



Final

Environmental Assessment  
for Construction, Operation,  
and Decommissioning of a  
Solar Photovoltaic System at  
Marine Corps Base  
Camp Pendleton, California

November 2015

Prepared for:  
United States Department  
of the Navy and United States  
Marine Corps



**Final  
Environmental Assessment  
Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at  
Marine Corps Base Camp Pendleton, California**

**Lead Agency for the Environmental Assessment:** Marine Corps Installations Command

**Title of Proposed Action:** Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California

**Affected Region:** San Diego County, California

**Designation:** Environmental Assessment

**Abstract**

The United States Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 and other applicable laws. This EA analyzes the potential environmental impacts resulting from the construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base Camp Pendleton, California.

Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar PV system. The partner would sell the generated power to regional customers and/or the Navy. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. The EA analyzes three action alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative. This EA includes a detailed analysis of the Proposed Action’s potential environmental consequences on the following resources: biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities.

**Prepared By:** United States Department of the Navy

**Point of Contact:** **Department of the Navy**  
Naval Facilities Engineering Command Southwest  
Attn: Ryan Maynard, Code EV21.RM  
1220 Pacific Highway  
San Diego, California 92132-5190

**November 2015**

**DEPARTMENT OF DEFENSE  
UNITED STATES MARINE CORPS**

**FINDING OF NO SIGNIFICANT IMPACT**

**FOR CONSTRUCTION, OPERATION, AND DECOMMISSIONING  
OF A SOLAR PHOTOVOLTAIC SYSTEM AT  
MARINE CORPS BASE, CAMP PENDLETON, SAN DIEGO COUNTY, CALIFORNIA**

Pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321-4370h); the Council on Environmental Quality Regulations implementing procedural provisions of NEPA (40 C.F.R. Parts 1500-1508); and the Marine Corps Environmental Compliance and Protection Manual (Marine Corps Order P5090.2A), the United States Marine Corps (USMC) gives notice that an Environmental Assessment (EA) was prepared and an Environmental Impact Statement (EIS) will not be prepared for the construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base, Camp Pendleton (MCB CamPen) California. I find that the Selected Alternative, including adherence to the impact avoidance/minimization measures set forth in detail in the EA, will not have an adverse impact on the human environment. Therefore, an EIS is not required.

**Proposed Action:** The Navy and a private partner will enter into an agreement to allow the private partner to use Navy-owned land at MCB CamPen to construct, operate, and own a solar PV system. The partner will sell the generated power to regional customers including the Navy/USMC. The private partner will be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. At the end of the agreement, the solar PV system will be decommissioned and the site returned to its pre-project condition.

**Purpose and Need:** The purpose of the Proposed Action is to increase Navy and USMC installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy/USMC installations by the construction and operation of a solar PV system at MCB CamPen. The Proposed Action is required to meet the renewable energy standards put forth by the 1 Gigawatt Initiative and Secretary of the Navy Energy Goals.

**Alternatives Analyzed:** The EA analyzes the potential effects of three action alternatives and the No Action relative to the Proposed Action:

- Alternative 1 (Preferred Alternative) up to 28 megawatts (MW) at Sites A and B, for 37 years (Model 2) on 194 acres (79 hectares [ha]);
- Alternative 2 up to 31 MW at Sites A, B, C, and D (either 37 years [Model 2] or 27 years [Model 3]) on 214 acres (87 ha);
- Alternative 3 up to 39 MW at Sites A, B, C, D, and E (either 37 years [Model 2] or 27 years [Model 3]) on 271 acres (110 ha); or
- No Action.

Other alternatives considered but not carried forward for full analysis for reasons set forth in the above referenced EA, include different renewable energy options (e.g., wind, biomass, tidal, geothermal) or a potential solar PV system site at Naval Weapons Station Seal Beach Detachment Fallbrook, which is adjacent to MCB CamPen.

Each of the three action alternatives would be implemented on a relatively flat, vacant land in the southwestern portion of MCB CamPen, between the Stuart Mesa Military Family Housing area and Interstate 5. One of the action alternatives (Alternative 3) also includes Site E, a vacant 57-acre site located immediately south of Vandegrift Boulevard and north of Rattlesnake Canyon Road. The No Action Alternative would have no effect on environmental resources, but would not fulfill the purpose of and need for the Proposed Action.

**Selected Alternative:** Based upon the analysis in the EA, I have selected Alternative 1 for implementation.

**Summary of Environmental Effects:** The EA analyzes the potential environmental impacts resulting from each of the action alternatives. The resources most likely to be affected by this action are biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities. Conversely, impacts to the following resources were considered to be negligible or non-existent and were not further analyzed in the EA: geological resources, noise, transportation, environmental justice, and safety and security.

The Selected Alternative will have negligible direct, indirect, or cumulative impacts on the quality of the local environment and will comply with all regulatory requirements. With incorporation of the impact avoidance/minimization measures, impacts to all resources will be less than significant with the Selected Alternative. Air quality impacts from the Selected Alternative will not exceed any conformity de minimis threshold for the San Diego Air Basin. A Record of Non-Applicability for Clean Air Act General Conformity requirements has been prepared and approved for this project. There are no significant cumulative effects associated with this project.

**Findings:** There will not be any disproportionately high and adverse human health or environmental effects from the Selected Alternative on minority or low-income populations. Nor will there be any impacts associated with the protection of children from environmental health and safety risks.

The EA and the Finding of No Significant Impact addressing this action are on file and may be reviewed at the place of origin: Commanding General, Attn: Director, Environmental Security, MCIWEST-MCB CAMPEN, Box 555008, Camp Pendleton, California 92055-5008, telephone (760) 725-4512.



Edward D. Banta  
Brigadier General, U.S. Marine Corps  
Commanding General  
Marine Corps Installations West-Marine Corps Base, Camp Pendleton

13 DEC 2015

Date

---

## EXECUTIVE SUMMARY

---

The United States Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 and other applicable laws. This EA presents an analysis of the potential environmental consequences of a Proposed Action pertaining to the construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base (MCB) Camp Pendleton, California.

This EA will assist Navy officials in making a decision about whether or not to implement the Proposed Action or another alternative. This document will also help determine whether significant impacts would occur as a result of implementation of the Proposed Action and alternatives, and therefore, whether an Environmental Impact Statement is needed. The Navy has developed three action alternatives: Alternative 1: Construction, Operation, and Decommissioning of an up to 28 megawatt (MW) Solar PV System at Sites A and B; Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C, and D; and Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E.

The purpose of the Proposed Action is to increase Navy installation energy security, operational capability, strategic flexibility and resource availability through the development of renewable energy generating assets at Navy installations by the construction and operation of a solar PV system at MCB Camp Pendleton. The Proposed Action is required to meet the renewable energy standards put forth by the 1 Gigawatt (GW) Initiative and Secretary of the Navy's (SECNAV) Energy Goals.

The screening factors used to develop the reasonable range of alternatives include the following: (1) must not interfere with installation mission activities and operations or create unsafe conditions; (2) should contribute to the SECNAV's goal of obtaining 1 GW of renewable energy by the end of 2020 by providing a sufficiently sized parcel (or parcels) of land for solar PV system placement; and, (3) should provide a location and/or design capable of providing electricity at or below the current cost of traditional power.

Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar PV system. The partner would sell the generated power to regional customers and/or the Navy. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. At the end of the agreement, the solar PV system would be decommissioned and the site returned to its pre-project condition.

The following resource areas were evaluated for potential environmental consequences: biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities. Table ES-1 summarizes the potential environmental consequences, as well as avoidance/minimization measures associated with implementation of Alternative 1, Alternative 2, Alternative 3, and the No-Action Alternative. As shown in Table ES-1, no significant impacts to any resource area would occur with implementation of Alternatives 1 and 2. A potentially significant impact could occur to hazardous materials and waste for Alternative 3 without prior closure of an inactive pistol range at Site E.

