers exposed to construction noise on VAFB currently exits. Based on past nest data from 2001 – 2017 we anticipate that an average of 24 nests could occur within 390 m of the construction activity and could be adversely affected by construction noise and visual impacts of equipment operations. However, nests beyond 122 m would not experience noise levels much above ambient levels.

These effects during the breeding season could provoke temporary or permanent emigration from nesting sites, trigger a startle response that alerts predators to nest locations, cause temporary abandonment of nests, mask biologically significant sounds (e.g. predators) that make abandoned eggs or young more vulnerable and reduce overall fitness. Therefore, construction of the cabin and campsites during the breeding season may affect, and is likely to adversely affect, the Western snowy plover.

Additional Avoidance and Minimization Measures

The following minimization measures would apply to Proposed Action as it specifically relates to construction activity occurring during the western snowy plover breeding season (01 March – 30 September) and minimize effects on breeding plovers.

* A Service-approved biologist will monitor breeding plovers, and any active nests or chicks, at least 3 times per week during construction activities to document any noise related impacts. Monitoring will be focused in the area defined in Figure 5-1. These data will be used in the future to better understand noise related impacts to breeding plovers, and to develop effective minimization measures.

* Qualified biologists shall brief all project personnel prior to participating in project implementation activities. At a minimum, the training would include a description of the listed species and sensitive biological resources occurring in the area, the general and specific measures and restrictions to protect these resources during project implementation, the provisions of the ESA and the necessity of adhering to the provisions of the ESA, and the penalties associated with violations of the ESA.

* No night construction will not be allowed.

* All trash will be removed daily to help prevent attracting predators to the area.

-----Original Message-----
From: Chang, Lena [mailto:lena_chang@fws.gov <mailto:lena_chang@fws.gov> <mailto:lena_chang@fws.gov <mailto:lena_chang@fws.gov> >]
Sent: Thursday, October 25, 2018 12:10 PM
To: YORK, DARRYL L GS-13 USAF AFSPC 30 CES/CEIEA <darryl.york@us.af.mil <mailto:darryl.york@us.af.mil> <mailto:darryl.york@us.af.mil <mailto:darryl.york@us.af.mil> > >
Cc: Heather Tipton <heather_tipton@fws.gov <mailto:heather_tipton@fws.gov> <mailto:heather_tipton@fws.gov <mailto:heather_tipton@fws.gov> > >; Christopher Diel <christopher_diel@fws.gov <mailto:christopher_diel@fws.gov> <mailto:christopher_diel@fws.gov <mailto:christopher_diel@fws.gov> > >
Subject: [Non-DoD Source] Wall Beach Consultation - Upcoming Changes

Hi Darryl,

Heather and I spoke regarding the changes to the construction window for the Wall Beach cabin consultation. We felt the time frame you and I discussed is feasible, but can firm that up after we've seen the proposed changes. To summarize:

* VAFB will provide us with a revision to the project description for the Wall Beach consultation. We request this include any additional associated potential effects and avoidance and minimization measures. (proposed to send by next week week).

* After we've received all necessary information and done a preliminary review, we can confirm with VAFB our projected date of delivery of a draft BO, keeping in mind that the ideal date for VAFB would be a final BO in early January (in advance of the Coastal Commission meeting in February).

Does that sound like a plan?

Some considerations regarding effects to western snowy plover: Heather and I discussed potential scenarios of nesting and construction timing, that if construction is already occurring when the plovers are beginning to nest, then those who are more sensitive to noise can choose nest sites elsewhere; whereas, if they've already chosen a site and then are subsequently disturbed by noise, this may result in a greater effect. In other words, starting construction before the nesting season may be less disturbing to nesting birds, as the existing noise may help birds determine their preferred nest location. We realize the Air Force may not have control over when construction begins, but it's just something to consider. We will review the updated project description and analyze the effects accordingly.

Thanks very much! Please get in touch if you have any questions or comments.

Regards,

Lena

Lena Chang|Senior Fish & Wildlife Biologist U.S. Fish & Wildlife Service|Ventura Fish & Wildlife Office

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<mailto:lena_chang@fws.gov> > > Facebook <https://www.facebook.com/pages/Ventura-Fish-and-Wildlife-Office/684176251665713> •Ventura Fish & Wildlife Office <http://www.fws.gov/ventura/> •U.S. Fish & Wildlife Service <http://www.fws.gov/>

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2018-F-0845

March 15, 2019

Beatrice L. Kephart
30 CES/CEI
1028 Iceland Avenue
Vandenberg Air Force Base, California 93437

Subject: Wall Beach Cabin and Campsite Construction at Vandenberg Air Force Base, Santa Barbara County, California (2018-F-0845)

Dear Ms. Kephart:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Air Force's (Air Force) proposal to construct cabins and campsites at Wall Beach on Vandenberg Air Force Base (VAFB), and its effects on the federally threatened western snowy plover (*Charadrius nivosus nivosus*). We received your request for consultation on July 23, 2018. Your request and our response are in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*).

In your July 23, 2018 letter, you requested that we reinitiate consultation on the Beach Management Plan and Water Rescue Training at Vandenberg Air Force Base (8-8-12-F-11R) to incorporate the proposed cabin/campsite construction and operation. In a separate document (Service 2019), we have analyzed the Air Force's proposed operation (not construction) of the Wall Beach cabins and campsites and evaluate that analysis consistent with the Beach Management Plan biological opinion. Based on the proposed avoidance and minimization measures for cabin/campsite operation, including existing avoidance and minimization measures for the beach management plan, we determined the proposed operation of cabins and campsites at Wall Beach to be consistent with the effects to western snowy plovers analyzed for recreation in the existing Beach Management Plan and Water Rescue Training at Vandenberg Air Force Base biological opinion (8-8-12-F-11R; Service 2015). The conclusion, incidental take statement, reasonable and prudent measures, terms and conditions, and reporting requirements for the biological opinion (8-8-12-F-11R) remain in effect, and the operation of the Wall Beach cabins and campsites will not be addressed in our biological opinion below. The biological opinion below will focus solely on the construction of the cabins and campsites.

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BY:

This biological opinion was prepared using information provided in the biological assessment (ManTech 2018) that accompanied your July 23, 2018 request for consultation; electronic and telephone communications between our staff; and information in our files. These documents, and others relating to the consultation, are located at the Ventura Fish and Wildlife Office.

Consultation History

On July 23, 2018, we received your request to initiate consultation for the construction of cabins and campsites at Wall Beach, along with the biological assessment (ManTech 2018). The proposed project description included construction activities to be conducted outside of the western snowy plover breeding season. On October 30, 2018, we received a revision to the proposed project description to include construction activity for the Wall Beach cabins during the western snowy plover breeding season, as well as additional minimization and monitoring measures (D. York, U.S. Air Force, in litt. 2018a). On November 5, 2018, we received requested additional information regarding western snowy plover nesting data for Wall Beach (York, in litt. 2018b).

On February 22, 2019, the Service provided the Air Force with a draft biological opinion. The Air Force (York, in litt. 2019) provided comments on the draft biological opinion on March 1, 2019; we have incorporated the Air Force's comments into this biological opinion, as appropriate.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Air Force proposes to install four pre-fabricated cabins and five tent camping sites for future recreational usage (as discussed above) at Wall Beach on VAFB. The Air Force anticipates that the proposed construction activities would take approximately 90-120 days and could occur at any time of year.

The proposed cabins and campsites would be installed immediately east of the existing paved parking area for Wall Beach. The proposed action would disturb a total area of approximately 0.60 acre. Each of the four pre-fabricated kit cabins (primarily consisting of treated logs, wooden materials, metal roofing/trim) would be approximately 23 feet long by 14 feet wide by 10.5 feet high and supported by 16 concrete pier foundations, 8 to 16 inches above grade. All four cabins would cover a total area of approximately 1,264 square feet and require 1,400 square feet of cleared space for installation. Each of the five campsites would require less than 300 square feet for camping activities; only minor vegetation and debris clearing would be required to prepare the sites. There would be no utilities or plumbing associated with the cabins or campsites.

All construction equipment and materials would be staged on paved surfaces within the project area, including the existing parking area. Initial vegetation clearing would be performed by scraping and grubbing the vegetation to ground level with a front-end loader. Holes for concrete pier foundations would be drilled with an auger, and two concrete mixing trucks would be used to pour approximately 20 cubic yards of concrete into drilled holes. If holes need to be left open overnight, they would be covered. Construction equipment used for installation of the pre-fabricated cabins would include an all-terrain forklift, flatbed truck, 10-horsepower compressor, 35-horsepower generator, pneumatic nail gun, electric drills, and a circular saw. A four-person construction crew would be on-site for approximately 90 days to complete construction activities. A 40-cubic yard roll-off dumpster would be utilized for construction-generated waste during the entire construction period.

Minimization and Monitoring Measures

To minimize and monitor adverse effects to western snowy plovers, the Air Force will implement the following measures:

1. Qualified biologists will brief all project personnel prior to participating in project implementation activities. At a minimum, the training will include a description of the listed species and sensitive biological resources occurring in the area, the general and specific measures and restrictions to protect these resources during project implementation, the provisions of the Endangered Species Act and the necessity of adhering to the provisions of the Act, and the penalties associated with violations of the Act.

2. Nighttime construction will be prohibited.

3. If holes or trenches cannot be filled prior to the end of the workday, they will be covered with plywood or metal sheets to minimize the risk of entrapping animals.

4. A Service-approved biologist will monitor breeding plovers, and any active nests or chicks, at least three times per week during construction activities to document any noise related impacts. Monitoring will be focused in the area defined in Figure 1 below. These data will be used in the future to better understand noise-related impacts to breeding plovers, and to develop effective minimization measures.

5. During construction of cabins/campsites, the area will be inspected daily and all trash will be removed to help prevent attracting predators.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "to engage in an action that

reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the western snowy plover, the factors responsible for that condition, and survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the western snowy plover in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the subspecies; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the western snowy plover; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the western snowy plover.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the western snowy plover, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the western snowy plover in the wild by reducing the reproduction, numbers, and distribution of the subspecies.

STATUS OF THE SPECIES

Legal Status

The Service listed the Pacific coast population of the western snowy plover as threatened on March 5, 1993 (58 FR 12864). We designated critical habitat in 1999 (64 FR 68508 68544) and redesignated it in 2005 (70 FR 56970 57119). In 2012, we issued a revised critical habitat designation which included a change in taxonomic nomenclature (77 FR 36727 36869). We completed a 5-year status review in 2006 (Service 2006), and issued a recovery plan in September 2007 (Service 2007).

Natural History

The western snowy plover is a small shorebird in the family Charadriidae, a subspecies of the snowy plover (*Charadrius nivosus*). It is pale gray-brown above and white below, with a white collar on the hind neck and dark patches on the lateral breast, forehead, and behind the eyes. The bill and legs are black.

Foraging Behavior

Western snowy plovers are primarily visual foragers, using the run-stop-peck method of feeding typical of most plover species. They forage on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone, in dry sand areas above the high tide, on saltpans, on spoil sites, and along the edges of salt marshes, salt ponds, and lagoons. They sometimes probe for prey in the sand and pick insects from low-growing plants (Service 2007, pp. 17-18).

Breeding

The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The main coastal habitats for nesting include sand spits, dune-backed beaches, beaches at creek and river mouths, and saltpans at lagoons and estuaries (Page and Stenzel 1981, p. 12; Wilson 1980, p. 23). Western snowy plovers nest less commonly on bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and gravel river bars (Wilson 1980, p. 9; Page and Stenzel 1981, pp. 12, 26; Powell et al. 2002, pp. 156, 158, 164; Tuttle et al. 1997, pp. 1-3).

Their nests consist of a shallow scrape or depression, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips). As incubation progresses, western snowy plovers may add to and increase the nest lining. Driftwood, kelp, and dune plants provide cover for chicks that crouch near objects to hide from predators. Because invertebrates often occur near debris, driftwood and kelp are also important for harboring snowy plover food sources (Page et al. 2009, Breeding).

Along the west coast of the United States, the nesting season of the western snowy plover extends from early March through late September. Generally, the breeding season may be 2 to 4 weeks earlier in southern California than in Oregon and Washington. Fledging (reaching flying age) of late-season broods may extend into the third week of September throughout the breeding range (Service 2007, p. 11).

The approximate periods required for snowy plover nesting events are: 3 days to more than a month for scrape construction (in conjunction with courtship and mating), usually 4 to 5 days for egg laying, and incubation averaging 28.4 days in the early season (before May 8) to 26.9 days in the late season (Warriner et al. 1986, pp. 23-24). The usual clutch size is three eggs with a range from two to six (Page et al. 2009, Breeding). Both sexes incubate the eggs, with the female tending to incubate during the day and the male at night (Warriner et al. 1986, pp. 24-25). Adult western snowy plovers frequently will attempt to lure people and predators from hatching eggs and chicks with alarm calls and distraction displays.

Western snowy plover chicks are precocial, leaving the nest with their parents within hours after hatching (Service 2007, p. 14). They are not able to fly for approximately 1 month after

hatching; fledging requires 29 to 33 days (Warriner et al. 1986, p. 26). Broods rarely remain in the nesting area until fledging (Warriner et al. 1986, p. 28; Lauten et al. 2010, p. 10). Casler et al. (1993, p. 6) reported broods would generally remain within a 1-mile radius of their nesting area; however, in some cases would travel as far as 4 miles (pp. 11-12).

Wintering

In winter, western snowy plovers are found on many of the beaches used for nesting, as well as beaches where they do not nest. They also occur in man-made salt ponds and on estuarine sand and mud flats. In California, the majority of wintering western snowy plovers concentrate on sand spits and dune-backed beaches. Some also occur on urban and bluff-backed beaches, which they rarely use for nesting (Page et al. 1986, p. 148; Page and Stenzel 1981, p. 12). South of San Mateo County, California, wintering western snowy plovers also use pocket beaches at the mouths of creeks and rivers on otherwise rocky Page et al. 1986, p. 148). Snowy plovers forage in loose flocks. Roosting snowy plovers will sit in depressions in the sand made by footprints and vehicle tracks, or in the lee of kelp, driftwood, or low dunes in wide areas of beaches (Page et al. 2009, Behavior). Sitting behind debris or in depressions provides some shelter from the wind and may make the birds more difficult for predators to detect.

Rangewide Status

Historical records indicate that nesting western snowy plovers were once more widely distributed and abundant in coastal Washington, Oregon, and California (Service 2007, p. 21). In Washington, western snowy plovers formerly nested at five coastal locations (Washington Department of Fish and Wildlife 1995, p. 14) and at over 20 sites on the coast of Oregon (Service 2007, p. 24). In California, by the late 1970s, nesting western snowy plovers were absent from 33 of 53 locations with breeding records prior to 1970 (Page and Stenzel 1981, p. 27).

The first quantitative data on the abundance of western snowy plovers along the California coast came from window surveys conducted during the 1977 to 1980 breeding seasons by Point Reyes Bird Observatory (Page and Stenzel 1981, p.1). Observers recorded an estimated 1,593 adult western snowy plovers during these pioneering surveys. The results of the surveys suggested that the western snowy plover had disappeared from significant parts of its coastal California breeding range by 1980 (Service 2007, p. 27).

Breeding season and winter window survey data from 2005 to 2017 includes approximately 250 sites in Washington, Oregon, and California, with the majority of the sites located in California. In California, 1,807 western snowy plovers were counted during the 2016 breeding window survey, and 3,802[1] western snowy plovers were counted during the 2016-2017 winter window survey (Arcata Fish and Wildlife Office (AFWO) 2016, 2017). Across the Pacific coast range,

[1] This number likely includes wintering inland birds that are not part of the listed Pacific coast population.

the 2016 breeding window survey estimated 2,284 western snowy plovers, and the 2016-2017 winter window survey estimated 4,214 western snowy plovers in Washington, Oregon and California (AFWO 2017a, 2017b). These numbers demonstrate that a large percentage of all western snowy plovers in the Pacific coast range were counted in California during both winter and breeding window surveys.

Threats

Historical records indicate that nesting western snowy plovers were once more widely distributed and abundant in coastal Washington, Oregon, and California. The reasons for decline and degree of threats vary by geographic location; however, the primary threat was, and remains, habitat destruction and degradation. Habitat loss and degradation can be primarily attributed to human disturbance, urban development, introduced beachgrass (*Ammophila* spp.), and expanding predator populations (Service 2007, p. 33). Natural factors, such as inclement weather, have also affected the quality and quantity of western snowy plover habitat (58 FR 12865).

Recovery

The primary objective of the recovery plan (Service 2007, p. vi) is to remove the Pacific coast population of the western snowy plover from the list of endangered and threatened wildlife and plants by:

1. Increasing population numbers distributed across the range of the Pacific coast population of the western snowy plover;

2. Conducting intensive ongoing management for the species and its habitat and developing mechanisms to ensure management in perpetuity; and

3. Monitoring western snowy plover populations and threats to determine success of recovery actions and refine management actions.

The Pacific coast population of the western snowy plover would be considered for delisting when the following criteria have been met (Service 2007, p. vii):

1. An average of 3,000 breeding adults has been maintained for 10 years, distributed among 6 recovery units as follows: Washington and Oregon, 250 breeding adults; Del Norte to Mendocino Counties, California, 150 breeding adults; San Francisco Bay, California, 500 breeding adults; Sonoma to Monterey Counties, California, 400 breeding adults; San Luis Obispo to Ventura Counties, California, 1,200 breeding adults; and Los Angeles to San Diego Counties, California, 500 breeding adults. This criterion also includes implementing monitoring of site-specific threats, incorporation of management activities into management plans to ameliorate or eliminate those threats, completion of research necessary to modify management and monitoring actions, and development of a post-delisting monitoring plan.

2. A yearly average productivity of at least one (1.0) fledged chick per male has been maintained in each recovery unit in the last 5 years prior to delisting.

3. Mechanisms have been developed and implemented to assure long-term protection and management of breeding, wintering, and migration areas to maintain the subpopulation sizes and average productivity specified in Criteria 1 and 2. These mechanisms include establishment of recovery unit working groups, development and implementation of participation plans, development and implementation of management plans for Federal and State lands, protection and management of private lands, and public outreach and education.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations 402.02). Based on data provided in the biological assessment (ManTech 2018), the action area for the proposed construction project at Wall Beach consists of the construction footprint and areas extending up to approximately 1,279 feet from the construction area (Figure 1).

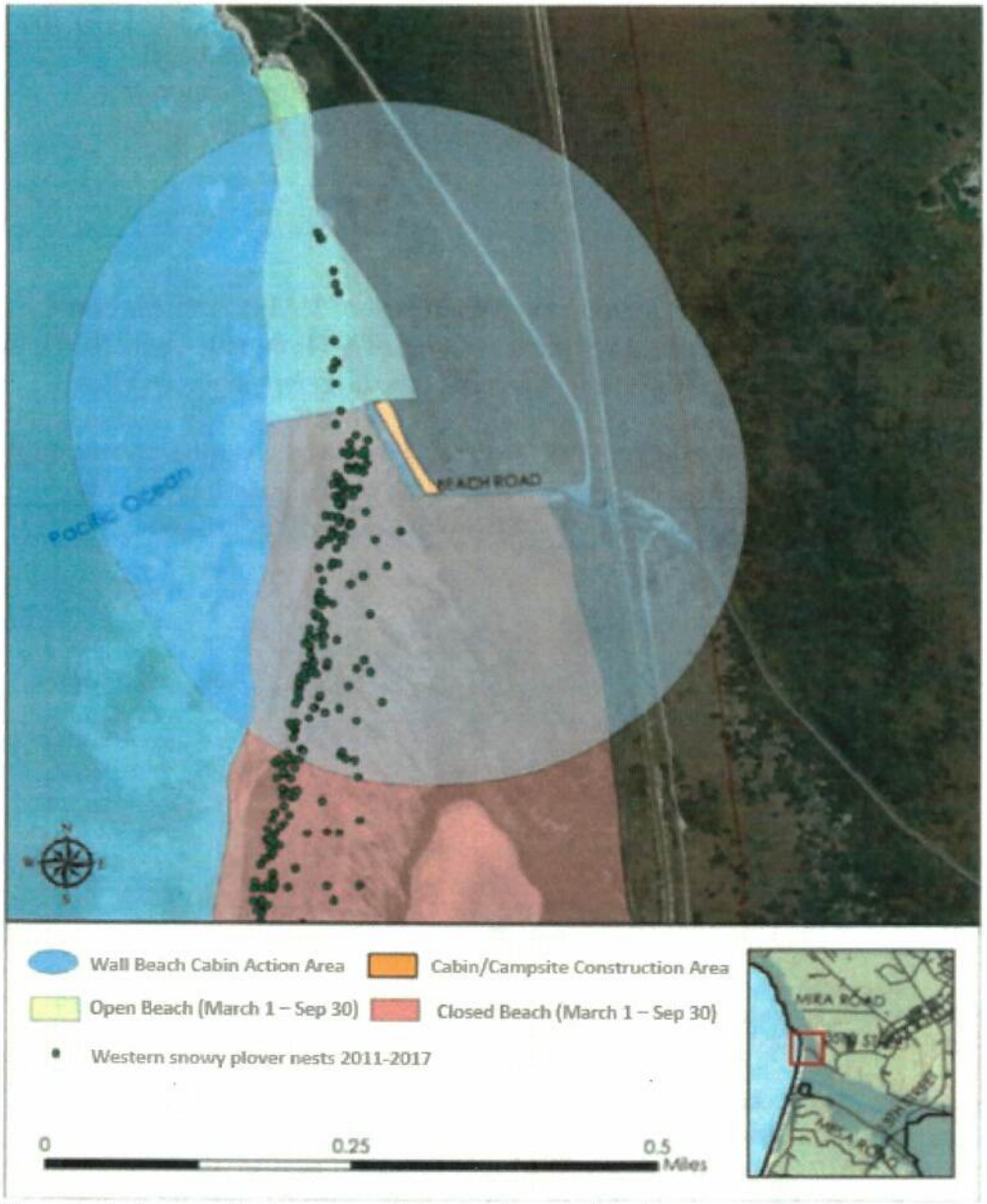

Figure 1. Action area for the proposed construction of cabins/campsites at Wall Beach on Vandenberg AFB. Western snowy plover nesting records, and closed/open areas of the beach, are also identified. (Source: adapted from ManTech 2018).

Habitat Characteristics of the Wall Beach Cabins Action Area

Within the 0.60 acre to be cleared for cabin and campsite installation, 0.20 acre is currently disturbed/partially cleared and the remaining 0.40 acre is currently dominated by non-native and invasive species. An existing 450-foot concrete wall, approximately 8 feet tall, and paved parking area are located immediately west of, and adjacent to, the proposed construction area. West of these is undisturbed beach habitat, characterized by high sand dunes and sparse native

vegetation. As part of the biological opinion for its beach management plan (8-8-12-F-11R), the Air Force has performed restoration activities (invasive plant treatment/removal, beach contouring) on portions of Wall Beach including within the Wall Beach cabins action area, resulting in higher quality and amounts of nesting and foraging habitat for western snowy plovers in this area.

Status of the Species in the Action Area

Western snowy plovers nest and/or overwinter along the entire coast of VAFB. The Air Force has performed annual monitoring of western snowy plovers since 1993 (Robinette et al. 2017). In 2014, VAFB supported an estimated 11 percent of California's breeding population (AFWS 2016). The breeding population of western snowy plovers on VAFB has been highly variable but relatively stable since 2007. Observed nesting on Wall Beach has followed a similar pattern until 2015, when the number of detected nests per linear mile within the closed area dramatically increased following beach contouring conducted in 2014 (Robinette et al. 2017; Figure 2).

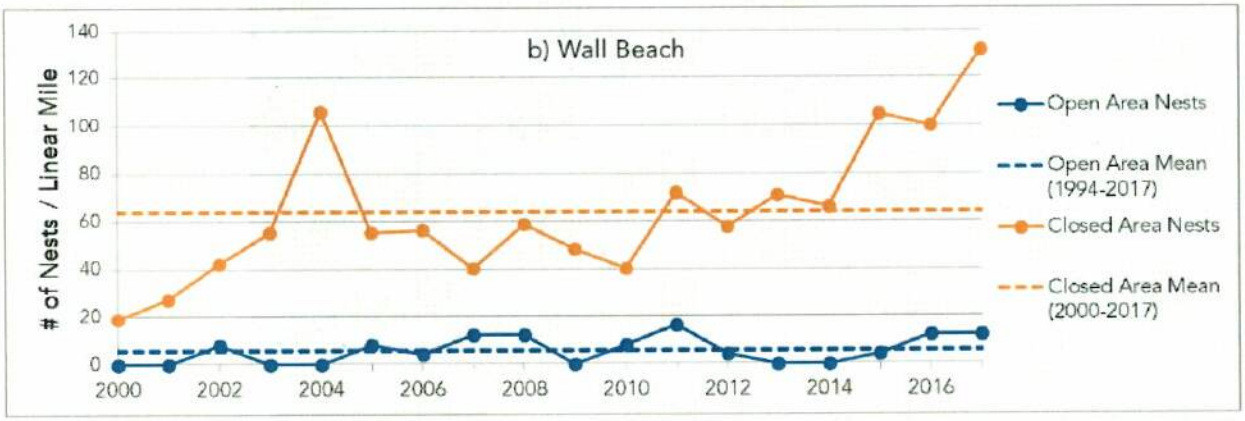

Figure 2. Trends in annual number of western snowy plover nests per linear mile within open and closed sections of Wall Beach from 2000 through 2017; dashed lines show the 18-year means (Source: Robinette et al. 2017).

In the biological assessment (ManTech 2018) and subsequent communications (York, in litt. 2018a,b), the Air Force summarized western snowy plover nesting numbers within the action area from the 2011 through 2017 breeding seasons. During this 6-year period, there were an average of 20.14 nests identified annually within the action area, with 91 percent occurring within the closed area and 9 percent within the open area. The nearest observation of a western snowy plover nest was approximately 94 feet west of the proposed construction area. During these years, the largest number of simultaneously active nests within the action area was 12 nests, with an average of 2.02 simultaneous nests per day between March 1 and September 30. There were long periods at the beginning and end of the March-September time period where no nests were present. During "peak" season (defined here as May 1 through June 30, although actual "peak" can vary from year to year), the average number of simultaneously active nests increased to 4.45 nests per day.

In addition to annual variations in observed nest numbers, nesting data for Wall Beach indicate that annual clutch success (Figure 3) and fledging success (Figure 4) also vary significantly between years. In 2017, observed clutch hatch success (i.e., percent of known-fate eggs that hatched) was approximately 37 percent, the lowest rate observed on Wall Beach in many years (Robinette et al. 2017). Predation, primarily by coyotes and suspected ravens (Figure 5), accounted for the majority of nest failures, followed by tides and wind (Robinette et al. 2017). Observed fledging success (i.e., percent of banded chicks that fledged) was approximately 45 percent in 2017, lower than recent years but still higher than the long-term average for the area (Robinette et al. 2017). Analyses of time series data by Robinette et al. (2017) suggests that large scale processes (e.g., environmental variability) are governing breeding effort and fledging success, while more localized factors (e.g., predation, disturbance) are governing clutch hatch success at VAFB. Additionally, they found a positive correlation with annual base-wide fledging success and the amount of wrack deposited on Wall Beach and north Surf Beach, indicating that these areas may provide a significant prey resource for chicks hatching on both north and south base.

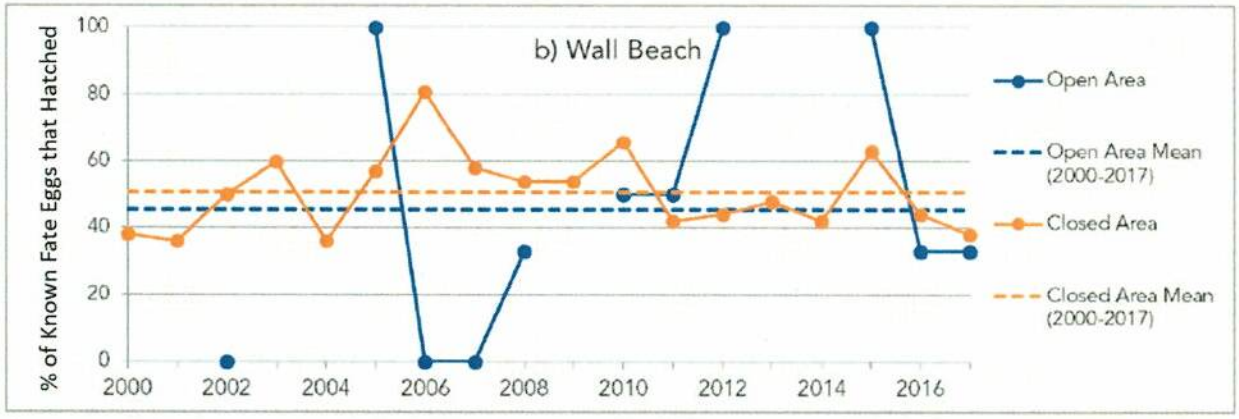

Figure 3. Trends in annual western snowy plover clutch hatch success at open and closed areas of Wall Beach. Missing data points indicate years where no nests were initiated within that particular beach sector. (Source: Robinette et al. 2017).

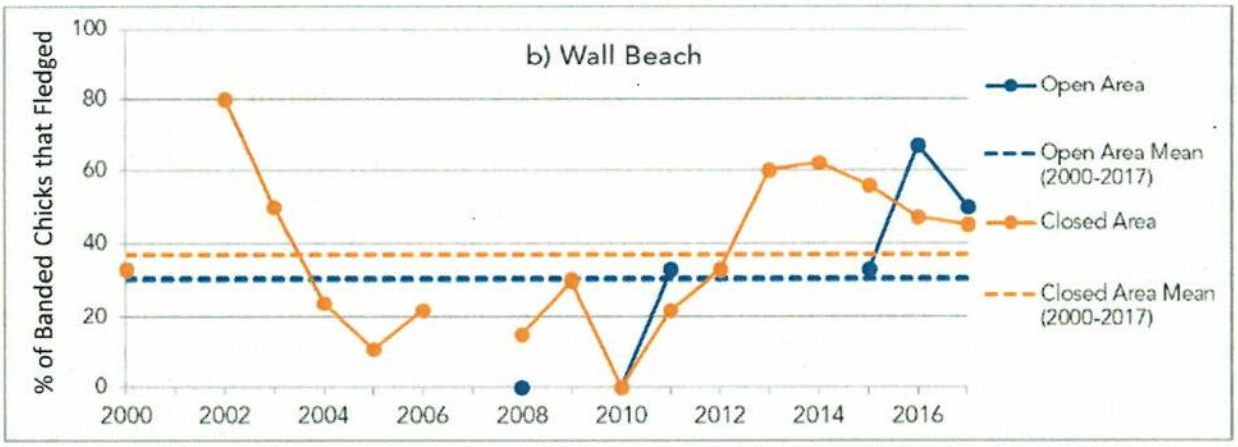

Figure 4. Trends in annual western snowy plover fledging success within open and closed areas of Wall Beach. Missing values indicate years when no nesting occurred or fledging success was not determined for that particular beach sector. (Source: Robinette et al. 2017).

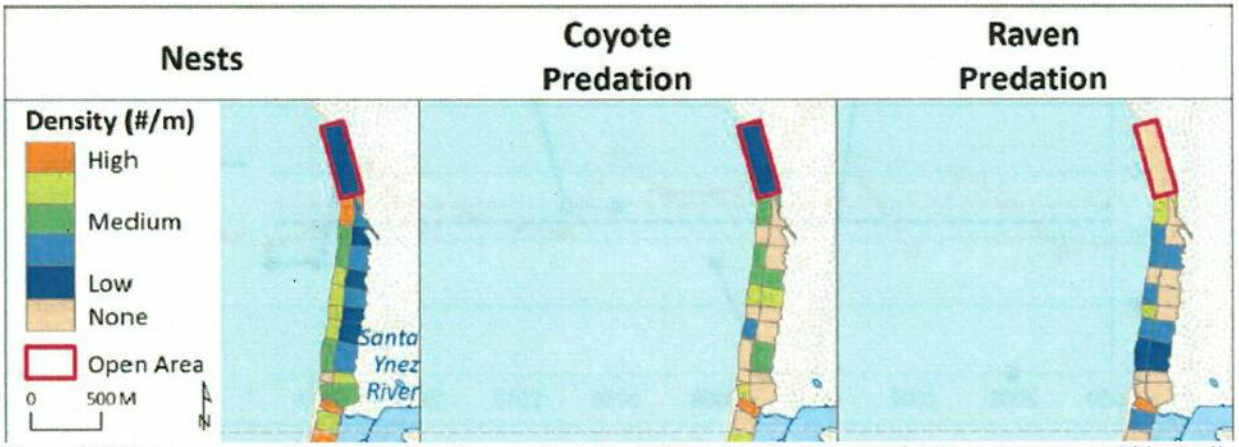

Figure 5. Western snowy plover nest densities, and nest predation rate of coyotes and common ravens, within Wall Beach transect blocks. (Source: adapted from Robinette et al. 2017).

The number of wintering western snowy plovers using Wall Beach specifically is not available; instead, annual winter window surveys group plovers on "South Beaches" (i.e., Wall Beach and north/south Surf Beach). While these surveys do not incorporate methods to account for variation in detection rates, observed data suggest that the winter population size on South Beaches was generally decreasing from 2007 to 2012, and was generally increasing from 2012 to 2016, but decreased during the 2016/2017 winter likely due to strong winter and El Nino storms (Figure 6; Robinette et al. 2017). Over the last 10 years, observed numbers of wintering plovers ranged between approximately 75 to 150 plovers total across all South Beaches.