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<b>Biological</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and DCSS, which are suitable habitat for the least Bell’s vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell’s vireo or the coastal California gnatcatcher. Moreover, the avoidance/minimization measures would be implemented to lessen potential impacts to biological resources.</p>	<p><u>No Significant Impact</u> Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat, which is suitable habitat for the least Bell’s vireo, is adjacent to, but not located within, the construction footprint. A small area (1.0 acre [0.4 ha]) of DCSS, which is suitable habitat for the coastal California gnatcatcher, is located within the transmission corridors. As such, implementation of Alternative 2 would not affect the least Bell’s vireo and may affect, but is not likely to adversely affect, the coastal California gnatcatcher. The avoidance/minimization measures would be implemented to lessen potential impacts to biological resources. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.</p>	<p><u>No Significant Impact</u> Construction of the proposed project at Sites A-D would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Site E provides greater value than the Stuart Mesa sites, particularly for DCSS and the coastal California gnatcatcher. Riparian habitat, which is suitable habitat for the least Bell’s vireo, is adjacent to, but not located within, the construction footprint of Sites A-D. Depending on the final plan of development, the implementation of Alternative 3 could result in the loss of up to 11.5 acres (4.7 ha) of DCSS that is suitable habitat for the coastal California gnatcatcher at Site E. As such, construction of the proposed project would not affect the least Bell’s vireo but would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
			mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.	
<i>Avoidance/Minimization Measures</i>	<p><b>Construction</b></p> <ul style="list-style-type: none"> <li>• <b>BR-1.</b> To further minimize potential impacts, no trees, including eucalyptus, would be removed for construction of the solar PV sites.</li> <li>• <b>BR-2.</b> To avoid impacts to all nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements.</li> <li>• The following avoidance/minimization measures would be implemented to specifically avoid or minimize impacts to the coastal California gnatcatcher and the least Bell’s vireo:               <ul style="list-style-type: none"> <li>○ <b>BR-3.</b> A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the coastal California gnatcatcher and the least Bell’s vireo, respectively. Surveys would be performed by a qualified ornithologist familiar with the coastal California gnatcatcher and the least Bell’s vireo (i.e., at least one field season and 40</li> </ul> </li> </ul>	<p>Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>BR-7.</b> DCSS would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). DCSS that cannot be avoided would be restored onsite or mitigated off-site.</li> <li>• <b>BR-8.</b> A live-trapping survey of both transmission line corridors for the Pacific pocket mouse would be performed in the portions of each corridor exhibiting the most suitable Pacific pocket mouse habitat. Survey results would confirm the presence or absence of the Pacific pocket mouse and would be shared with the USFWS during subsequent consultation. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted.</li> </ul>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>BR-9.</b> It is expected that additional avoidance and minimization measures would be identified during formal consultation with the USFWS if Alternative 3 were to be selected.</li> </ul>	No measures identified.

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<p>hours of experience with each species).                      Three pre-activity surveys for active coastal California gnatcatcher and least Bell’s vireo nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other on-going surveys to minimize disturbance to nesting coastal California gnatcatchers and least Bell’s vireos and to avoid redundant survey effort.</p> <ul style="list-style-type: none"> <li>o <b>BR-4.</b> Construction activities during the nesting season within 500 feet (152 meters) of occupied coastal California gnatcatcher or least Bell’s vireo habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if coastal California gnatcatcher and least Bell’s vireo nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Fish and Wildlife Office would be notified of the location of the nest. Additionally, a 250-foot (76-meters) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season. <p><b>Operation</b></p> <ul style="list-style-type: none"> <li>• <b>BR-5.</b> To assess any potential impacts the solar PV system might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species</li> </ul> </li> </ul>			

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<p>would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations.</p> <ul style="list-style-type: none"> <li>• <b>BR-6.</b> Maintenance personnel would be trained to identify coastal California gnatcatchers and least Bell’s vireos and would report any observations of dead or injured California gnatcatchers and least Bell’s vireos to Environmental Security within 48 hours.</li> </ul>			
<b>Hazardous Materials and Waste</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. Site A hosts no open remediation sites; however, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by RWQCB.</p>	<p><u>No Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance.</p>	<p><u>Potential Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance. Inactive Range 404 (at Site E) requires remediation and closure. Without remediation and closure, potential significant impact could occur. Supplemental NEPA would be needed to incorporate the closure.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>HW-1.</b> Construction BMPs and SWMP would be required.</li> <li>• <b>HW-2.</b> The SWPPP at Site A is currently undergoing a closure action and confirmation of closure should be requested prior to any ground disturbance.</li> </ul>	<p>Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>HW-3.</b> Wait for closure of IR Site 1120 at Site D.</li> </ul>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>HW-4.</b> Remediate and close inactive Range 404 at Site E.</li> </ul>	<p>No measures identified.</p>

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<b>Water</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. New facilities on MCB Camp Pendleton would incorporate the concept of Low Impact Development (LID). All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base source.</p>	<p><u>No Significant Impact</u> Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.</p>	<p><u>No Significant Impact</u> Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 3. All activities associated with Alternative 3 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>WR-1.</b> The project would obtain coverage under the California Construction General Permit.</li> <li>• <b>WR-2.</b> A SWPPP that would include standard erosion control measures to reduce potential impacts resulting from erosion would be prepared. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. The standard erosion control measures as identified in the SWPPP would be utilized to reduce erosion during grading and construction activities.</li> <li>• <b>WR-3.</b> Projects on MCB Camp Pendleton with a footprint of 5,000 square feet or greater would implement Low Impact Development (LID) features in accordance with the <i>Department of Defense Unified Facilities Criteria Low Impact</i></li> </ul>	Same as Alternative 1.	Same as Alternative 1.	No measures identified.

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<p><i>Development</i> (Unified Facilities Criteria [UFC] 3-210-10) (2010) and Section 438 of the Energy Independence and Security Act (2007). A comprehensive set of stormwater planning, design, and construction elements would be used to maintain or restore predevelopment hydrology of the site with regard to volume, rate, and duration of flow, pollutant loading, and temperature for the 95<sup>th</sup> percentile, 24-hour storm. LID strategies are described in detail in UFC 3-210-10, Chapter 2. These strategies address the long-term post construction (operational) phase where ensuring water quality benefits are provided by low impact design, source controls, and treatment controls.</p>			
<b>Air Quality</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor, short-term emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.</p>	<p><u>No Significant Impact</u> Same as Alternative 1.</p>	<p><u>No Significant Impact</u> Same as Alternative 1.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>AQ-1.</b> Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment.</li> <li>• <b>AQ-2.</b> Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions.</li> </ul>	<p>Same as Alternative 1.</p>	<p>Same as Alternative 1.</p>	<p>No measures identified.</p>

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<ul style="list-style-type: none"> <li>• <b>AQ-3.</b> After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).</li> </ul>			
<b>Land Use and Military Operations</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Temporary change in land use from agricultural to renewable energy. The construction, operation, and decommissioning of the solar PV system on Sites A and B would be inconsistent with the Master Plan. Also, portions of Site A encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee. MCB Camp Pendleton is exempt from the Farmland Protection Policy Act, as the land would be used for national defense purposes.</p>	<p><u>No Significant Impact</u> Potential impacts would be similar to those described for Alternative 1. Portions of Site A and the entirety of Site C encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee.</p>	<p><u>No significant impact</u> Potential impacts would be similar to those described for Alternative 1. Alternative 3 would be inconsistent with planned future land uses. The proposed solar PV system would encroach into the Oscar One Training Area (Sites A and C) and maneuver area (Site E); the expansions would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>LU-1.</b> The MCB Camp Pendleton Master Plan would need to be amended during the next amendment cycle to alter the land use within the project area.</li> </ul>	Same as Alternative 1.	Same as Alternative 1.	No measures identified.
<b>Cultural</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> The area has been previously surveyed for cultural resources. Site B would fall under the Programmatic Agreement (PA) signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one archaeological site (CA-SDI-17912) previously determined ineligible with SHPO concurrence that would not fall under the PA.</p>	<p><u>No Significant Impact</u> The area has been previously surveyed for cultural resources. Sites B and D would fall under the PA signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one ineligible archaeological site (CA-SDI-17912) and Site C has an archaeological site that is ineligible for NRHP listing (CA-SDI-12572). Sites A and C would not fall under the PA.</p>	<p><u>No Significant Impact</u> Same as Alternative 2.  Site E has been previously surveyed for cultural resources, none were found, and therefore Site E would fall under the PA.  For Sites B, D, and E, Camp Pendleton Streamlined Section 106 Programmatic Agreement could be used to complete the Section 106 process.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<i>Avoidance/ Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>CR-1.</b> All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site (CA-SDI-17912) within the APE in Site A would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner.</li> <li>• <b>CR-2.</b> A monitoring and discovery plan would be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations.</li> <li>• <b>CR-3.</b> A report detailing the monitoring results would be provided to SHPO at the conclusion of excavations.</li> </ul>	<p>Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>CR-4.</b> All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site CA-SDI-1572) within the APE in Site C would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which would be funded by the private partner.</li> </ul>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 2.</p>	<p>No measures identified.</p>
<b>Visual</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.</p>	<p><u>No Significant Impact</u> Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.</p>	<p><u>No Significant Impact</u> Construction and operational visual impacts would largely be the same as those described under Alternative 2, including the addition of Site E.</p>	<p><u>No Impact</u> The existing visual environment would not change from current conditions.</p>
<i>Avoidance/ Minimization Measures</i>	<p>No measures identified.</p>	<p>No measures identified.</p>	<p>No measures identified.</p>	<p>No measures identified.</p>

**Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<b>Utilities</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Potential for temporary and localized power disruption when solar PV system comes on-line. Would support achievement of Navy’s renewable energy goals and strategies. Under the Model 2 acquisition strategy, there would be an increase in regional power supply. Existing infrastructure would be sufficient to support the solar PV system. A sewer line may be present at Site A.</p>	<p><u>No Significant Impact</u> Potential impacts would be similar to those described for Alternative 1. Under the Model 2 and combination Models 2 and 3 strategies, there would be an increase in regional power supply. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton.</p>	<p><u>No Significant Impact</u> Potential impacts would be the same as those described for Alternative 2.  A 12-inch (30.5-cm) diameter polyvinyl chloride natural gas main transects the southwestern corner of Site E.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>UT-1.</b> A utility investigation and survey would be conducted to determine presence, and obtain the exact depth and location of the sewer line on Site A for conflict avoidance.</li> </ul>	<p>Same as Alternative 1.</p>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>UT-2.</b> A utility investigation and survey would be conducted to obtain the exact depth and location of the natural gas line on Site E for conflict avoidance.</li> </ul>	<p>No measures identified.</p>

Notes: APE = area of potential effects; AQ = Air Quality; BMPs = Best Management Practices; BR = Biological Resources; CR = Cultural Resources; DCSS = Diegan coastal sage scrub; GHG = Greenhouse Gas; I = Interstate; IR = Installation Restoration; LU = Land Use and Military Operations; NEPA = National Environmental Policy Act; PA= Programmatic Agreement; POLs = petroleum, oils, lubricants; SHPO = State Historic Preservation Office; SWPPP = Stormwater Pollution Prevention Plan; SWMP = Solid Waste Management Plan; RWQCB = Regional Water Quality Control Board; U.S. = United States; USFWS = U.S. Fish and Wildlife Service; UT = Utilities; WR = Water Resources.

**Final  
Environmental Assessment  
Construction, Operation, and Decommissioning of a Solar Photovoltaic System at  
Marine Corps Base Camp Pendleton, California**

**Table of Contents**

**ABSTRACT.....Inside Front Cover**

**EXECUTIVE SUMMARY ..... ES-1**

**CHAPTER 1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION..... 1-1**

**1.1 INTRODUCTION/BACKGROUND.....1-1**

        1.1.1 Secretary of the Navy Renewable Energy Goals and Strategies ..... 1-1

        1.1.2 Solar PV System..... 1-3

**1.2 PROJECT LOCATION.....1-4**

        1.2.1 History and Mission of MCB Camp Pendleton..... 1-4

        1.2.2 Potential Solar PV Sites ..... 1-4

**1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION .....1-4**

**1.4 DECISION TO BE MADE.....1-7**

**1.5 SCOPE OF ANALYSIS .....1-7**

        1.5.1 Previous Studies ..... 1-7

        1.5.2 Resource Areas..... 1-7

**1.6 INTERGOVERNMENTAL COORDINATION .....1-9**

        1.6.1 Agency Consultation ..... 1-9

        1.6.2 Summary of Relevant Federal Requirements..... 1-10

**1.7 PUBLIC AGENCY PARTICIPATION.....1-10**

**CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES .....2-1**

**2.1 REASONABLE ALTERNATIVE SCREENING FACTORS.....2-1**

**2.2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES .....2-1**

        2.2.1 Proposed Action .....2-1

        2.2.2 Alternative 1: Construction, Operation, and Decommissioning  
of an up to 28 MW Solar PV System at Sites A and B  
(Preferred Alternative) .....2-1

        2.2.3 Alternative 2: Construction, Operation, and Decommissioning  
of an up to 31 MW Solar PV System at Sites A, B, C, and D.....2-5

        2.2.4 Alternative 3: Construction, Operation, and Decommissioning  
of an up to 39 MW PV System at Sites A, B, C, D, and E.....2-8

        2.2.5 No-Action Alternative.....2-8

**2.3 COMPARISON OF ACTION ALTERNATIVES.....2-10**

**2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED  
ANALYSIS .....2-10**

2.4.1 Other Renewable Energy Sources .....2-10

2.4.2 Fallbrook Site .....2-10

**CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....3-1**

**3.1 BIOLOGICAL RESOURCES .....3-11**

3.1.1 Definition of Resource .....3-11

3.1.2 Affected Environment .....3-11

3.1.3 Environmental Consequences .....3-21

**3.2 HAZARDOUS MATERIALS AND WASTE (HAZMAT/HAZWASTE) .....3-28**

3.2.1 Definition of Resource .....3-28

3.2.2 Affected Environment .....3-30

3.2.3 Environmental Consequences .....3-35

**3.3 WATER RESOURCES .....3-40**

3.3.1 Definition of Resource .....3-40

3.3.2 Affected Environment .....3-41

3.3.3 Environmental Consequences .....3-45

**3.4 AIR QUALITY .....3-48**

3.4.1 Definition of Resource .....3-48

3.4.2 Affected Environment .....3-48

3.4.3 Environmental Consequences .....3-53

**3.5 LAND USE AND MILITARY OPERATIONS.....3-57**

3.5.1 Definition of Resource .....3-57

3.5.2 Affected Environment .....3-58

3.5.3 Environmental Consequences .....3-61

**3.6 CULTURAL RESOURCES .....3-65**

3.6.1 Definition of Resource .....3-65

3.6.2 Affected Environment .....3-66

3.6.3 Environmental Consequences .....3-68

**3.7 VISUAL RESOURCES .....3-71**

3.7.1 Definition of Resource .....3-71

3.7.2 Affected Environment .....3-72

3.7.3 Environmental Consequences .....3-75

**3.8 UTILITIES .....3-78**

3.8.1 Definition of Resource .....3-78

3.8.2 Affected Environment .....3-79

3.8.3 Environmental Consequences .....3-80

**CHAPTER 4 CUMULATIVE IMPACT ANALYSIS .....4-1**

**4.1 INTRODUCTION .....4-1**

**4.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS .....4-1**

4.2.1 Past Actions.....4-1

4.2.2 Present Actions.....4-4

4.2.3 Future Actions .....4-5

**4.3 METHODOLOGY .....4-6**

4.3.1 Geographic Scope of the Cumulative Effects .....4-6

4.3.2 Time Frame of the Cumulative Effects Analysis .....4-6

**4.4 CUMULATIVE IMPACT ANALYSIS .....4-7**

4.4.1 Biological Resources.....4-7

4.4.2 Hazardous Materials and Waste .....4-7

4.4.3 Water Resources.....4-8

4.4.4 Air Quality.....4-8

4.4.5 Land Use and Military Operations .....4-10

4.4.6 Cultural Resources .....4-11

4.4.7 Visual Resources .....4-11

4.4.8 Utilities .....4-11

**CHAPTER 5 OTHER NEPA CONSIDERATIONS .....5-1**

**5.1 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS.....5-1**

**5.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES CONSIDERED .....5-1**

**5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES .....5-2**

**5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY .....5-3**

**5.5 ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION .....5-3**

**CHAPTER 6 LIST OF AGENCIES AND PERSONS CONTACTED .....6-1**

**CHAPTER 7 LIST OF PREPARERS .....7-1**

**CHAPTER 8 REFERENCES .....8-1**

**APPENDICES**

**APPENDIX A AGENCY CORRESPONDENCE**

**APPENDIX B PUBLIC PARTICIPATION**

**APPENDIX C RECORD OF NON-APPLICABILITY AND AIR QUALITY CALCULATIONS**

**List of Photos**

<b><u>Photo</u></b>	<b><u>Page</u></b>
1 Existing Solar PV System at MCB Camp Pendleton.....	1-3
3.7-1 South side of Site A, looking north.....	3-72
3.7-2 North side of Site B, looking west.....	3-72
3.7-3 East side of Site C, looking west.....	3-73
3.7-4 Looking north-west toward Site A.....	3-74
3.7-5 Site E, looking north.....	3-74
3.7-6 South side of Site E, looking northeast.....	3-75
3.7-7 A representative image of a solar PV system in a developed area.....	3-76

**List of Figures**

<b><u>Figure</u></b>	<b><u>Page</u></b>
1-1 Renewable Energy Models.....	1-2
1-2 Regional Location of MCB Camp Pendleton.....	1-5
1-3 Potential Solar PV Sites at MCB Camp Pendleton.....	1-6
2-1 Alternative 1: Up to 28 Megawatts at Sites A and B.....	2-3
2-2 Alternative 2: Up to 31 Megawatts at Sites A, B, C, and D.....	2-7
2-3 Alternative 3: Up to 39 Megawatts at Sites A, B, C, D and E.....	2-9
3.1-1 Biological Resources in the Vicinity of Sites A and C.....	3-12
3.1-2 Biological Resources in the Vicinity of Sites B and D.....	3-13
3.1-3 Biological Resources in the Vicinity of Site E.....	3-14
3.2-1 Hazardous Waste Sites in the Vicinity of Sites A, B, C, and D.....	3-32
3.2-2 Hazardous Waste Sites in the Vicinity of Site E.....	3-34
3.3-1 Watersheds in the Vicinity of the Project Areas.....	3-42
3.3-2 Water Resources in the Vicinity of the Potential Solar PV Sites.....	3-44
3.5-1 Land Use in the Vicinity of Sites A, B, C, and D.....	3-59
3.5-2 Land Use in the Vicinity of Site E.....	3-62
3.8-1 Electric Transmission Lines in the Vicinity of Sites A, B, C, and D.....	3-81
3.8-2 Electric Transmission Lines in the Vicinity of Site E.....	3-84
4-1 Cumulative Project Locations.....	4-2

**List of Tables**

<b><u>Table</u></b>	<b><u>Page</u></b>
ES-1 Summary and Potential Impacts and Avoidance/Minimization Measures .....	ES-2
1-1 Potential Solar PV Development Sites and Generating Potential .....	1-4
1-2 Anticipated Permits and Consultation for the Proposed Action .....	1-9
2-1 Summary and Comparison of Alternatives .....	2-10
3-1 Summary and Potential Impacts and Avoidance/Minimization Measures .....	3-2
3.1-1 Plant Communities in the Project Area.....	3-11
3.1-2 ESA Listed Species With the Potential to Occur in or in the Vicinity of the Project Area.....	3-17
3.1-3 Suitable Habitat within or Adjacent to the Project Area.....	3-19
3.4-1 National and California Ambient Air Quality Standards .....	3-50
3.4-2 Applicable Criteria Pollutant <i>de minimis</i> Levels (tons/year) .....	3-51
3.4-3 Representative Air Quality Data for MCB Camp Pendleton (2009-2013).....	3-53
3.4-4 Alternative 1 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity .....	3-54
3.4-5 Alternative 3 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity .....	3-56
4.4-1 Estimated Annual GHG Emissions – Alternative 1 .....	4-9
4.4-2 Estimated Annual GHG Emissions – Alternative 3 .....	4-10
5-1 Summary of Applicable Environmental Regulations and Regulatory Compliance.....	5-1

**Acronyms and Abbreviations**

AAV	Assault Amphibious Vehicle	FPPA	Farmland Protection Policy Act
AC	alternating current	FPUD	Fallbrook Public Utility District
AC/S	Assistant Chief of Staff	FUDS	Formerly Used Defense Site(s)
AGR	Agriculture	FY	fiscal year
APE	area of potential effects		
		G/ATOR	Ground/Air Task Oriented Radar
BMP	best management practices	GHG	greenhouse gas
B.P.	Before Present	GIS	geographic information system
		GW	gigawatt
CA	California	GWP	global warming potential
CAA	Clean Air Act		
CAAQS	California Ambient Air Quality Standards	ha	hectare
CAISO	California Independent System Operator	HAP	hazardous air pollutant
CARB	California Air Resources Board	HAZMAT	Hazardous Materials
CCND	Coastal Consistency Non-Determination	HAZWASTE	Hazardous Waste
CDFW	California Department of Fish and Wildlife	HWMP	Hazardous Waste Management Plan
CEQ	Council on Environmental Quality	I	Interstate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	INPR	Inventory Project Report
		IR	Installation Restoration
CFR	Code of Federal Regulations	IRP	Installation Restoration Program
CH <sub>4</sub>	methane		
cm	centimeter(s)	km	kilometer
CO	carbon monoxide	kV	kilovolt
CO <sub>2</sub>	carbon dioxide		
CO <sub>2</sub> e	carbon dioxide equivalent	LID	Low Impact Development
CPUC	California Public Utilities Commission	LUST	Leaking Underground Storage Tank
CSS	Combat Services Support		
CWA	Clean Water Act	MARSOC	Marine Corps Special Operations Command
CWRCB	California Water Resources Control Board	MCAS	Marine Corps Air Station
		MCB	Marine Corps Base
DC	direct current	MCIWEST-MCB CAMPENO	Marine Corps Installations West- MCB Camp Pendleton Order
DCSS	Diegan coastal sage scrub	MCTSSA	Marine Corps Tactical Systems Support Activity
DERP	Defense Environmental Restoration Program	MRP	Munitions Response Plan
DEV	Urban/developed	MW	megawatt
DIST	Disturbed		
DoD	Department of Defense		
DTSC	Department of Toxic Substances Control		
		EA	Environmental Assessment
EA	Environmental Assessment	ECMS	Communications/Electrical Maintenance Shop
ECMS	Communications/Electrical Maintenance Shop	EIS	Environmental Impact Statement
		EO	Executive Order
EIS	Environmental Impact Statement	ESA	Endangered Species Act
EO	Executive Order	ESQD	Explosive Safety Quantity Distance
ESA	Endangered Species Act	EUC	Eucalyptus woodland
ESQD	Explosive Safety Quantity Distance		
EUC	Eucalyptus woodland	°F	degrees Fahrenheit
		FAA	Federal Aviation Administration
°F	degrees Fahrenheit	FFA	Federal Facilities Agreement
FAA	Federal Aviation Administration	FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FFA	Federal Facilities Agreement	FONSI	Finding of No Significant Impact
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act		
FONSI	Finding of No Significant Impact		