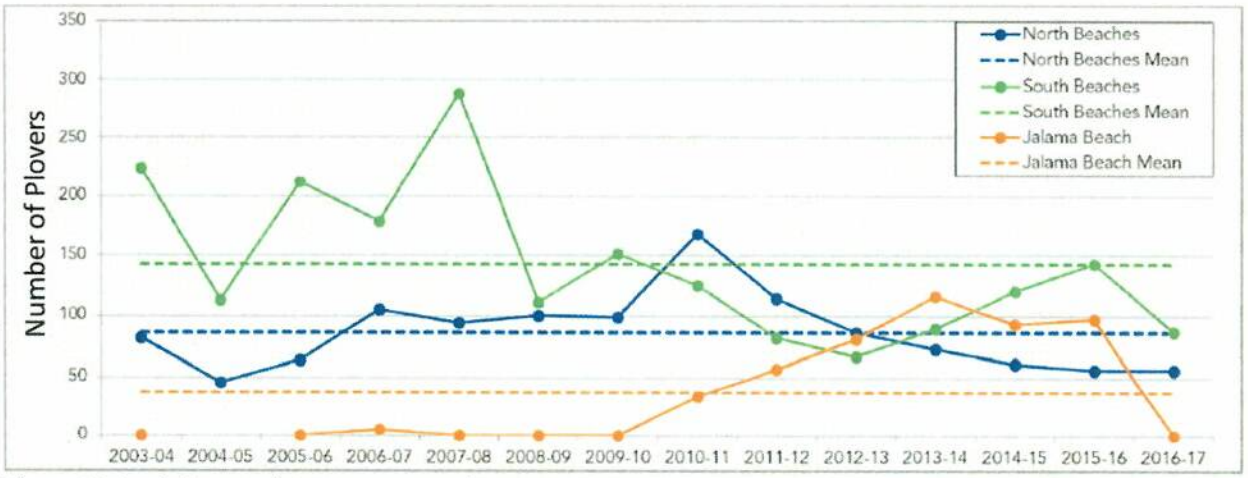

Figure 6. Trends in annual western snowy plover winter population assessed using maximum number of adults observed during the range wide winter window surveys from 2003/2004 to 2017. Dashed lines indicate the 14-year mean for each beach section. (Source: Robinette et al. 2017).

EFFECTS OF THE ACTION

Western snowy plovers are present on VAFB year-round, both wintering and breeding. The proposed construction of Wall Beach cabins/campsites may result in direct and indirect effects on all life stages of western snowy plovers, depending on the timing of construction activities, primarily due to increased human disturbance related to noise. Because the proposed construction area does not present suitable conditions for western snowy plover nesting, we do not believe that the proposed clearing/disturbance of this 0.60 acre will result in the loss of habitat for the species. However, noise and visual disturbance associated with the construction and installation of the cabins/campsites are expected to adversely affect western snowy plovers in the action area.

Effects of Cabin and Campsite Construction

Construction of the proposed cabins and campsites could commence at any time of year, during the breeding or non-breeding season. Once construction commences, some western snowy plovers could be exposed to noise levels above existing ambient sound levels. ManTech (2018) characterized ambient sound levels and compared to typical noise levels related to proposed project activities. The proposed action area is located in a relatively undeveloped area but experiences significant winds and crashing waves, which increase ambient sounds levels. Based on data from Surf Beach (located approximately 1 mile to the south), existing ambient sound levels in the action area are expected to be approximately 51.8 A-weighted decibels (dBA) Equivalent Sound Level (Leq) during the day (7:00 a.m. to 5:00 p.m), 53.1 dBA Leq in the evening (5:00 p.m. to 10:00 p.m.), and 45.5 dBA Leq at night (10:00 p.m. to 7:00 a.m.)(County of Santa Barbara Planning and Development 2008). Leq measurements are time-weighted sound levels, rather than depictions of instantaneous noises. Regularly occurring sources of instantaneous noise near the proposed action area include crashing ocean surf, which generates approximately 78 dBA (Bolin and Abom 2010), and can be louder during high surf events.

Additionally, a north-south Union Pacific Railroad right-of-way passes approximately 800 feet east of the proposed action area, generating semi-frequent line source noise and ground vibrations. Train noises, including the warning horn sounding at the grade crossing at New Beach Road, can generate up to 113 dBA of sound (Hanson et al. 2006). Amtrak passenger and Union Pacific freight trains travel through the area up to 24 times per day (City of San Luis Obispo 2005; Southern California Association of Governments 2008) and therefore contribute a significant role in the location's existing sound profile.

In their analysis, ManTech (2018) factored in the expected attenuation (at least 5 dBA; Harris 1978) caused by the existing concrete wall located along the west side of the Wall Beach parking area. Natural sound barriers (e.g., persistent, strong northwest winds, sand dune topography, and scrub vegetation) are also present between the proposed cabin/campsite area and western snowy plover habitat and are expected to somewhat reduce noise levels reaching plovers. However, because the amount of expected attenuation cannot be easily determined, these factors were not incorporated into the ambient versus project-related noise comparison.

The proposed construction equipment are non-impact devices (no ground contact/shaking), and their probable sound outputs are listed in Table 1 (ManTech 2018). ManTech (2018) notes that, because a number of factors can influence how sound propagates in the environment, the estimation of sound levels based on spherical spreading from the point source is only an approximation of attenuation with distance. Assuming all construction equipment would be operating simultaneously during the daytime only and discounting unquantified attenuation from natural sound barriers, construction activities would produce approximately 79.5 dBA at 100 feet from the proposed action area and reach daytime ambient noise levels (51.8 dBA) at approximately 1,279 feet (ManTech 2018). Based on these data, the proposed construction could create noise above ambient levels over approximately 25.7 acres of beach; this is equivalent to approximately 1 percent of the total area of beach habitat available on VAFB (ManTech 2018). Western snowy plover may also be exposed to visual disturbances from construction activities in areas where sand dunes do not block the construction area from view, although the likelihood of this also diminishes with distance. Because the Air Force has proposed limiting construction activities to daytime hours, lights will not be a source of disturbance during construction activities.

Based on western snowy plover nesting data from 2011 through 2017, we anticipate that an average of approximately 21 nests could occur within the action area, and that up to 12 nests may be active at any one time. During this 6-year period, the nearest observation of a plover nest was approximately 94 feet west of the construction area; a nest in this location would be exposed to sounds levels of approximately 79.5 dBA (27.7 dBA more than under ambient conditions).

While no observational data of western snowy plovers exposed to construction noise on VAFB currently exists, we expect that plovers could be adversely affected by construction noise and visual impacts of equipment operations. These effects during the breeding season could provoke temporary or permanent emigration from nesting sites, trigger a startle response that alerts predators to nest locations, cause temporary abandonment of nests, mask biologically significant

sounds (e.g., predators) that make abandoned eggs or young more vulnerable, interrupt courtship or breeding activities, and reduce overall fitness. Effects would be greatest for nesting plovers located nearer to the construction area. While we expect the likelihood and severity of disturbance to decrease as distance from the construction area increases, we have no data to indicate the existence or value of a noise threshold (above ambient levels) below which plovers are not expected to be disturbed. Similarly, while we expect existing natural barriers to help diminish noise to some degree, we have no data to inform how much sound levels at nests could be reduced.

Table 2. Typical noise levels produced by construction equipment (Source: ManTech 2018).

Construction Noise (point Source, non-Impact, with barriers)					
Source	Expected Noise Level (dBA) @ 50' (15.2 m)	Combined Noise Output (dBA) @ 50' (15.2 m)	Expected Noise Level (dBA) @ 100' (30.5 m)	Expected Noise Level (dBA) @ 400' (121.9 m)	Expected Noise Level (dBA) @ 800' (243.8 m)
Front-end loader	74	80	72.5	57.5	50
Auger attachment	79				
Two (2) concrete mixer trucks (Class IIX)	76	79	71.5	56.5	49
All-terrain forklift	80	--	72.5	57.5	50
Flatbed truck (Class VI)	89	--	81.5	66.5	59
Two (2) Pickup trucks – crew transport & tool storage (Class II)	70	73	65.5	50.5	43
10 HP compressor	73	78	70.5	55.5	48
35 HP generator	76				
Pneumatic air nail gun	80	--	72.5	57.5	50
Two (2) electric drills (12 amp)	51.5	54.5	47	32	24.5
Circular saw	70.5	--	63	48	40.5
All equipment (operating simultaneously)		87	79.5	64.5	57

We believe the potential for disturbance to result in adverse effects to nesting plovers would be highest if construction commences during the breeding season, after plovers have already established nests in the action area. Initial increases in sound levels associated with construction are likely to trigger a startle response by plovers, potentially leading to subsequent nest failure or abandonment. We expect that nesting plovers would either move to adjacent suitable habitat until

the noise disturbance ceases or acclimate to construction noises. Because of this, and assuming that the level of construction activity will be fairly consistent during the proposed 90-120-day construction period, we expect that the majority of nest abandonment or loss would occur within a short span of time once construction begins. In addition, the Air Force has proposed monitoring breeding plovers and active nests or chicks in the action area during construction activities to document any noise-related impacts and develop effective minimization measures, which should also help to minimize impacts to nesting plovers.

We expect effects to non-breeding plovers would be minimal, as these individuals would likely either move to adjacent suitable habitat until the noise disturbance ceases or acclimate to construction noises.

Effects of Monitoring

Human activity within western snowy plover breeding areas can cause birds to flush and become agitated. People entering the Wall Beach breeding area to monitor breeding plovers, active nests, and chicks are likely to cause some disturbance to the birds. These disturbances may startle western snowy plovers or disrupt foraging or breeding activities. Brooding birds may flush and leave eggs or chicks unattended. Unattended eggs and chicks may become vulnerable to exposure or predation; they may also become susceptible to injury if monitors step on chicks or nests that are not detected. Because monitoring activities would be conducted by a Service-approved biologist familiar with the biology and potential risks to western snowy plover, we expect that the potential for adverse effects to western snowy plovers from monitoring activities would be greatly reduced.

Effects on Recovery

In the recovery plan for western snowy plover, we designated six recovery units across the range. VAFB is located within Recovery Unit 5, which includes San Luis Obispo, Santa Barbara, and Ventura Counties. Recovery Unit 5 supports the greatest number of western snowy plovers in the range (approximately half of the U.S. population), and has the greatest amount of available suitable habitat (Service 2007). The proposed construction of cabins and campsites at Wall Beach would affect up to approximately 25.7 acres of western snowy plover habitat (approximately 1 percent of the total available habitat on VAFB) due to increased human-related disturbance associated with temporary construction activities during no more than a single breeding season. With implementation of the minimization measures proposed by the Air Force, impacts to the western snowy plover would likely be low and would not reduce the likelihood of recovery of the subspecies.

Summary of Effects to the Western Snowy Plover

In summary, we expect adverse effects to western snowy plovers are likely to occur as a result of the proposed action. We anticipate construction activities would cause short-term effects to western snowy plovers during a single breeding and/or non-breeding season (depending on when

construction begins). Short-term effects would likely include startle responses, flushing, and interruptions to foraging, courtship, and breeding activities, with the potential for reduced numbers of nesting adults and/or productivity in the action area during a single breeding season. Although adverse effects are likely to occur as a result of the proposed action, we do not anticipate they will diminish the contribution the population at VAFB makes to the recovery of the western snowy plover.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. We do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the Act. Because the action area is entirely within VAFB, a Federal installation, we are not aware of any future State, tribal, local, or private actions that are reasonably certain to occur in the action area.

CONCLUSION

The regulatory definition of "to jeopardize the continued existence of the species" focuses on assessing the effects of the proposed action on the reproduction, numbers, and distribution, and their effect on the survival and recovery of the species being considered in the biological opinion. For that reason, we have used those aspects of the western snowy plover's status as the basis to assess the overall effect of the proposed action on the subspecies.

Reproduction

If construction activities commence during the breeding season (approximately March through September), breeding western snowy plovers would likely be disturbed by construction noise and possible visual disturbances. We expect that disturbance may result in short-term effects including temporary or permanent emigration from nesting sites, flushing from nests or abandonment of nests, and interruption of courtship or breeding activities. We expect that affected plovers would either move to adjacent suitable habitat or acclimate to construction noises. Monitoring activities may also cause temporary disturbance to breeding western snowy plovers; however, because the Air Force will only use Service-approved biologists, monitoring activities are not expected to result in take. We conclude that, while the proposed project has the potential to temporarily reduce western snowy plover reproduction in the action area, the proposed activities would not reduce reproduction of the subspecies on VAFB, in Recovery Unit 5, or rangewide.

Numbers

We are unable to determine the precise number of western snowy plovers that could occur in the action area and may be affected by proposed project because the numbers of individuals in the action area likely vary from year to year, and the exact effects of the proposed action are not well

documented. However, based on the short-term nature of the proposed construction and the minimization measures the Air Force has proposed, we do not expect the number of western snowy plovers on VAFB to decline due to the proposed activities. Therefore, we conclude that the proposed project would not reduce the numbers of western snowy plovers on VAFB, in Recovery Unit 5, or rangewide.

Distribution

The proposed project could temporarily displace western snowy plovers from portions of the action area. Disturbance from construction noise could potentially cause plovers to avoid areas currently used for nesting or foraging, resulting in a change in distribution of the subspecies within the action area during the construction period. Changes in distribution due to avoidance are more likely to occur in areas closest to the cabins and campsites, and are not expected to happen basewide. Therefore, we conclude that, while the effects of the proposed project have the potential to temporarily reduce the distribution of the western snowy plover in the action area, the proposed activities would not reduce distribution of the subspecies on VAFB, in Recovery Unit 5, or rangewide.

Recovery

The proposed action would not result in any appreciable change in reproduction, population numbers, or distribution of the western snowy plover and would not preclude the Service's ability to implement any of the measures identified in the recovery plan for the subspecies. Therefore, we conclude that the proposed action would not appreciably reduce the likelihood of recovery of the western snowy plover in Recovery Unit 5 or rangewide.

After reviewing the current status of the western snowy plover, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the Air Force's proposal to construct cabins and campsites at Wall Beach on VAFB is not likely to jeopardize the continued existence of the western snowy plover. We have determined that the reproduction, numbers, and distribution of the subspecies would not be reduced, and that the proposed project would not reduce appreciably the likelihood of the recovery of the western snowy plover as envisioned in the recovery plan due to the relatively small size of the affected area, the short duration of construction activities, and the measures the Air Force proposes to avoid and minimize the potential effects.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is

defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this incidental take statement.

In June 2015, the Service finalized new regulations implementing the incidental take provisions of section 7(a)(2) of the Act. The new regulations also clarify the standard regarding when the Service formulates an Incidental Take Statement [50 CFR 402.14(g)(7)], from "...if such take may occur" to "...if such take is reasonably certain to occur." This is not a new standard, but merely a clarification and codification of the applicable standard that the Service has been using and is consistent with case law. The standard does not require a guarantee that take will result; only that the Service establishes a rational basis for a finding of take. The Service continues to rely on the best available scientific and commercial data, as well as professional judgment, in reaching these determinations and resolving uncertainties or information gaps.

We anticipate that western snowy plovers could be taken as a result of the proposed construction of Wall Beach cabins/campsites due to increased human disturbance (primarily noise) in the vicinity of the cabins/campsites. We expect the incidental take to be in the form of harm and/or harass if brooding birds flush and leave eggs or chicks unattended; and harm, harass, wound, and/or kill if unattended eggs and chicks become vulnerable to effects of exposure or predation.

Historical nesting data provide information to estimate the number of nests that are likely to occur within the action area and that may be taken as a result of the proposed project. We estimate the amount of incidental take of active nests reasonably expected during the breeding season would occur within a short span of time once construction begins (as discussed in the Effects of the Action section of this biological opinion). In addition, we anticipate that the number of nests taken would be substantially less than the maximum observed number of simultaneously active nests.

Therefore, if more than four (4) western snowy plover nests are harassed, as evidenced by the injury or mortality of an egg or chick or the permanent abandonment of the nest, as a result of Wall Beach cabin/campsite construction activities, the Air Force must contact our office immediately to reinitiate formal consultation. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions. We do not anticipate, nor do we exempt, take for any other activities not analyzed in this consultation.

REASONABLE AND PRUDENT MEASURES

The measures described below are non-discretionary, and must be undertaken by the Air Force, as appropriate, for the exemption in section 7(o)(2) to apply. The Air Force has a continuing duty to regulate the activity covered by this incidental take statement. If the Air Force fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Air Force must report the progress of the action and its impact on the subspecies to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The Service's evaluation of the effects of the proposed action includes consideration of the measures developed by the Air Force, and repeated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects of the proposed action on the western snowy plover. Any subsequent changes in the minimization measures proposed by the Air Force may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16.

We believe the following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of the western snowy plover related to construction of cabins and campsites at Wall Beach:

1. The Air Force must monitor breeding western snowy plovers to determine the effects of the proposed activities and ensure that the level of incidental take that occurs during project implementation is commensurate with the analysis contained herein.

2. The Air Force must implement adaptive monitoring and management of western snowy plovers.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Air Force must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement reasonable and prudent measure 1:

    a. If construction commences during the western snowy plover breeding season (March 1 through September 30), the Air Force must monitor all nesting activity of western snowy plovers within 1,279 feet of the Wall Beach cabin/campsite construction area throughout the breeding season. This monitoring must be conducted in a manner sufficient to determine the effect of increased noise levels on nesting western snowy plovers, such as through the use of nest cameras, camouflaged observers, or other methods capable of documenting behavior.

b. The Air Force's western snowy plover monitoring plan for Wall Beach cabin/campsite construction must be submitted to, and approved by, the Service prior to the commencement of proposed activities.

c. The Air Force must request our approval of any biologist it wishes to employ as a Service-approved biologist for western snowy plover monitoring at least 30 days prior to conducting any such activities. In the request, the Air Force must include the names of the biologist(s), qualifications, references, and what monitoring activities the biologist(s) would complete. Please be advised that possession of a 10(a)(1)(A) permit for the covered species does not substitute for the implementation of this measure. Authorization of Service-approved biologists is valid for this consultation only.

2. The following terms and conditions implement reasonable and prudent measure 2:

a. The Air Force must use information collected from monitoring to adapt species management actions and monitoring efforts accordingly for the proposed project and future related consultations. For example, adapted monitoring efforts may include increasing the monitoring frequency and/or revising monitoring methods for the western snowy plover if data collected from initial monitoring efforts suggest effects of project activities are greater than expected.

b. If western snowy plover eggs or chicks are abandoned or injured by project activities, adaptive management actions must include rescue (to the extent possible) and transfer of these animals to the Santa Barbara Zoo by Service-approved individuals. During the nesting season, an incubator must be on standby and operated by qualified individuals to receive abandoned eggs or chicks and safely transport them to the rehabilitation facility.

c. The Air Force must request our approval of any biologist it wishes to employ as a Service-approved biologist for western snowy plover egg or chick rescue at least 30 days prior to the potential of conducting any such activities. In the request, the Air Force must include the names of the biologist(s), qualifications, references, and what activities the biologist(s) would complete. Please be advised that possession of a 10(a)(1)(A) permit for the covered species does not substitute for the implementation of this measure. Authorization of Service-approved biologists is valid for this consultation only.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402. 14(i)(3), the Air Force must report the progress of the Wall Beach cabin/campsite construction project and its impact on the species to the Service as specified in this incidental take statement. This reporting will assist the Service and the Air Force in

evaluating current and future measures for the conservation of the western snowy plover at VAFB. The Air Force must provide the following information to the Service:

> A written report is due to the Service within 60 days following the conclusion of the project. The report must include: documentation of actual noise levels at western snowy plover nests within 1,279 feet of the cabin/campsite construction area (if during the breeding season); documentation of the results of plover monitoring, biological surveys and observations, and any other pertinent information records; documentation of potential impacts of the proposed activities on western snowy plovers; and the number of plover nests abandoned and the number of plover eggs and chicks injured or killed within the action area, describing the circumstances of each if known.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within one working day of locating a dead or injured western snowy plover, the Air Force must make initial notification by telephone and writing to the Ventura Fish and Wildlife Office in Ventura, California, [2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766]. The notification must include the time and date, location of the carcass, a photograph, cause of death if known, and any other pertinent information.

Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state for later analysis. Injured western snowy plovers must be transported to a qualified veterinarian. If any injured western snowy plovers survive, the Air Force should contact us regarding their final disposition.

The remains of western snowy plovers must be placed with educational or research institutions holding the appropriate State and Federal permits, such as the Santa Barbara Natural History Museum (Contact: Paul Collins, Santa Barbara Natural History Museum, Vertebrate Zoology Department, 2559 Puesta Del Sol, Santa Barbara, California 93460, (805) 682-4711, extension 321).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to avoid or minimize adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

> We recommend that the Air Force use directional outdoor lighting fixtures or shield lighting fixtures at cabins and campsites, and use the lowest acceptable illumination levels needed to

ensure human safety, to minimize potential visual disturbance to western snowy plovers and other wildlife. To be effective, light shields should be opaque, sufficiently large, and positioned so that light from the shielded source does not reach beach habitat. Good shielding should provide a cutoff angle of 90 degrees or more.

REINITIATION NOTICE

This concludes formal consultation on the proposed project to construct recreational cabins and campsites at Wall Beach on VAFB as outlined in your consultation request dated July 23, 2018, and subsequent revisions to the project description on October 30, 2018. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may adversely affect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; (3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by this action (50 CFR 402.16). In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Heather Tipton of our staff at (805) 677-3326, or by electronic mail at heather_tipton@fws.gov.

Sincerely,

Acting for Stephen P. Henry
Field Supervisor

cc:
Darryl York, VAFB
Rhys Evans, VAFB

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-F-0182

February 04, 2015

Beatrice L. Kephart
Installation Management Flight (30 CES/CEI)
1028 Iceland Avenue
Vandenberg Air Force Base, California 93437

Subject: Biological Opinion on the Beach Management Plan and Water Rescue Training at Vandenberg Air Force Base (2014-2018) (8-8-12-F-11R)

Dear Ms. Kephart:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Air Force's (Air Force) proposed beach management plan at Vandenberg Air Force Base (Vandenberg AFB) and its effects on the federally threatened Pacific Coast population of western snowy plover (*Charadrius nivosus nivosus*) and California red-legged frog (*Rana draytonii*), and the endangered El Segundo blue butterfly (*Euphilotes battoides allyni*) and California least tern (*Sterna antillarum browni*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). We received your February 9, 2012, request for formal consultation on February 10, 2012.

This biological opinion is based on information that accompanied your request for consultation (Air Force 2012a), including electronic mail and telephone conversations between our staff, and information in our files. We based this biological opinion on information contained in your previous requests for formal consultation and subsequent biological opinions (1-8-01-F-13, 1-8-02-F-7, and 1-8-03-F-13) for the beach management program at Vandenberg AFB. Additionally, we have reviewed previous amendments to the beach management program, in which you requested minor changes that did not rise to the level of requiring informal or formal consultation, and concurrence letters pertaining to the incorporation of additional areas to conduct beach restoration activities. We can make a complete record of this consultation available at the Ventura Fish and Wildlife Office.

You requested reinitiation of consultation regarding the biological opinion for the beach management plan (1-8-05-F-5R) to include water rescue training and coastline familiarization. You determined that the water rescue training may affect, and is likely to adversely affect, western snowy plovers and California red-legged frogs and may affect, but is not likely to adversely affect, the El Segundo blue butterfly.

You also determined that the water rescue training and coastline familiarization may affect and would likely adversely affect federally threatened southern sea otters (*Enhydra lutris nereis*). However, upon further discussions between our staffs regarding ways in which the Air Force could minimize effects to sea otters, you proposed to incorporate conservation measures into the project description that would avoid adversely affecting southern sea otters. You therefore revised your determination and concluded that water rescue training and coastline familiarization activities may affect, but are not likely to adversely affect, southern sea otters (Air Force 2013a).

Description of Water Rescue Training and Coastline Familiarization

The Air Force proposes to conduct water rescue training and coastline familiarization. For water rescue training, the Air Force would establish four areas on Base; two areas on North Base and two areas on South Base. The Vandenberg AFB Fire Department (Fire Department) would carry out these training activities, which could occur at any of four sites, but not all of them at the same time. The proposed training areas on North Base include the areas that are open to recreational use at Wall and Minuteman Beaches. The proposed training areas on South Base include the mouth of Honda Creek and the primary launch site at the Base's boat harbor south of Point Arguello.

The Fire Department would conduct training on the use of personal watercraft (PWC) and victim rescues within static water beyond the surf zone and in the surf line. Water rescue training would be restricted to within 0.5 mile (0.8 km) of the launch point; however, if the PWCs are launched from Minuteman Beach they would come back to Wall Beach due to the steep slope at Minuteman Beach. Utility vehicles would transport the PWC to the training areas or a hoist would lower the PWC into the boat harbor. Generally, one site is used per month and the training would occur year round. Training activities may occur for a maximum of two consecutive days. Up to 20 people could participate per day at each site.

Coastline familiarization would consist of personnel operating PWC up and down the coast between the Boat House and Jalama Beach to become familiar with the coastline in the event of an emergency rescue situation. The Air Force proposes to implement a suite of avoidance and minimization measures as part of the project description for this activity.

The launch site of PWC at the boat harbor is the only site out of the four training areas that is near a resident breeding colony of southern sea otters off the coast of Vandenberg AFB; however, the entire Vandenberg AFB coastline is within the range of the southern sea otter. Specifically, southern sea otters occur within and outside of the boat harbor, and a known resting/rafting area is present off the coast of the Base near Sudden Flats. Therefore, the Air Force proposes measures to avoid adversely affecting sea otters when conducting water rescue training and coastline familiarization. A qualified biologist familiar with the sea otter population off the coast of Vandenberg AFB will conduct a pre-activity briefing for project personnel that will: (a) describe the suite of measures below that the Air Force proposed to avoid adversely affecting sea otters; (b) provide a description of southern sea otters, their habitat, and where they are known to occur off the coast of Vandenberg AFB; (c) describe the temperature and metabolic

stress that sea otters are under and the impacts that result from disturbing resting sea otters; and (d) inform them that southern sea otters are not to be adversely affected by the project activities.

Additional measures to avoid adversely affecting sea otters include:

1. A qualified biologist will monitor all training activities in areas occupied by southern sea otters (e.g., Boat Harbor and Sudden Flats);

2. The biologist will survey the training areas prior to training activities to ensure southern sea otters are not present; and

3. Launching of training equipment (PWC) will not occur if southern sea otters are present within the launch site;

4. The biologist will ensure that training activities are not conducted within 328 feet (100 meters) from resting or rafting sea otters.

In addition to the pre-activity briefing that will be provided to project personnel by a qualified biologist, the Air Force will implement the following measures to avoid adversely affecting southern sea otters while conducting coastline familiarization activities:

1. Personnel operating the PWC will maintain speeds of no more than 17 miles per hour (15 knots) within depths of less than approximately 131 feet (40 meters);

2. A qualified biologist will monitor all project activities to ensure the PWC do not adversely affect sea otters;

3. The PWC will maintain a minimum 328-foot (100-meter) buffer around all kelp beds (*Macrocystis* spp.) and known sea otter rafting areas;

4. All PWC will have global positioning systems (GPS) units to ensure that project personnel are staying within the designated pathway and outside of the 328-foot (100-meter) buffer; and

5. The biological monitor will have the authority to halt all project activities if sea otters are observed within the pathway of the PWC, if personnel are not complying with the measures to avoid adversely affecting sea otters, or if the activities are affecting sea otters in a manner not discussed herein.

<u>Determination for the El Segundo Blue Butterfly, California Red-legged Frog, California Least Tern, and Western Snowy Plover</u>

For El Segundo blue butterfly, seacliff buckwheat (*Eriogonum parvifolium*)[1] plants, which are

1 Seacliff buckwheat and coast buckwheat are common names for *Eriogonum parvifolium*

host plants to the El Segundo blue butterfly, occur within and adjacent to the tertiary access road that the Fire Department would use during the water rescue training activities (specifically, accessing the launch site at the Honda Creek mouth). The Air Force has conducted multiple surveys (according to the standardized methods from El Segundo blue butterfly 10(a)(1)(A) Recovery Permits) along this road but has not observed any El Segundo blue butterflies during these surveys. Seacliff buckwheat plants at this location along the access road have not been determined to be occupied and thus would generally fall within habitat currently recognized as suitable but unknown to be occupied. However, because the Air Force conducted surveys over multiple years using the standardized methods found in the El Segundo blue butterfly recovery permit, the preponderance of evidence suggests that El Segundo blue butterflies are not present along the tertiary access road to the mouth of Honda Creek for water rescue training purposes. Therefore, we concur with your determination that the water rescue training activities are not likely to adversely affect El Segundo blue butterflies.

For California red-legged frogs and western snowy plovers, water rescue training may adversely affect these species in a manner not previously analyzed in the existing biological opinion. Therefore, we analyze the effects of the water rescue training on California red-legged frogs and western snowy plovers in this biological opinion. California least terns would not be affected by water rescue training. Additionally, coastline familiarization would not affect El Segundo blue butterfly, California red-legged frog, California least tern, or western snowy plover.

Determination for the Southern Sea Otter

Because southern sea otters occur within the area of the boat harbor and between the boat harbor and Jalama Beach, the water rescue training activities and coastline familiarization activities have the potential to adversely affect sea otters. Southern sea otters are mobile while foraging and forage in the open ocean nearby the coastline. An approaching PWC may cause an otter to flush from preferred foraging areas or cause it to forage elsewhere. However, because sea otters are mobile while foraging, the effect of a PWC causing an otter to flush while foraging is not likely to rise to the level of being adverse (L. Carswell, pers. comm. 2013). Affecting resting otters that may be rafting in kelp beds within the project area is a much greater concern due to the metabolic stress resulting from disturbing resting otters. Therefore, to avoid adversely affecting sea otters while conducting the water rescue training and coastline familiarization activities, the Air Force proposes to implement the suite of measures stated above as part of the project activities. Because the measures that the Air Force will implement would provide enough protection to avoid adversely affecting resting or rafting sea otters, we concur with your final determination that the water rescue and coastline familiarization activities, as proposed, may affect, but are not likely to adversely affect, southern sea otter.

We do not discuss coastline familiarization further because it would not affect the species on which we are formally consulting in this biological opinion (El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover).

Incorporating the Management of the California Least Tern Colony at Purisima Point into the Beach Management Plan

As part of the reinitiation of this consultation, and in agreement with the Air Force, we have added the management of the California least tern colony on Vandenberg AFB. The management program was first described in the biological opinion we issued on January 11, 1999, for the Delta II launch program at Space Launch Complex 2 (SLC-2) and Taurus launch program at 576-E (1-8-98-F-25R). Subsequently, we issued a programmatic biological opinion (8-8-09-F-10) in September 2011, which superseded the previous biological opinion (1-8-98-F-25R). Because the management of the California least tern colony at Purisima Point aligns more with the beach management program than the launch program it is currently managed under, we incorporated the management of the California least tern colony into the beach management program analyzed in this biological opinion.

The effects of launches from Vandenberg AFB on California least terns were analyzed in the previous biological opinions (1-8-98-F-25R and 8-8-09-F-10); therefore, we are not repeating that analysis herein. In this biological opinion, we only describe the activities associated with the management of the California least tern colony, which includes the maintenance of fencing around the Purisima Point colony, predator management, and nest monitoring activities. Therefore, in this biological opinion we include a description of the California least tern management program, status of the species, an environmental baseline, and an effects analysis that pertains to the management of the colony. Consolidating the management programs for the California least tern and western snowy plover should lead to managing these species and their habitat efficiently under one program and reporting the programs' effects within one document.

Beach Restoration Activities

The Air Force developed a comprehensive plan to restore western snowy plover habitat on Vandenberg AFB (Restoration Plan). The Air Force would conduct the restoration actions outside of the western snowy plover and California least tern breeding seasons. They proposed to remove approximately 62 acres (25 hectares) of European beachgrass and 2 to 3 acres (0.8 to 1.2 hectares) of iceplant from four areas (areas A-D) (Air Force 2005) to compensate for the adverse effects caused by allowing recreational access in 1.25 miles (2.0 kilometers (km)) of western snowy plover nesting habitat (see Description of the Proposed Action section below). A goal of the beach restoration plan is to increase the amount of breeding habitat available for western snowy plovers and California least.

In 2011, the Air Force requested including Wall Beach in the restoration area and proposed to use herbicide to selectively, chemically treat 4 acres (1.6 hectares) of European beachgrass and 18 acres (7.3 hectares) of iceplant. The Air Force determined that the restoration activities may affect, but were not likely to adversely affect, the western snowy plover, California least tern, California red-legged frog, El Segundo blue butterfly, and tidewater goby (Air Force 2011). We concurred with the Air Force's determination on October 13, 2011. As part of this current

request for consultation, the Air Force proposes to conduct restoration activities within any suitable habitat for California least terns and western snowy plovers on Vandenberg AFB (Air Force 2013a).

Determinations for the El Segundo Blue Butterfly, California Red-legged Frog, Tidewater Goby, Western Snowy Plover, and California Least Tern

Western Snowy Plover and California Least Tern

Restoring suitable habitat could have a beneficial effect on the western snowy plover and California least tern by enhancing the quality and availability of habitat. The U.S. Bureau of Land Management cleared 167 acres of nonnative vegetation on the North Spit of Coos Bay, Oregon, and snowy plovers used many of the cleared areas almost immediately for nesting and brood rearing (Service 2007). However, it may take many years to eliminate nonnative plants from suitable habitat areas and there is potential that western snowy plovers may never move into restored areas for nesting.

All restoration activities would occur outside of the breeding season for western snowy plovers and California least terns. Thus, the Air Force would avoid adverse effects to the breeding population that could result if these activities would occur during the breeding season. To date, restoration activities have not adversely affected western snowy plovers or California least terns. A qualified biological monitor will oversee the restoration activities to ensure that foraging behavior of wintering snowy plovers is not adversely affected. California least terns would not be present at restoration sites outside of the breeding season. Therefore, because the restoration would be conducted outside of the breeding season, and the Air Force has proposed measures to avoid adversely affecting wintering western snowy plovers, we concur with your determination that the proposed restoration activities would not adversely affect western snowy plovers or California least terns.

El Segundo Blue Butterfly

As noted previously, we concurred with your determination on October 13, 2011, that the restoration activities at Wall Beach are not likely to adversely affect El Segundo blue butterflies (Air Force 2011). We concurred because you proposed to cover and avoid seacliff buckwheat plants when chemically treating and removing invasive plants at this location . However, considering that the restoration areas analyzed under this biological opinion would include mechanical, manual, chemical, and controlled burning removal methods within all western snowy plover and California least tern habitat on Vandenberg AFB, including areas containing seacliff buckwheat, we do not concur that the beach restoration activities are not likely to adversely affect El Segundo blue butterfly. Controlled burning activities would likely remove seacliff buckwheat plants in some of the restoration sites because buckwheat plants occur scattered within stands of the invasive species targeted for removal. Therefore, we analyze the effects of beach restoration activities to El Segundo blue butterflies in the biological opinion below.

California Red-legged Frog and Tidewater Goby

The restoration activities would not occur within wetland or riparian areas, and the Air Force proposed protective measures to avoid adversely affecting these species. On October 13, 2011, we concurred with your determination that the restoration activities are not likely to adversely affect California red-legged frogs or tidewater gobies (Air Force 2011).

CONSULTATION HISTORY

The history of consultation concerning the beach management program and recreational access at Vandenberg AFB and its effect on western snowy plovers dates back to 1995. We have issued numerous biological opinions analyzing effects of the beach management program at Vandenberg AFB. During the 2001 breeding season, the Air Force proposed a beach management program that formed the basis of the plan as it currently exists. We are not providing a complete consultation history in this biological opinion, but we include a brief discussion of the beach management program since the 2001 breeding season.