O <sub>3</sub>	ozone	SMR	Santa Margarita River
		SO <sub>2</sub>	sulfur dioxide
PA	Programmatic Agreement	SOP	Standard Operating Procedures
PM <sub>2.5</sub>	suspended particulate matter less than or equal to 2.5 microns in diameter	SWMP	Solid Waste Management Plan
		SWPPP	Stormwater Pollution Prevention Plan
PM <sub>10</sub>	suspended particulate matter less than or equal to 10 microns in diameter	SWRCB	State Water Resources Control Board
POLs	petroleum, oils, lubricants	TDS	total dissolved solids
ppm	parts per million	TSS	total suspended solids
PPV	public private venture		
PV	photovoltaic	µg/m <sup>3</sup>	micrograms per cubic meter
		UFC	Unified Facilities Criteria
ROD	Record of Decision	U.S.	United States
ROI	region of influence	USACE	U.S. Army Corps of Engineers
RWQCB	Regional Water Quality Control Board	USC	U.S. Code
		USEPA	U.S. Environmental Protection Agency
SDAB	San Diego Air Basin	USFWS	U.S. Fish and Wildlife Service
SDCAPCD	San Diego County Air Pollution Control District	USMC	U.S. Marine Corps
		UST	underground storage tank
SDG&E	San Diego Gas & Electric		
SECNAV	Secretary of the Navy	VNG	Valley needlegrass grassland
SHPO	State Historic Preservation Office	VOC	volatile organic compounds
SIP	State Implementation Plan	VORTAC	Very High Frequency Omni-directional Range Tactical Aircraft Control
SMEAF	Stuart Mesa East Agricultural Fields		

# CHAPTER 1

## PURPOSE OF AND NEED FOR THE PROPOSED ACTION

---

### 1.1 INTRODUCTION/BACKGROUND

The United States (U.S.) Department of the Navy (Navy) and the U.S. Marine Corps (USMC) have prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 and other applicable laws. This EA analyzes the potential environmental impacts resulting from the construction, operation, and decommissioning of a proposed solar photovoltaic (PV) system at Marine Corps Base (MCB) Camp Pendleton, California (CA). This project is one of several renewable energy projects the Navy is currently evaluating within the Renewable Energy Program Office's southwest area of responsibility. Marine Corps Installations Command is the action proponent for this project.

#### 1.1.1 Secretary of the Navy Renewable Energy Goals and Strategies

##### 1.1.1.1 Goals

In October 2009, the Secretary of the Navy (SECNAV) established renewable energy goals for the Navy's shore based installations to meet by 2020. These goals include:

- The Navy will produce or procure at least 50 percent of the total quantity of electric energy consumed by shore-based facilities and activities each fiscal year (FY) from alternative energy sources;
- Fifty percent of Navy installations will be net zero (i.e., over the course of a FY, an installation matches or exceeds the electrical energy it consumes ashore with electrical energy generated from alternative energy sources) (Navy 2012).

##### 1.1.1.2 Strategies

The Navy's energy strategy is centered on energy efficiency, energy security, and sustainability while remaining the pre-eminent maritime power:

Energy efficiency increases mission effectiveness. Efficiency improvements minimize operational risks while saving time, money, and lives.

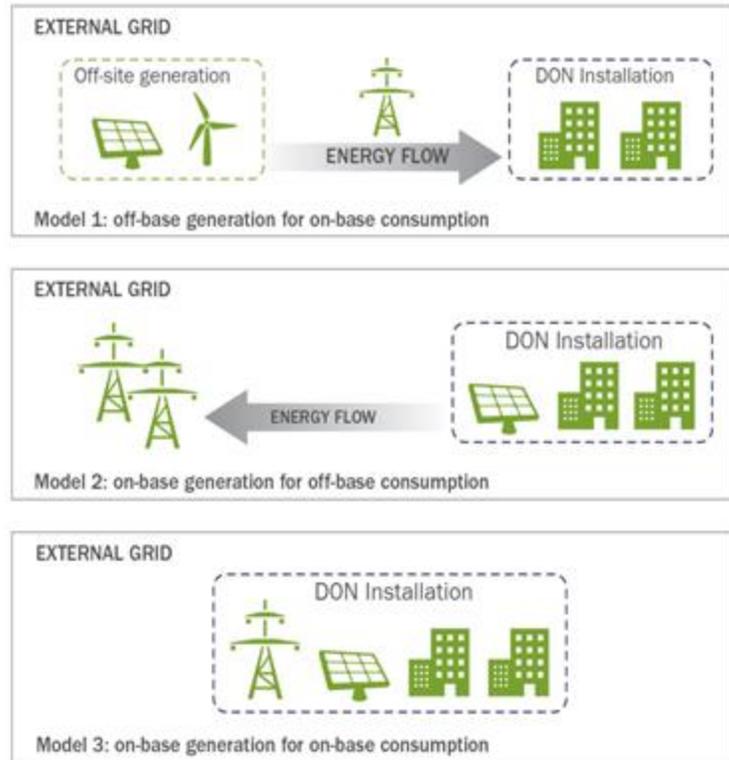
Energy security is critical to mission success. Energy security safeguards our energy infrastructure and shields the Navy from a volatile energy supply.

Sustainable energy efforts protect mission capabilities. Investment in environmentally responsible technologies reduces greenhouse gas (GHG) emissions and lessens dependence on fossil fuels (Navy 2014).

The SECNAV has established a goal for the Navy to develop one gigawatt (GW) of renewable energy generating capacity by the year 2020 (Navy 2012). The Navy has developed acquisition strategies based on the following three separate models (Figure 1-1) to procure or generate renewable energy to meet SECNAV's goals:

#### Model 1: Off-base generation for on-base consumption:

- Navy purchases new renewable energy generation for on-base load
- Renewable energy generation provides price stability and diversifies energy portfolio
- Acquisition: Inter-agency Agreement



**Figure 1-1 Renewable Energy Models**

Model 2: On-base generation for off-base consumption:

- Third party produces on Navy property and exports energy to grid (allows for much higher capacity of product vs Model 3)
- Navy to receive energy security via lease terms
- Acquisition: Real estate outgrant

Model 3: On-base generation for on-base consumption:

- Navy consumes all energy generated
- Price stability and diversifies energy portfolio
- Acquisition: Power Purchase Agreement

The Navy proposes to implement either Model 2 or Model 3, or a combination of Models 2 and 3 at MCB Camp Pendleton to support achievement of the SECNAV’s goals. Under Model 2, the Navy and a private partner would enter into a 37-year agreement to allow the private partner to use Navy land to construct, operate, and own the PV system. Once the system is operational, the private partner would sell the power to regional customers. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. Under Model 3, the Navy and a private partner would enter into a 27-year agreement to allow the private partner to use Navy land to generate power for the Navy’s use at MCB Camp Pendleton. Under a combination of Models 2 and 3, the private partner would sell the power to regional customers and MCB Camp Pendleton.

### 1.1.2 Solar PV System

Solar PV technology uses solar cells to convert energy from direct and diffuse solar radiation into electricity. The basic unit in a PV system is a solar cell made up of semiconductor material that absorbs solar radiation and converts it to an electrical current. Solar cells are contained within solar modules that are assembled into solar panels. A series of panels comprises a solar array. Solar PV systems generate direct current (DC) electricity, which is converted to alternating current (AC) for transmission on the electrical grid and ultimate end-use in AC form. The conversion from DC to AC occurs at a power conditioning station that contains inverters. The power is transferred via a transmission line and substation to the nearest point of connection to the utility grid.

Solar PV systems are comprised of hundreds and sometimes thousands of individual solar PV panels. The vast majority of the solar PV market uses Flat Plate PV technology. In this design, the manufacturer arranges the cells on a flat panel, inserts the cells between a transparent encapsulant and a thin backing sheet of polymer, and then tops the cells with a layer of tempered glass that allows light to reach the PV cells. An anti-reflective coating covers this top layer so more light can be absorbed by each cell (Department of Energy 2011). Each panel can be stationary, or track the sun with either single-axis or multi-axis tracking equipment.

Photo 1 presents an existing solar PV system at MCB Camp Pendleton. This solar PV system covers approximately 6 acres (2.4 hectares [ha]) in Box Canyon and provides approximately 1.5 megawatts (MW) of power (MCB Camp Pendleton 2011a). Solar PV energy projects generally require about 8 to 10 acres (3.2 to 4 ha) of total land use to produce 1 MW of power, but can vary depending on the type of PV system, configuration, and solar radiation at individual sites (National Renewable Energy Laboratory [NREL] 2013). Given the relatively high solar radiation values and climate conditions at MCB Camp Pendleton, and the performance of the nearby Box Canyon solar PV system, it is assumed that it would take approximately 7 acres (2.8 ha) to generate 1 MW<sup>1</sup> of power at MCB Camp Pendleton.



**Photo 1. Existing Solar PV System at MCB Camp Pendleton.**

---

<sup>1</sup> The MW unit is not a quantity, but a rate. The electricity is produced at a rate measured in MWs, but the quantity of power produced is measured as a rate multiplied by a time period, usually in hour increments. For example, a 25 MW system could generate power at a rate of 25 MW for 8 hours and thus produce 200 MW hours of power. In our homes, we use/buy power in kilowatt hours (noted as kwh on our power bills) and power companies produce and transmit electricity in terms of MW hours.

**1.2 PROJECT LOCATION**

**1.2.1 History and Mission of MCB Camp Pendleton**

Established in 1942, MCB Camp Pendleton remains the USMC’s largest west coast expeditionary training facility. MCB Camp Pendleton’s principal mission is to operate a training base that promotes the combat readiness of the Operating Forces and the mission of other tenant commands by providing training opportunities, facilities, services and support responsive to the needs of Marines, Sailors and their families.

MCB Camp Pendleton is a 200-square mile (518-square kilometer [km]) area located 40 miles (64 km) north of the city of San Diego, within the northern portion of San Diego County (Figure 1-2). The Orange County line is contiguous with the northwest boundary of MCB Camp Pendleton; Riverside County is north of, but does not abut, the boundary of MCB Camp Pendleton. The city of San Clemente and the Cleveland National Forest border MCB Camp Pendleton to the north and east, with the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook to the east, and the city of Oceanside to the south.

**1.2.2 Potential Solar PV Sites**

The Navy and USMC have determined that up to 272 acres (110 ha) at MCB Camp Pendleton can potentially serve as areas for solar PV systems. The project area consists of the five potential solar PV sites. Four of the sites (Sites A, B, C, and D) and their supporting transmission infrastructure are referred to herein as the Stuart Mesa Sites because they are located on vacant land, formerly used for agricultural purposes, east of Interstate (I)-5 and adjacent to the existing Stuart Mesa Housing complex (Figure 1-3).

The fifth site (Site E), referred to as the 12 Area Site herein, is located in the eastern portion of MCB Camp Pendleton, immediately south of Vandegrift Boulevard and north of Rattlesnake Canyon Road. The site is vacant, with one building in the southeastern portion of the site (Figure 1-3).

Based on the potential power generated by acre as presented in Section 1.1.2, *Solar PV Systems*, Table 1-1 presents the approximate maximum MW power production capability for each site.

**Table 1-1. Potential Solar PV Development Sites and Generating Potential**

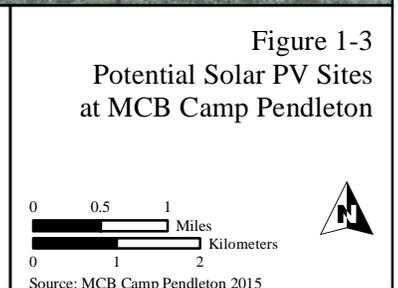
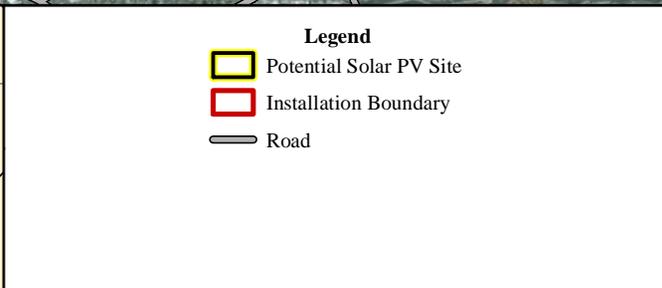
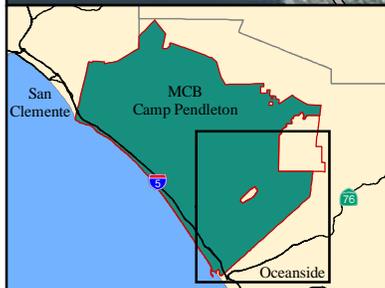
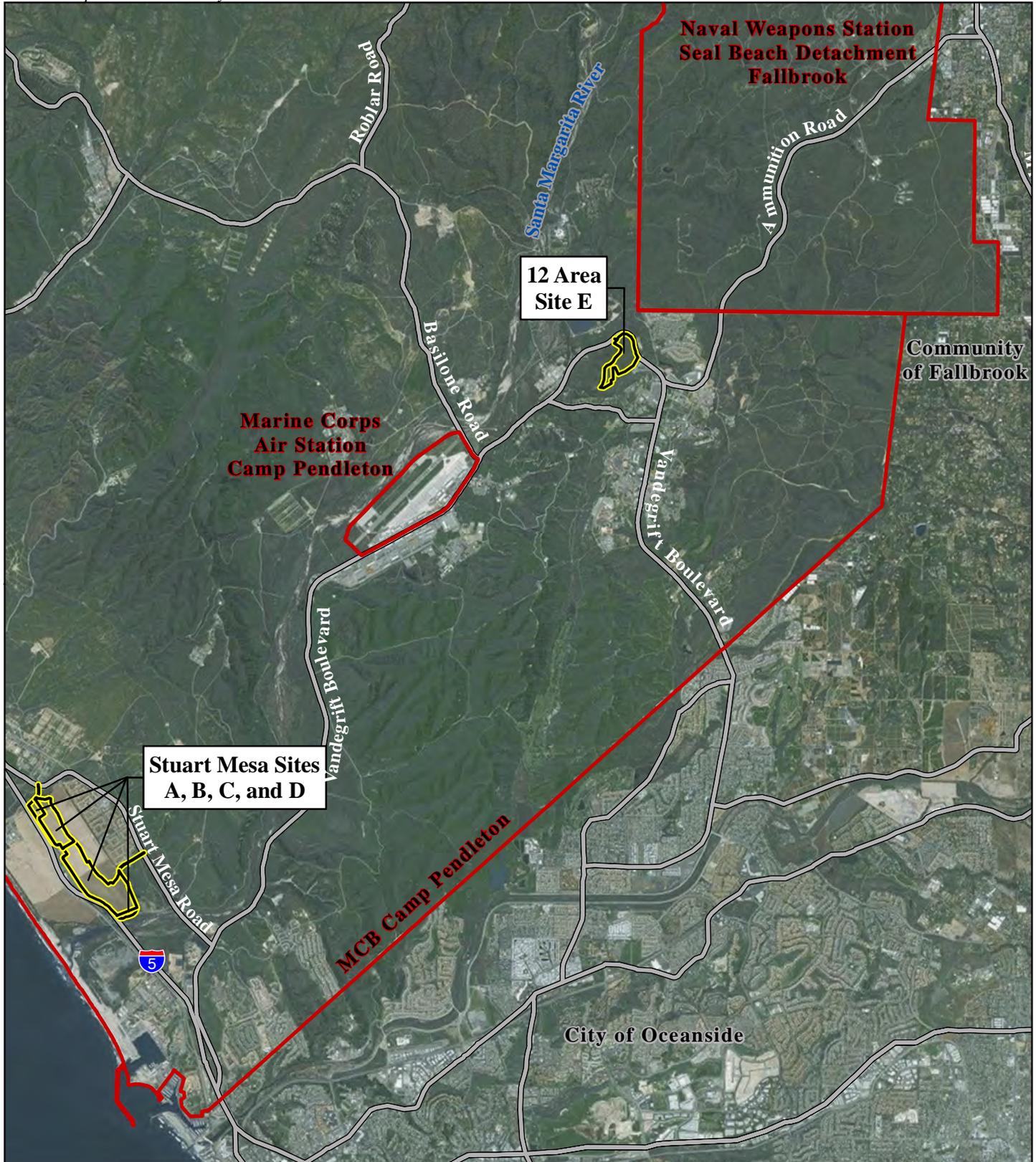
Site	Potential Solar PV Site <i>acres (hectares)</i>	Generating Potential <sup>1</sup> (MW)
Stuart Mesa Site A	139 (56)	20
Stuart Mesa Site B	55 (22)	8
Stuart Mesa Site C	6 (2.4)	1
Stuart Mesa Site D	14 (5.6)	2
12 Area Site E	57 (23)	8

*Note:* <sup>1</sup>Assumes approximately 7 acres (2.8 ha) are needed to generate one MW of power.