Beach Management

On March 9, 2001, we issued a biological opinion (1-8-01-F-13) to the Air Force for their proposed beach management plan for the 2001 western snowy plover breeding season. The Air Force's proposed action allowed unrestricted recreational beach access to 1.25 miles (2.01 km) of western snowy plover habitat during the 2001 breeding season (the same area that was open to recreational access during the 2000 breeding season). Public access would be available to approximately 0.5 mile (0.8 km) of Surf Beach, military access would be available at the northernmost 0.25 mile (0.4 km) of Wall Beach and the northernmost 0.5 mile (0.8 km) of Minuteman Beach. Military recreational access in this context included active duty military and their dependents, retired military and their dependents, Department of Defense and Vandenberg contractor employees. The Air Force has authorized access for saltwater fishing at Minuteman Beach and for active duty military at Wall Beach through an agreement with the State of California regarding the Vandenberg State Marine Reserve. The Air Force proposed to close all other sandy beaches on Vandenberg AFB during the breeding season (March 1 to September 30) and proposed to fence and sign the closed sections of beach As part of the 2001 management plan, the Air Force proposed to close Surf Beach to all recreational access for the remainder of the breeding season if they document more than 25 violations of the closed area at Surf Beach within one breeding season. indicating the reason and timing of the closure. Fencing would run perpendicular to the ocean from the back dunes to at least the mean high tide line. The Air Force proposed to remove the fencing, in whole or in part, at the end of the breeding season. Similarly, the Air Force would close Wall and Minuteman Beaches if more than 10 and 5 violations, respectively, occur within one breeding season.

On December 21, 2001, we issued a biological opinion (1-8-02-F-7) for the beach management plan during the 2002 western snowy plover breeding season. The beach management plan was the same as proposed during the 2001 breeding season. However, in a letter dated July 26, 2002,

we concurred with the Air Force's determination that increasing the violation limit at Surf Beach from 25 to 40 would not result in additional adverse effects. In a letter dated October 2, 2002, we concurred with Air Force's determination that eliminating the wintering closure at the mouth of the Santa Ynez River would not require reinitiation of consultation. Apparently, when the closure at the Santa Ynez River mouth has been in place, western snowy plovers have not been observed roosting in the area on a regular basis or in large numbers, and the Air Force indicated that the closure was hard to maintain.

On May 12, 2003, we issued another biological opinion (1-8-03-F-13) for the beach management plan for the 2003 breeding season that was the same as the year before. Likewise, the 2004 beach management plan was the same as proposed previously.

In 2004, we had a series of meetings with the Air Force to discuss the beach management strategy going forward. Through a cooperative effort, we agreed on a proposed 5-year beach management plan that would include many of the same protective measures that have been in place during the previous three breeding seasons, yet would allow the Air Force to provide recreational access to its beaches 7 days a week.

On March 1, 2005, we issued a biological opinion (1-8-05-F-5R) for the beach management plan for the 2005 through 2009 breeding seasons. This plan included an increase of the violation limits at Surf and Minuteman Beaches during the 5-year plan. Violation limits at Surf Beach were increased from 40 to 50, and increased from 5 to 10 at Minuteman Beach. During the 5-year period this biological opinion was in effect, we have consulted with the Air Force to make minor adjustments to some management actions; these minor amendments did not reach the level of triggering additional formal or informal consultation.

In 2010, the Air Force proposed renewing the beach management plan to be effective from 2010 through the 2014 breeding season. The Air Force proposed four changes to update the project description that included to: (1) remove temporary shelters for enforcement personnel; (2) discontinue the use of satellite phones for monitors facilitating communications with enforcement personnel; (3) allow the Air Force to trap and remove corvids near western snowy plover habitat and coordinate all predator management activities instead of using U.S. Department of Agriculture's Wildlife Services to conduct these activities; and (4) use infrared-triggered still cameras only in areas with identified predation issues. On March 2, 2010, we determined that the proposed changes to the project description would not result in any additional adverse effects beyond the effects analyzed in the biological opinion. Therefore, we extended the beach management plan to be effective through the 2014 breeding season.

Beach Restoration Plan

The Air Force developed a comprehensive plan to restore western snowy plover habitat on Vandenberg AFB (Restoration Plan) to compensate for the adverse effects of allowing recreational access on 1.25 miles (2.01 km) of western snowy plover habitat. The Air Force

proposed to eradicate nonnative dune vegetation within western snowy plover habitat (Air Force 2005; see Description of the Proposed Action section below).

In 2007, you requested our concurrence that conducting beach restoration activities at areas A-D identified in the Restoration Plan was not likely to adversely affect the El Segundo blue butterfly. In a letter dated December 19, 2007, we concurred with your determination because you proposed to conduct the restoration activities outside of the flight season, avoid affecting seacliff buckwheat plants by placing a protective cover over all seacliff buckwheat plants that may be subject to herbicide, and we only considered the effects of mechanical, manual, and chemical restoration methods.

In 2011, you requested to amend the beach management plan (l-8-05-F-5R) to include beach restoration at Wall Beach, between the parking lot and the mouth of the Santa Ynez River. In a letter, dated October 13, 2011, we concurred with your determination that the restoration activities at Wall Beach would not result in adverse effects to the western snowy plover beyond what we had previously analyzed under the biological opinion. We also concurred with your determination that restoration at Wall Beach is not likely to adversely affect the El Segundo blue butterfly, California red-legged frog, tidewater goby, and California least tern. However, as discussed above, we do not concur with your determination that the additional proposed beach restoration activities in all western snowy plover habitat are not likely to adversely affect El Segundo blue butterflies.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The biological opinion consists of two main elements: (1) beach management plan, which includes access and enforcement, predator management, and beach restoration activities; and (2) water rescue training.

Beach Management

Beach Access and Enforcement

For the purposes of this biological opinion, beaches where the proposed activities would occur on Vandenberg AFB are divided into three sections: 1) North Beaches (6.2 miles) (10 km) extending from the north end of Minuteman Beach south to the rocky shore that extends north from Purisima Point; 2) Purisima Beaches (2.6 miles) (4.2 km) encompass the sandy pocket beaches, rocky beaches and dune areas adjacent to Purisima Point, including the Purisima Point least tern colony; and 3) South Beaches (5 miles) (8 km) encompass sandy coastline habitat predominately consisting of small dunes and narrow beaches backed by sheer and vegetated bluffs. North Beaches are subdivided into four sectors: 1) Minuteman, 2) Shuman North, 3) Shuman South, and 4) San Antonio. Purisima Beaches are subdivided into two sectors: 1)

Purisima North, and 2) Purisima Least Tern Colony. South Beaches are subdivided into three sectors including: 1) Wall, 2) Surf North, and 3) Surf South (Appendix A).

Western Snowy Plover

The Air Force proposes to allow recreational beach access to 1.25 miles (2.01 km) of approximately 13.8 miles (22.2 km) of suitable nesting habitat on Vandenberg AFB during the 2014-2018 breeding seasons (open areas) (the same area that was open to recreational access during the 2000-2013 breeding seasons) and for any year thereafter that the Air Force and the Service agree to extend this biological opinion. All other sandy beaches determined to be western snowy plover and California least tern habitat on Vandenberg would be closed during the breeding season (closed areas) (March 1 to September 30).

Open Areas

The open section of Surf Beach at Surf North would extend from the closure fence that the Air Force first installed in July 1999 and continue north approximately 0.5 mile (0.8 km). The Air Force established the northern boundary to protect the cluster of several nests that typically occur near this boundary. Public access is available within the open area at Surf Beach. Recreational users (e.g. walking and surfing) may access Surf Beach either through the existing access trail at the Surf Station parking lot or by a trail through the back dunes from the Ocean Beach parking lot to Surf Station. A public access road through Vandenberg (Ocean Avenue) makes Ocean Park and Surf Station accessible to the public. Access to the open area at the northernmost 0.25 mile (0.4 km) of Wall Beach is adjacent to the boundary fence. Access to the open area at the northernmost 0.5 mile (0.8 km) of Minuteman Beach is at the bluff-backed beach north of the existing access trail, where western snowy plover nesting has not been known to occur. The Air Force would close Minuteman Beach south of the access trail. Military recreational access would be available at portions of Wall and Minuteman Beaches. Military recreational access in this context includes active duty military and their dependents, retired military and their dependents, Department of Defense and Vandenberg contractor employees. The Air Force authorizes access for saltwater fishing Minuteman Beach and for active duty military at Wall Beach.

Closed Areas

The Air Force would close approximately 12.55 miles (20.2 km) of Vandenberg AFB's coastal sand beaches and adjacent dunes to recreational access during the breeding season (March 1 to September 30). The Air Force previously used drift fencing and signs to demarcate the closed section of the beaches, but currently utilizes strands of yellow rope along with signs that indicate the reasons and timing of the closure. These boundary ropes run perpendicular to the ocean from the back dunes to at least the mean high tide line. The Air Force opens the "closed areas" to public access, with restrictions (see minimization measure #7 below), at the end of the breeding season when all western snowy plovers have fledged.

California Least Tern

The Air Force delimits the California least tern colony at Purisima Point with an electric fence and does not permit public access or recreational activities in this area during the breeding season. The Air Force strictly enforces any violation of the restriction. Additionally, if California least terns recolonize historical, or establish new nesting sites on Base, the Air Force would likely afford those sites the access and recreational restrictions that would be in place to protect western snowy plovers.

Avoidance and Minimization Measures for the Western Snowy Plover and California Least Tern

The Air Force proposes to implement the following measures to minimize human disturbance and potential intrusion into areas closed during the western snowy plover and California least tern breeding seasons:

1. The Air Force will place fencing and bilingual (English and Spanish) signs to delineate closed beach and dune areas. Fencing (strands of yellow rope) in beach areas will be erected perpendicular to the shoreline and will extend from as close to the water as practicable to the upper dunes.

2. The Air Force will inspect fences throughout the breeding season to assess the need for maintenance. Individuals responsible for repairing damaged fences will coordinate with the biological monitors to avoid adversely affecting western snowy plovers and least terns during fence maintenance activities.

3. The Air Force will provide animal-proof trash containers in convenient locations near entrances to all open beach areas and will empty and clean the containers as needed to minimize attracting predators.

4. The Air Force will make routine beach inspections to remove any trash from open beach areas.

5. The Air Force will present the established educational program to all base personnel and contractors who may use beaches for recreation. This program will:

    a. describe and illustrate the behavior of the western snowy plover and its distribution and habitat on Base;
    b. describe threats to the western snowy plover;
    c. describe the adverse effects of feeding wildlife;
    d. explain seasonal access restrictions of certain areas;
    e. show examples of signs describing beach restrictions;
    f. explain the penalties for not obeying restrictions;
    g. provide maps showing restrictions; and

h. identify the proper contact if an injured or dead western snowy plover or California least tern is found.

6. The Air Force will distribute an educational brochure to the public, as needed.

7. The following prohibitions will be in effect for all of Vandenberg AFB beaches during the nonbreeding season (from approximately October 1 to February 28):

a. overnight camping is prohibited;
b. pets must be on a leash at all times;
c. littering is prohibited;
d. fireworks are prohibited; and
e. recreational off-road vehicles (ATVs and utility vehicles) are prohibited, unless used for the sole purpose of the Fire Department to transport personal watercraft (PWC) to specific launch sites (see Water Rescue Training)

8. The following prohibitions will be in effect for all of Vandenberg AFB's western snowy plover and California least tern beaches during the breeding season from March 1 to September 30:

a. beach fires are prohibited;
b. pets are prohibited;
c. overnight camping is prohibited;
d. littering is prohibited;
e. recreational off-road vehicles are prohibited, unless used for the sole purpose of the Fire Department to transport PWC to specific launch sites (see Water Rescue Training);
f. fireworks are prohibited;
g. horses are prohibited
h. windsurfing and/or parasailing is prohibited; and
i. kite flying is prohibited.

9. Overflight restrictions will include a minimum 500-foot (152-meter) altitude above western snowy plover nesting areas and 1,900-foot (579-meter) altitude over the least tern nesting area at Purisima Point. Flight patterns are established to minimize aircraft presence over these areas

10. The Air Force's enforcement officers will issue citations, at their discretion, to all persons found violating the beach access restrictions.

11. Enforcement of beach access will be conducted as follows: (a) enforcement personnel will patrol beaches during both open and closed periods; and (b) enforcement efforts will emphasize personnel presence when and where it is most needed (i.e., where violations are occurring or are deemed most likely to occur), and will be adjusted to times and locations

12. where violations are occurring. The Air Force will conduct patrols on foot and only on wet sand in closed areas to the maximum extent practicable.

13. If the Air Force documents 50 violations of the closed area of Surf Beach (including Ocean Park) in any one breeding season, Surf Beach will be closed to all recreational access for the remainder of the western snowy plover breeding season. If the Air Force documents 10 violations of the closed area at Wall Beach in any one breeding season, Wall Beach will be closed to all recreational access for the remainder of the breeding season. If the Air Force documents 10 violations of the closed area at Minuteman Beach in any one breeding season, Minuteman Beach will be closed to all recreational access for the remainder of the breeding season.

Violations of Beach Closure Rules

The Air Force will determine violations based on individuals found in closed areas or by evidence of such intrusion based on footprints in closed areas. Violations of beach closures will be determined in the following manner:

1. Each individual found in a closed beach area will count as a single and separate violation. Multiple persons in a closed area will count as multiple violations. However, if multiple persons are found in a closed area, or there is evidence (e.g., footprints) of multiple persons violating the closed area restrictions that appear to be part of a discrete group (2 or more individuals), the Air Force will contact the Service to determine whether the individuals in the discrete group would be counted as individual violations (e.g., whether a group of 10 individuals would count as 10 violations) or if the discrete group as a whole would count as 1 violation. Because this situation is not typical, the Air Force and Service will make this determination on a case-by-case basis.

2. The Air Force will consider documentation of entry into closed beach areas based on footprints a violation for each set of footprints.

3. The Air Force will investigate evidence of persistent activity (lasting more than a few minutes) in a closed area, such as a fire, camping, resting or other similar activity as a violation. The Air Force will conduct an investigation to attempt to determine the following: the number of people who entered the closure, the type of activity and duration, and the potential effects to western snowy plovers.

4. The Air Force will conduct investigations of potential violations in a manner such that western snowy plovers will not be adversely affected as a result of the investigation. Air Force enforcement personnel will coordinate with and be escorted by monitors to avoid adverse effects to western snowy plovers. Monitors will assist the investigating official to help determine adverse effects of the incident on western snowy plovers.

In addition, the Air Force will implement the following actions to allow consistent follow-up and documentation of violations, and to support the Conservation Law Enforcement Officers in their enforcement efforts:

1. The Air Force will provide official forms (AF Form 1168, Statement of Suspect/Witness Complaint) to monitors for recording their observations of violations. This form will help standardize reporting by monitors to better document the time, date, nature of observed violations, and evaluate potential impacts to western snowy plovers.

2. Law enforcement personnel must witness monitors filling out AF Form 1168 for them to be legally valid. Therefore, the monitor must contact Conservation Law Enforcement Officers the same day that they observe the evidence of violation(s). Many cases (e.g., footprints-only evidence) require subsequent onsite investigation by the officers to determine if a violation or violations occurred. In some cases this may not be feasible. Therefore, this measure is expected to reduce, but not entirely eliminate, the number of incidents where the monitor's observations of trespass do not receive follow-up investigation by law enforcement.

3. The Air Force will establish clear protocols for communication between monitors, Conservation Law Enforcement Officers, and the Air Force biologist(s).

4. The Air Force will ensure monitors are kept informed of all beach openings and closings and criteria for counting violations toward the violation limit for each beach.

Beach Restoration

An important aspect of the beach management program at Vandenberg AFB is restoration of suitable western snowy plover and California least tern habitat. The Air Force developed the restoration plan with the primary aim of providing a long-term benefit to western snowy plovers and California least terns by enhancing suitable habitat. They proposed to conduct restoration activities within any suitable habitat for California least terns and western snowy plovers on Vandenberg AFB; the total area encompasses approximately 1,628 acres (659 hectares) (Air Force 2013a; Kaisersatt, in litt. 2014). They proposed to conduct the restoration actions between October 1 and February 28, which is outside of the El Segundo blue butterfly, western snowy plover and California least tern breeding seasons. The Air Force would utilize a combination of restoration methods such as manual removal, chemical treatment, mechanical removal, and controlled burning to eradicate invasive nonnative dune vegetation (e.g., European beachgrass and iceplant.

Predator Management

The Air Force developed a predator management plan for western snowy plovers during the 2001 breeding season. The Air Force updated the plan in response to changing conditions, primarily due to the incursion of common ravens (*Corvus corax*). The goal of the plan is to control predation on western snowy plovers and California least terns sufficiently to allow a

reasonable level of recruitment into the population. Qualified biologists conduct predation control, which focuses on those species that have a substantial effect on western snowy plover and California least tern breeding and fledging success [e.g., coyotes (*Canis latrans*) and corvids (western scrub-jays (*Aphelocoma californica*), crows (*Corvus brachyrhynchos*), ravens)]. The Air Force targets individual problem coyotes and corvids for lethal removal. Predatory birds, such as American kestrels (*Falco sparverius*), loggerhead shrikes (*Lanius ludovicianus*), and merlins (*Falco columbarius*), found to be preying on western snowy plover and California least tern would be captured and relocated when possible. The predator management plan is subject to change based on information gained during implementation.

The Air Force will implement the following measures to manage avian and mammalian predators during the western snowy plover and California least tern breeding season:

Avian Predators

1. The Air Force will trap and remove avian predators identified as an imminent threat near western snowy plover and California least tern habitat, and coordinate all predator management activities between the biological monitors and appropriately permitted individuals. Predator management personnel would observe predator movements to and from beaches in an attempt to identify roosting and nesting locations of birds that frequent western snowy plover and California least tern habitat. Additionally, the Air Force will lethally remove individual coyotes that are keying-in on western snowy plover nests. In some instances, the lethal removal of corvids may be warranted. Authorized personal under the direction of a Vandenberg AFB biologist would maintain the trap(s), humanely euthanize corvids, and dispose of the carcasses.

2. Nixalite® or similar materials will be installed on all posts and fencing where practicable to minimize the attractiveness of these structures to avian predators.

3. The Air Force will place small shelters within California least tern nesting habitat at Purisima Point to provide cover for least tern chicks from avian predators. The Air Force will evaluate the design, number and specific placement of shelters each season to achieve optimum effectiveness.

Mammalian Predators

1. The Air Force will install and maintain electric fencing around the California least tern managed area at Purisima Point (Purisima Point Colony). The Air Force will electrify the fences prior to the arrival of any California least terns and will repair fences as needed.

2. The Air Force will utilize infrared-triggered still cameras to assist with unidentified predation issues.

3. The Air Force will place traps for mammalian predators based on information derived from

biological monitors.

4. Trapping and lethal removal of mammalian predators within nesting habitat will be done by trained and authorized personnel under the supervision of individuals permitted to work in western snowy plover and California least tern nesting habitat.

Water Rescue Training

As discussed above, the Air Force proposes to establish four water rescue training areas on Base; two areas on North Base and two areas on South Base. The Fire Department would carry out these training activities, which could occur at any of four sites, but not all of them at the same time. The proposed training areas on North Base include the areas that are open to recreational use at Wall and Minuteman Beaches. The proposed training areas on South Base include the mouth of Honda Creek and the primary launch site at the Base's boat harbor south of Point Arguello.

The Fire Department would conduct training on the use of PWC and victim rescues within static water beyond the surf zone and in the surf line. Water rescue training would be restricted to within 0.5 mile (0.8 km) of the launch point; however, if the PWCs are launched from Minuteman Beach they would come back to Wall Beach due to the steep slope at Minuteman Beach. Utility vehicles would transport the PWC to the training areas or a hoist would lower the PWC into the boat harbor. Generally, one site is used per month and the training would occur year round. Training activities may occur for a maximum of two consecutive days. Up to 20 people could participate per day at each site. In addition to those measures described above to avoid adverse effects from water rescue training and coastline familiarization to the southern sea otter, the Air Force also proposes the following measures to avoid and minimize adverse effects from water rescue training to the California red-legged frog and western snowy plover:

<u>California Red-legged Frog</u>

1. Prior to any training activities, a qualified biologist who is familiar with California red-legged frogs will conduct a brief training session for personnel that will include a description of the species and the avoidance and minimization measures afforded to it.

2. The Air Force will conduct all equipment maintenance and refueling at least 250 feet (76 meters) away from riparian and wetland areas. Project personnel will conduct daily inspections of vehicles for leaks of hazardous substances.

3. The Air Force will limit the number of access routes, number and size of staging areas, and the total area of the activity to the minimum necessary to achieve training needs. The Air Force will clearly demarcate routes and boundaries and will locate them as far as possible outside of riparian and wetland areas.

4. A Service-approved biologist will conduct pre-activity surveys at the mouth of Honda Creek, and relocate California red-legged frogs found within the project area to the nearest suitable habitat outside of the project area but within the same watershed.

Western Snowy Plover

1. Prior to any training activities, a qualified biologist who is familiar with the western snowy plover will provide a brief training session for water rescue personnel that will include a description of the species and the avoidance and minimization measures afforded to it during the breeding and wintering seasons.

2. A Service-approved biologist will monitor all training activities at Wall and Minuteman beaches to minimize effects to western snowy plovers.

3. Training activities at Wall and Minuteman beaches will only occur within the open areas during the western snowy plover breeding season.

4. All-terrain vehicles/utility vehicles will be restricted to 15 miles per hour within western snowy plover habitat to avoid impacts to breeding and wintering birds.

5. The Air Force will choose access routes that avoid nests and wintering western snowy plovers in the open areas at Wall and Minuteman Beaches.

6. During the breeding season, access in the open areas will be as far away as possible from the boundary fences demarcating the closed areas at Wall and Minuteman Beaches while still allowing the Fire Department to accomplish its training.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATIONS

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover; (3) the *Effects of the*

Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover.

In accordance with policy and regulation, the jeopardy determinations are made by evaluating the effects of the proposed Federal action in the context of the current status of El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover in the wild by reducing the reproduction, numbers, and distribution of that species.

STATUS OF THE SPECIES

El Segundo Blue Butterfly

The El Segundo blue butterfly was federally listed as endangered on June 1, 1976 (41 Federal Register (FR) 22041). We have not designated critical habitat for the El Segundo blue butterfly. We issued a recovery plan for the El Segundo blue butterfly on September 28, 1998 (Service 1998). We completed a 5-year status review for the subspecies in 2008 (Service 2008).

Oakley Shields (1975) formally described the El Segundo blue butterfly based on specimens that had been collected in the city of El Segundo, California. The El Segundo blue butterfly is in the family Lycaenidae. It is one of five subspecies comprising the polytypic species, the square-spotted blue butterfly *(Euphilotes battoides)*. Like all species in the genus *Euphilotes*, the El Segundo blue butterfly spends its entire life cycle in intimate association with a species of buckwheat, in this case seacliff buckwheat. However, the nearly complete association of all life stages with a single plant is unique among North American butterflies. El Segundo blue butterfly adults mate, nectar, lay eggs, perch, and in most cases probably die on buckwheat flowerheads (Mattoni 1990).

The adult stage of the El Segundo blue butterfly generally begins in early June and concludes in early to mid-September. The onset of this stage is closely synchronized with the beginning of the flowering season for seacliff buckwheat (Mattoni 1990; Pratt and Ballmer 1993). Typically, adult females may survive up to 2 weeks whereas a male may survive up to 7 days (G. Pratt, pers. comm. 2006a). Upon emergence as adults, females fly to seacliff buckwheat flowerheads where they mate with males that are constantly moving among flowerheads (Service 1998).

The El Segundo blue butterfly lays eggs in seacliff buckwheat flowerheads, and the eggs hatch within 3 to 5 days. The larvae then undergo four instars to complete growth, a process that takes 18 to 25 days (Service 1998). By the third instar, the larvae develop honey glands and are thereafter usually tended by ants (e.g., *Iridiomyrmex humilis*, *Conomyrmex* spp.), which may

protect them from parasitoids (e.g., Branchoid wasp (*Cortesia* spp.)) and small predators (Mattoni 1990). Ant species that are associated with and tend El Segundo blue butterfly larvae include carpenter ants (*Camponotus maritimus*), pyramid ants or insane ants (*Dorymyrmex insanus*), formica or California red-and-black field ant (*Formica moki*), acrobat ants (*Crematogaster hesperus*), and odorous house ant, stink ant, or coconut ant (*Tapinoma sessile*) (Tetra Tech, Inc. and Pratt 2012). Larvae remain concealed within flowerheads and initially feed on pollen, then switch to feeding on seeds sometime during the first and second instar (G. Pratt, pers. comm. 2006a). Larvae are highly polymorphic, varying from almost pure white or yellow to strikingly marked individuals with a dull red-to-maroon background broken by a series of yellow or white dashes (Mattoni 1990).

At the end of the fourth instar, larvae disperse from the flowerheads, fall or crawl to the ground, and pupate in the soil. Larvae may find a suitable site directly underneath seacliff buckwheat plants or migrate (wander) away from the plant to a more suitable site. This wandering stage is short (likely 1 day or less). Larvae may travel up to approximately 25 feet (7.6 meters) from the nearest seacliff buckwheat plant, but we expect that most larvae remain within the immediate vicinity of a seacliff buckwheat plant (Arnold pers comm. 2013; Arnold, in litt. 2013). We do not know the factors that make a site suitable, but it is known that the larvae pupate in sandy soils, clay soils, shale, sandstone, and even cracks and softer portions of road, and seem to prefer softer soils compared to harder substrates (Arnold pers comm. 2013; Arnold, in litt. 2013). Upon finding a suitable site, larvae burrow into the ground and remain there until the appropriate conditions are met. El Segundo blue butterfly are true pupae in that they are bags of fluid that contain a thick cuticle to protect it from moisture loss and other factors. At least 0.5 inch (1.3 centimeters (cm)) of rain must penetrate the soil to accumulate enough moisture for the pupae to undergo a life stage change (i.e., develop into an adult) (G. Pratt, pers. comm. 2006a). The adult butterfly emerges the following June; however, some pupae may remain in diapause for 2 or more years (Service 1998), and may remain in diapause for up to 6 years (Pratt, in litt. 2013). Some pupae at every site likely remain in diapause every year (some pupae stay in diapause each year even in good years) (Arnold pers comm. 2013; Arnold, in litt. 2013).

Population dynamics of El Segundo blue butterflies are closely allied with the seacliff buckwheat. Although individual plants may live 20 years or more, young plants generally do not flower until their second year of growth (Arnold and Goins 1987). Juveniles and older plants do not produce as many flowers as middle-aged buckwheat plants, which support the most butterflies (Arnold and Goins 1987). Field observations suggest that solitary buckwheat plants less than about 5 years of age do not produce enough flowers for larvae to effectively utilize them (Arnold 1983). Thus, survival of the El Segundo blue butterfly is dependent upon maintenance of middle-aged buckwheat plants and recruitment of younger plants to replace older individual plants that senesce.

For several decades following the subspecies' description, researchers presumed the El Segundo blue butterfly was endemic to southwestern Los Angeles County in coastal southern California. Museum records reveal that the El Segundo blue butterfly was once widespread on the El Segundo sand dunes and specimens were collected at El Segundo, Redondo Beach, Manhattan

Beach, and at several locations on the Palos Verdes peninsula (Donahue 1975). Currently, El Segundo blue butterfly occurs at four locations in Los Angeles County: the Ballona Wetlands, the Airport Dunes, the Chevron Preserve, and Malaga Cove. Four recovery units, based on geographic proximity, habitat similarity, and possible genetic exchange, encompass these areas with the known populations and (or) areas with restorable habitat (Service 1998). The El Segundo blue butterfly appears further limited to areas with high sand content (Service 1998).

Seacliff buckwheat occurs over a larger range than the known range of El Segundo blue butterfly; seacliff buckwheat occurs from San Diego County to the northern end of Monterey County (Pratt, in litt. 2006b; Jepson 2012; CalFlora 2013)). The southern extent of El Segundo blue butterfly's known distribution is Malaga Cove in Los Angeles County and before it was discovered in Santa Barbara County in 2005, the northern extent of its known distribution was the Ballona Wetlands in Los Angeles County.

Population in Santa Barbara County

The El Segundo blue butterfly was reported to occur at Vandenberg AFB in 2005 by Dr. Gordon Pratt and by Dr. Pratt and Dr. Richard Arnold in 2007 (G. Pratt, pers. comm. 2006a; Bell, in litt. 2007). Questions arose whether the butterflies observed at Vandenberg AFB are actually the El Segundo blue butterfly or a morphologically similar species. The genus *Euphilotes* is complex and diverse. There are known cases of cryptic speciation in the genus (i.e., some distantly related species are very similar morphologically) (Mattoni 1988). Entomologists typically use wing characters to identify butterflies; however, they are not as useful in *Euphilotes* (as a genus) because these characters can vary between individuals within the same taxon (and particularly in the *E. battoides* complex). In these instances, additional information and other characters are necessary for a definitive identification such as larval host plant, genitalia morphology, flight season, location, and genetics (Ballmer, in litt. 2006).

Because butterflies in the genus *Euphilotes* can be very similar morphologically yet substantially different genetically (Mattoni 1990; Pratt 1994), individual male butterflies were collected to compare the genetic signatures among the butterflies from Vandenberg AFB with known El Segundo blue butterflies from Los Angeles County (Pratt and Stouthamer 2008). We have reviewed the results of the genetic study and determined that the resulting information was not conclusive enough to make a determination that the butterfly in question is not the El Segundo blue butterfly.

Given that the geographic separation between the known occurrences of El Segundo blue butterfly in Santa Barbara County and Los Angeles County is approximately 120 miles and the relatively limited dispersal capability of El Segundo blue butterfly, it is possible that the butterflies observed at Vandenberg AFB are not El Segundo blue butterflies but rather an undescribed, cryptic species with the same morphology, larval food plant, flight season, and genitalia. On the contrary, it is possible that there was a continuous distribution between Santa Barbara and Los Angeles Counties but separated over time either naturally or by anthropogenic causes. The distribution of seacliff buckwheat, the butterfly's limited dispersal capabilities, and

the increasing fragmentation of native habitat in this region support this concept. A third possibility is that the butterflies currently have a continuous distribution between Santa Barbara and Los Angeles Counties, but have not yet been documented in the intervening areas. However, there are no areas known with El Segundo blue butterfly occurrences between the populations in Santa Barbara and Los Angeles Counties. A few species experts have opportunistically surveyed some of the intermediate sites that contain seacliff buckwheat, but these survey efforts have been infrequent and less rigorous. Moreover, another possibility is that El Segundo blue butterflies does not occupy the areas between Santa Barbara and Los Angeles Counties, but have dispersed from one area to another. A long-distance dispersal event is more likely to occur during one dispersal event rather than multiple events in a stepping-stone fashion because the probability of a single longer dispersal event is greater than the combined probability of two (or more) consecutive shorter dispersal events (Gillespie et al. 2012, Crisp et al. 2011). Strong wind events (e.g., Santa Ana winds, hurricanes) are a widely recognized mechanism for successful long-distance dispersal events and have been determined to be the vector for the successful colonization of remote islands by plants, animals (e.g., butterflies), and arthropods, which are generally less dispersive (Gillespie et al. 2012, Zimmerman 1948).

Based on wing morphology, flight period, genitalia, and host plant association; these individuals were determined to be more similar to El Segundo blue butterfly than to any other known *Euphilotes* species or *E. battoides* subtaxon (Ballmer, in litt. 2006; Pratt, in litt. 2006c). Therefore, we consider this species to be El Segundo blue butterfly until we receive definitive information demonstrating otherwise.

Surveys conducted in Santa Barbara County (including at Vandenberg AFB) reported 127 adult El Segundo blue butterflies in 2012; 247 individuals in 2011, 403 individuals in 2010, and 379 individuals in 2009. Lower numbers of adult El Segundo blue butterflies observed can be partially attributed to variation in precipitation, which can result in dead or poor quality seacliff buckwheat plants. The Air Force, along with biological consultants first documented the El Segundo blue butterfly at two general locations on Vandenberg AFB in Santa Barbara County (Tranquillon Mountain and San Antonio Terrace). In subsequent years the El Segundo blue butterfly has also been reported to the northeast of San Antonio Terrace near Lompoc-Casmalia Road and northeast of the Vandenberg tracking station; East of the Base boundary near the northwestern portion of Burton Mesa Ecological Reserve along the Freeport-McMoran pipeline; East of Tranquillon Peak along Miguelito Canyon Road, East of Lompoc along Sweeney and Santa Rosa Roads; and even further east near Drum Canyon Road. Biologists have found El Segundo blue butterflies in additional areas as surveys have been conducted over the last 6 years.

Arnold (1986) conducted capture-recapture studies in Los Angeles County and reported that the majority of El Segundo blue butterflies moved 100 feet (31 meters) or less between captures; 79 percent and 87 percent for females and males, respectively. Approximately 93 percent of females and males moved 200 feet (61 meters) or less between captures. Approximately 3 percent of females and 4 percent of males moved more than 500 feet (152 meters) between captures. The farthest distance moved by any individual butterfly was approximately 7,200 feet (1.36 miles; 2.18 km). However, we note that Arnold derived the 200-foot (61-meter) buffer

from studies at the Chevron Refinery (Chevron) in El Segundo. The Chevron site is approximately 1.5 acres (0.61 hectares) and is surrounded by urban areas. The area contains high concentrations of seacliff buckwheat plants that grow in close proximity to one another. Therefore, the adult El Segundo blue butterfly would not have to disperse very far to locate suitable seacliff buckwheat flowerheads. In contrast, the preserve at the Los Angeles International Airport (LAX) is 200 acres (81 hectares) and contains widely scattered seacliff buckwheat plants. At the LAX site, El Segundo blue butterflies were detected dispersing up to 1.36 miles (2.18 km), and the average movement of individuals at LAX was more than twice that of individuals at the Chevron location (Arnold 1986). Additionally, adult El Segundo blue butterflies routinely dispersed up to 0.5 mile (0.8 km) from occupied locations to colonize restoration sites in Los Angeles and Redondo Beach.

Because biologists have documented the El Segundo blue butterfly dispersing farther distances in larger areas that contain more widely scattered plants, the 200-foot (61-meter) buffer may represent the lower end of the dispersal distance capability of El Segundo blue butterfly. Therefore, based on the habitat and area at Vandenberg AFB, it could be expected that dispersal distance would be greater in Santa Barbara County where the seacliff buckwheat plants are much less dense than at Chevron, as it was at the LAX site compared to the Chevron site. However, we do not know the minimum, average, or maximum dispersal distances of the El Segundo blue butterfly in Santa Barbara County.