**1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION**

The purpose of the Proposed Action is to increase Navy installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy installations by the construction and operation of a solar PV system at MCB Camp Pendleton. The Proposed Action is required to meet the renewable energy standards put forth by the 1 GW Initiative and the SECNAV’s Energy Goals.





The policy requirements for energy security and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the Navy and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning that the Navy would have the option to use any energy produced "on-base" in the event of an area power outage or other circumstances.

## **1.4 DECISION TO BE MADE**

The decision to be made is where to locate the PV system at MCB Camp Pendleton. This EA evaluates the environmental consequences of implementing the alternatives to determine if an Environmental Impact Statement (EIS) needs to be prepared. An EIS will need to be prepared if it is determined that the Proposed Action or other alternative ultimately selected for implementation would have significant impacts to the human or natural environment. Should an EIS be deemed unnecessary based on the effects analysis of the alternative selected for implementation, this selection would be documented in a Finding of No Significant Impact.

## **1.5 SCOPE OF ANALYSIS**

### **1.5.1 Previous Studies**

An Environmental Feasibility Study was prepared (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2014) to determine the environmental viability of siting the PV system at the potential sites. The study evaluated the environmental costs, benefits, and potential environmental risks associated with the construction, operation, and maintenance of a large-scale PV system at two sites on MCB Camp Pendleton and one site at the adjacent Naval Weapons Station Seal Beach Detachment Fallbrook (Fallbrook Site). Potential risks include costs for complying with environmental regulations, including mitigation. This EA has integrated the results of the Environmental Feasibility Study; notably that the Fallbrook Site alternative was eliminated from consideration for renewable energy generation projects.

The NREL prepared a separate study *Solar Opportunity: MCB Camp Pendleton, NWS Fallbrook* (NREL 2014). The NREL study includes an evaluation of the existing utility transmission system and its current capacity to establish the probable points of interconnection.

### **1.5.2 Resource Areas**

#### **1.5.2.1 Resources Analyzed in Detail**

As described and evaluated in Chapter 3, this EA analyzes the following resource areas in detail:

- Biological Resources
- Hazardous Materials and Waste
- Water Resources
- Air Quality
- Land Use and Military Operations
- Cultural Resources
- Visual Resources
- Utilities

### 1.5.2.2 Resources Not Analyzed in Detail

Several other resource areas typically assessed in environmental documents were considered but not carried forward for detailed analysis in this EA. This is because any potential impacts to these resource areas from the action alternatives would be either non-existent or considered negligible at most. The reasons for not analyzing the following resources in detail are presented below:

**Geological Resources.** The topography of the potential solar PV system sites do not pose a constraint or risk to the proposed construction and operations of the solar PV system. No unique geologic features exist on the proposed sites. As the Proposed Action does not include the construction of regularly occupied structures, there would be no potential seismic-related safety concerns. Implementation of the Proposed Action would temporarily disturb soils within the project area, resulting in an increased potential for dust generation and erosion. However, these potential effects would be temporary, minor, and would be reduced through the implementation of the avoidance/minimization measures presented in Table 3-1, *Summary of Potential Impacts and Avoidance/Minimization Measures*. Therefore, impacts to geological resources from the implementation of the alternatives would be negligible.

**Noise.** The Stuart Mesa Sites (A, B, C and D) are located within a currently noisy area due to the proximity of military training, the North County Transit District (NCTD) maintenance yard, railroad tracks, and the I-5 freeway. Sensitive noise receptors in the project vicinity include the Stuart Mesa Housing complex and Stuart Mesa Elementary School. No sensitive noise receptors are located near the 12 Area Site (Site E). Construction noise generated by the Proposed Action would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Therefore, impacts to the noise environment from implementation of the alternatives would be negligible.

**Transportation.** Construction of the Proposed Action would involve a temporary and localized increase in traffic associated with construction worker commuting trips and the transport of construction equipment and materials. Depending on the volume and timing of construction traffic, the project could cause an incremental increase in queues and delays at gates and at intersections lying along the travel route(s). However, traffic associated with construction workers and material deliveries would be temporary, dispersed, and minimal. Operations-related traffic is expected to be light and infrequent, and therefore would not result in a substantial or recurring increase in traffic. Therefore, impacts to transportation from implementation of the alternatives would be negligible.

**Environmental Justice.** Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider human health and environmental conditions in minority and low-income communities. MCB Camp Pendleton is not in or surrounded by a community populated by census-defined minority and low-income populations. The construction and operation of the Proposed Action would not result in a permanent change to population ethnicities or age distributions. There would be no human health or adverse environmental conditions placed upon minority and/or low-income populations from the implementation of the alternatives.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, helps ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children. The Proposed Action would be constructed on government property, where access is controlled. The solar PV system would be fenced and have warning signs surrounding the site to further minimize the possibility of unauthorized access from nearby residents. Standard job site safety measures would be implemented, which include securing equipment, materials, and vehicles, as well as neutralizing potential safety hazards, should unauthorized persons visit the site during non-working hours. Therefore,

there would be no disproportionate impact to the health and safety of children from the implementation of the alternatives.

**Safety and Security.** As the Proposed Action would be located on an active military installation, homeland security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism; natural disasters, and disease outbreaks. Unified Facilities Criteria (UFC) 4-020-01, *DoD Security Engineering Facilities Planning Manual*, would guide planning, design, and construction criteria related to antiterrorism and force protection for the Proposed Action, including setbacks from nearby easements. The solar PV system would not represent critical infrastructure or utility equipment for performing MCB Camp Pendleton’s mission should the solar PV system withdraw power distribution. The solar PV system would be fenced and have warning signs surrounding the site to minimize the possibility of unauthorized access from nearby residents. Standard job site safety measures would be implemented. Therefore, impacts to safety and security from implementation of the alternatives would be negligible.

**1.6 INTERGOVERNMENTAL COORDINATION**

**1.6.1 Agency Consultation**

Table 1-2 presents the anticipated agency permits and consultation potentially needed for the Proposed Action. As shown in the table, approval from the California Public Utilities Commission<sup>2</sup> (CPUC) and the California Independent System Operator<sup>3</sup> (CAISO) would be required only if Model 2 were to be implemented. Of note, while approval from the CPUC and CAISO is not a requirement for this EA, ultimately (i.e., after completion of the NEPA process), the private partner would obtain the approvals from these entities for implementation of Model 2.

The Coastal Zone Management Act applies to the Stuart Mesa Sites (Sites A, B, C, and D). A Coastal Consistency Non-Determination (CCND) was issued in 2009 for two public-private venture (PPV) housing proposals (PPV-6 and PPV-7). The CCND has been updated to address the change from housing to a solar PV system. Agency correspondence can be found in Appendix A.

**Table 1-2. Anticipated Permits and Consultation for the Proposed Action**

Agency	Permit or Approval	Current Status
USFWS	Section 7 of the ESA	USMC will not formally consult with USFWS (on preferred alternative).
SHPO	Section 106 of the NHPA	USMC will comply with SHPO Programmatic Agreement (on preferred alternative).
CPUC <sup>1</sup>	Public Utilities Code Section 399.11	The private partner will obtain a power purchase agreement from the CPUC.
CAISO <sup>1</sup>	Public Utilities Code Sections 2811-2816	The private partner will obtain an Interconnection Agreement from the CAISO.
CZMA	Update CCND for consistency with determination issued for PPV-6 and PPV-7	CCND was issued for Stuart Mesa Housing projects. Updated CCND for Solar PV EA received concurrence on 13 October 2015.

Notes: <sup>1</sup>Approval would be required from CPUC and CAISO only if Model 2 were to be implemented.

CZMA = Coastal Zone Management Act; ESA = Endangered Species Act; SHPO = State Historic Preservation Officer; NHPA = National Historic Preservation Act; USFWS = U.S. Fish and Wildlife Service.

<sup>2</sup> The CPUC regulates investor-owned utilities in California, oversees the procurement of renewable energy in the state under the Renewable Portfolio Standard implementation program, and permits electrical transmission.