To quantify the amount of occupied habitat on Vandenberg AFB, we took into account that the majority of individual El Segundo blue butterflies move 200 feet (61 meters) or less (Arnold 1986), and calculated a 200-foot (61-meter) buffer around each observed butterfly. We assume, however, the 200-foot (61-meter) buffer is at the lower end of observed dispersal distances for El Segundo blue butterflies when seacliff buckwheat plants are more scattered, such as at Vandenberg AFB (see discussion above regarding dispersal distances (Arnold 1986)). Nevertheless, the estimate in 2012 is approximately 1,009 acres (408 hectares) of known occupied habitat at Vandenberg AFB (Air Force 2012b). The Air Force estimated that approximately 17,500 acres (7,082 hectares) of suitable habitat is within 1 mile (1.6 km) of the known occupied habitat, and the seacliff buckwheat occurs over at least 60,000 acres (24,281 hectares) of the Base. Many of these areas contain seacliff buckwheat plants at low densities. The acreage estimates for suitable habitat do not include a 200-foot (61-meter) buffer; thus, calculations for known occupied and suitable habitats are not determined the same way.

Threats to the El Segundo Blue Butterfly

In general, competition, predation, and parasitism by other insects utilizing seacliff buckwheat; loss of habitat and habitat fragmentation due to development; and loss of habitat due to competition of nonnative vegetation with seacliff buckwheat negatively impact the El Segundo blue butterfly. Urbanization and land conversion have fragmented the historic range of the El Segundo blue butterfly such that extant populations now operate as independent units rather than parts of a metapopulation or a single, cohesive, wide-ranging population (Service 2008). Small populations have higher probabilities of extinction than larger populations because their low

abundance renders them susceptible to inbreeding, loss of genetic variation, high variability in age and sex ratios, demographic stochasticity, and other random, naturally occurring events such as droughts or disease epidemics (Soulé 1987). Additionally, isolated populations are more susceptible to elimination by stochastic events because the likelihood of recolonization following such events is negatively correlated with the extent of isolation (Wilcox and Murphy 1985). Given the low dispersal potential of El Segundo blue butterflies, the likelihood that this subspecies would naturally recolonize a site decreases as the distance between the occupied sites increases. Therefore, if El Segundo blue butterflies are extirpated from a site that is a greater distance from an occupied site than the subspecies' dispersal distance, the site may not be recolonized. Habitat fragmentation is detrimental to small, isolated populations and produces edge effects that facilitate the introduction of invasive nonnative plant species that may out-compete and displace seacliff buckwheat. Relatively fast-growing invasive nonnative plants such as acacia (*Acacia* spp.), iceplant, other buckwheat species (*Eriogonum* spp.), and nonnative grasses compete with seacliff buckwheat and decrease the likelihood that seacliff buckwheat would sprout and mature (Mattoni 1990). Furthermore, Pratt (1987) observed numerous insects living in seacliff buckwheat inflorescences along with El Segundo blue butterfly larvae, including lepidopterous larvae in the families of Cochylidae, Gelechiidae, Geometridae, Riodinidae, and even other Lycaenidae. Parasitoids (e.g., Branchoid wasp (Cortesia spp.) and small predators may also affect El Segundo blue butterflies (Mattoni 1990).

Recovery of El Segundo Blue Butterfly

The recovery plan for El Segundo blue butterfly identifies four recovery units (Ballona, Airport, El Segundo, and Torrance) to conserve and maintain the species' distribution and its genetic diversity throughout its present range (Service 1998). At least one population is needed in each of the four units to reduce the risk of extinction from random events that may affect any one local area. We wrote the recovery plan for El Segundo blue butterfly prior to the discovery of the species on Vandenberg AFB, so the plan does not consider the Base.

The recovery of El Segundo blue butterfly is dependent on protection of occupied and potential habitat. Occupied habitat contains individuals of the subspecies and associated habitat used for breeding, feeding, shelter, and/or as a dispersal corridor. Areas that contain El Segundo sand dune and are not currently occupied by El Segundo blue butterflies, but could be managed and restored, constitute potential habitat for the subspecies. Colonization of potential areas by El Segundo blue butterfly would result in increased numbers of individuals, ultimately expanding the number and size of populations until the subspecies reaches the point where it can be downlisted to threatened. According to the recovery plan (Service 1998), El Segundo blue butterfly can be considered for downlisting to threatened status when:

1. At least one secure population in each of the four RUs is permanently protected. The Airport Dunes located in the Airport recovery unit contains the largest population of the butterfly and is the most likely one that can survive disease, predators, parasites, and other perturbations. The Airport Dunes must be one of the protected populations.

2. Each of the four populations are managed to maintain coastal dune habitat dominated by local native species including coast [seacliff] buckwheat.

3. As determined by a scientifically credible monitoring plan, each of the four populations must exhibit a statistically significant upward trend (based on transect counts) for at least 10 years (approximately 10 butterfly generations). Population management in each RU must ensure that discrete population growth rates are maintained at or above 1.0, indicating a stable or increasing population.

4. A program is initiated to inform the public about the El Segundo blue butterfly and its habitat.

5-Year Review for the El Segundo Blue Butterfly

Biologists discovered the El Segundo blue butterfly on the Palos Verdes Peninsula near Point Vicente in Los Angeles County (RBF Consulting 2001; Pratt 2006 in Service 2008) and at Vandenberg AFB in Santa Barbara County subsequent to the subspecies' listing and prior to the 2008 5-year status review. Thus, the original listing document and the recovery plan did not consider these areas. The 5-year review for the El Segundo blue butterfly states that the subspecies continues to be threatened by habitat degradation; habitat fragmentation; introduction of parasitic, competing and predatory insect species; and stochastic extinction. In consideration of its limited and fragmented distribution, overall small population size, and continued threats as discussed, we determined that the El Segundo blue butterfly remains in danger of extinction throughout all or a significant portion of its range (Service 2008). However, because of the recent success of habitat restoration efforts along Torrance, Redondo, and Dockweiler Beaches (Los Angeles County) in 2007, we conclude that this subspecies can respond positively to management of its habitat and the recovery potential has improved.

California Red-Legged Frog

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 FR 25813), and critical habitat was designated on March 17, 2010 (71 FR 19244). The Service completed a recovery plan for the species in 2002 (Service 2002). Storer (1925), Stebbins (2003), and Jennings et al. (1992) contain detailed information on the biology of California red-legged frogs.

This species is the largest native frog in the western U.S., ranging from 1.5 to 5.1 inches (3.8 to 13 cm) long. The abdomen and hind legs of adults are largely red; the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers, and dorsolateral folds are prominent on the back.

The diet of California red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food item of adults. Vertebrates, such as Pacific treefrogs

(*Pseudacris regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger California red-legged frogs (Hayes and Tennant 1985). Feeding activity occurs along the shoreline and on the surface of the water. Hayes and Tennant (1985) found juveniles to be active diurnally and nocturnally, whereas adults were largely nocturnal.

California red-legged frogs use a variety of habitat types, including various aquatic systems, riparian, and upland habitats. Suitable habitat includes all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (61 FR 25813).

California red-legged frogs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs. Deep pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha* spp.) provide optimal habitat. Eggs, larvae, transformed juveniles, and adults also have been found in ephemeral creeks and drainages and in ponds that do not have riparian vegetation. When riparian vegetation is present, California red-legged frog spend considerable time resting and feeding in it; the moisture and camouflage provided by the riparian plant community likely provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting population numbers and distribution.

California red-legged frogs breed in aquatic habitats from November through March, including in artificial impoundments such as stock ponds if conditions are appropriate. Storer (1925) recorded earlier breeding in southern localities. This species successfully breeds in streams and riparian systems, although high seasonal flows and cold temperatures in streams often make these sites risky environments for eggs and tadpoles. Males appear at breeding sites from 2 to 4 weeks before females (Storer 1925). California red-legged frogs are often prolific breeders, typically laying their eggs during or shortly after large rainfall events in late winter and early spring. Females deposit egg masses on emergent vegetation so that the masses float on the surface of the water (Hayes and Miyamoto 1984). Egg masses contain about 2,000 to 5,000 moderately-sized (0.08 to 0.11 inch (0.2 to 0.28 cm)) in diameter, dark reddish brown eggs (Storer 1925, Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis between 3.5 to 7 months after hatching (Storer 1925, Wright and Wright 1949). Sexual maturity can be attained at 2 years of age by males and 3 years of age by females and is usually reached at 3 to 4 years of age (Jennings and Hayes 1985). Adults may live 8 to 10 years (Jennings *et al.* 1992) but the average life span is considered much less.

Juvenile and adult California red-legged frogs may disperse long distances from breeding sites throughout the year. They can be encountered living within streams at distances exceeding 1.8 miles (2.9 km) from the nearest breeding site, and have been found up to 400 feet (122 meters) from water in adjacent dense riparian vegetation (Bulger et al. 2003). Some California red-legged frogs have moved long distances over land between water sources during winter rains. Adult California red-legged frogs moved more than 2 miles (3.22 km) in northern Santa Cruz County "without apparent regard to topography, vegetation type, or riparian corridors" (Bulger et

al. 2003). Individual California red-legged frogs make long-distance movements that were straight-line, point-to-point migrations over variable upland terrain rather than using riparian corridors for movement between habitats. Most of the overland movements occur at night.

The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985, Storer 1925). This species occurred throughout the Central Valley and Sierra Nevada foothills. The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. At present, California red-legged frogs occur in 243 streams or drainages in 22 counties, primarily in central coastal California. Surveyors have recorded four additional occurrences in the Sierra Nevada foothills since listing, bringing the total to five extant populations, compared to approximately 26 historical records. Currently, California red-legged frogs occur in three disjunct regions in 26 California counties and one region in Baja California, Mexico (Grismer 2002, Fidenci 2004, Smith and Krofta 2005). The most secure aggregations of California red-legged frogs are in aquatic sites that support substantial riparian and aquatic vegetation and lack non-native predators.

Threats to California Red-legged Frog

Over-harvesting, habitat loss, nonnative species introduction, and urban encroachment are the primary factors that have negatively affected the California red-legged frog throughout its range (Jennings and Hayes 1985, Hayes and Jennings 1988; Service 2002). Habitat loss and degradation, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Continuing threats to California red-legged frogs include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, and competition from or predation by nonnative species including bullfrog (*Lithobates catesbeiana*), catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquitofish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and signal crayfish (*Pasifasticus leniusculus*). The cause of local extirpations does not appear to be restricted solely to loss of aquatic habitat. We consider the most likely causes of local extirpation to be changes in faunal composition of aquatic ecosystems (i.e., the introduction of nonnative predators and competitors) and landscape-scale disturbances that disrupt California red-legged frog population processes, such as dispersal and colonization. The introduction of contaminants or changes in water temperature may also play a role in local extirpations. Furthermore, we consider chytrid fungus (*Batrachochytrium dendrobatidis*), a waterborne fungus that can decimate amphibian populations, a threat to California red-legged frog populations.

Recovery of California Red-legged Frog

According to the recovery plan for the California red-legged frog, the strategy for the species' recovery involves: 1) protecting existing populations by reducing threats; 2) restoring and creating habitat that will be protected and managed in perpetuity; 3) surveying and monitoring

populations and conducting research on the biology and threats to the species; and 4) reestablishing populations of the species within its historical range (Service 2002).

The recovery plan for the California red-legged frog identifies eight recovery units. The Recovery Team's determination that various regional areas of the species' range are essential to its survival and recovery formed the basis for the recovery units. The recovery status of the California red-legged frog is considered within the scale of recovery units as opposed to the overall range. Because of the varied status of this species and differing levels of threats throughout its range, recovery strategies differ per recovery unit to best meet the goal of delisting the species. For example, in areas where California red-legged frog populations appear to be stable, recovery strategies are intended to protect existing population numbers, whereas in areas where frogs have been extirpated or are declining, strategies are to stabilize, increase, augment, or reestablish populations.

Major watershed boundaries, as defined by U.S. Geological Survey hydrologic units, and the limits of the range of the California red-legged frog delineate the recovery units. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Core areas were delineated within each recovery unit, and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of nonnative species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long-term viability within existing populations. This management strategy allows for the recolonization of habitat within and adjacent to core areas that naturally experience periodic localized extinctions, thus assuring the long-term survival and recovery of the California red-legged frog.

California Least Tern

The California least tern, which is one of three subspecies of least tern in the United States, was listed as endangered in 1970 (35 FR 16047). We have not designated critical habitat for the California least tern. We issued a revised recovery plan in 1985 (Service 1985). We completed a 5-year status review for the California least tern in September 2006 (Service 2006). The State of California listed the California least tern as endangered in 1971. The California least tern is a fully-protected species under California law.

The California least tern was historically concentrated in three southern California counties: Los Angeles, Orange, and San Diego. Between Ventura County and the San Francisco Bay area, only Guadalupe Dunes-Mussel Rock Dunes and Purisima Point (Vandenberg AFB) have been used regularly by California least terns (Marschalek 2006). At the time of listing, a census revealed only 600 pairs of breeding California least terns in California, but recovery efforts instituted since the time of listing have helped raise numbers of breeding birds. Statewide surveys conducted in 1995 counted 2,598 pairs (Caffrey 1995) and the population increased to approximately 7,100 pairs by 2005. In addition, the number of California least tern sites has nearly doubled since the time of listing, with most of the California least tern colonies occurring in southern California.

Since 1970, nesting sites have been documented in California from the San Francisco Bay area to the Tijuana River at the Mexican border (Marschalek 2006), and in Mexico within the Gulf of California and on the west coast of Baja California from Ensenada to San José del Cabo at the tip of the peninsula (Lamb 1927, Grinnell 1928, Patten and Erikson 1996). In 1991 and 1992, a survey of the west coast of the Baja peninsula documented 13 breeding colonies at five different locations, from Ensenada through Bahía Magdalena with one to six sites at each location. Large nesting colonies along the California coast have been discontinuous and are spread out along beaches at the mouths of larger estuaries. The Santa Margarita River mouth in San Diego County generally hosts the largest number of California least terns among all locations.

The breeding season typically begins in April. California least terns nest in colonies on relatively open beaches kept free of vegetation by natural scouring from tidal action. Nesting areas are relatively flat sandy beaches in close proximity to foraging habitat, and are relatively secluded from disturbance and predation. California least tern are gregarious. They forage, roost, nest, and migrate in colonies, although there are many records of solitary pairs nesting at certain sites, or low densities of nesting pairs over several miles of beach habitat (Service 1985). A typical colony size is 25 pairs; a typical clutch is 2 eggs. California least terns lay eggs in the first part of May, and eggs hatch in early June. Sometimes they line the nest with shell fragments and small pebbles after laying the eggs. Eggs are incubated primarily by the female for 20 to 25 days. Chicks usually fledge by late June. California least terns can re-nest up to two times in one breeding season if eggs or chicks are lost early. The wintering range is not clearly defined because fragments of distributional information have not created a comprehensive picture of the migratory route and winter range of California least tern.

California least terns forage primarily in near-shore ocean waters and in shallow estuaries and lagoons (Massey 1987). At colonies where feeding activities have been studied, California least tern foraged mostly within 2 miles (3.2 km) of the breeding area and primarily in near-shore ocean waters less than 60 feet (18 meters) deep (Collins et al. 1979, Atwood and Minsky 1983). Prey items include northern anchovy (*Engraulis mordax*), topsmelt (*Atherinops affinis*), California grunion (*Leuresthes tenuis*), and killifish (*Fundulus parvipinnis*). Severe El Niño Southern Oscillations can affect the California least tern's food supply.

Threats to the California Least Tern

The decline of the California least tern is attributed primarily to the loss and fragmentation of breeding and foraging habitat, although the rate of habitat loss in recent years is reduced because almost all coastal habitats have already been fragmented and degraded. Most colonies are small patches of degraded nesting habitat surrounded on all sides by human activity. Additionally, there is a lack of undisturbed or moderately-disturbed suitable breeding habitat available for population expansion. The level of human coastal use is expected to continue the conflict between resurging California least tern populations and limited habitat availability. Although most of the important nesting sites are in public ownership, competing land uses continue to be a major threat for disturbance to, or elimination of, nesting habitat. These remaining nest sites must be intensively managed to conserve suitable nesting habitat.

Repeated disturbance in California least tern breeding sites can also have significant effects on California least tern reproductive success and cause nest failure, re-nesting, and site abandonment (Massey and Fancher 1989). For example, the California least tern colony at Ormond Beach, Ventura County California, was repeatedly disturbed by paragliders and ultralight aircraft; within 4 years, all nesting attempts had failed and the site was abandoned (Smith 2006).

Recovery of the California Least Tern

The recovery plan for the California least tern focuses on: 1) developing and implementing site specific management plans; 2) preserving and properly managing nesting habitat; 3) protecting colonies against certain predation pressures and other disturbances; 4) refining management techniques through additional research; 5) developing a conservation education program; 6) enforcing laws and regulations that protect the California least tern and its habitat; and 7) determining the status of the California least tern in Baja California, Mexico. The goal of recovery efforts is the reclassification of the species from endangered to threatened and, ultimately, delisting of the species.

The 1985 final recovery plan for the California least tern states that the goal of recovery efforts is the reclassification of the species from endangered to threatened and, ultimately, delisting of the species. Reclassification to threatened status may be considered when: 1) there are at least 1,200 breeding pairs distributed in at least 15 of 23 coastal management areas; 2) each of the 15 "secure" coastal management areas must have at least 20 breeding pairs; and 3) each of the 15 "secure" coastal management areas must have a 3-year mean reproductive rate of at least 1.0 young fledged per breeding pair. Delisting of the California least tern may be considered when: 1) at least 1,200 breeding pairs are distributed in at least 20 of 23 coastal management areas; 2) each of the 20 "secure" coastal management areas must have a 5-year mean reproductive rate of at least 1.0 young fledged per breeding pair; and 3) the San Francisco Bay, Mission Bay, and San Diego Bay are included within the 20 secure management areas with 4, 6, and 6 secure colonies respectively.

5-Year Review for the California Least Tern

Researchers have discovered new information about the species' population dynamics and its threats since the completion of the recovery plan. Thus, the recovery criteria in the recovery plan do not reflect the best available and most up-to-date information on the biology of the species and its habitat (Service 2006). The California least tern population in California increased from 600 pairs in 1973 to approximately 7,100 pairs in 2005. The number of occupied sites had nearly doubled since the time of listing, with most of the colonies occurring in Southern California. The level of production (fledged young per year) had declined and continues on a downward trend (Marschaleck 2006); however, new information suggests that even at these production levels, California least tern populations are continuing to increase. Monitoring data from 2012 indicates there is an estimated 4,300-6,400 breeding pairs rangewide (Frost 2013). The 5-year review for the California least tern recommends: 1) revising the recovery plan; 2)

continued management of existing nest sites; and 3) the creation of new nest sites and site expansion at existing sites.

Western Snowy Plover

We listed the Pacific Coast population of the western snowy plover as threatened on March 5, 1993 (58 FR 12864). We first designated critical habitat on September 29, 2005; however, we designated revised critical habitat on June 19, 2012. We issued a recovery plan for the western snowy plover in September 2007 (Service 2007), and completed a 5-year status review on May 31, 2006.

Historical records indicate that nesting western snowy plover (Pacific Coast population) were once more widely distributed and abundant in coastal Washington, Oregon, and California. Prior to 1970, western snowy plovers bred at 53 coastal locations in California. Between 1970 and 1981, western snowy plovers stopped breeding in parts of San Diego, Ventura, and Santa Barbara Counties, most of Orange County, and all of Los Angeles County (Page and Stenzel 1981).

Western snowy plovers in California comprise at least 90 percent of the Pacific Coast population. Eight geographic areas support over three-quarters of the California coastal breeding population: San Francisco Bay, Monterey Bay, Morro Bay, the Callendar-Mussel Rock Dunes area, the Point Sal to Point Conception area (Vandenberg AFB), the Oxnard lowland, Santa Rosa Island, and San Nicolas Island (Page et al.et al. 1991). The population is sparse in Washington, Oregon, and northern California. In 2006, estimated populations were 70 adults along the Washington coast (Pearson et al. 2006), 177 to 179 adults along coastal Oregon (Lauten et al. 2006), and 2,231 adults in coastal California and San Francisco Bay (window survey including correction factor) (Service 2007). A recent population estimate suggests the Baja California, Mexico population is approximately 1,000 breeding adults (E. Palacios, pers. comm. 2008).

The Pacific Coast population of the western snowy plover nests near tidal waters along the mainland coast and offshore islands from Damon Point, Washington, to Bahía Magdelena, Baja California, Mexico. Most nesting occurs on unvegetated to moderately vegetated, dune-backed beaches and sand spits. Other less common nesting habitats include salt pans, dredge spoils, and salt pond levees. Nests consist of a shallow scrape or depression, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips); nest lining increases as incubation progresses. Nests are usually located within 328 feet (100 meters) of water, but can be farther away when there is no formative vegetative barrier between the nest and water (Page and Stenzel 1981). The majority of western snowy plovers are site-faithful (returning to the same breeding area in subsequent breeding seasons); some also disperse within and between years (Warriner et al. 1986, Stenzel et al. 1994).

The breeding season is from early March through late September. The earliest nests on the California coast occur during the first week of March in some years and by the third week of March in most years (Page et al. 1995). Peak initiation of nesting is from mid-April to mid-June

(Warriner et al. 1986; Powell et al. 1997). Generally, the breeding season may be 2 to 4 weeks earlier in southern California than in Oregon and Washington. Individual birds 1 year or older are considered to be breeding adults. The mean annual life span of western snowy plovers is estimated at about 3 years, but at least one individual was at least 15 years old when last seen (Page et al. 1995).

The typical egg clutch size of western snowy plover is three with a range from two to six (Warriner et al. 1986, Page et al. 1995). Both sexes incubate the eggs, which take about 27 days (4 weeks) to hatch, with the female tending to incubate during the day and the male at night (Warriner et al. 1986). After losing a clutch or brood or successfully hatching a nest, western snowy plovers may re-nest at the same site or move up to several hundred miles to nest at other sites (Stenzel et al. 1994, Powell et al. 1997). Re-nesting occurs 2 to 14 days after failure of a clutch, and observers documented up to five re-nesting attempts for a pair (Warriner et al. 1986).

Western snowy plover chicks are precocial (capable of a high degree of independence from birth) and able to feed on their own within hours of hatching; however, chicks are unable to fly until 1 month after hatching. Females generally desert males and broods by the sixth day and thereafter the chicks are typically accompanied by only males. Females obtain new mates and initiate new nests while males rear the broods (Page et al. 1995).

Western snowy plover are primarily visual foragers, using the run-stop-peck method of feeding typical of *Charadrius* species. They forage on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone, in dry sand areas above the high tide, on salt pans, on spoil sites, and along the edges of salt marshes, salt ponds, and lagoons. Western snowy plover sometimes probe for prey in the sand and pick insects from low-growing plants. Their food sources consist of immature and adult forms of aquatic and terrestrial invertebrates. Little quantitative information is available on food habits. The recovery plan (Service 2007) identifies prey items for western snowy plover that include but are not limited to: beach hoppers (*Orchestoidea* spp.) rove beetles (Staphylinidae), long-legged flies (Dolichopodidae), shore flies (Ephydridae), water bugs (Saldidae), and hymenopterans (Braconidae).

In western North America, western snowy plovers winter mainly in coastal areas from southern Washington to Central America (Page et al. 1995), although the majority of birds winter south of Bodega Bay, California (Page et al. 1986). In winter, western snowy plovers occur on many of the beaches used for nesting, as well as some beaches where they do not nest. They also occur in man-made salt ponds and on estuarine sand and mud flats. In California, the majority of wintering western snowy plovers assemble on sand spits and dune-backed beaches. Some also occur on urban and bluff-backed beaches, which western snowy plovers rarely use for nesting (Page *et al.* 1986). Western snowy plovers that breed on the coast and inland are very site-faithful in winter.

Threats to Western Snowy Plover

Much of the analysis presented below is based on the western snowy plover recovery plan (Service 2007), Lafferty (2001), Burger (1993, 1994), and the Guidelines for Managing Recreational Activities in Piping Plover (*Charadrius melodus*) Breeding Habitat (Service 1994). The piping plover is closely related to the western snowy plover, its biology and behaviors are similar to the western snowy plover and it faces similar threats; therefore, we use piping plover as a surrogate to analyze some of the impacts to western snowy plover in this biological opinion.

The Pacific Coast population of western snowy plovers has experienced widespread loss of nesting habitat and reduced reproductive success at many nesting locations. The degree of threats varies by geographic location. Human activity is a key factor in the decline of the western snowy plover coastal breeding populations range wide. Human activities disturb western snowy plovers twice as often as all other natural causes combined (Page et al. 1977). We cited increasing level of human recreation as a major threat to the breeding success of the Pacific Coast population of the western snowy plover at the time of listing (Service 1993). Human disturbance is the primary cause of habitat loss, along with urban development, invasive nonnative plants, and expanding predator populations. Breeding and wintering habitat is subject to erosion and accretion, and is highly susceptible to degradation by mechanized beach cleaning; and construction of seawalls, breakwaters, jetties, piers, homes, hotels, parking lots, access roads, trails, bike paths, day-use parks, marinas, ferry terminals, and recreational facilities. Urban development has permanently eliminated valuable nesting habitat on beaches in southern Washington (Brittell et al. 1976), Oregon (Oregon Department of Fish and Wildlife 1994), and California (Page and Stenzel 1981).

Urban development can result in increased human use of snowy plover habitat in addition to causing direct loss of habitat,. Human activities such as walking, jogging, fishing, fireworks, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Thus, humans can cause direct mortality of western snowy plovers because people may step on and crush eggs or chicks on purpose or inadvertently, deliberately take eggs from nests, and remove chicks from beaches erroneously thinking they have been abandoned. Humans may flush adult western snowy plovers off their nests, which may cause mortality of eggs and chicks due to exposure to temperature changes, blowing sand, and increased vulnerability to predators (Service 2007). Beach-related recreational activities that are concentrated in one location can negatively affect incubating western snowy plover adults when these activities occur too close to their nests and repeated intrusions by people into nesting areas may cause birds to move into marginal habitats where reproductive success is then reduced (Service 2007). Studies of the piping plover indicate that early season nesting attempts are abandoned and moved elsewhere when human use becomes too intense (Cairns and McLaren 1980). Disturbances such as stationary visitors and surf fishermen kept incubating western snowy plovers off their nests for the longest period of time probably because of the duration of stationary disturbances that occur close to nests (Fahy and Woodhouse 1995). Additionally, the improper disposal of offal (waste parts of fish), bait, and other litter attracts predators of western

snowy plover. Western snowy plovers may also become entangled in discarded fishing lines (G. Page, pers. comm. 1998).

Page et al. (1977) observed humans disrupt incubating adult western snowy plovers at Point Reyes, California; when humans approached western snowy plover, adults left their nests most of the time when people were within 164 feet (50 meters) and about one-third of the time when people were over 328 feet (100 meters). Hoopes et al. (1992) found that humans caused piping plovers to flush or move at an average distance of 75 feet (23 meters). Burger (1994) observed that piping plovers in response to human disturbance spent more energy on vigilance and avoidance behavior at the expense of foraging activity; the time devoted to foraging was negatively correlated with the number of people within 328 feet (100 meters) of piping plovers. The disruption of foraging and roosting behavior may result in decreased accumulation of energy reserves necessary to complete the migration cycle and successfully breed (Burger 1986, Pfister et al. 1992). Shorebirds, such as western snowy plover and piping plover that are unsuccessful in gaining necessary fat reserves have very low survival rates (Brown et al. 2000b in Lafferty 2001).
Plovers (*Charadrius* spp.), however, may have differing reactions to human disturbances. Page et al. (1977) observed that western snowy plovers' reaction to disturbance by humans varied, ranging from one bird remaining off the nest for less than 1 minute when a person walked within 3 feet (1 meter) of the nest on a heavily-used beach to another western snowy plover leaving the nest when three people were 656 feet (200 meters) away on a less-used beach. Lafferty (2001) observed that western snowy plover were most frequently disturbed when approached closely by people and dogs. However, researchers have suggested that western snowy plover exposed to prolonged human activity near their nests may become accustomed to it and may adapt by diversifying habitat use (e.g., beaches and dunes) when available (Page et al. 1977; Burger 1994).

People using beaches for recreation occasionally drag driftwood around the beach and build structures with it (Applegate and Schultz 2000). Western snowy plovers often build nests beside driftwood, so its removal may reduce the number of suitable nesting sites (Service 2007). Additionally, driftwood provides western snowy plover with year-round protection from wind, blowing sand, predators, and humans. Removal of driftwood has destroyed nests at Vandenberg AFB, where driftwood being dragged to beach fire sites crushed two nests (Persons 1994). Driftwood also provides habitat for invertebrate prey species, especially near the wrack line. Therefore, driftwood removed for firewood or decorative items can result in destruction of nests and newly hatched chicks that frequently crouch by driftwood to hide from predators and people, and is likely to reduce the concentration of invertebrate prey, which may cause western snowy plovers to spend more time and energy foraging elsewhere. Moreover, structures built of driftwood can serve as hunting perches for avian predators (Service 2007).

Dogs on beaches can pose a substantial threat to western snowy plover during both the breeding and nonbreeding seasons. Unleashed dogs may chase western snowy plover and destroy nests. Similar to disturbance by humans, repeated disturbances by dogs can interrupt brooding, incubating, and foraging behavior of adult western snowy plover and cause chicks to become

separated from their parents (Service 2007). Even when not deliberately chasing birds, dogs on a beach may disturb western snowy plover and other shorebirds that are roosting or foraging. Page et al. (1977) found that western snowy plovers flushed more frequently and remained off their nests longer when a person was accompanied by a dog than when alone. Lafferty (2001) observed that the minimum distance between human activity and wintering and roosting western snowy plovers was approximately 100 feet (30 meters). Relatively few people or dogs beyond this distance disturbed wintering plovers. The number of individual people or pets in a group did not seem to alter the probability of disturbance. However, breeding western snowy plovers are more sensitive to disturbance by humans and react at a greater distance (at least 262 feet (80 meters)) than wintering western snowy plovers (Fahy and Woodhouse 1995; Lafferty 2001).

Western snowy plovers may perceive kites flown by people as potential predators, as was shown with piping plovers. Hoopes et al. (1992) found that piping plovers responded to kites at an average distance of 279 feet (85 meters), moved an average distance of over 328 feet (100 meters), and responded for an average duration of 70 seconds. Stunt kites may cause a greater response from western snowy plovers than traditional, stationary kites. At Ocean Beach in San Francisco, California, western snowy plovers' reaction to kites ranged from increased vigilance while roosting in close proximity to the kite flying to walking or running up to 82 feet (25 meters) away and resting again while remaining alert (Hatch 1997). Other kite-like instruments or sails, such as parachutes used to wind-surf or para-surf, can have the same effect as kites, especially if parachutes are raised over the beach or in the surf near the shoreline.

Driving vehicles in breeding habitat may cause destruction of eggs, chicks, and adults, abandonment of nests, and considerable stress to western snowy plover family groups (G. Page, pers. comm. 1997; Myers, in litt. 1988; Price, in litt. 1992; Stern et al. 1990; Casler et al. 1993; S. Richardson, pers. comm. 1998; Widrig 1980, in Service 2007). Vehicles may crush wrack into the sand making it unavailable as cover or a foraging substrate (MacIvor 1990, Strauss 1990, Hoopes *et al.* 1992, Goldin 1993, in Service 1994). Furthermore, beaches used by vehicles during nesting and brood-rearing periods generally have fewer breeding piping plovers than available nesting and feeding habitat can support. In contrast, piping plover abundance and productivity has increased on beaches with vehicle restrictions during chick-rearing periods and protection of nests from predators (Goldin 1993; S. Melvin, pers. comm. 1993, in Service 1994). However, the magnitude of this threat is variable, depending on the frequency of use and type of terrain covered.

Studies on the piping plover found off-road vehicles caused piping plover to flush or move at an average distance of 131 feet (40 meters) (Hoopes et al. 1992). Off-road vehicles within 164 feet (50 meters) of piping plovers caused them to stop feeding most of the time. While most responses by piping plovers to off-road vehicles resulted in movement by the birds, sometimes piping plovers freeze in response to the off-road vehicles. Both of these responses (flushing and freezing in place) have a negative impact on plovers through either disturbance, interruption of foraging behavior, or increasing the risk that vehicles will hit or crush them. Western snowy plover adults and chicks have used tire tracks and human footprints for loafing at Camp Pendleton and Naval Amphibious Base Coronado (Powell and Collier 1994), which would

increase their chances of being run over and killed. Plover chicks stand in, walk, and run along tire ruts, and sometimes have difficulty crossing deep ruts or climbing out of them (Eddings et al. 1990, Strauss 1990, Howard et al. 1993, in Service 1994). According to Fahy and Woodhouse (1995, in Service 2007), all-terrain vehicles operating at Vandenberg AFB caused the most significant alert and flight behaviors by western snowy plovers, even though they were in compliance with the then linear restriction.

Additional Threats to the Western Snowy Plover

West Nile Virus

West Nile virus, a mosquito-borne disease that can infect birds, reptiles, and mammals, has spread rapidly across the U.S. from the initial introduction in New England (National Audubon Society 2006). In 2004 to 2006, the disease was reported from two coastal counties (Lane and Lincoln) in Oregon but has not been reported from any coastal counties in Washington (U.S. Geological Survey 2006). The West Nile virus has been identified in dead piping plovers and killdeer (*Charadrius vociferus*), both of which are closely related to the western snowy plover (Center for Disease Control 2004).

Predation

Predator density is a significant factor affecting the quality of western snowy plover nesting habitat (Stenzel et al. 1994). Predation can result in the loss of adults, chicks, or eggs and separation of chicks from adults (Service 2007). Western snowy plovers generally cannot defend themselves or their nests against predation but must rely on anti-predator adaptation, including 1) pale coloration of adults, eggs, and young, which acts as camouflage against detection by predators; 2) a skulking retreat from the nest at a predator's approach; 3) extreme mobility and elusiveness of precocial young; and 4) maintenance of low nesting density (Page et al. 1983). In natural ecosystems, the predator-prey relationship tends to maintain a natural balance, where prey species slowly evolve strategies to evade predators, while predator species slowly evolve effective prey-capturing behavior. However, when nonnative predators are introduced into the ecosystem and thrive, they frequently occur in much higher densities and possess more effective strategies than native predators and, hence, usually have a more severe effect on native wildlife populations (Service 2007).

Nonnative predators of western snowy plovers include eastern red foxes (*Vulpes vulpes regalis*), domestic and feral dogs and cats, and North American opossums (*Didelphis virginiana*). Domestic and feral cats are widespread predators. The threat of predation by domestic cats intensifies when housing is constructed near western snowy plover breeding habitat. Furthermore, unnatural habitat features such as landscaped vegetation (e.g., palm trees), telephone poles, transmission towers, fences, buildings, and landfills near western snowy plover nesting areas attract predators (Service 2007). Trash left on the beach by humans may also attract predators. Native predators of western snowy plovers include coyotes, crows, ravens, American kestrels, loggerhead shrikes, and several gull species (*Larus* spp.). Human presence,

fragmentation of plover colonies into smaller, isolated units, and the loss of larger predators to control these meso-predators all exacerbate the effects of even native predators.

Invasive Nonnative Vegetation (from Service 2007)

A significant cause of habitat loss for coastal breeding western snowy plovers has been the encroachment of European beachgrass and American beachgrass (*Ammophila breviligulata*) into suitable habitat. Foredunes dominated by introduced beachgrass have replaced the original low, rounded, open mounds formed by the native dunegrass (*Leymus mollis*) and other native beach plants. European beachgrass was introduced to the west coast around 1898 to stabilize dunes (Wiedemann 1987); it has spread up and down the coast and now occurs from British Columbia, Canada, to Ventura County in southern California. American beachgrass is native to the East Coast and the Great Lakes region. Currently, American beachgrass is the dominant introduced beachgrass species in much of the western snowy plover's range in the state of Washington (Seabloom and Wiedemann 1994). In addition to the loss of nesting habitat, European beachgrass may affect western snowy plover food resources. Slobodchikoff and Doyen (1977) found that beachgrass markedly depressed the diversity and abundance of sand-burrowing arthropods at coastal dune sites in central California. Beachgrass communities may also provide habitat for western snowy plover predators that historically would have been largely precluded by the lack of cover in the dune community (Stern et al. 1991).

Other nonnative plant species that have invaded coastal dunes include Scotch broom (*Cytisus scoparius*), gorse (*Ulex europaeus*), South African iceplant (*Carpobrotus edulis*), pampas grass (*Cortaderia selloana*), jubata grass (*Cortaderia jubata*), and iceplant (*Mesembryanthemum* sp.). Shore pine (*Pinus contorta*) is a native plant species that has invaded coastal dunes and resulted in similar impacts to western snowy plovers (Schwendiman 1975, California Native Plant Society 1996, Powell 1996). Many nonnative weed species also occur on and along San Francisco Bay salt pond levees, resulting in unsuitable nesting habitat for western snowy plovers (Service 2007).

Recovery of the Western Snowy Plover

The 2007 final recovery plan for the western snowy plover states that the goal of recovery efforts is to delist the western snowy plover. The recovery plan for western snowy plover focuses on: (1) increasing population numbers distributed across the range of the western snowy plover; (2) conducting intensive ongoing management for the species and its habitat and developing mechanisms to ensure management in perpetuity; and (3) monitoring western snowy plover populations and threats to determine success of recovery actions and refine management actions. The species would be considered for delisting when:

1. An average of 3,000 breeding adults has been maintained for 10 years, distributed among 6 recovery units as follows: Washington and Oregon, 250 breeding adults; Del Norte to Mendocino Counties, California, 150 breeding adults; San Francisco Bay, California, 500 breeding adults; Sonoma to Monterey Counties, California, 400 breeding adults; San Luis

Obispo to Ventura Counties, California, 1,200 breeding adults; and Los Angeles to San Diego counties, California, 500 breeding adults. This criterion also includes monitoring of site-specific threats, incorporation of management activities into management plans to ameliorate or eliminate those threats, completion of research necessary to modify management and monitoring actions, and development of a post-delisting monitoring;

2. A yearly average productivity of at least one (1.0) fledged chick per male has been maintained in each recovery unit in the last 5 years prior to delisting; and

3. Mechanisms have been developed and implemented to assure long-term protection and management of breeding, wintering, and migration areas to maintain the subpopulation sizes and average productivity specified in Criteria 1 and 2. These mechanisms include establishment of recovery unit working groups, development and implementation of participation plans, development and implementation of management plans for Federal and State lands, protection and management of private lands, and public outreach and education.

5-Year Review for the Western Snowy Plover

Threats to western snowy plover remain essentially the same as at the time of its listing in 1993, although the magnitude of the threats has been reduced and the overall population has increased through active management afforded by protections under the Act. Despite the reduction in the magnitude of threats and increased population, western snowy plover is still at risk. The most important threats are ongoing habitat loss and fragmentation; mortalities, injuries, and disturbance resulting from human activities; and lack of comprehensive State and local regulatory mechanisms throughout this species' range. Despite the overall population increase, population sizes are low or the species is absent throughout parts of its historical range in Washington, Oregon, and California. Therefore, we concluded in the 5-year review that the western snowy plover remains a threatened species under the Act.

The actions most needed to further promote recovery include re-establishing breeding populations to beach habitats in southern California; continuing to prevent habitat loss and degradation; restoring degraded habitats; balancing habitat restoration with the needs for other species and their habitats around San Francisco Bay; managing nest and chick predators; and continuing managing human activities at breeding and wintering locations. Because threats differ range-wide, the degree of management needed for recovery and conservation would vary site to site and should be conducted in a regional context.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of this biological opinion and based on the information provided by the Air Force, we consider the action area to include Vandenberg AFB's sandy beaches (South, North, and Purisima Beaches) where the California least tern and

western snowy plover nest during the breeding season and western snowy plover uses for wintering habitat. The nesting habitat for western snowy plover comprises 13.8 miles (22.2 km); the Air Force closes 12.55 miles (20.1 km) to recreational activities during the breeding season and opens 1.25 miles (2.02 km) to certain recreational activities. The California least tern colony at Purisima Point accounts for approximately 1.3 miles (2.1 km) of the total nesting habitat for the western snowy plover and California least tern. Additionally, the action area includes the boat house, and the access route(s) to the mouth of Honda Creek, where large vehicles would transport PWC to launch sites to conduct water rescue training activities.

Beach Restoration

To date, the Air Force has treated approximately 372 acres (151 hectares) of invasive nonnative vegetation within areas A-D of the Restoration Plan to enhance western snowy plover and California least tern habitat (Kaisersatt, in litt. 2014).

El Segundo Blue Butterfly

Seacliff buckwheat plants are within some but not all areas that the Air Force would target for restoration, and occur in low densities scattered within stands of invasive nonnative vegetation (i.e., European beachgrass and iceplant). . The Air Force conducted surveys for seacliff buckwheat plants within restoration areas on north base at Purisima, Wall, and Minuteman Beaches. They observed 1,591 seacliff buckwheat plants in 154 acres (62 ha) within Purisima, Wall, and Minuteman Beaches; these three beach segments encompass a total restoration area of 959 acres (388 ha) (Kaisersatt, in litt. 2015). Based on the surveys at these three beach segments, and other visual inspections throughout the entire restoration area (1,628 ac (659 ha)), the Air Force estimated that seacliff buckwheat occurs within 16 percent of the entire restoration area. However, the density of seacliff buckwheat in restoration areas targeted on south base is typically less than north base restoration areas (Kaisersatt, in litt. 2015). Furthermore, the Air Force extrapolated (based on the surveys at north base) that there are approximately two buckwheat plants per acre within the entire restoration area. We consider these seacliff buckwheat plants to comprise suitable but unknown to be occupied habitat.

For the purposes of this consultation, we define areas that contain seacliff buckwheat but have not been determined to be occupied or unoccupied by the El Segundo blue butterfly as suitable but unknown to be occupied habitat. The Air Force has referred to these areas as "suitable but not known to be occupied." Therefore, relative to this habitat category, "suitable but not known to be occupied" is equivalent to "suitable but unknown to be occupied" as defined.

Recovery of the El Segundo Blue Butterfly

The recovery plan for the El Segundo blue butterfly did not contemplate the role of Vandenberg AFB in the species' recovery because we finalized the plan prior to the observations of this species in Santa Barbara County. Similarly, the 2008 5-year review does not specify the recovery function of Vandenberg AFB for the El Segundo blue butterfly.

The Integrated Natural Resources Management Plan (INRMP) for the Base considers the species and includes measures to conserve the El Segundo blue butterfly and its host plants. The positive conservation measures for El Segundo blue butterfly the Air Force has implemented at the Base so far include: 1) surveys to further delineate the species' occurrence on, and off, the Base; 2) removal of invasive plants from potentially suitable habitat; 3) cooperation with research through U.C. Riverside and U.C. Santa Barbara; 4) public outreach; and 5) funding research such as commensal relationships between El Segundo blue butterfly and harvester ants (*Messor* spp., *Pogonomyrmex* spp.). Therefore, although the recovery plan for El Segundo blue butterfly did not consider the potential presence of the species at Vandenberg AFB, nor does the 2008 5-year review specify a recovery function of the Base, the Air Force has made a positive effort to conserve the species on Vandenberg AFB, which would be consistent with other recovery efforts.

California Red-legged Frog

The California red-legged frog occurs in Honda Creek and has the potential to occur on the beach adjacent to the creek mouth. Additionally, the California red-legged frog has the potential to occur in a dune swale wetland adjacent to the Wall Beach restoration area, and occurs in the nearby Santa Ynez River. California red-legged frogs occur in nearly all permanent streams and ponds on Vandenberg AFB. Of the 109 ephemeral, wetland, and riparian sites on Base, only 11 sites did not have any life stage of the California red-legged frog (Christopher 2002).

Recovery of the California Red-Legged Frog

The action area, and Vandenberg AFB in general, are within the Northern Transverse Ranges and Tehachapi Mountains Recovery Unit for the California red-legged frog. The action area is also within the Santa Maria River-Santa Ynez River Core Area defined in the recovery plan (Service 2002). The recovery unit was described in the recovery plan as having a "high recovery status,' meaning that the unit supports many populations of the species, has many areas of high habitat quality, and threat levels that range from low to high.

Implementation of the Air Force's INRMP affords the California red-legged frog many protections on Vandenberg AFB. So far, the Air Force has implemented several actions that provide a positive conservation benefit: 1) public outreach and education; 2) working with researchers from U.C. Santa Barbara, the U.S. Geological Survey, and Department of the Navy, including chytridiomycosis studies; 3) surveys for new populations; and 4) monitoring of known populations. These efforts are consistent with the goals from the recovery plan of protecting known populations; protecting suitable habitat, corridors, and core areas; developing and implementing management plans for preserved habitat, occupied watersheds, and core areas; developing land use guidelines; gathering biological and ecological data necessary for conservation of the species; and monitoring existing populations and conducting surveys for new populations.

California Least Tern

Since 1978, California least terns have used the Purisima Point site on a regular basis. The site is approximately 1.3 miles (2.1 km) and bounded by electrified fences on the northern and southern boundary, a chain link fence along the eastern boundary, and the ocean to the west. The Purisima Point colony is characterized by a small population, especially when considering the amount of available breeding habitat and variable annual productivity (Robinette and Howar 2009). In addition to the Purisima Point colony, California least terns historically nested at the Beach 2 colony during 6 breeding seasons between 1990 and 2003, with populations ranging from 1 to 15 pairs. No nesting has occurred at this site since 2003.

The Purisima Point colony has a history of variable productivity, fluctuating at or above the mean from 1998 through 2003, and below the mean prior to 1998 and after 2003. Productivity in 2011 was well below average, marking the first time productivity has been below average since 2006. Since Point Reyes Bird Observatory began monitoring the Purisima Point colony in 2001, there have been six productive years (2001 through 2003 and 2007 through 2010) and three non-productive years during which only one fledgling in total was produced (2004 through 2006). In productive years, California least terns arrive early in the season and adult colony attendance increases rapidly. Colony attendance remains relatively high and stable throughout the egg laying and chick rearing periods and then both adults and fledglings gradually disperse from the colony. The 2011 breeding season initially showed characteristics of a productive year, but resulted in a non-productive year. The breeding population in 2011, estimated at 32 breeding pairs, represented a 3 percent decrease compared to the 2010 breeding season and the 16-year mean (Robinette and Howar 2011).

The mammalian predator that causes the most concern on Base is the coyote (*Canis latrans*), which preys on eggs, chicks, and adults. Avian predators that cause the most concern are ravens and crows; other avian species that are less of a concern include northern harriers (*Circus cyaneus*), American kestrels, loggerhead shrikes, and great-horned owls (*Bubo virginianus*) that may nest close to the California least tern colony. The first raven was sighted at the colony in 2010 (Robinette and Howar 2011).

Recovery of the California Least Tern

The revised recovery plan for the California least tern divides the geographic distribution of the California least tern into 23 Management Areas. The area covered by the 23 Management Areas encompasses all known breeding sites. The recovery plan identifies the beaches at Vandenberg AFB in Coastal Management Area D (Service 1985). Recovery objectives for this area include the development and implementation of a California least tern management plan. The 5-year review does not specify the recovery function of Vandenberg AFB for the California least tern (Service 2006).

The INRMP identifies key threats to the California least tern on Vandenberg AFB, and conservation measures to help alleviate threats. Management activities for the California least

tern on Vandenberg AFB include the avoidance and minimization measures that the Air Force included as part of the proposed project; we therefore will not repeat them herein. Additionally, the Air Force monitors impacts of launches on California least terns in accordance with the Service's biological opinions for applicable launch programs (Delta, Atlas, Taurus, and Falcon). Because year-round launch capability is essential to the Air Force's mission at Vandenberg AFB, the objective of launch monitoring is to identify launch-related impacts and develop additional management and/or mitigation measures if necessary to ensure conservation of California least terns on Base with no net impact to mission capability.

Western Snowy Plover

The following baseline information was compiled from western snowy plover breeding season annual monitoring reports (2006 through 2012) (SRS Technologies 2004, 2005, 2006; Mantech SRS Technologies 2007, 2008, 2009, 2010; Ball and Robinette 2011, 2012; Robinette et al. 2013). In particular, we relied on the 2012 breeding season annual report for much of the discussion of historical nesting and reproduction (Ball and Robinette 2012).

Vandenberg AFB provides one of the best opportunities for recovery of the western snowy plover because it supports one of the largest concentrations of breeding individuals throughout the species' range, and the recovery plan estimates it may be able to support 400 adult birds during the breeding season. Additionally, Vandenberg AFB represents the largest area of continuous mainland coastal habitat under Federal ownership. Since the first comprehensive surveys in the late 1970s for western snowy plover in western North America, Vandenberg AFB has consistently had one of the largest breeding aggregations of western snowy plovers along the west coast of the U.S. (Page and Stenzel 1981, Page et al. 1991).

Western snowy plovers nest from March through September on up to approximately 13.8 miles (22.2 km) of Vandenberg's coastal sand beaches and adjacent dunes that is divided into three sections: North Beaches (6.2 miles) (10 km), Purisima Beaches (2.6 miles (4.2 km), which includes the Purisima Point least tern colony that is 1.3 miles (2.1 km)), and South Beaches (5 miles) (8 km) (see the Description of the Proposed Action for a description of the beach sections that characterize North, South, and Purisima Beaches). Approximately 1.25 miles (2.01 km) of breeding habitat is open to recreational use during the breeding season.

Since 1994, the size of the western snowy plover breeding population on Base has been variable (Ball and Robinette 2011). The smallest population occurred in 1999 (78 adults) and the largest in 2004 (420 adults). The population showed decreasing trends between 1997 and 1999 and more recently between 2004 and 2007. It is important to note that after 1999, the Air Force instituted a beach management plan that provided greater protection for nesting and breeding birds, which resulted in higher numbers of breeding western snowy plovers on Base. As a result, the population showed an increasing trend between 1999 and 2004. The population is variable, but relatively stable since 2007 with a mean of 240 adults from 2000 to 2012 and a mean of 340 nests initiated (Ball and Robinette 2012). Within this time period, approximately 10 percent of

the total nests were initiated in the areas open to recreational access; the sum of the averages for the open areas at Surf, and Wall, and Minuteman Beaches is approximately 35 nests.

Both hatching and fledging success has been highly variable from 1997 through 2012; the long-term mean for hatching success is approximately 46 percent and fledging success is 34 percent. Annual variability is higher for fledging success than hatching success, with no real long-term pattern. Annual hatching success on North and South beaches show similar patterns, though there is divergence in some years (1999, 2003, 2006, and 2011). Purisima Beaches maintain a higher hatching success compared to North and South beaches; however, we note that these results are not statistically significant. Additionally, hatching success has been less variable at Purisima Beaches. The long-term mean for fledging success on North and South beaches is similar, approximately 35 percent and 40 percent respectively, but these annual values are not correlated. Western snowy plover that nest on Purisima Beaches appear to show slightly higher long-term fledging success.

The mean number of nests initiated over the time series is similar between North and South beaches. The highest number of nests occurred on South Beaches and the lowest on Purisima Beaches. There was also little variability in nest densities among beach sections. Nests initiated at Purisima Beaches have been declining since 1994, with the lowest number of nests initiated at Purisima Beaches in the time series occurring in 2011. There was no significant correlation between wrack index values and nest density or fledgling density. Overall, South Beaches had more wrack and a higher mean nest density while North Beaches had a higher mean fledgling density.

Predation is one of the primary causes of loss of western snowy plover nests at Vandenberg AFB. Over the 19 years of monitoring on Base, 17 to 52 percent of nests have been lost in a given year to predators (Ball and Robinette 2012). The two main predators observed preying upon nests are coyotes and corvids (i.e., crows and ravens). In 2012, 37 percent of nests were lost to predators. Coyotes and ravens were responsible for approximately 80 percent of these losses.

From 1994 to 2000, crows were the main corvids observed on Vandenberg AFB beaches, but northern ravens have become the dominant corvid in recent years. Coyote predation has mainly occurred on South Beaches. From 1994 through 2012, approximately 32 percent of all nests where the fate was known were lost to predators.

The long-term mean for hatching success was higher in the closed areas at Surf, Wall, and Minuteman Beaches (Minuteman: approximately 19 percent in the open area and 47 percent in the closed area; Wall: approximately 42 percent in the open area and 45 percent in the closed area; and Surf: approximately 42 percent in the open area and 50 percent in the closed area). The hatching success at Minuteman and Wall Beaches is highly variable with many years where no plovers initiated nests in the respective open area. However, hatching success appears to be increasing within the closed area at Minuteman Beach. At Wall Beach, hatch success within the closed area appears relatively stable, fluctuating near the long-term mean. At Surf Beach, hatch

success within the open area and closed area appear to follow a similar pattern, but are not significantly correlated (Ball and Robinette 2012).

Fledging success at Minuteman is highly variable in the closed area with no banding data available for nests initiated in the open area. The long-term mean for the closed area is approximately 35 percent. At Wall Beach, the long-term mean was higher in the closed area (29 percent) compared to the open area (11 percent), although the mean for the open area was based on a small sample size (only 3 years of banding data). At Surf Beach, the mean fledging success is similar between open and closed areas (open area is approximately 27 percent and closed area is 32 percent), but inter-annual patterns were not significantly correlated (Ball and Robinette 2012).

Winter censuses have documented up to 450 western snowy plovers on Vandenberg AFB (1994 through 2013 survey data) (Air Force 2013b). The average number of wintering snowy plovers on Base is approximately 250. The Air Force conducts wintering counts in December and January. Many of the fledglings overwinter on Vandenberg AFB and are detectable in large wintering flocks (Mantech 2008). Additionally, observations of banded individuals indicate that western snowy plovers that breed elsewhere use Vandenberg AFB in the winter.

Recovery of the Western Snowy Plover

The recovery plan divided the Pacific Coast population of the western snowy plover into six recovery units. The area covered by the six recovery units encompasses all known breeding and wintering sites for the Pacific coast population of the western snowy plover. Vandenberg AFB is within Recovery Unit 5 for the Pacific Coast population of the western snowy plover. Recovery Unit 5 supports the greatest number of western snowy plovers (approximately half of the U.S. Pacific Coast population) and has the greatest amount of available suitable habitat (Service 2007). The beach management plan encompasses Locations CA-84 and CA-85 (as described in the recovery plan, (Service 2007)), which have been identified as breeding and wintering sites for this species. The 5-year review does not specify the recovery function of Vandenberg AFB for western snowy plover.

The INRMP identifies key threats to western snowy plovers on Vandenberg AFB, and conservation measures to help alleviate threats. Management activities for western snowy plovers on Vandenberg AFB include the avoidance and minimization measures that the Air Force included as part of the proposed project; we therefore will not repeat them herein. Additionally, a completed habitat restoration plan includes eradication of nonnative beachgrass and iceplant and enhancement of native vegetation within suitable habitat for the western snowy plover. Furthermore, the Air Force monitors impacts of launches on western snowy plovers in accordance with the Service's biological opinions for applicable launch programs (Delta, Atlas, Taurus, and Falcon). Because year-round launch capability is essential to the Air Force's mission at Vandenberg AFB, the objective of launch monitoring is to identify launch-related impacts and develop additional management and/or mitigation measures if necessary to ensure conservation of western snowy plovers on Base with no net loss to mission capability.

EFFECTS OF THE ACTION

El Segundo Blue Butterfly

Beach Management

Removal or destruction of occupied seacliff buckwheat plants could kill or injure individual adults, larvae, or eggs of El Segundo blue butterfly present on the plants. Beach Restoration as proposed would remove seacliff buckwheat within some but not all the areas where these activities occur. Currently, we consider seacliff buckwheat plants in the restoration area(s) to comprise habitat that is suitable but unknown to be occupied by El Segundo blue butterflies, and therefore we assume that butterflies may be present. As part of the restoration plan, the Air Force may employ manual or mechanical removal, chemical treatment methods, or controlled burning to remove targeted invasive nonnative vegetation such as European beachgrass and iceplant. Mechanical and controlled burning removal methods may also remove seacliff buckwheat plants, whereas manual removal methods should not affect seacliff buckwheat plants because manual removal would specifically target invasive nonnative plants. Because we do not have enough information to analyze the effects of chemical removal methods to El Segundo blue butterflies, any adverse effects to El Segundo blue butterflies from chemical removal methods are not covered by this biological opinion.

Seacliff buckwheat plants occur in low densities and scattered within invasive nonnative vegetation that the Air Force would remove. Based on Air Force surveys of north base restoration areas, approximately 3,256 seacliff buckwheat plants[2] may be removed by restoration activities within the entire restoration area (1,628 ac (659 ha)). Because the Air Force proposed to conduct restoration actions outside of the El Segundo blue butterfly flight season, El Segundo blue butterflies would not be present on seacliff buckwheat plants during restoration actions. The proposed ground disturbance from restoration activities would be short-term for the duration of the restoration activities. While removing seacliff buckwheat plants outside of the flight season would avoid effects to adults, larvae, and eggs that could be present on flowerheads, removing or otherwise destroying these plants after the flight season could directly affect El Segundo blue butterflies that have diapaused beneath seacliff buckwheat plants. We assume that when seacliff buckwheat plants are lost, any individual El Segundo blue butterfly larvae that may be beneath the plants could be killed or injured as the plant is damaged or removed by project equipment or from ground-disturbing activities such as invasive nonnative vegetation removal actions (i.e., mechanical removal and controlled burning).

Removing seacliff buckwheat plants may indirectly affect the next generation of butterflies by removing or rendering the host plants unusable for the subsequent flight season(s). If seacliff buckwheat reestablishes post-removal but prior to the flight season, there likely would not be adequate flowerheads on these plants for El Segundo blue butterflies to utilize for at least one to several breeding seasons until the plants mature.

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2 (Two seacliff buckwheat plants per acre * 1,628 acres (659 ha)) = 3,256 plants

Summary

Overall, beach restoration activities would have a minor adverse effect to the El Segundo blue butterfly population on Vandenberg AFB. The total number of seacliff buckwheat plants (approximately 3,256) and associated El Segundo blue butterflies that may be adversely affected is a small portion of the population on Base. In addition, we consider the seacliff buckwheat plants that would be adversely affected by restoration activities suitable but unknown to be occupied habitat. Therefore, the proposed activities are not likely to noticeably reduce the El Segundo blue butterfly population on Vandenberg AFB and would have even less of an impact rangewide, and would not translate into a substantial diminishment of the numbers, reproduction, or distribution of the species throughout its range.

Recovery of the El Segundo Blue Butterfly

As noted earlier, we published the recovery plan before biologists discovered the El Segundo blue butterfly population at Vandenberg AFB and in Santa Barbara County. We expect minor adverse effects to the El Segundo blue butterfly because of the proposed project; therefore, the level of effects to the El Segundo blue butterfly that we anticipate to occur within the action area would not interfere with recovery efforts for the subspecies. The population of El Segundo blue butterfly on Base would be able to continue to contribute to the overall conservation of the species.

California Red-legged Frog

Beach Management

Beach management, as proposed, is not likely to adversely affect California red-legged frogs because these activities would not occur in California red-legged frog habitat and we do not expect California red-legged frogs to be present where these activities would occur.

Water Rescue Training

The access to and launching of PWC at Honda Creek may adversely affect California red-legged frogs. Training activities would not occur within wetland or riparian habitats, but dispersing California red-legged frogs have the potential to occur in adjacent areas where the water rescue training activities would occur. Juvenile and adult California red-legged frogs may disperse long distances from breeding sites throughout the year. Therefore, the Air Force proposes to conduct pre-activity surveys at the mouth of Honda Creek, using Service-approved biologists to capture and relocate any California red-legged frogs found within the action area. California red-legged frogs would be relocated to the nearest suitable habitat outside of the action area, but within Honda Creek. While capturing and relocating California red-legged frogs reduces the potential for adverse effects form the proposed project, a small proportion of captured California red-legged frogs could be injured or die as a result of the capture and relocation efforts due to improper handling, containment, transport of individuals, or from releasing them into unsuitable

habitat (e.g., where nonnative predators are present). Observations of diseased and parasite-infected amphibians are not uncommon. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up infections of disease agents, may cause an increased risk of mortality in wild populations. The hands, footwear, or equipment of fieldworkers can carry amphibian pathogens and parasites between habitats, in the process spreading them to localities containing species that have had little or no prior contact with such pathogens or parasites. The Air Force's use of a Service-approved biologist would reduce improper handling, containment, or transport of California red-legged frog.

The effects of noise generated by personnel and vehicles during the nonbreeding season would likely be minor because California red-legged frogs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs. The noise generated would likely not penetrate the air-water interface unless directly above it, and therefore, we anticipate California red-legged frog would experience limited exposure to noise while in their aquatic habitats.

The adverse effects to California red-legged frogs during the breeding season could be more substantial because noise generated from the vehicles, PWC, and up to 20 personnel participating in the water rescue training activities could interfere with California red-legged frog breeding activities. Male California red-legged frogs produce mating calls to attract females. These mating calls are audible during the evening and at night, and sometimes during the daytime during peak breeding season (CaliforniaHerps.com 2013). In general, noise effect thresholds for most species are unknown, evidence for habituation is limited, long-term effects are generally unknown, and how observed behavioral and physiological response might be manifested ecologically and demographically are poorly understood (Brown 2001).

An animal's response to noise can depend on a variety of factors, including noise level, frequency distribution, duration, number of events, variation over time, rate of onset, level of background noise, time of year, and time of day. A review of the literature reveals that it is generally accepted reptiles, amphibians, and invertebrates do not hear as well as and react less than birds and mammals, although research is limited (U.S. Department of Transportation 2004). Spadefoot toads (*Scaphiopus couchi*) undergoing estivation reacted to motorcycle sounds (up to 95 decibels at 0.4-4.4 kilohertz) by leaving their burrows, which could have a detrimental effect if it occurred at the wrong time of year (Brattstrom and Bondello 1983). Other than this one study; however, there is little information on the response of amphibians to noise disturbance.

Assuming a worst-case scenario that noise from the vehicle towing the PWC and presence of personnel at the project site adjacent to Honda Creek could cause disruption of breeding activities similar to spadefoot toads leaving burrows, the water rescue training activities could interrupt breeding activities in Honda Creek. However, we anticipate the effect would be less substantial because the noise generated by the project activities is temporary (up to 2 consecutive days per month, but likely less often); the project activities would only occur during daylight hours, whereas the California red-legged frog produces mating calls during the day but primarily

at night; and the Air Force would use a route that is as far from the riparian corridor of Honda Creek as possible.

Summary

The beach management activities would not adversely affect California red-legged frogs. Water rescue training activities are likely to adversely affect California red-legged frogs. Because the Air Force will implement measures to minimize adverse effects, and the Fire Department would only conduct activities during daytime hours and not within wetland habitats, we anticipate that the overall effect to California red-legged frogs at Honda Creek, and thus to the population on Vandenberg AFB as a whole, to be minor. We do not expect the proposed activities to reduce the reproduction, numbers, or distribution of the California red-legged frog.

Recovery of the California Red-legged Frog

The action area is within the Santa Maria to Santa Ynez Core Area of the Central Coast recovery unit. Because the action area is within a recovery unit with high recovery status, the proposed project is not likely to reduce the potential contribution to the conservation of California red-legged frog. In other words, we consider the populations of California red-legged frog in the recovery unit plentiful and many of those are of high quality. Because the impacts of the water rescue training activities would be temporary and minor, and the Air Force will implement measures to minimize adverse effects to the California red-legged frog and its habitat, we anticipate that the proposed project will not diminish the likelihood of the California red-legged frog's recovery.

California Least Tern

Beach Management

The Air Force proposes to close 12.55 miles (20.2 km) of beaches to human recreational use during the western snowy plover and California least tern breeding season. Approximately 1.3 miles (2.1 km) of breeding habitat for California least tern at Purisima Point will be closed. Because there is no public access to the Purisima Point colony during the breeding season, and the access restrictions are strictly enforced, human recreation should not directly impact California least terns. No disturbance due to human activity on the beach has been observed since at least 2005 (Robinette and Rogan 2006; Robinette 2007; Robinette and Howar 2008, 2009, 2010, 2011; Robinette et al. 2012; Robinette et al. 2013).

Predation is one cause of low productivity of California least terns. The Air Force has developed a predator management plan, the implementation of which should reduce the rate of predation on breeding California least tern eggs and chicks. Although we recognize that some level of predation by native predators is part of a healthy, dynamic environment, the goal of predator management is to reduce predation to a level that would allow California least terns on Vandenberg AFB to contribute to the recovery of the species.

The Air Force installs fencing around the perimeter of the breeding area. The Air Force repairs the fencing (if necessary) and electrifies it before California least terns arrive at the site. If repairs are needed during the breeding season, maintenance activities could adversely affect nesting California least terns because the human presence needed to repair the fence may cause adult birds to temporarily or permanently flush from nesting sites, exposing eggs and chicks to predators and/or unfavorable conditions where eggs and chicks may not hatch or survive. We assume that the closer the nest is to the location of the fencing repair, the more likely the human presence would negatively impact nesting birds. However, there is no indication that fencing repairs or maintenance has adversely affected California least terns during 8 years of monitoring. The Air Force coordinates all fence maintenance activities with biological monitors to reduce the effects of this activity on California least terns, and the benefit of having a functioning fence to protect nesting California least terns outweighs the potential for negative effects. Because the Air Force will coordinate all maintenance activities with biological monitors, they may reduce the potential to adversely affect nesting California least terns. However, because we cannot predict where the adults will nest within the fence, we anticipate that fence maintenance could adversely affect California least terns.

If the Air Force needs to trap and remove a coyote out of the colony as part of predator management, this action could result in temporary or permanent flushing of an unknown number of California least terns from their nests. We assume that the closer nests are to the area where this human activity would occur to remove a coyote, the more likely this action would affect nesting birds. Because the Air Force will coordinate all predator management with biological monitors, they would reduce the potential to adversely affect nesting California least terns. However, because we cannot predict where the adults will nest, we anticipate that predator management could adversely affect California least terns. The overall purpose of predator management, however, is to provide a benefit to California least terns.

Water Rescue Training

Water rescue training activities would not adversely affect California least tern because these activities would not occur within California least tern habitat.

Summary

Overall, the implementation of the beach management plan would provide a benefit to California least terns because it protects California least terns from adverse effects of human recreation and includes a predator management plan. Impacts associated with biological monitoring and conducting predator management and fence maintenance activities are likely to have only a minor adverse effect on the California least tern population on Base and would not reduce the numbers, reproduction, or distribution of the species.

Recovery of the California Least Tern

The recovery plan states that the most effective means of California least tern conservation is

through development and implementation of a California least tern management plan (Service 1985). The beach management program at Vandenberg AFB positively reflects the goals of the recovery plan and the recommendations of the 5-year review because it includes management of the California least tern colony and its habitat at Purisima Point on Vandenberg AFB. Therefore, we conclude that the proposed activities would not diminish the likelihood of the California least tern's recovery.

Western Snowy Plover

Beach Management

The Air Force proposes to close 12.55 miles (20.2 km) of beaches to recreational use during the western snowy plover and California least tern breeding season. Recreational access would occur within 1.25 miles (2.01 km) of suitable habitat. The closure of the suitable habitat area during the breeding season has been in effect since the 2001 breeding season. The closure of this area to public access during the breeding season has increased the rates of survival and breeding success, and decreased the impacts of humans (SRS Technologies 2004, 2005, 2006; Mantech SRS Technologies 2007, 2008, 2009, 2010; Ball and Robinette 2011, 2012; Robinette et al. 2013). These results are consistent with other findings of increased reproductive success on fully-closed beaches compared with those with just linear restrictions (Persons 1998).

The Air Force installs boundary fencing (yellow rope) and signs prior to the start of the breeding season to demarcate the closed areas. Maintenance activities could affect nesting western snowy plovers; however, the Air Force coordinates all maintenance activities with biological monitors to reduce the effects on western snowy plovers. Therefore, we anticipate fencing maintenance would have a minor effect. Additionally, the boundary fencing and signs may provide perches for birds that prey on western snowy plovers. The Air Force would apply Nixalite® or other appropriate material to deter perching and reduce avian predation opportunities.

The Air Force prohibits certain recreational activities in western snowy plover habitat during the breeding and nonbreeding seasons to minimize the effects to breeding and wintering western snowy plovers (see minimization measures 7 and 8 under Avoidance and Minimization Measures for the Western Snowy Plover and California Least Tern in the Description of the Proposed Action section of this biological opinion). Additionally, the Air Force has initiated actions to increase public awareness to reduce potential effects to the western snowy plover and its habitat while trying to keep the open areas accessible to the public and Vandenberg AFB personnel during the breeding season. The distribution of educational brochures to the public and installation of bilingual signs should reduce human intrusion into the areas closed during the breeding season. Additionally, the recent use of volunteer docents during the 2013 breeding season to increase public awareness should help reduce human intrusion into the closed areas. Furthermore, the proposed cap on the number of violations would further reduce the amount of adverse effects to western snowy plovers because once the limit is reached at Surf (50), Wall (10), or Minuteman (10) Beaches, respectively, the Air Force closes the open beach area where the violations limit is exceeded for the remainder of the breeding season. The issuance of

citations, at the discretion of Vandenberg AFB law enforcement, to violators of the beach access rules (i.e., closed areas) acts as a deterrent to potential violators.

From 2001 to 2012, the number of violations in the closed areas at Surf Beach have ranged from 17 to well over 50. The violations at Wall Beach ranged from 1 to 8; Minuteman Beach ranged from 1 to 11 (Ball and Robinette 2012). In most years, the open areas of the beaches remain accessible for the entire breeding season. However, the limits were exceeded three times at Surf Beach including the last two breeding seasons, and once at Wall Beach, but Minuteman Beach has never been closed due to exceeding the violation limit. Unauthorized human recreation occurs within the closed areas as people ignore the signs to stay out of the closed areas during the breeding season. Even after reaching the violation limit and the open area at Surf Beach is closed for the remainder of the breeding season, people continue to enter the area closed to recreation. The open area at Surf Beach was closed relatively early during the 2013 breeding season and violations post-closure of the open area of Surf Beach during 2013 were high. Because the Air Force implemented an increased monitoring effort and docent program during the 2013 breeding season, the number of violations seemed high because there was more monitoring of the closed areas in 2013; however, it is also possible the number of violations each year was higher than was documented because it was not being monitored as closely. Nevertheless, we discuss the adverse effects that humans have on western snowy plovers above (see Status of the Species section–Western Snowy Plover).

As stated earlier, the Air Force proposes to allow access to 1.25 miles (2.01 km) of western snowy plover habitat during the breeding season (0.5 mile (0.8 km) at Surf Beach, 0.25 mile (0.4 km) at Wall Beach, and 0.5 mile (0.8 km) at Minuteman Beach), but with limitations on recreational activities (see minimization measures 7 and 8 under Avoidance and Minimization Measures for the Western Snowy Plover and California Least Tern in the Description of the Proposed Action section of this biological opinion). In total, the three areas open to beach recreation have historically supported between 0 and approximately 10 percent of all western snowy plover nests on Base. Eleven nests were located in the open areas in 2012; nine at Surf, one at Wall, and one at Minuteman Beach (Ball and Robinette 2012). During the 2013 breeding season, and after the violation limit was reached at Surf Beach and the open area subsequently closed, western snowy plovers established more nests than usual in the (previously) open area that was closed. The increase in nests is likely due to the decrease in human disturbance effects after closure of the previously open area.

Biological monitors erect symbolic fencing around nests in high-visitor traffic areas within the open areas to protect the nests and birds from people inadvertently crushing the nests, eggs, or chicks. Installing symbolic fencing may cause western snowy plovers to flush from nests, but the installation of symbolic fencing has been successful in protecting nests from trampling. However, symbolic fencing may increase curiosity and vandalism by humans (Service 2007). In 2011, a human deliberately trampled one nest (Ball and Robinette 2011); two nests were deliberately destroyed in 2013 (Robinette *et al* 2013). Overall, humans deliberately destroy very few nests in the open areas on Base because of the protection given by the symbolic fencing and the monitoring and enforcement efforts provided by the Air Force.

Symbolic fencing placed around nests may be ineffective in protecting chicks from people or vehicles because chicks typically leave the nest within a day after hatching and move extensively along the beach to feed (Service 1994). Additionally, symbolic fencing would not protect the nests and western snowy plovers from predators. The Air Force may install predator exclosures, which have consistently increased nest success (White and Hickey 1997, Stern et al. 1991, Craig et al. 1992, Mabee and Estelle 2000, Service 2002, Lauten et al. 2006, in Service 2007). Over time, however, these exclosures may provide a visual cue to predators, making it easier for them to target adults, chicks, and eggs of western snowy plover (Service 2007).

Over 19 years of monitoring on Base, approximately 32 percent of western snowy plover nests were lost due to predation (1994 through 2012), ranging between 17 to 52 percent of nests being lost to predators (Ball and Robinette 2012). In 2012, 37 percent of western snowy plover nests were lost due to predators, with coyotes, ravens, and crows the three main predators of nests (Ball and Robinette 2012).

The Air Force implements a predator management plan that aims to reduce the high rate of predation of western snowy plover on Base. An effective predator management plan would increase nesting and fledging success, as has been evident elsewhere (Service 2007). Nevertheless, predators continue to have an effect on western snowy plover at Vandenberg AFB, but not unlike other breeding areas that host the western snowy plover throughout its range. The Air Force uses qualified biologists to conduct the predator management activities. Personnel may enter closed areas to conduct these activities and have the potential to step on and crush eggs and/or cause adults to flush from their nests, but because they would be accompanied by a Service-approved biological monitor, the effects to western snowy plovers from conducting predator management activities is expected to be minimal.

The Air Force has used electric fencing around the California least tern colony at Purisima Point on Base, where western snowy plovers also have historically nested. This fence is generally effective at excluding mammalian predators of the California least tern, and western snowy plovers that may nest within the California least tern colony have also benefited (Service 2007).

We expect that dogs will have a minimal effect on breeding western snowy plovers because the Air Force proposes to prohibit dogs within western snowy plover habitat (closed and open areas) during the breeding season. Unfortunately, small percentages of the public do not always follow these restrictions and bring dogs into the open areas regardless, or unaware, of the rules prohibiting dogs. These individuals are cited, as necessary, by Conservation Law Enforcement to deter future incidents of ignoring the prohibitions of dogs on the beach during the breeding season. Similar to disturbance by humans, repeated disturbances by dogs can interrupt brooding, incubating, and foraging behavior of adult western snowy plovers and cause chicks to become separated from their parents (Service 2007) (see discussion above in the Status of the Species–Western Snowy Plover). Fahy and Woodhouse (1995; in Lafferty 2001) observed that leashed pets were about half as likely to disturb western snowy plovers as unleashed pets. Additionally, Lafferty (2001) observed that few dogs (and people) beyond 100 feet (30 meters) impacted wintering roosting western snowy plovers. However, because breeding western snowy plovers

are more sensitive to disturbance and react at a greater distance than wintering western snowy plovers (see Page et al. (1977); Hoopes et al. (1992); Burger (1994)), bringing dogs into the open areas may affect breeding adults within the open areas, and possibly within closed areas. If western snowy plovers are affected in the closed area, it would depend upon where the dog is relative to the boundary demarcating the closed area and if nests are present near the boundary. Outside of the breeding season, the Air Force allows dogs but they must be on a leash at all times. Thus, based on Lafferty (2001), we anticipate that few leashed dogs would affect wintering western snowy plovers unless the dog gets within 100 feet (30 meters).

Law enforcement patrols could crush western snowy plovers, destroy nests, and disturb nesting activity, chick rearing, and foraging western snowy plovers. Enforcement personnel patrol within wet sand to the maximum extent possible in order to reduce the potential for these effects to western snowy plovers. Enforcement personnel may enter closed areas to remove and cite trespassers as necessary. Biological monitors will escort enforcement personnel to help minimize effects to western snowy plovers when investigations are needed. Overall, enforcement is a beneficial part of the beach management program by discouraging encroachment into closed areas and thus increasing breeding success.

Anglers using specific areas of Vandenberg AFB have previously violated closures and other beach restrictions, most notably leaving litter in these areas (Applegate and Shultz 2000). Anglers' have occasionally used suitable habitat as a toilet area and left bait and fish remains on the beach. These activities may attract predators to the beach that in turn may prey upon western snowy plovers.

As described above, the Air Force developed a beach restoration plan as part of their beach management program, which would improve western snowy plover and California least tern habitat by removing invasive nonnative plants, particularly European beachgrass and iceplant. The Air Force has successfully removed approximately 87 acres (35 hectares) of European beachgrass and iceplant. We concluded that the restoration plan would not adversely affect western snowy plover because it occurs during the nonbreeding season and monitors will be present during restoration activities (see discussion above). Overall, the Air Force provides a benefit to western snowy plovers by working to increase the amount and quality of nesting and foraging habitat on Base.

Water Rescue Training

The Fire Department would conduct water rescue training activities within the open areas at Wall and Minuteman Beaches. This activity would not occur in the open area at Surf Beach. The percentage of western snowy plover nests in the open areas is historically a very small proportion of the total nesting that occurs on Base. The amount of habitat available within areas open and closed to recreational activities is similar at Minuteman Beach (0.5 mile (0.8 km) open and 0.6 mile (0.97 km) closed). On average from 2008 through 2012 breeding seasons, western snowy plovers initiated less than one nest annually in the open area and nine nests in the closed area. At Wall Beach, there is more habitat available in the closed area ((0.85 mile) (1.37 km)) than the

open area ((0.25 mile) (0.4 km)). On average from 2008 through 2012 breeding seasons, western snowy plovers initiated two nests annually in the open area and approximately 47 nests in the closed area (Mantech 2008-2010; Ball and Robinette 2011-2012).

We assume that the presence of humans associated with conducting these activities would be similar to the effects that currently occur to western snowy plovers due to the existing presence of people in the open areas. However, the effects of the water rescue training activities to western snowy plover may be more substantial. Up to 20 Fire Department personnel would participate in these training activities at the same time, which could last up to 8 hours per day at the same location (Wall or Minuteman Beaches). Stationary people may affect incubating western snowy plover for a longer period of time because of the duration of these stationary disturbances that may occur close to nests. Similarly, the Fire Department would transport the PWC to the launch site with utility vehicles, which are similar to but larger than an all-terrain vehicle. The presence of vehicles in the open areas would be a new effect to western snowy plovers at Vandenberg AFB because aside from the rare occurrence where law enforcement would use an ATV to conduct an enforcement action, the Air Force has not allowed vehicles within suitable habitat. As discussed above in the Status of the Species–Western Snowy Plover, utility vehicles could affect western snowy plovers by causing adults to flush from their nests, reduce foraging efforts, and increase the potential for eggs and chicks to succumb to temperature changes, blowing sand, and predators. Moreover, these vehicles may also crush western snowy plover chicks within the open areas.

At Minuteman Beach, the access route of the vehicles from the parking lot to the training area is approximately 492 feet (150 meters) from the boundary fence that demarcates the closed area. This distance is likely to be far enough distance away for the water rescue training activities not to affect breeding western snowy plover within the closed area at Minuteman Beach. A biological monitor will ensure that any nests in the open area will be avoided by the access route and all training personnel will avoid directly affecting nest(s). However, because western snowy plovers may nest anywhere within the open area at Minuteman Beach, there is potential for these activities to indirectly affect western snowy plovers by causing adults to flush from their nests, thereby impacting adults, chicks, or eggs as discussed above.

At Wall Beach, the access route from the parking lot to the training area is adjacent to the boundary fence that demarcates the closed area. A biological monitor will ensure that any nests in the open area would be avoided by the access route and all training personnel would avoid directly affecting nest(s). The effects in the open area would be similar to Minuteman Beach, however, there is potential for these activities to indirectly affect adults, chicks, and eggs in the closed area at Wall Beach. The access route will be as far away from the boundary fence as possible, but the presence and noise of the vehicle and people may affect western snowy plovers within the closed area of Wall Beach. Disruption of normal behaviors because of the water rescue training activities could lead to reduced breeding and reproductive success of western snowy plovers in the closed area at Wall Beach.

The number of nesting western snowy plovers that would be affected would depend on how close nests are to the boundary fence. We anticipate that these activities would cause all western snowy plovers to flush from their nests that are within at least 131 feet (50 meters) of the boundary fence. Additionally, the distance from the fence in which western snowy plovers flush is likely to be greater because breeding western snowy plovers are more sensitive to disturbance than wintering western snowy plovers, and the use of vehicles is a new impact to western snowy plovers at Vandenberg AFB. Therefore, for our effects analysis we assume that nests within 328 feet (100 meters) of the boundary fence could be affected due to vehicle access to Wall Beach for water rescue training operations during the western snowy plover breeding season.

Since 2005, most of the nesting at Wall Beach occurs within the closed area (greater than 90 percent of nests at Wall Beach are in the closed area). Based on annual reports from western snowy plover monitoring, we assume that the nests are uniformly distributed in the closed area of Wall Beach. Therefore, if the closed area is approximately 0.85 mile (1.37 km), and we use an average of 47 nests (average number of nests in the closed area from 2005 to 2012) initiated in the closed area, we assume approximately four nests (including all life stages of western snowy plovers in these nests) would be adversely affected. The effect could range from temporary flushing from a nest to total loss of a nest in response to the water rescue training activities, in particular because of the use of a vehicle in the open area. The water rescue training activities may, in effect, result in slightly less available habitat for breeding western snowy plovers in the closed area at Wall Beach. Moreover, water rescue training activities may affect wintering western snowy plovers at both Minuteman and Wall Beaches by causing western snowy plovers to abandon preferred foraging areas and expend energy in order to move out of the way of these activities. The Air Force will also monitor these activities during the nonbreeding season, which would minimize potential adverse effects to wintering western snowy plovers from this activity.

Summary

The Air Force's proposed beach management program would provide an overall benefit to the western snowy plover. The beach management program includes beach restoration and predator management programs to enhance suitable habitat for western snowy plover. Closing 12.55 miles (20.2 km) of suitable habitat to human use allows western snowy plover to complete its life cycle more successfully than if the breeding season closure was not in effect on Base. People directly and indirectly affect breeding western snowy plovers because they continue to violate the beach access restrictions and enter the closed areas, and can recreate on 1.25 miles (2.01 km) of habitat. Additionally, recreational access within the open areas could adversely affect not only breeding western snowy plovers in the open area but also within the closed area because people can be adjacent to the boundary fence (yellow rope) that demarcates the closed area. However, because Vandenberg AFB allows human recreation within the open areas, western snowy plovers on Base may be somewhat accustomed to humans within and adjacent to its breeding habitat. Mortality caused by people is not typical although it happens, and humans may cause adults to flush from their nests, spend more time and energy on vigilance and avoidance behavior, and disrupt breeding and roosting behavior. The effect of flushing western snowy plovers is difficult to analyze.

Overall, we anticipate the nesting and breeding success in the open areas to be less than the closed areas because of the human presence in the open areas. The nests within the closed areas at Surf, Wall, and Minuteman Beaches have a higher long-term hatching success rate; fledging success is more variable. There is no data to compare the open and closed areas at Minuteman Beach, the nests within the closed area at Wall Beach have a higher fledging success than the nests in the open area, and the fledging success at the open and closed areas at Surf Beach is comparable (Ball and Robinette 2012). Additionally, the density of nests is lower near the boundary demarcating the closed areas of Minuteman, Wall, and Surf Beaches than it is farther away from these boundary lines. Thus, we could assume, and much of the literature indicates that humans adversely affect nesting and breeding success of the western snowy plover. The initiation of water rescue training activities in the open areas at Minuteman and Wall Beaches would affect breeding western snowy plover and their offspring. Furthermore, we anticipate that the water rescue training activities would adversely affect a small percentage of the western snowy plovers in the closed area at Wall Beach as well because the access route at Wall Beach is adjacent to the closed area boundary.

Human presence, leashed dogs, and water rescue training activities on the beaches occurring outside of the breeding season may affect wintering western snowy plovers by causing western snowy plovers to abandon preferred foraging areas and expend energy in order to move out of the way of these activities.

We do not expect that the impacts associated with actions of the beach management plan (e.g., personnel monitoring, predator management, and fence maintenance), and water rescue training activities to substantially reduce the numbers, reproduction, or distribution of the species.

Recovery of Western Snowy Plover

The beach management plan encompasses Locations CA-84 and CA-85 (as described in the recovery plan, (Service 2007)), which have been identified as breeding and wintering sites for this species. The beach management plan beneficially affects the recovery of the western snowy plover because it incorporates management of the breeding and wintering population and suitable habitat on Base, including the locations identified in the recovery plan. Therefore, the beach management plan would provide a benefit to western snowy plovers and would not diminish the likelihood of recovery. Similarly, the initiation of water rescue training activities is not likely to diminish the likelihood of the western snowy plover's recovery.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. We do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the Act. Because the action area is entirely within Vandenberg AFB, which is a Federal installation, all activities within this action

area would be Federal actions subject to section 7; therefore, we do not anticipate any cumulative effects.

CONCLUSION

After reviewing the current status of the El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover; the environmental baseline for the action area; the effects of the proposed beach management plan and water rescue training on these species; and the cumulative effects, it is the Service's biological opinion that the activities described in the Description of the Proposed Action section of this biological opinion, as proposed, are not likely to jeopardize the continued existence of the El Segundo blue butterfly, California red-legged frog, California least tern, or western snowy plover.

El Segundo Blue Butterfly

The project activities would adversely affect only a small portion of the available habitat on Base. Beach restoration activities would have a minor effect on the El Segundo blue butterfly because of the removal of approximately 3,256 seacliff buckwheat plants currently categorized as suitable but unknown to be occupied from restoration areas by equipment and personnel. Therefore, with the amount of occupied habitat on Vandenberg AFB and throughout this species' range outside of the Base, the proposed activities analyzed under this biological opinion would have a relatively minor effect on the El Segundo blue butterfly rangewide. Additionally, the project activities would not diminish the likelihood of the recovery of the El Segundo blue butterfly because the activities that would occur within the action area would not translate into a substantial diminishment of the numbers, reproduction, or distribution of the species.

California Red-legged Frog

The project activities would adversely affect only a small portion of the available habitat and known population of California red-legged frogs on Base. The beach management activities would not affect California red-legged frogs; only the water rescue training activities would likely adversely affect individuals. Because the Air Force will implement measures to minimize adverse effects, and would not reduce habitat for the California red-legged frog at Honda Creek on Vandenberg AFB, the proposed activities analyzed under this biological opinion would represent a minor adverse effect to the California red-legged frog throughout its range. Additionally, the project activities would not affect the recovery of California red-legged frog because the activities that would occur within the action area would not translate into a substantial diminishment of the numbers, reproduction, or distribution of the species.

California Least Tern

Overall, the implementation of the beach management plan would provide a benefit to the California least tern because it protects California least terns from adverse effects of human recreation and reduces predation. Activities such as monitoring, predator management, and

fence maintenance would only have a minor adverse effect on the California least tern population on Base. Water rescue training activities would not adversely affect California least terns because water rescue training would not occur in or near California least tern habitat. The proposed project activities would not affect the recovery of California least tern because the beach management program reflects the goals of the recovery plan and recommendations of the 5-year review, and includes management of the California least tern colony and its habitat at Purisima Point on Vandenberg AFB. Thus, the activities that would occur within the action area would not translate into a substantial diminishment of the numbers, reproduction, or distribution of the species.

Western Snowy Plover

The human activities associated with the beach management plan, and the addition of water rescue training activities, would adversely affect snowy plover. Because Vandenberg AFB allows human recreation on their beaches within open areas and outside of the breeding season, and people continue to violate the beach closure restrictions during the breeding season, humans continue to cause direct mortality of western snowy plovers, but more typically, cause western snowy plovers to flush from their nests and preferred nesting, foraging, and roosting areas. However, the Air Force's proposed beach management program would provide an overall benefit to western snowy plovers on Vandenberg AFB as compared to the Air Force not implementing this plan. Water rescue training activities are likely to adversely affect western snowy plovers. Because these activities are temporary and would only occur in two locations where the Air Force currently allows human recreation, we do not expect the adverse effects to western snowy plovers to increase substantially, in addition to the effects of the beach management plan and human recreational impacts. In total, these effects would not reduce the reproduction, numbers, or distribution of the western snowy plover. The beach management program would contribute to the recovery of the species because the number of breeding birds and the breeding success on Base should at least remain consistent, if not increase because of this plan.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the

Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the Air Force or made binding conditions for the Fire Department, as appropriate, for the exemption in section 7(o)(2) to apply. The Air Force has a continuing duty to regulate the activity covered by this incidental take statement. If the Air Force 1) fails to assume and implement the terms and conditions, or 2) fails to require the Fire Department to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Air Force must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR 402.14(i)(3)]

El Segundo Blue Butterfly

Beach Management

The Air Force estimated that they would remove or otherwise adversely affect approximately 3,256 seacliff buckwheat because of restoration actions. We assume that a typical seacliff buckwheat plant contains about 300 flower heads and may yield 30 El Segundo blue butterfly larvae, although through parasitization and predation many of the larvae would not survive (Pratt, in litt. 2007). The seacliff buckwheat plants at Vandenberg AFB are more scattered and less dense than habitat in other known locations in Los Angeles County (Pratt, in litt. 2007). In addition, the population of El Segundo blue butterflies at Vandenberg AFB occurs in much less dense numbers than other known populations. Generally, El Segundo blue butterflies are not common anywhere they are observed. Therefore, we anticipate a low level of take of El Segundo blue butterflies would result from beach restoration activities.

Specifically, we anticipate that all El Segundo blue butterflies within restoration areas will be taken in the form of harm, harassment, injury, or mortality. The restoration areas are comprised of suitable but unknown to be occupied habitat and we assume that El Segundo blue butterflies may be present where these activities would occur. However, because these activities would occur outside the flight season detecting an individual would be difficult as larvae are in diapause in the soil. Removing seacliff buckwheat plants, or otherwise damaging it to a point that the plant would not provide the adequate life-supporting attributes, could harm individual El Segundo blue butterflies by altering the habitat resulting in death or injury by impairing essential behavioral patterns, including breeding, feeding, or sheltering. Rendering host plants unusable may harass individual El Segundo blue butterflies, creating a likelihood of injury by annoying it to such an extent as to significantly disrupt its normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering. Removing secliff buckwheat plants may outright injure or kill individual El Segundo blue butterflies. We recognize that the effect of removing seacliff buckwheat plants breeding and feeding behaviors of adult butterflies may not be observable until the subsequent breeding season(s).

Summary

Because of their cryptic nature, small size, low mobility, fluctuations in abundance from one generation to the next and from one flowerhead to another, and we consider the seacliff buckwheat plants suitable but unknown to be occupied, detecting dead, injured, harmed, or harassed El Segundo blue butterflies resulting from the proposed actions would be difficult. Consequently, we are unable to reasonably anticipate the actual number of El Segundo blue butterflies that would be taken by the proposed project activities; however, we must provide a number at which formal consultation would have to be reinitiated.

The Environmental Baseline, Effects Analysis, and Conclusion sections of this biological opinion indicate that adverse effects to El Segundo blue butterflies would likely be minor given the nature of the proposed activities and the habitat currently recognized as suitable but unknown to be occupied. Thus, we anticipate that take of El Segundo blue butterflies would also be low. If the Air Force removes more than 3,256 seacliff buckwheat plants in the entire restoration area, they must contact our office immediately to reinitiate formal consultation. Additionally, because we recognize that for every El Segundo blue butterfly found dead or injured, other individuals would likely killed or injured that are not detected, we determine an appropriate take limit anticipating that the actual take would be higher and thus set the number at a lower limit. Therefore, because the seacliff buckwheat plants are currently unknown to be occupied and El Segundo blue butterflies generally occur in low densities, if 1 (one) El Segundo blue butterfly is found dead or injured due to the proposed activities, the Air Force must contact our office immediately. If a second adult or larval El Segundo blue butterfly is found killed or injured by project activities, the Air Force must reinitiate formal consultation with the Service. El Segundo blue butterflies may be taken only within the boundaries of the action area. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions. We do not anticipate, nor do we exempt take for any other activities not analyzed in this consultation.

California Red-legged Frog

Beach Management

We anticipate that no take of California red-legged frogs would result from beach management actions such as monitoring, fence maintenance, and predator management because these activities do not occur in California red-legged frog habitat and we do not expect California red-legged frogs to be present where these activities would occur. Additionally, because the Air Force uses qualified biologists to monitor these activities, we do not anticipate beach management actions to result in take of California red-legged frog.

Water Rescue Training

We anticipate that California red-legged frogs would be taken in the form of capture, injury, and

mortality due to the water rescue training activities. All California red-legged frogs found at the mouth of Honda Creek would be subject to capture because the Air Force will attempt to capture and relocate all life stages of California red-legged frogs out of affected areas prior to the onset of water rescue training activities. The protective measures proposed by the Air Force are likely to prevent mortality or injury of most individuals. However, we assume that a small percentage of the captured California red-legged frogs may succumb to injury or mortality due to mishandling, improper containment, or physiological stress. Additionally, these captured individuals may be killed or injured if they attempt to return to the project area after they have been relocated. Individual California red-legged frogs that the Air Force does not detect through pre-construction surveys may be killed or injured anywhere within the action area, but because Service-approved biologists would conduct the capture and relocation efforts we anticipate they will detect most California red-legged frogs and properly move them out of harm's way. The purpose is to reduce the overall risk to California red-legged frog that could result from implementing project actions.

Summary

Incidental take of the California red-legged frog will be difficult to detect because of its small body size and its cryptic coloration, and therefore finding a dead or injured specimen is unlikely. Finding carcasses and assigning a cause of death are problematic, especially in the presence of numerous scavengers that are likely to find dead animals soon after they die. Consequently, we are unable to reasonably anticipate the actual number of California red-legged frogs that would be taken by the proposed project; however, we must provide a number at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of this biological opinion indicate that adverse effects to California red-legged frogs would likely be low given the nature of the proposed activities, therefore, we anticipate that take of California red-legged frogs would also be low. Because we recognize that for every California red-legged frog found dead or injured, other individuals may be killed or injured that are not detected, we determine an appropriate take limit anticipating that the actual take would be higher and we set the number at a lower limit. .

If 2 adults, subadults, or juveniles are found dead or injured the Air Force must contact our office immediately to reinitiate formal consultation. If more than 100 California red-legged frogs (adults, subadults, and juveniles) are captured and relocated, the Air Force must contact our office immediately to reinitiate formal consultation. Furthermore, if more than 5 captured California red-legged frogs die or are injured in captivity, the Air Force must contact our office immediately to reinitiate formal consultation. These limits on take apply annually.

California red-legged frogs may be taken only within the boundaries of the action area. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions. We do not anticipate, nor do we exempt take for any other activities not analyzed in this consultation.

California Least Tern

Beach Management

We anticipate that few California least terns would be taken as a result of harassment during beach management, including predator management actions. The California least tern colony at Purisima Point is not accessible to recreational use during the nesting season. Because Service-approved biologists would conduct monitoring actions during the breeding season and would accompany any personnel conducting maintenance or law enforcement actions into the California least tern colony, we do not anticipate these actions to result in take. Maintenance of the electrified fence that surrounds the colony is conducted prior to the beginning of the breeding season when California least tern would not be present, although maintenance of the fence (e.g. washing salt off wires) may be required throughout the breeding season. The Air Force may need to remove a coyote from within the fenced colony, and therefore we anticipate that maintenance repairs and predator removal could result in take of California least terns as it may cause California least terns to flush from their nests. The majority of the time, capture and removal or lethal removal of individual problem predators is not likely to result in a loss of California least tern nests, chicks, or eggs because predator management activities occur outside of the colony, and qualified biologists accompany any individuals entering the Purisima Point colony. Beach restoration activities would occur outside of the breeding season when California least terns would not be present, so there would be no take of California least terns from these activities.

Water Rescue Training

We do not anticipate any California least terns would be taken due to the water rescue training activities because these activities would not occur in California least tern habitat (Purisima Point Colony). We do not anticipate, nor do we exempt take for any other activities not analyzed in this consultation.

Summary

We anticipate minimal take of California least terns from the Air Force implementing the beach management plan. Therefore, if California least terns associated with two nests (i.e., adult pair and offspring) annually are flushed as a result of fencing maintenance and predator management actions, the Air Force must contact our office immediately to reinitiate formal consultation.

California least terns may be taken only within the boundaries of the action area. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions. We do not anticipate, nor do we exempt take for any other activities not analyzed in this consultation.

Western Snowy Plover

Western snowy plovers are small, cryptically-colored birds that are difficult to detect, except perhaps when they move, and finding dead or injured individuals would be difficult. Breeding western snowy plovers and their young are present in spring and summer; migratory or wintering individuals augment the resident population in fall and winter. Changes in the number of western snowy plovers at Vandenberg AFB can be attributed to several factors, including habitat management, the presence of people, weather, and predation. Therefore, determining a reason for the failure of a nest when it does occur may be difficult. Anticipating the precise number of western snowy plovers that may be taken as a result of the beach management plan in any given year is also difficult. Additionally, we are unable to anticipate the precise number of western snowy plovers that may be taken over the course of several years under the beach management plan.

Beach Management

Closed Areas

We anticipate take in the form of harassment of western snowy plovers in the closed areas due to Air Force activities such as fence and sign maintenance during the breeding season. Conducting these activities may cause western snowy plovers to flush from their nests and thus cause injury by significantly disrupting normal behavioral patterns including breeding, feeding, or sheltering. Adult western snowy plovers flushed off their nests may not be able to successfully incubate, which can lead to mortality of eggs and chicks due to exposure to temperature changes, blowing sand, and increased vulnerability to predators. Additionally, humans may cause western snowy plovers to abandon preferred foraging areas and expend more energy on vigilance and avoidance behavior than foraging. However, western snowy plovers may differ in their responses to people because western snowy plovers do not always flush when humans approach their nests and therefore may not be taken. Overall, the take resulting from flushing western snowy plover is difficult to anticipate. Consequently, we are unable to estimate the number of individual western snowy plovers that may be harassed because we cannot predict the number of western snowy plovers that may nest or attempt to raise broods in the vicinity of the boundary fencing, or the number of adults that may flush from their nests that result in disruption of normal behavioral patterns. Given the limited area where signs and fencing are located, the Air Force conducts this maintenance prior to the start of the breeding season, unless otherwise needed, and the Air Force uses qualified biological monitors, we anticipate that few western snowy plovers would be taken in the form of harassment.

We anticipate that implementation of the predator management plan would result in minimal take of western snowy plovers. Capture and removal or lethal removal of individual problem predators is not likely to result in a loss of western snowy plover nests, chicks, or eggs. We also do not anticipate that predator management activities would cause western snowy plovers to flush from their nests because predator control actions would occur away from nests. Similarly, because beach restoration activities would occur outside of the breeding season, there would be

no take of breeding western snowy plovers.

The take of any western snowy plover by recreational beach users in the closed areas as a result of noncompliance with beach access restrictions is not exempted from the prohibitions against take contained in section 9 of the Act because these actions are in violation of posted prohibitions on Vandenberg AFB and not incidental to implementing the beach management plan. Additionally, take in the open area that results from people not following the prohibitions on recreational activities in the open areas (e.g., walking dogs on the beach during the breeding season) is not exempted from the prohibitions against take contained in section 9 of the Act because these actions are in violation of posted prohibitions on Vandenberg AFB.

Open Areas

During the 2002 breeding season, the Air Force began demarcating nests found in high traffic areas within the open area using symbolic fencing. Four nests have been lost in the last 2 years directly attributed to humans (S. Kaisersatt pers. comm. 2013a; S. Kaisersatt pers. comm. 2013b; Ball and Robinette 2011). Although the Air Force attempts to protect all nests in the open area before a trampling incident, we cannot anticipate that they will be able to find and protect all future nests in the open areas prior to human effects. Therefore, we anticipate that all western snowy plover nests, which includes the associated adults, chicks, and eggs, in the open area may be taken through harassment, injury, or mortality resulting from people crushing chicks, nests, and eggs; causing individuals to flush; causing adults to abandon nests; disrupting foraging behavior; increasing the likelihood of predation and exposure to adverse weather conditions; and altering habitat features necessary for successful breeding and foraging. However, we note that not all nests are lost that are initiated in the open areas and these nests have successfully fledged western snowy plovers. The percentage of nests initiated in the open areas at Surf, Wall, and Minuteman Beaches combined is historically low (approximately 10 percent) compared to the number of nests initiated in the closed areas. Thus, we assume the loss of all nests in the open areas would not substantially reduce the annual productivity of western snowy plover on Vandenberg AFB.

Water Rescue Training

Closed Areas

Water rescue training activities may result in take of western snowy plovers that are nesting in the closed area at Wall Beach in the form of harassment due to the presence of Fire Department personnel and the noise generated while accessing Wall Beach and conducting the training activities. The closed area at Wall Beach is approximately 0.85 mile (1.37 km), and based on annual western snowy plover monitoring reports we use an average of 47 nests (average number of nests in the closed area 2005 to 2012) initiated within the closed area. Assuming a uniform distribution of nests in the closed area at Wall Beach, and the distance of 328 feet (100 meters) at which western snowy plover are likely to flush off their nests due to the water rescue training activities, we anticipate that no more than 4 nests (including all life stages of the associated

western snowy plover, which may be up to 2 adults and 3 eggs/chicks per nest) would be lost as a result of these activities due to impairing essential behavioral patterns, including breeding feeding, and sheltering.

Open Areas

The water rescue training activities would occur in the areas open to recreational use at Wall and Minuteman Beaches, but not at Surf Beach. Because the Air Force may not be able to locate and protect all the nests in the open areas prior to human effects, we anticipate that these activities may result in take of western snowy plovers in the open areas in the form of harassment, injury, or mortality. However, the Air Force will use Service-approved biological monitors to oversee these activities to reduce effects to breeding and wintering snowy plovers in the open areas, and thus reduce take of western snowy plovers.

Summary

Combining the anticipated take of western snowy plovers in the open and closed area resulting from beach management and the water rescue training activities, and based on the historical numbers of nests observed, we anticipate no more than 40 nests (including all life stages of associated western snowy plovers, which may be up to 2 adults and 3 eggs or chicks per nest) would be taken annually. The anticipated take includes take of all nests in the open area (average of 35 nests or up to 10 percent of the total nests), take of up to 4 nests in the closed area at Wall Beach, and take of 1 nest in the closed areas combined due to beach management activities such as fencing maintenance or predator management.

Western snowy plovers may be taken only within the boundaries of the action area. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions. We do not anticipate, nor do we exempt take for any other activities not analyzed in this consultation.

REASONABLE AND PRUDENT MEASURES

For the El Segundo blue butterfly, the avoidance and minimization measures listed in the Project Description will effectively minimize the impacts of any potential take of El Segundo blue butterfly. Consequently, we are not including additional reasonable and prudent measures or implementing terms and conditions for El Segundo blue butterfly in this incidental take statement.

For the California red-legged frog, California least tern, and western snowy plover, we believe the following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of these species:

1. The Air Force must monitor breeding western snowy plovers and California least terns to determine effectiveness of the beach management plan.

2. The Air Force must ensure that implementation of the predator management plan is conducted by biologists qualified to conduct these activities.

3. The Air Force must minimize the effects to western snowy plovers from water rescue training activities in the open areas at Wall and Minuteman Beaches.

4. The Air Force must use qualified personnel to minimize incidental take of California red-legged frogs, California least terns, and western snowy plovers during project implementation.

The Service's evaluation of the effects of the proposed action includes consideration of the measures developed by the Air Force, stated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects of ongoing actions to the El Segundo blue butterfly, California red-legged frog, California least tern, and western snowy plover. Any subsequent changes in the minimization measures proposed by the Air Force may constitute a modification of the proposed action and may warrant re-initiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that are proposed by the Air Force as part of the proposed action.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Air Force must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure 1:

    a. The Air Force must monitor all nesting activity of western snowy plovers on Vandenberg AFB throughout the breeding season (March 1 to September 30). This monitoring must be conducted in a manner consistent with the monitoring effort conducted during the 2004 to 2012 breeding seasons. Banding under the monitoring plan must be consistent with the 2004 to 2012 breeding seasons; therefore; broods would be banded with a different color. Any proposal to alter the monitoring methodology or data collection must be reviewed and approved by the Service.

    b. "The Air Force must ensure that all western snowy plover chicks have fledged prior to opening the closed areas on Vandenberg AFB to recreational use. We estimate the end of the breeding season to occur on September 30; however, if all western snowy plover chicks have fledged before September 30, the closed areas may be opened to recreational

access. In contrast, if western snowy plover chicks have not fledged and are present after September 30, the closed areas must remain closed until all chicks have fledged.

c. The Air Force must monitor all nesting activity of California least terns on Vandenberg AFB throughout the breeding season (March 1 to September 30). The Air Force must conduct this monitoring in a manner consistent with the monitoring effort conducted during the 2004 to 2012 breeding seasons.

2. The following terms and conditions implement reasonable and prudent measure 2:

   a. Any change to the Air Force's predator management plan must be approved by the Service prior to its implementation.

   b. Biologists implementing predator management actions must be approved in the same manner as Service-approved biologists in Term and Condition 4(a) below.

3. The following terms and conditions implement reasonable and prudent measure 3:

   a. The Air Force must monitor the water rescue training activities during the nonbreeding season to minimize the effects to wintering western snowy plovers.

   b. The personnel conducting water rescue training activities must not congregate near the boundary fence that demarcates the closed area at Wall and Minuteman Beaches.

   c. The vehicles that are transporting PWC to launch sites at Wall and Minuteman Beaches must go no faster than 10 mph when on the sandy beaches.

   d. The pathway vehicles take to access the launch point at Wall Beach must be as far as possible from the boundary fence that demarcates the closed area at Wall Beach.

   e. The Air Force must avoid creating tire ruts in the sand, to the maximum extent possible, when driving vehicles to the launch sites at Minuteman and Wall Beaches.

4. The following terms and conditions implement reasonable and prudent measure 4:

   a. The Air Force must request our approval of any biologist it wishes to employ as a Service-approved biologist at least 30 days prior to conducting any such activities. In the request, the Air Force must include the names of the biologist(s), qualifications, references, which species the biologist(s) is requesting to monitor for, and what monitoring activities the biologist(s) would complete. Please be advised that possession of a 10(a)(1)(A) permit for the covered species does not substitute for the implementation of this measure. Authorization of Service-approved biologists is valid for this consultation only.

b. California red-legged frogs must be relocated from all areas where project activities would occur near aquatic habitat and that may result in injury or mortality of these individuals. California red-legged frogs may only be captured by hand or dip net and transported in buckets separate from other species. When capturing and removing California red-legged frogs, the Service-approved biologist(s) must minimize the amount of time that animals are held in captivity. California red-legged frogs must be maintained in a manner that does not expose them to extreme temperatures or any other environmental conditions that could cause mortality, injury, or undue stress.

c. Term and Condition 4.b. has the potential to cause the transfer of chytrid fungus between drainages. Therefore, to avoid transferring disease or pathogens between aquatic habitats during the course of surveys and handling of California red-legged frogs, the Service-approved biologist(s) must follow the Declining Amphibian Population Task Force's Code of Practice (see enclosure). A copy of this Code of Practice is enclosed. You may substitute a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care must be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the Air Force must report the progress of the beach management program and water rescue training and their impact on the species to the Service as specified in this incidental take statement. This reporting will assist the Service and the Air Force in evaluating current and future measures for the conservation of El Segundo blue butterfly, California red-legged frog, California least tern , and western snowy plover at Vandenberg AFB. The Air Force must provide the following information to the Service:

1. An annual report for the western snowy plover and California least tern breeding season: The report must contain (a) the results of monitoring, biological surveys, and sighting records; (b) documentation of any effects to western snowy plover and California least tern by the activities evaluated in this biological opinion; (c) a discussion of the effects that result in take of western snowy plover and California least tern; and (d) any other pertinent information as required by this biological opinion. The report should follow the format and include, at a minimum, the same type of data as breeding season reports submitted since 2001. In addition, the report must document compliance with all of the protective measures being implemented to conserve western snowy plovers and California least terns and provide recommendations to better protect these species on Vandenberg AFB. The annual reports are due December 31 of each year this biological opinion is in effect.

2. An annual report on wintering western snowy plovers: The report must include, at a minimum, results of winter surveys, any effects to wintering western snowy plovers and a discussion of the effects that result in take of western snowy plovers, recommendations to better protect wintering western snowy plovers, and any other pertinent information that may

be useful in protecting wintering western snowy plover. The annual reports are due on May 31 of each year this biological opinion is in effect.

3. An annual report discussing the trespassing violations into the closed areas during the western snowy plover breeding season and must include the following information for each violation (or collect as much of the information as is possible): Evidence of the violation (e.g., monitors observe a violation or observe footprints); date, time, and location of the violation; description of the violation and the effects to western snowy plovers, including a discussion of the effects that result in take of western snowy plover, how the violator(s) accessed a closed area, the violator(s) approximate distance from western snowy plover nest(s), and the response of western snowy plovers to the violation (e.g., flushing from nest, hunkering down in nest, alarm calls, or injury or mortality); action the Air Force takes against the violator(s) (e.g., warning, citation, removal from base); whether the violator(s) is affiliated with the Air Force (military personnel, contractor, or not affiliated); and the city where the violator(s) resides (if possible). This report must also document the hours spent in the field monitoring beach access/closure restrictions.

4. The Air Force must keep the Service informed if the number of violations is approaching the maximum allowed for each closed beach segment (i.e., Surf, Wall, and Minuteman) and must notify the Service within one business day if the maximum number of violations is reached.

5. An annual report discussing the effectiveness of predator management activities: The report must include a description of the effects of predation on California least terns and western snowy plovers; actions initiated by the Air Force to reduce the effect of predation; a discussion of the level of take resulting from predator management activities; and the number, if applicable, of predators removed from California least tern and western snowy plover breeding habitat, including the removal method.

6. An annual report discussing when and where restoration activities occurred (i.e., beach segment), including which methods the Air Force used to remove vegetation; the number of seacliff buckwheat plants removed in restoration areas; a discussion of adverse effects to El Segundo blue butterflies and western snowy plovers; and the total acreage of habitat that has been restored.

7. An annual report that includes the dates and locations where water rescue training activities occur: The report must include a discussion of the effects to California red-legged frogs and western snowy plovers, and a discussion of the effects that result in take of California red-legged frogs and western snowy plovers.

8. A report summarizing the effects to California red-legged frogs: The report must include how many California red-legged frogs were captured and relocated from Honda Creek during water rescue training activities, the effects to California red-legged frogs from capture and relocation efforts, and any injury or mortality of California red-legged frog resulting from capture and relocation.

DISPOSITION OF DEAD OR INJURED SPECIMENS

As part of this incidental take statement and pursuant to 50 CFR 402.14(i)(1)(v), upon locating a dead or injured El Segundo blue butterfly, California red-legged frog, California least tern, or western snowy plover, initial notification within 3 working days of its finding must be made by telephone and in writing to the Ventura Fish and Wildlife Office ((805) 644-1766). The report must include the date, time, location of the carcass, a photograph, cause of death or injury, if known, and any other pertinent information.

Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state. Injured animals must be transported to a qualified veterinarian. Should any treated El Segundo blue butterfly, California red-legged frog, California least tern, or western snowy plover survive, the Air Force must contact the Service regarding the final disposition of the animals.

Dead specimens must be preserved in accordance with standard specimen preservation methods. The remains must then be deposited with an educational or research institution that holds the appropriate State and Federal permits in accordance with relevant permit conditions. For the University of California at Santa Barbara, contact the Cheadle Center for Biodiversity and Ecological Restoration, Santa Barbara, California 93106, telephone (805) 893-2401. For the Santa Barbara Museum of Natural History, Santa Barbara, California 93105, contact Paul Collins, telephone (805) 682-4711.

In the case of take or suspected take of El Segundo blue butterfly, California red-legged frog, California least tern, or western snowy plover not exempted in this biological opinion, the Air Force must notify Vandenberg AFB Conservation Law Enforcement and the Ventura Fish and Wildlife Field Office within 24 hours.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to avoid or minimize adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

1. The Air Force should work with the Santa Barbara County Department of Parks and Recreation to see that management of Ocean Beach County Park is consistent with conservation of the western snowy plover.

2. The Air Force, in tandem with the Service, should work with the Mayor of Lompoc and/or other local officials to help educate local residents about the beach access restrictions at Surf

Beach during the western snowy plover breeding season and the consequences (i.e., beach closure) of not abiding by these restrictions.

REINITIATION NOTICE

This concludes formal consultation on the Air Force's Beach Management Plan at Vandenberg AFB outlined in your request for reinitiation dated February 9, 2012. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Bill Standley of my staff at (805) 644-1766, extension 315.

Sincerely,

Stephen P. Henry
Field Supervisor

Enclosure

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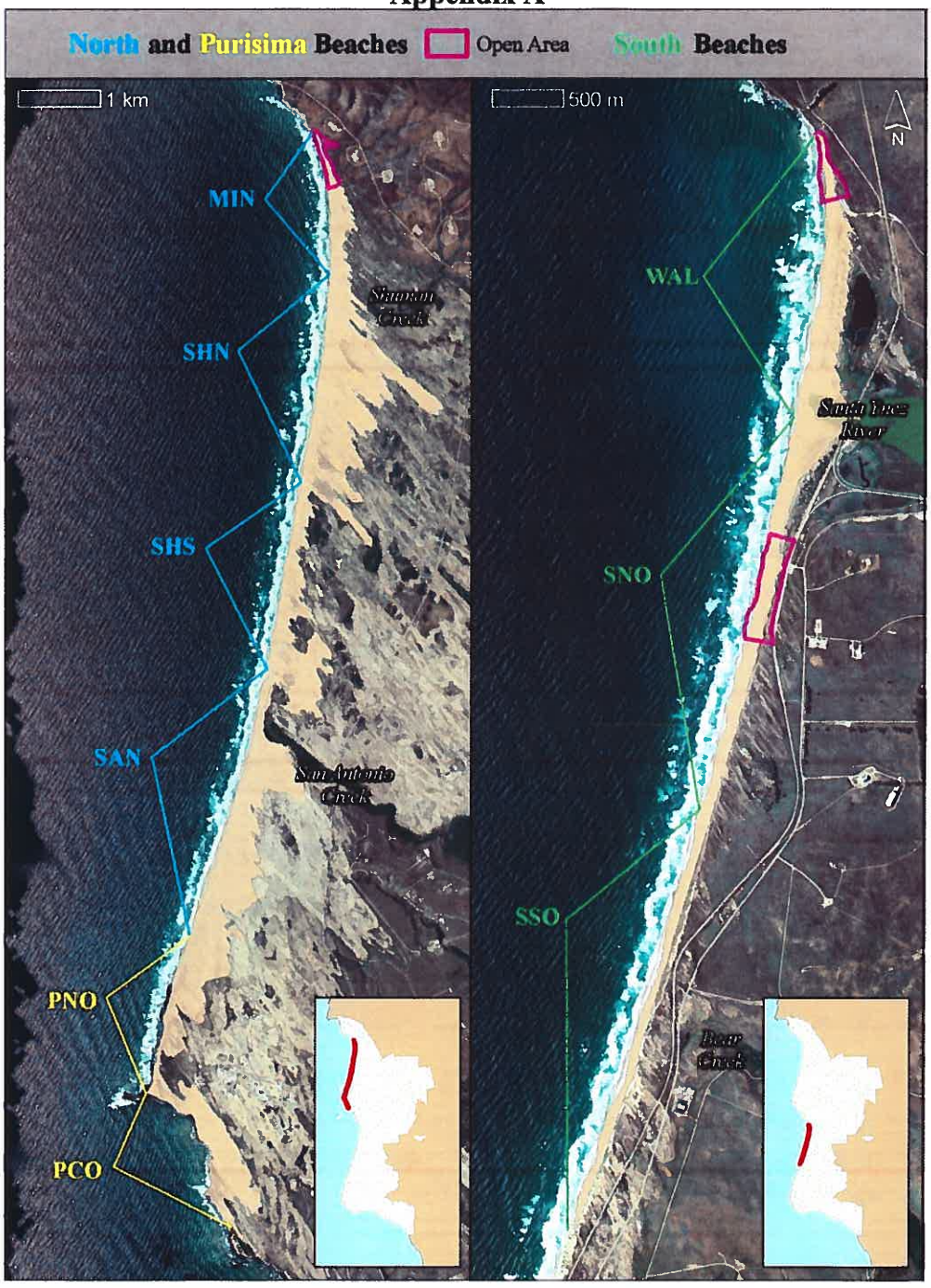
Appendix A



Map of beach sections for North, Purisima, and South Beaches on Vandenberg AFB: MIN = Minuteman, SHN = Shuman North, SHS = Shuman South, SAN = San Antonio, PNO = Purisima North, PCO = Purisima Colony, WAL = Wall Beach, SNO = Surf North, SSO = Surf South (from Ball and Robinette 2012).

The Declining Amphibian Populations Task Force Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each work site.

2. Boots, nets, traps, and other types of equipment used in the aquatic environment should then be scrubbed with 70 percent ethanol solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond. wetland, or riparian area.

3. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or "base camp." Elsewhere, when washing machine facilities are available, remove nets from poles and wash in a protective mesh laundry bag with bleach on the "delicates" cycle.

4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean them as directed above and store separately at the end of each field day.

5. When amphibians are collected, ensure that animals from different sites are kept separately and take great care to avoid indirect contact (e.g., via handling, reuse of containers) between them or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected and disposable husbandry equipment.

6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.

7. Used cleaning materials and fluids should be disposed of safely and, if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions.

For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.
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APPENDIX D: California Coastal Commission Consultation

DEPARTMENT OF THE AIR FORCE
30TH SPACE WING (AFSPC)

NOV 13 2018

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Mr. Larry Simón
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California Coastal Commission
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Dear Mr. Simón

1. AUTHORITY

The 30th Space Wing, United States Air Force, Vandenberg AFB, CA (hereinafter, Air Force or AF) submits this Consistency Determination (CD) to comply with the Federal Coastal Zone Management Act of 1972 (CZMA), 16 United States Code, Section 307, and Section 930.34, et seq., of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (15 Code of Federal Regulations (CFR) Part 930).

2. DETERMINATION

The project area is located within the boundary of VAFB and is owned by the Department of Defense (DoD). Although the CZMA federal lands definition excludes federal lands from the coastal zone, actions within them must be reviewed for consistency with the California Coastal Management Program (CCMP).

Under the CZMA and 15 CFR Part 930 the Air Force has evaluated this action and for the reasons stated below determined it is consistent to the maximum extent practicable with the California Coastal Act of 1976 (CCA), Chapter 3, Coastal Resources Planning and Management Policies, and will be conducted in a manner consistent with the CCMP.

3. INTRODUCTION

The Air Force has prepared this CD for the California Coastal Commission's (CCC's) review to support the AF's proposed Beach Management Plan (BMP) activities to occur at VAFB during a five-year period (2019 to 2023). The AF proposes to implement essentially the same management elements that the CCC has reviewed and concurred with in previous AF Federal CD submittals (CD-019-00, CD-089-02, ND-007-004, and CD-094-04). The AF proposes to revise its beach

management to include installing four separate, pre-fabricated cabins and five tent camping sites at Wall Beach.

The AF prepared this CD per Section 307(c)(1)(A) of the CZMA, as amended, 15 CFR Part 930, and the enforceable policies of the CCA (California Public Resources Code, Division 20).

BMP activities for 2019-2023 have the potential to affect coastal uses and/or resources; however, the Air Force proposes to include measures into beach management activities to prevent, minimize and/or mitigate potential effects so as to comply with the enforceable policies of the CCA, to the maximum extent practicable.

4. DESCRIPTION OF BEACH MANAGEMENT PLAN

Since 1995, the Air Force has implemented beach management activities at VAFB. Over time, we modified beach management activities due to adaptive management needs and/or based on funding availability.

BMP activities proposed from 2019 to 2023 includes beach closures/access restrictions, habitat restoration, monitoring, education, and predator management.

The AF intends these activities to promote survival and recovery of the federally threatened Western snowy plover (WSP) (*Charadrius nivosus nivosus*) and federally endangered California least tern (LT) (*Sternula antillarum browni)* on VAFB.

4.1 Beach Closures/Access Restrictions

The Air Force proposes to allow recreational beach access to 1.25 miles (2.01 km) of approximately 13.8 miles (22.2 km) of suitable nesting habitat on VAFB during the 2019-2023 breeding seasons (open areas). These open areas are the same areas that were open to recreational access during the 2000-2018 breeding seasons. All other sandy beaches determined to be WSP and least tern habitat on VAFB would be closed during the breeding season (closed areas) (March 1 to September 30).

The following beaches would be available for recreational access during the breading season: (1) Minuteman; (2) Wall; and (3) Surf. For the location of beaches affected, see Figure 1.

Public access would be available to approximately 0.5 mile (0.8 km) of Surf Beach near Surf Station by using the existing access trail at the Surf Station parking lot or by a trail through the back dunes from the Ocean Beach Park parking lot to Surf Station. A public access road through VAFB (Ocean Avenue) provides the public access to Ocean Beach Park and Surf Station.

Access to the northernmost 0.25 mile (0.4 km) of Wall Beach and the northernmost 0.5 mile (0.8 km) of Minuteman Beach would be open to those persons who have credentials allowing them military access. Those persons include active duty military personnel and their dependents, reserve military personnel and their dependents, retired military personnel and their dependents, and DoD and VAFB contractor employees. Access to Wall Beach would be provided from an access trail that begins at the northern corner of the parking area and continues northward along the bluff-backed

Figure 1. Location of beaches affected on VAFB.

beach. This trail placement would protect all dune-backed habitat on Wall Beach. Access to Minuteman Beach would be provided from an access trail to the bluff-backed beach north of the parking area.

If conditions for keeping these beaches open are not met during the breeding season, they would be closed. Specifically, Surf Beach would be closed if the public causes 50 violations, and both Wall and Minuteman beaches would be closed if more than 10 violations occur at each beach. A violation occurs when a person enters a closed section of the beach where WSPs and/or LTs are breeding.

To enforce beach closures/restrictions, the AF would erect boundary fencing with bilingual signage stating the purpose for the closures and demarcating the closed beach areas. Docents would be present in the open areas to educate visitors about WSP importance, inform visitors of beach closures/restrictions, and notify visitors if they violate beach restrictions. VAFB Conservation Law Enforcement Officers would patrol beaches during the breeding season.

Following the breeding season end, which is approximately September 30 of each year, beaches would be opened. However, per the requirements of the U.S. Fish and Wildlife Service's (USFWS's) Biological Opinion (BO), the AF would delay opening beaches until all chicks have fledged.

The following prohibitions will be in effect for all VAFB's beaches during the nonbreeding season (from approximately October 1 to February 28):

- overnight camping is prohibited;
- pets must always be leashed;
- littering is prohibited;
- fireworks are prohibited; and
- recreational off-road vehicles (ATVs and utility vehicles) are prohibited.

The following prohibitions will be in effect for all VAFB's WSP and LT beaches during the breeding season from March 1 to September 30:

- beach fires are prohibited;
- pets are prohibited;
- overnight camping is prohibited;
- littering is prohibited;
- recreational off-road vehicles are prohibited;
- fireworks are prohibited;
- horses are prohibited;
- windsurfing and/or parasailing is prohibited; and
- kite flying is prohibited.

4.2 Monitoring

The Air Force proposes to continue its monitoring program as in prior years per the USFWS-approved Monitoring Plan.

4.3 Education

The Air Force will present the established educational program to all base personnel and contractors who may use beaches for recreation. This program will:

- describe and illustrate WSP behavior, distribution, and habitat on VAFB;
- describe WSP threats;
- describe the adverse effects of feeding wildlife;
- explain seasonal access restrictions of certain areas;
- show examples of signs describing beach restrictions;
- explain the penalties for not obeying restrictions;
- provide maps showing restrictions;
- identify the proper contact if an injured or dead WSP or least tern is found; and,
- will distribute an educational brochure to the public, as needed.

4.4 Habitat Restoration

The Air Force proposes to conduct habitat restoration activities within any suitable habitat for LTs and WSPs on VAFB. These activities would occur outside the breeding seasons for the WSP and, LT and aim to increase suitable breeding habitat for the WSP and LT on VAFB to compensate for allowing recreational use of 1.25 miles (2.0 kilometers) of nesting habitat during the breeding season.

The AF proposes to restore dune habitat by eradicating invasive and non-native dune vegetation. The total proposed area for restoration is approximately 1,628 acres (659 hectares). Methods used would include: manual removal, chemical treatment, mechanical removal, and prescribed burns.

4.5 Predator Management

Coyotes, corvids (i.e., Western scrub jays, crows, and ravens), owls, and raptors substantially negatively impact WSP and LT breeding and fledgling success on VAFB.

The AF will continue to implement predator management per the USFWS-approved Predator Management Plan (PMP). The goal of the Plan is to control predation on WSPs and LTs sufficiently to allow a reasonable level of recruitment into the population. Qualified biologists conduct predation control, which focuses on those species that have a substantial negative effect on WSP and LT breeding and fledging success. The AF targets individual problem coyotes and corvids for lethal removal. Predatory birds, such as American kestrels (*Falco sparverius*), found to be preying on WSP and LT would be captured and relocated when possible. The PMP may change based on information gained during implementation.

The Air Force will implement the following measures to manage avian and mammalian predators during the WSP and LT breeding season:

Avian Predators

- The AF will trap and remove avian predators identified as an imminent threat near WSP and LT habitat, and coordinate all predator management activities between the biological monitors and appropriately permitted individuals. Predator management personnel would observe predator movements to and from beaches to try to identify roosting and nesting locations of birds that frequent WSP and LT habitat. Additionally, the AF will lethally remove individual coyotes that are keying-in on WSP nests. In some instances, lethally removing corvids may be warranted. Authorized personal under the direction of a VAFB biologist would maintain the trap(s), humanely euthanize corvids, and dispose of the carcasses.
- Nixalite® or similar materials will be installed on all posts and fencing where practicable to minimize the attractiveness of these structures to avian predators.
- The AF will place small shelters within LT nesting habitat at Purisima Point to provide cover for LT chicks from avian predators. The AF will evaluate the design, number and specific placement of shelters each season to achieve optimum effectiveness.

Mammalian Predators

- The AF will install and maintain electric fencing around the LT managed area at Purisima Point (Purisima Point Colony). The AF will electrify the fences prior to LTs arrival and repair fences as needed.
- The AF will utilize infrared-triggered still cameras to assist with unidentified predation issues.
- The AF will place traps for mammalian predators based on information derived from biological monitors.
- Trained and authorized personnel under the supervision of individuals permitted to work in WSP and LT nesting habitat will trap and lethally remove mammalian predators within nesting habitat.

4.6 Wall Beach Cabins and Campsites

Four separate, pre-fabricated kit cabins and five tent camping sites would be established at Wall Beach (Figure 2). Each cabin would be approximately 23 feet (ft) long by 14 ft wide by 10.5 ft high (6.9 x 4.3 x 3.2 meters [m]) (Figure 3 and Figure 4) and supported by 16 concrete pier foundations, 8 to 16 inches (in) (20.3 to 40.6 centimeters [cm]) above grade. Thus, the overall height above grade of each cabin would be approximately 12 ft (3.7 m). Cabin building materials would primarily consist of treated logs and wooden materials, complete with metal roofing and trim. Tent campsites would be located immediately southeast of the proposed cabins and require minor clearing of vegetation and debris to prepare the sites. Each campsite would require less than 300 ft^2 (27.9 m^2) for camping activities. One vehicle would be allowed per cabin or campsite and would park next to each cabin or campsite within the disturbed area. Campsites would not have any facilities or amenities other than picnic tables and would not include fire pits. The campsites facilities would also require routine inspection and maintenance to ensure cabins are in good condition, as well as regular weeding to maintain the grounds and removing trash left by campers.

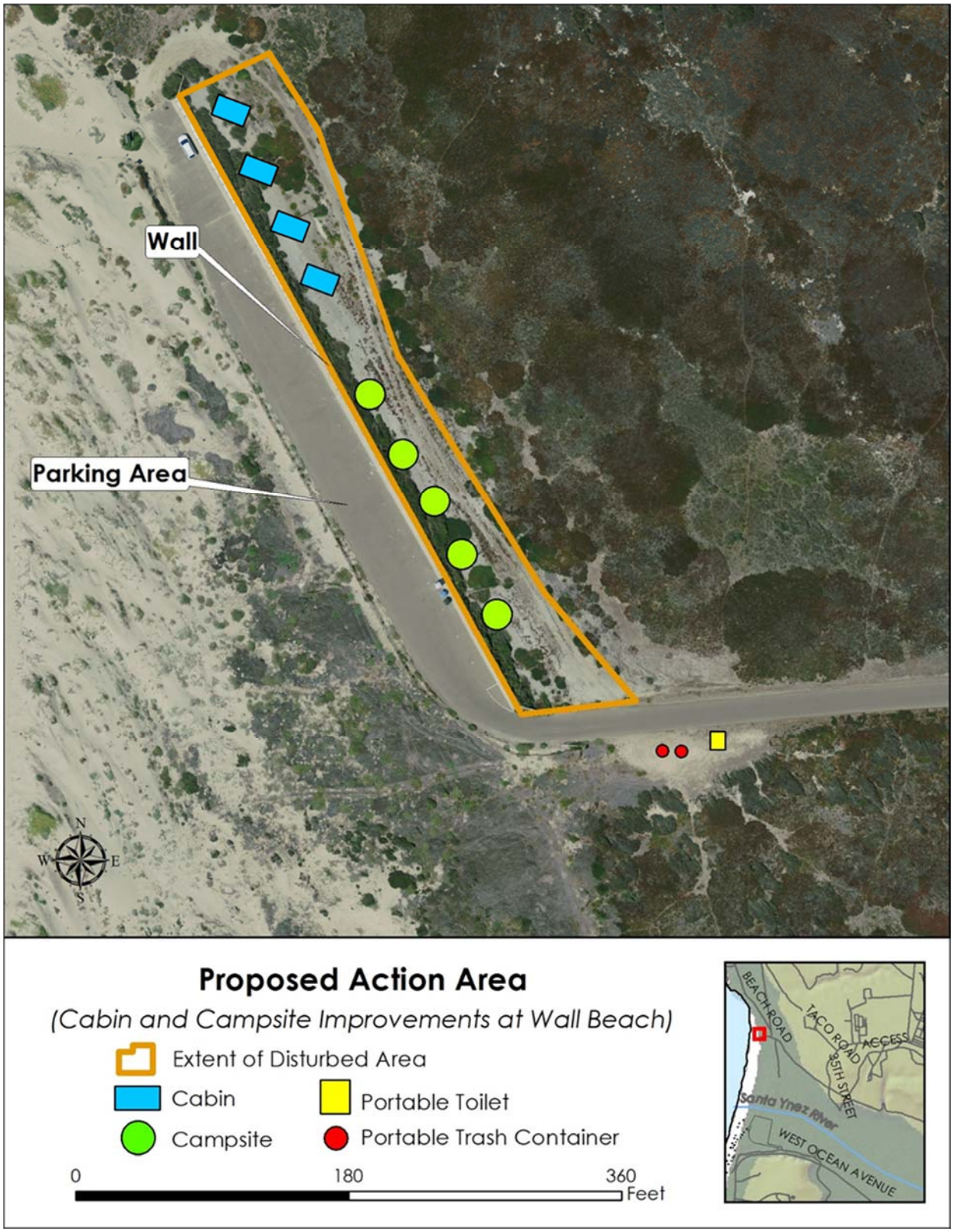

Figure 2. Proposed location of cabin and campsite improvements.

Figure 3. Cabin – front view.

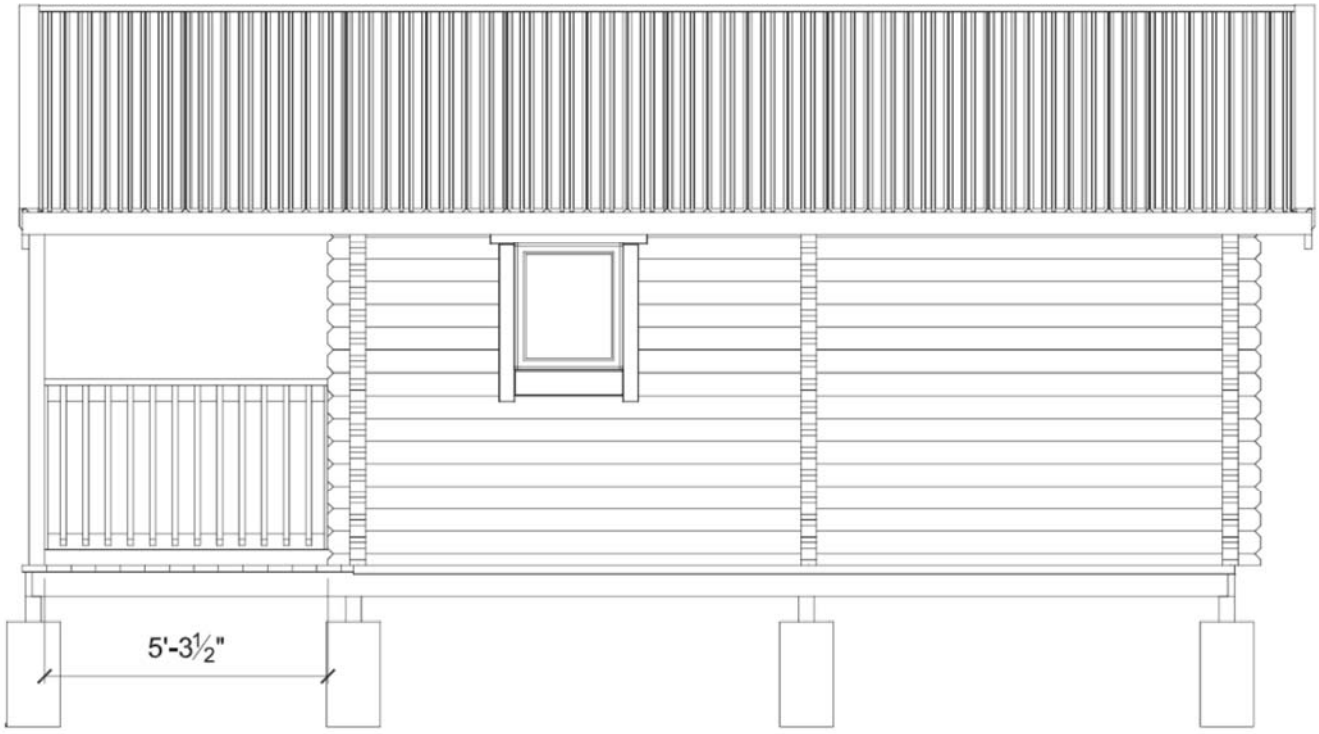

Figure 4. Cabin – side view.

5. CONSISTENCY ANALYSIS / ANALYSIS OF EFFECTS

The following analysis demonstrates how the proposed beach management activities to be implemented over a five-year period would be consistent, to the maximum extent practicable, with the relevant enforceable policies of the CCA.

5.1 Public Access and Recreation (Sections 30210, 30212, 30213, and 30214)

Section 30210 of the CCA provides for maximizing public access and recreation opportunities, providing that such activities take into account natural resource protection needs. Section 30212 provides for public access for "new development projects except where it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) adequate access exists nearby, or, (3) agriculture would be adversely affected." Section 30213 provides for protecting, encouraging, and, where feasible, providing lower cost visitor and recreational facilities. Section 30214 elaborates on access management considerations, providing that: "(a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following: (1) Topographic and geologic site characteristics"; "(2) The capacity of the site to sustain use and at what level of intensity"; "(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area…." Section 30221 provides for protecting oceanfront land "for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area."

As discussed in Section 2.1, and primarily for the benefit of the WSPs and LTs, VAFB proposes to close most VAFB beaches while allowing portions of three beaches (Surf, Wall, and Minuteman) to remain open for recreational use. The three beaches to remain open could, however, be closed if the conditions for keeping them open are not met. Specifically, Surf Beach could be closed if the public causes 50 violations, and both Wall and Minuteman beaches would be closed if more than 10 violations occur at each beach. Only Surf Beach is open to the general public whereas Minuteman Beach and Wall Beach would be limited to persons that have base access. From 2012 through 2015, 2017, and 2018, Surf Beach was closed early due to the USFWS's BO violation limit being reached. Allowing portions of beaches to remain open during the breeding season is a compromise position between the AF and the USFWS to allow some public access to the local beaches even though this results in less beach habitat being available for breeding birds use. Public recreational activities at the beaches are not compatible with breeding activities (i.e., nesting).

Although the AF provides public access opportunities in an area where access is limited, it is equally, if not more, critical to the survival of the WSP. As discussed in the environmentally sensitive habitat area (ESHA) section below, page 10, section 5.2, VAFB provides important habitat that is necessary for the survival and recovery of the species. The closures and/or restrictions on access are necessary to protect WSPs and LTs from anthropogenic impacts during the breeding season.

Additionally, since 1994 (when regular monitoring began), the monitoring reports for WSPs on VAFB have documented that restrictions to recreational use corresponds with increases in clutch hatch and fledging success (Figure 5).

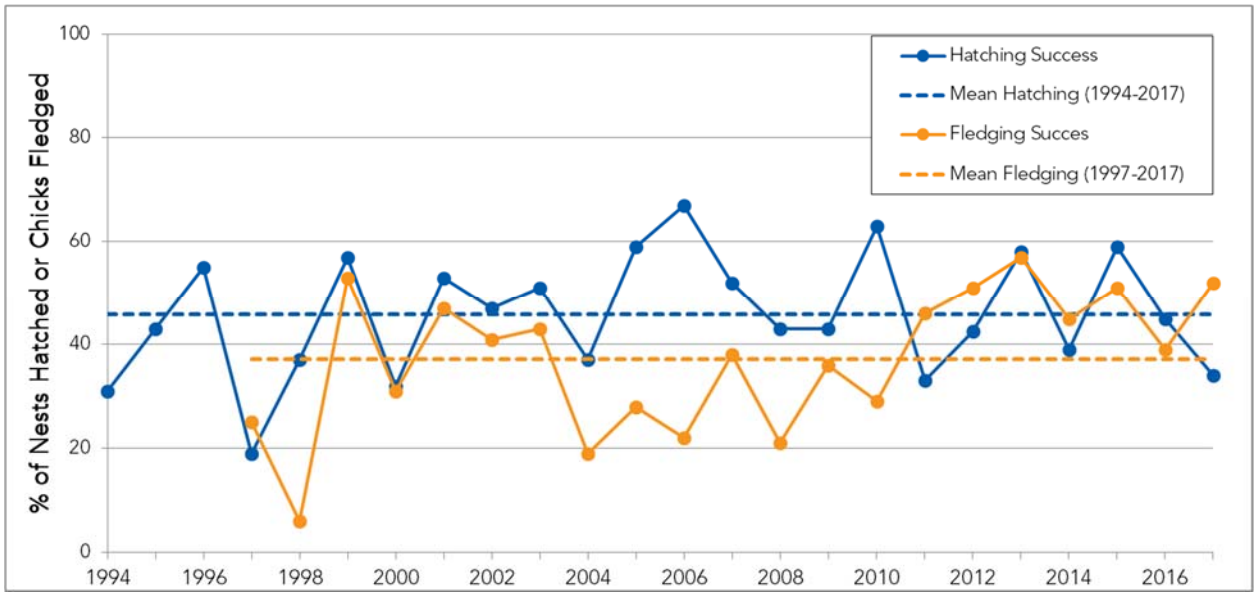

Figure 5. Trends in annual WSP clutch hatch and fledging success on VAFB from 1994 to 2017. Data on fledging success were not available for 1994-1996.

Since 1994, the WSP breeding population size at VAFB has been highly variable (Robinette et al. 2017). The smallest population occurred in 1999 (78 adults) and the largest in 2004 (420 adults). The population showed decreasing trends between 1997 and 1999 and more recently between 2004 and 2007. The population showed an increasing trend between 1999 and 2004. The population has been variable, but relatively stable since 2007.

Figure 6 shows trends in annual breeding population before and after beach closures were established in 2000. The mean number of adults and nests initiated increased after closures went into effect. Moreover, the period during linear restriction (1994-1999) shows a decreasing trend, whereas the period after has been variable, but relatively stable. In 2004, there was a spike in the WSP population on VAFB that was also observed for the total WSP population range-wide (USFWS 2007). In 2017, the number of adults observed was near the long-term mean and the number of nests initiated on VAFB was well above the long-term mean (Robinette et al 2017).

Figure 7 compares the number of nests established per linear mile within areas open to recreational access and closed areas. Long-term means for areas closed to recreational access are higher than those for open areas at all three beach sectors.

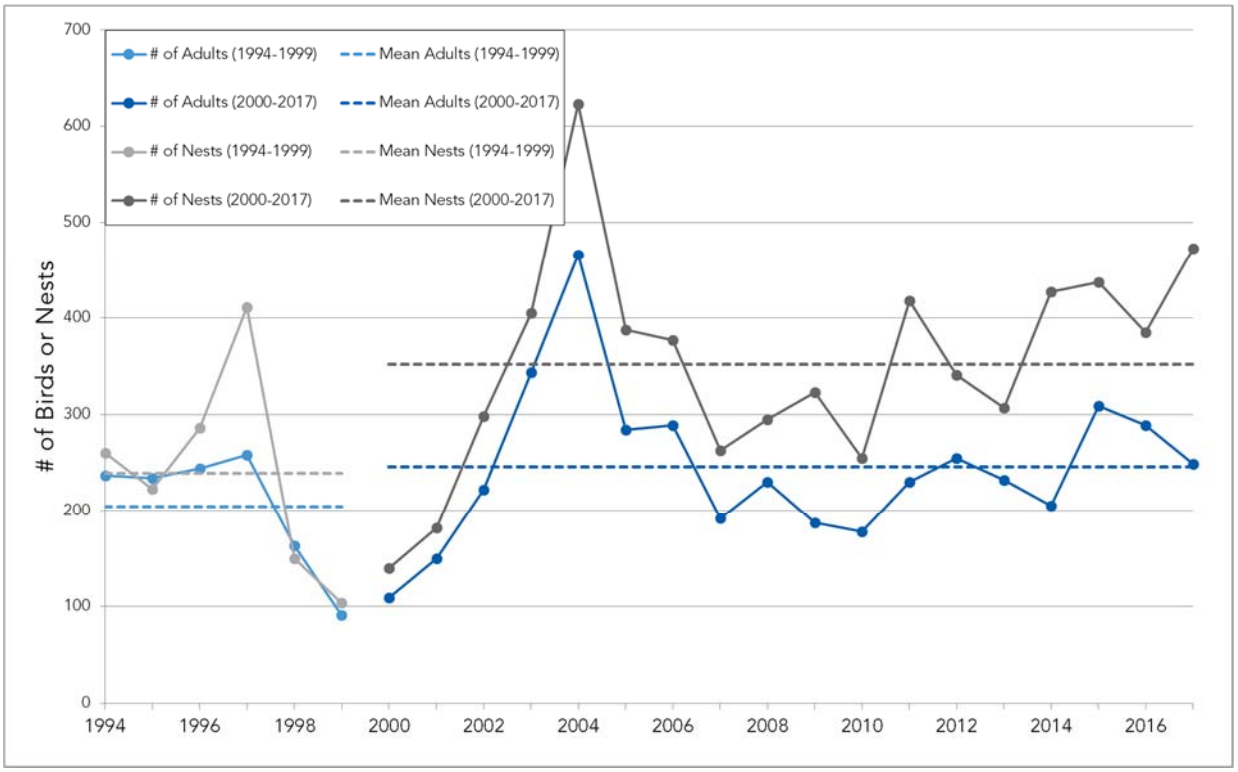

Figure 6. Trends in annual breeding population assessed using maximum number of adults observed during window surveys and number of nests initiated from 1994-2017. Dashed lines show the long-term means calculated for the periods during linear restriction (1994-1999) and after beach closures took effect (2000-2017).

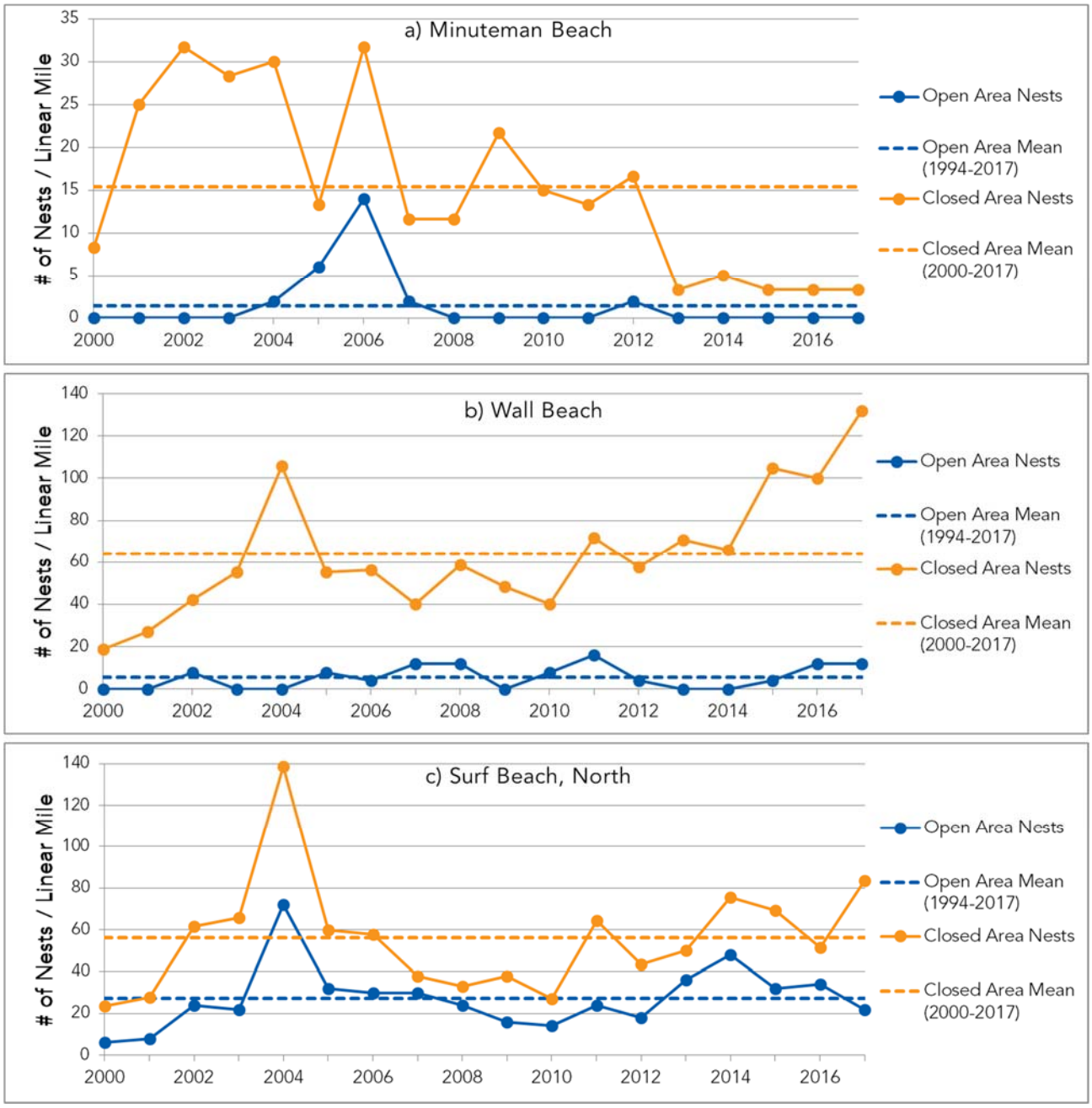

Figure 7. Trends in annual number of nests per linear mile within open and closed sections of Minuteman, Wall, and Surf Beaches, from 2000-2017. Dashed lines show the 18-year means (2000-2017).

Although Wall Beach is not open to the public, campsite improvements would enhance recreational opportunities for persons with military access.

5.2 Environmentally Sensitive Habitat Areas (Section 30240)

Section 30240(a) of the CCA provides that "[e]nvironmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas."

The USFWS listed the Pacific Coast population of the WSP as threatened in March 1993 under the Endangered Species Act (ESA) of 1973, as amended. The ESA mandates federal agencies, which includes the AF, protect WSPs on their land and enforce ESA provisions that prohibit accidental and intentional take. The ESA also places a proactive requirement on all federal agencies to participate in species recovery.

VAFB's beaches provide both nesting and wintering WSP habitat. Plovers use approximately 12.5 miles of VAFB's beaches. Since the first comprehensive surveys for WSPs in western North America in the late 1970s, VAFB has consistently held one of the largest concentrations of breeding WSPs along the United States west coast. Additionally, VAFB has the largest continuous mainland coastal habitat under Federal ownership, and experts think VAFB can support 400 adult birds during the breeding season. Because of these factors, VAFB provides one of the greatest opportunities for recovering the WSP throughout its range (USFWS 2015).

The AF would implement beach management in areas that may be considered ESHAs; however, the AF would incorporate measures to ensure adverse impacts are avoided and/or minimized, to the maximum extent practicable.

Previously, the CCC has found that VAFB's sandy beaches that provide nesting habitat for the WSP are ESHAs under the CCA (CD-094-04). However, as discussed below, the LT also uses VAFB's sandy beaches.

The federally endangered El Segundo blue butterfly [*Euphilotes battoides allyni* (ESBB)], threatened California red-legged frog [*Rana draytonii* (CRLF)], LT, and WSP exist or may exist within the areas where beach management activities would be conducted. The WSP and LT exist along the shoreline with the LT colony located primarily near Purisima Point. Seacliff buckwheat (*Eriogonum parvifolium*), host plant for the ESBB, occurs sporadically throughout Wall, Purisima, and Minuteman Beaches. Habitat restoration activities would occur in suitable but unknown to be occupied ESBB habitat. The CRLF occurs in Shuman Creek, San Antonio Creek, and the Santa Ynez River, the dune swale wetlands east of the Minuteman habitat restoration area. And, it has the potential to occur in a dune swale wetland adjacent to the Wall Beach habitat restoration area.

The USFWS has concurred with the AF determination that implementing habitat restoration and predator management are not likely to jeopardize the continued existence of the ESBB, CRLF, LT, or WSP, although adverse effects are anticipated to the ESBB and WSP (USFWS 2015). To reduce the overall impacts to each of the species considered the USFWS requires that the AF follow the "Reasonable and Prudent Measures" and the "Term and Conditions" set forth in the BO (USFWS 2015). Generally, implementing beach management activities would comply with the following relevant conditions imposed by the USFWS:

- The AF must monitor breeding WSPs and LTs to determine beach management effectiveness.
- The AF must ensure the PMP is implemented by qualified biologists.
- The AF must use qualified biological monitors to enforce minimization and avoidance measures, thereby minimizing incidental take of CRLF, LTs, and WSPs during project implementation.

The AF will adhere to these requirements when implementing beach management activities. Implementing beach management also carries out the USFWS's BO requirements since the main purpose of beach management is to conserve and protect ESA-listed species.

Section 30240(a): Environmentally sensitive habitat areas

Section 30240(a) of the Coastal Act limits activities within an ESHA to "only uses that are dependent on those resources." In this case, the AF proposes to restrict beach recreation activities to protect the WSP. In the USFWS's BO for the AF's 2014-2018 Beach Management Plan, it described the following threats to the WSP:

> Human activity is a key factor in the decline of the western snowy plover coastal breeding populations range wide. Human disturbance is the primary cause of habitat loss, along with urban development, invasive nonnative plants, and expanding predator populations.
>
> Human activities such as walking, jogging, fishing, fireworks, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Thus, humans can cause direct mortality of western snowy plovers because people may step on and crush eggs or chicks on purpose or inadvertently, deliberately take eggs from nests, and remove chicks from beaches erroneously thinking they have been abandoned. Humans may flush adult western snowy plovers off their nests, which may cause mortality of eggs and chicks due to exposure to temperature changes, blowing sand, and increased vulnerability to predators. Beach-related recreational activities that are concentrated in one location can negatively affect incubating western snowy plover adults when these activities occur too close to their nests and repeated intrusions by people into nesting areas may cause birds to move into marginal habitats where reproductive success is then reduced. Studies of the piping plover indicate that early season nesting attempts are abandoned and moved elsewhere when human use becomes too intense. Disturbances such as stationary visitors and surf fishermen kept incubating western snowy plovers off their nests for the longest period of time probably because of the duration of stationary disturbances that occur close to nests (Fahy and Woodhouse 1995). Additionally, the improper disposal of offal (waste parts of fish), bait, and other litter attracts predators of western snowy plover. Western snowy plovers may also become entangled in discarded fishing lines.

Based on this BO, the AF determined that it is necessary to significantly reduce beach recreational activities to prevent continued decline of plover numbers and provide adequate

protection of the ESHA. Therefore, the AF finds that the proposed project is dependent on the ESHA resources.

Section 30240(a) of the CCA also requires activities within an ESHA to avoid significant disruption to the sensitive habitat. The proposed project will reduce the beach recreation activities within the ESHA. As described above, these activities can adversely affect WSP reproductive success. Therefore, beach management will protect plover habitat, and thus it is consistent with the standard to avoid significant disruption.

In past years, plovers have nested on the open portions of these beaches, but in relatively low numbers. Therefore, using these open beaches is not likely to significantly affect nesting plovers.

In addition, symbolic exclosures (a chain or rope fence generally around a nest) would be used to protect nests in the open areas. Therefore, the Air Force finds that the proposed recreational uses identified in the AF's CD will not significantly affect the ESHA.

Predator Management

The proposed five-year plan for beach management also involves managing predators to reduce WSP nest and chick predation loss. Because of this purpose, beach management will protect this sensitive habitat, and therefore, is dependent on this resource.

The second requirement of the CCA's ESHA policy is that the proposed activity avoids significant disruption to the sensitive resource. Predator management is necessary to protect this species for the following reasons: 1) the bird nests on the ground in loose colonies and relies mostly on camouflage as its predation protection; 2) human activities and invasive plants have eliminated much of the plover's nesting habitat, thus the remaining habitat is much more sensitive to predation; and 3) notwithstanding population increases at VAFB in recent years, the Pacific Coast WSP population has declined in recent years. Because of these concerns, predator management is necessary to protect the plover, reduce future population declines, and increase nesting success.

Past monitoring shows that predators are responsible for as much as 80% of the failed plover nests during a nesting season. Table 1 puts predation in the context of other causes for nest failure.

Table 1 shows that the percentage of failed nests attributed to predators is relatively high and indicates that continued predator management is necessary. However, predator management must be implemented carefully, because if improperly done it could result in significant ecological effects and possibly adverse impacts to the plover. For example, if the population of the top-level terrestrial predator, the coyote, in this system is significantly reduced through predator management, it could result in increased predation by lower level predators (mesopredators), such as red foxes, raccoons, opossums, and skunks. The mesopredators may be better at nest predation than the coyotes. In addition, predator/prey relationships are complex and too much interference with this relationship could have unintended ecological and biological effects. The goal of the AF's Predator Management Plan is to reduce plover predation while minimizing ecological effects from predator management. Specifically, the plan states, "Management actions conducted under this Plan will emphasize selective control of individual problem predators, using non-lethal techniques wherever possible in the control of native predators. VAFB's predator management decisions must also

Table 1: Percent of failed nests attributed to various causes.

Nest Fate	2016	2017
Hatched	45	34
Abandoned Before Hatch	6	3
Incubated Past Hatch Date	1	0
Depredated	32	43
Destroyed by Wind	4	6
Destroyed by Tide	10	12
Destroyed by Human(s)	0	0
Failed Unknown	1	1
Suspected Adult Mortality	1	1
Unknown Fate	0	0

include the assessment of these actions on the larger ecosystem, with the priority being that ecosystem stability and integrity are maintained."

Ravens and coyotes are the primary predators that the plan focuses on. These species account for most plover predation on VAFB. The AF proposes to use trash clean up and carrion removal as tools to reduce the presence of these animals on the beach. The AF proposes to conduct beach clean-up as necessary. Human trash is an attractant bringing predators to the beach. By removing this debris regularly, the AF hopes to reduce the number of predators attracted to the beach.

The AF's clean-up activities also include removing carrion from the beach. Ravens, and coyotes are scavengers that rely on carrion as part of their food source and are attracted to dead animals that wash up on the beach. The plan provides for removing carrion when plover monitors identify it. However, the decision to remove carrion will take into consideration potential impacts on the plover from the removal activities.

Section 30244: Archaeological or paleontological resources

Restoration activities may occur in areas where archeological and/or paleontological resources exist, but protective measures would be implemented to ensure no adverse effects result. Where negative effects are unavoidable, proper mitigation will be implemented (USAF 2015).

The AF would clearly demarcate cultural areas protected by laws, e.g., National Historic Preservation Act, so that the bulldozer operators are able to easily avoid impacts to the recorded sites during Wall Beach dune re-contouring and constructing firebreaks from San Antonio Creek to Minuteman Beach. A qualified archaeologist would monitor restoration activities that could potentially have an adverse effect on archaeological sites. In addition, a Santa Ynez Band of Chumash Indians (SYBCI) monitor may also be present to minimize adverse effects to cultural resources during firebreaks construction. The SYBCI Fire Personnel may participate with the VAFB Hot Shots (Wildland Fire) in a controlled burn effort for firefighting training that is combined with prehistoric archaeological resources stewardship. Because monitors would be present when bull dozers are operating, and because the legally protected cultural areas would be flagged for purposes of easy avoidance, the restoration project is not likely to impact the

archaeological resources. The State Historic Preservation Officer concurred with the AF determination of no adverse effect (USAF 2015).

In conclusion, the beaches on VAFB base support nesting WSPs, a federally listed threatened species. Therefore, the WSP habitat on VAFB is an ESHA. The purpose of the 2019-2023 BMP is to manage and protect this ESHA and, therefore, the plan depends on the sensitive resource of the ESHA. In addition, beach management will reduce impacts to WSPs from human activities on beaches and from predation, and will not significantly disrupt the ESHA. Therefore, the Air Force finds that the proposed plan is consistent with the ESHA policy (Section 30240) of the Coastal Act.

5.3 Aesthetics (Viewshed) (Sections 30001. 30116, and 30251)

The project will not negatively impact aesthetics, e.g., viewshed, although some minor effects would generally occur. The cabins at Wall Beach would be visible from the coastline. However, this area is not open to the public. Habitat restoration will restore areas to native habitat, which will result in a more natural looking environment. Therefore, the Air Force is consistent with the enforceable policies of the CCA, to the maximum extent practicable

6. CONSISTENCY DETERMINATION

Based on the foregoing analysis, the Air Force has determined that implementing the BMP at VAFB is consistent with the enforceable policies of the CCA, to the maximum extent practicable.

Implementing the BMP would benefit both the public and the environment. The public will be able to use portions of Surf Beach and public access restrictions on other beach portions will aid survival and recovery of federally-listed species that rely on the California's central coast beaches. In sum, adverse effects would result to public access and recreation while beneficial effects would generally result to environmentally sensitive habitat areas and aesthetics. Implementing the BMP would adhere to requirements listed in prior consultation documents with both the USFWS and the CCC, to the extent not superseded by recent consultations, to minimize adverse effects to the environment.

Therefore, the Air Force requests the CCC concur that the AF implementing its BMP on VAFB from 2019 to 2023 would be consistent with CCA enforceable policies; thus, the CZMA.

7. REFERENCES

Consistency Determinations: CD-019-00, CD-089-02, CD-094-04 (Interim Plover Management Plans at Vandenberg Air Force Base).

Negative Determination: ND-007-04 (Modifications to Interim Plover Management Plans at Vandenberg Air Force Base).

Robinette, D.P., J.K. Miller, & J. Howar. J. 2017. Monitoring and Management of the Endangered California Least Tern and the Threatened Western Snowy Plover at Vandenberg Air Force Base, 2017. Petaluma, California: Point Blue Conservation Science

USAF 2015. Identification of Historic Properties and Finding of No Adverse Effect, Snowy Plover Habitat Restoration, Phase II, Purisima and Minuteman Beach (February 2015).

USFWS. 2007. U.S. Fish and Wildlife Service (USFWS). Western Snowy Plover (*Charadrius alexandrinus nivosus*) Pacific Coast Population Recovery Plan.

USFWS, 2015. Biological Opinion on the Beach Management Plan and Water Rescue Training at Vandenberg Air Force Base (2014-2018) (8-8-122-F-11R) (February 4, 2015).

If you need additional information or have questions, please call me at (805) 605-7924 or email me: beatrice.kephart@us.af.mil. You can also call Samantha Kaisersatt at (805) 605-0392 or email her: samantha.kaisersatt@us.af.mil.

Sincerely

BEATRICE L. KEPHART
Chief, Installation Management Flight

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY GAVIN NEWSOM, GOVERNOR

CALIFORNIA COASTAL COMMISSION

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December 16, 2019

Beatrice L. Kephart
Chief, Installation Management Flight
Department of the Air Force
30 CES/CEI
1028 Iceland Avenue
Vandenberg AFB, CA 93437-6010

Subject: Consistency Determination CD-0004-18 (Beach Management Plan, Vandenberg Air Force Base, Santa Barbara County)

Dear Ms. Kephart:

On December 13, 2019, the California Coastal Commission unanimously concurred with the above-referenced consistency determination. The Commission found that the project was consistent with the California Coastal Management Program. Please contact me at (415) 904-5288 should you have any questions regarding this matter.

Sincerely,

Larry Simon

Larry Simon
Federal Consistency Coordinator

cc: CCC – South Central Coast District

APPENDIX E: Species List

Table E-1. Plant species observed during field surveys at the Proposed Action Area.

Species	Common Name	Status
Abronia umbellata	Sand verbena	Native
Ambrosia chamissonis	Beach burr	Native
Amsinckia sp.	Fiddleneck	Native
Avena barbata	Slender wild oat	Non-native
Artemisia californica	California sagebrush	Native
Baccharis pilularis	Coyote brush	Native
Brassica nigra	Black mustard	Non-native
Bromus diandrus	Rip-gut brome	Non-native
Bromus hordeaceus	Soft brome	Non-native
Cakile maritima	Sea rocket	Non-native
Carduus pycnocephalus	Italian thistle	Non-native
Carpobrotus spp.	Iceplant	Non-native
Ehrharta calycina	Veldt grass	Non-native
Ericameria ericoides	Mock heather	Native
Foeniculum vulgare	Fennel	Non-native
Galium aparine	Common bedstraw	Native
Heliotropium curassavicum	Heliotrope	Native
Heterotheca grandiflora	Telegraph weed	Native
Hirschfeldia incana	Perennial mustard	Non-native
Plantago coronopus	Cut-leaf plantain	Non-native
Plantago lanceolate	English plantain	Non-native
Ribes divaricatum	Straggly gooseberry	Native
Salsola tragus	Russian thistle	Non-native
Toxicodendron diversilobum	Poison oak	Native

Table E-2. Wildlife species recorded and potentially occurring at the Proposed Action Area. Special status species are shown in red.

Species name	Common name	Status
Amphibians		
Aneides lugubris	Arboreal salamander	Native
Batrachoseps nigriventris	Black-bellied salamander	Native
Ensatina eschscholtzii	Ensatina	Native
Pseudacris hypochondriaca	Baja California chorus frog	Native
Reptiles		
Aniella puchra	California legless lizard	Native
Coluber constrictor	Yellow-bellied racer	Native
Crotalus oreganus	Pacific rattlesnake	Native
Elgaria multicarinata	Southern alligator lizard	Native
Eumeces skiltonianus	Western skink	Native
Lampropeltis getula	California kingsnake	Native
Masticophis lateralis	California whipsnake	Native
Phrynosoma coronatum	Coast horned lizard	Native
Pituophis catenifer	Gopher snake	Native
Sceloporus occidentalis	Western fence lizard	Native
Birds		
Accipiter cooperii	Cooper's hawk	Native
Aechmoporus clarkii	Clark's grebe	Native
Ammodramus savannarum	Grasshopper sparrow	Native
Aphelocoma californica	Western scrub-jay	Native
Aquila chrysaetos	Golden eagle	Native
Arenaria melanocephala	Black turnstone	Native
Artemisiospiza belli belli	Bell's sage sparrow	Native
Athene cunicularia	Burrowing owl	Native
Bubo virginianus	Great Horned Owl	Native
Buteo jamaicensis	Red-tailed Hawk	Native
Butorides virescens	Green heron	Native
Callipepla californica	California quail	Native
Calypte anna	Anna's hummingbird	Native
Carduelis lawrencei	Lawrence's goldfinch	Native
Carpodacus mexicanus	House finch	Native

Species name	Common name	Status
Cathartes aura	Turkey vulture	Native
Chamaea fasciata	Wrentit	Native
Charadrium montanus	Mountain plover	Native
Charadrius nivosus	Western snowy plover	Native
Charadrius vociferus	Killdeer	Native
Chondestes grammacus	Lark sparrow	Native
Corvus brachyrhynchos	American crow	Native
Corvus corax	Common raven	Native
Falco peregrinus anatum	Peregrine falcon	Native
Falco sparverius	American kestrel	Native
Geococcyx californianus	Greater roadrunner	Native
Geothlypis trichas sinuosa	Common yellowthroat	Native
Haematopus bachmani	Black oystercatcher	Native
Haliaeetus leucocephalus	Bald eagle	Native
Limnodromus griseus	Short-billed dowitcher	Native
Limosa fedoa	Marbled godwit	Native
Melospiza melodia	Song sparrow	Native
Molothrus ater	Brown-headed cowbird	Non-native
Numenius americanus	Long-billed curlew	Native
Numenius phaeopus	Whimbrel	Native
Passerculus sandwichensis alaudinus	Belding's savannah sparrow	Native
Pipilo crissalis	California towhee	Native
Pipilo maculatus	Spotted towhee	Native
Psaltriparus minimus	Bushtit	Native
Rynchops niger	Black skimmer	Native
Sayornis nigricans	Black phoebe	Native
Selasphorus rufus	Rufous hummingbird	Native
Selasphorus sasin	Allen's hummingbird	Native
Sialia mexicana	Western bluebird	Native
Sternula antillarum browni	California least tern	Native
Sturnella neglecta	Western meadowlark	Native
Sturnus vulgaris	European starling	Non-native
Tringa semipalmata	Willet	Native
Tyto alba	Barn owl	Native

Species name	Common name	Status
Zenaida macroura	Mourning dove	Native
Zonotrichia leucophrys	White-crowned sparrow	Native
Mammals		
Spermophilus beecheyi	California ground squirrel	Native
Thomomys bottae	Botta's pocket gopher	Native
Microtus californicus	California vole	Native
Castor canadensis	American beaver	Non-native
Canis latrans	Coyote	Native
Odocoileus hemionus	Mule deer	Native

APPENDIX F: Notice of Availability for Public Review, Proof of Delivery/Publication

DEPARTMENT OF THE AIR FORCE
UNITED STATES SPACE FORCE
30TH SPACE WING

FEB 0 6 2020

MEMORANDUM FOR ALL INTERESTED GOVERNMENT AGENCIES, PUBLIC OFFICIALS, ORGANIZATIONS, AND INDIVIDUAL PARTIES

FROM: 30 CES/CEI
1028 Iceland Avenue
Vandenberg AFB CA 93437-6010

SUBJECT: Final Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) Cabin and Campsite Improvements at Wall Beach at Vandenberg Air Force Base (VAFB), California

1. Attached as public and agency notification, to comply with the National Environmental Policy Act of 1969, and the President's Council on Environmental Quality's implementing regulations, is the Final Draft EA and FONSI for Cabin and Campsite Improvements at Wall Beach at VAFB, California.

2. This Final Draft EA is available at: the Lompoc, Santa Maria, and Santa Barbara Public Libraries, and the VAFB Library. The Proposed Action is to improve a recreation area on VAFB by installing four separate, pre-fabricated cabins, and five tent camping sites at Wall Beach. Resources analyzed in the attached Final Draft EA include air quality, biological resources, cultural resources, earth resources, hazardous materials and waste management, human health and safety (noise), Coastal Zone management, solid waste management, transportation, and water resources. This Final Draft EA concludes that there will be no significant environmental impacts resulting from the Proposed Action.

3. The public comment period for this Final Draft EA/FONSI will be from 12 February 2020 through 14 March 2020. Comments may be sent to the above address attention of Ms. Tracy Curry-Bumpass, emailed to tracy.curry-bumpass@us.af.mil, or faxed to (805) 606-6137. If you have any questions, please contact Ms. Tracy Curry-Bumpass at (805) 606-2044.

BEATRICE L. KEPHART
Chief, Installation Management Flight

Attachment:
Final Draft EA and FONSI for Cabin and Campsite Improvements at Wall Beach at VAFB, California.

Customer Ad Proof

60010556 ManTech SRS TECHNOLGIES Order Nbr 154884

Publication	**Santa Maria Times**		
Contact	ManTech SRS TECHNOLGIES	PO Number	
Address 1	300 N "G" STREET	Rate	Legal
Address 2		Order Price	351.50
City St Zip	LOMPOC CA 93436	Amount Paid	0.00
Phone	8057424622	Amount Due	351.50
Fax			
Section	Announcements	Start/End Dates	02/06/2020 - 02/08/2020
SubSection		Insertions	3
Category	986 Legals	Size	75
Ad Key	154884-1	Salesperson(s)	TERESA RAMIREZ
Keywords	FINAL DRAFT ENVIRONMENTAL ASS	Taken By	TC Ramirez
Notes			

Ad Proof

FINAL DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

CABINS AND CAMPSITE IMPROVEMENTS AT WALL BEACH AT VANDENBERG AIR FORCE BASE, CALIFORNIA

The U.S. Air Force has prepared a Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) that evaluates the potential environmental impacts of improving a recreation area on VAFB by installing four separate, pre-fabricated cabins, and five tent camping sites at Wall Beach. These improvements, and its generated revenue, would enhance the ability of VAFB to provide recreational opportunities that are consistent with VAFB's mission and Federal policy to consider environmental impacts in decision-making for all major federal actions the "quality of the human environment". Authorized patrons would benefit from increased access to the recreational opportunities made possible by the project. Currently, Wall Beach can only be enjoyed during the day, since patrons cannot extend their visit past nightfall. The project would allow for overnight access to the area, with certain restrictions, through the installing camping facilities at Wall Beach. Resources analyzed in this Draft EA include air quality, biological resources, cultural resources, earth resources, hazardous materials and waste management, human health and safety (noise), Coastal Zone management, solid waste management, transportation, and water resources. This Draft EA concludes that there will be no significant environmental impacts resulting from the Proposed Action.

The Final Draft EA/FONSI is available for review at: the Lompoc, Santa Maria, and Santa Barbara Public Libraries, and the VAFB Library. The public comment period for this Final Draft EA/FONSI /FONPA is 12 February 2020 through 14 March 2020. Comments may be sent to the above address attention of Ms. Tracy Curry-Bumpass, emailed to tracy.curry-bumpass@us.af.mil, or faxed to (805) 606-6137. If you have any questions, please contact Ms. Tracy Curry-Bumpass at (805) 606-2044.

Legal #154884
Pub dates: Feb 6, 7, 8, 2020

Customer Ad Proof

60010556 ManTech SRS TECHNOLGIES Order Nbr 154885

Publication	**Lompoc Record**		
Contact	ManTech SRS TECHNOLGIES	PO Number	
Address 1	300 N "G" STREET	Rate	Legal
Address 2		Order Price	171.50
City St Zip	LOMPOC CA 93436	Amount Paid	0.00
Phone	8057424622	Amount Due	171.50
Fax			
Section	Announcements	Start/End Dates	02/09/2020 - 02/12/2020
SubSection		Insertions	2
Category	986 Legals	Size	75
Ad Key	154885-1	Salesperson(s)	TERESA RAMIREZ
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Ad Proof

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Legal #154885
Pub dates: Feb 9 & 12, 2020