<sup>3</sup> The CAISO is an independent, non-profit organization that oversees the operation of California’s electric power system, transmission lines, and electricity market. Proposed connections from private power producers to investor-owned utilities are subject to the review and approval of the CAISO.

## 1.6.2 Summary of Relevant Federal Requirements

The following provides a summary of federal requirements relevant to the Proposed Action.

### **EO 13693, *Planning for Federal Sustainability in the Next Decade***

EO 13693 (dated 19 March 2015) superseded EO 13423 (*Strengthening Federal Environment, Energy, and Transportation Management*) and EO 13514 (*Energy Efficient Standby Power Devices*). The goal of EO 13693 is to maintain federal leadership in sustainability and GHG emission reductions. EO 13693 establishes policies to maintain federal leadership in sustainability and GHG emission reductions. As relevant to this EA, EO 13693 identifies requirements relating to energy conservation, efficiency, and management; minimum percentages of total building energy obtained from clean energy sources; and, improvements in water use efficiency and management, including stormwater management.

#### 1.6.2.1 Secretary of the Navy Energy Goals

On 14 October 2009, the SECNAV established five aggressive renewable energy goals for the Navy's shore-based installations to meet by 2020. The goals pertain to improving fuel use in aircrafts as well as energy reduction and production. The goal that pertains the most to this document is: The Navy will produce at least 50 percent of shore-based energy requirements from alternative sources.

#### 1.6.2.2 1 GW Initiative

In support of the SECNAV energy goals, on 1 October 2012 Secretary Mabus chartered the 1 GW Task Force to enable the Navy to procure 1 GW of renewable energy generation capacity by 2020. One GW of renewable energy generation directly addresses several of the mandates and goals for which the Navy is accountable: EO 13693 (this EO superseded EOs 13423 and 13514), the 10 U.S. Code (USC) 2911 "25 by 25" mandate (25 percent by 2025), Energy Policy Act 2005 graduated renewable energy targets, and the SECNAV's departmental goals.

To reach the 50 percent renewable energy generation goal (which the 1 GW goal directly supports) in a cost-effective fashion, the Navy must purchase or facilitate the production of significant quantities of renewable energy while reducing power consumed through energy efficiencies. The overall the Navy energy strategy therefore includes both lines of effort: deploy renewable energy in support of the 1 GW goal and simultaneously bring the 50 percent renewable energy generation goal closer by reducing overall energy consumption.

## 1.7 PUBLIC AGENCY PARTICIPATION

Provided in Appendix B.

## CHAPTER 2

### PROPOSED ACTION AND ALTERNATIVES

---

Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA establish a number of policies for federal agencies, including “using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment” (40 Code of Federal Regulations [CFR] 1500.2 [e]). This EA only carries forward for detailed analysis those alternatives that could meet the purpose of and need for the project as defined in Section 1.3, *Purpose of and Need for the Proposed Action* and the below-listed reasonable alternative screening factors.

#### 2.1 REASONABLE ALTERNATIVE SCREENING FACTORS

The screening factors used to develop the reasonable range of alternatives are as follows:

1. Must not interfere with installation mission activities and operations or create unsafe conditions;
2. Should contribute to the SECNAV’s goal of obtaining 1 GW of renewable energy generating capacity by the end of 2020 by providing a sufficiently sized parcel (or parcels) of land for solar PV system placement; and
3. Should provide a location and/or design capable of providing electricity at or below the current cost of traditional power (e.g., orientation/location/slope relative to the sun for generating higher amounts of power, or a lower system cost relative to output).

#### 2.2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

##### 2.2.1 Proposed Action

Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar PV system. The partner would sell the generated power to regional customers and/or the Navy. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. The construction and use of energy storage batteries at MCB Camp Pendleton is not part of the Proposed Action.

The Navy has identified three action alternatives (Alternatives 1, 2, and 3) as meeting the reasonable screening factors. The following sections provide descriptions of these three alternatives. In addition, Section 2.2.5 describes the No-Action Alternative, and Section 2.3 compares each of the action alternatives.

##### 2.2.2 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B (Preferred Alternative)

Under Alternative 1, an up to 28 MW solar PV system would be constructed and operated at Sites A and B. At the conclusion of the agreement (37 years [Model 2]), the solar PV system would be decommissioned and the site returned to its pre-project condition.

### 2.2.2.1 Acquisition Strategies

Under Alternative 1, a PV system would be developed to generate renewable energy at MCB Camp Pendleton under Model 2 acquisition strategy (refer to Section 1.1.1.2).

Under a Model 2 acquisition strategy, the Navy and private partner would enter into a lease agreement (or real estate outgrant) to allow the partner to use Navy land to construct, operate, and own the solar PV system. While Navy land would be used, no existing Navy infrastructure (transmission lines, substation, etc.) would be used by the partner under the Model 2 acquisition strategy. The Navy would receive compensation for the lease, but would not directly receive the power generated by the solar PV system. The partner would sell the generated power to regional customers outside the Navy. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. The approximate contract duration would be 37 years. The 37-year agreement would consist of 2 years for construction, followed by an initial 25-year operating term and two, 5-year operating extensions (10 years). This acquisition strategy maximizes the total capacity (size) of the system based on available land, and not MCB Camp Pendleton's electrical demand.

### 2.2.2.2 Construction

Following execution of the agreement with the private partner, an up to 28 MW ground-mounted solar PV system would be constructed at MCB Camp Pendleton on Sites A and B (Figure 2-1). Sites A and B are relatively flat and devoid of vegetation. Site preparation activities would include trenching (up to 3-feet [1-meter] deep per UFC codes) for underground electrical lines and circuitry.

The 28 MW solar PV system would consist of solar PV panels, underground and/or pole-mounted electrical infrastructure, area lighting, concrete foundations, and concrete masonry units for inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the solar PV system.

All electrical equipment, including inverters and transformers would be constructed on concrete pads. All solar PV panel wiring would be routed underground. Gravel roads would be graded between the rows of solar PV panels and around the site perimeter for maintenance access. No access improvements would be required as part of Alternative 1 because the existing road network adjacent to the project area is sufficient. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the solar PV field to minimize the potential for unauthorized individuals to enter the area (Figure 2-1).

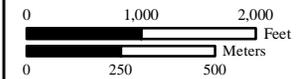
The solar PV panels would either be fixed-, single-, or multi-axis type solar PV panels. Fixed panels do not track the sun; they are fixed in an optimal position to collect solar radiation. Fixed panels would be constructed in east to west oriented rows to maximize solar radiation absorption. If selected, the single-axis and/or multi-axis panels would also be constructed in east to west oriented rows, but would include a drive shaft and motor that rotates the panels to follow the maximum solar irradiance throughout the day (i.e., the panels would track the movement of the sun).



- Legend**
-  Potential Solar PV Sites
  -  Road

Alternative 1: Site A and Site B (194 Acres)

Figure 2-1  
Alternative 1:  
Up to 28 Megawatts at  
Sites A and B



Source: MCB Camp Pendleton 2015

The solar PV panels would be affixed atop constructed mounting structures, mounted on posts bored into the ground, or be placed on concrete blocks above ground. Foundations for the mounting structures would be built on engineered fill or native soil at a minimum of 24 inches (61 centimeters [cm]) below adjacent grade or finished grade. Each pole footing would consist of a 4 inch (10 cm) cross-sectional area and would require a depth of 4 to 6.5 feet (1.2 to 2 meters) below ground surface. Upon completion, the highest point of the solar PV field would be no higher than approximately 15 feet (5 meters) above the ground surface. The solar PV panels would have an anti-reflective coating that would improve light absorption and reduce or eliminate the potential for glint and glare<sup>4</sup> impacts.

The solar PV panels would be constructed elsewhere (in a factory). Solar PV panel assembly could occur either on- or off-site, or a combination thereof. A construction staging area would be delineated within the overall project area and all work would be done on-site. Materials would be transported to the project area by truck where they would be staged, assembled, and moved into place. Equipment used to construct the solar PV system would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. A spray-on erosion control fiber matrix (soil stabilizer) would be applied to the soil following construction, thus reducing the potential for soil erosion. The construction duration would be approximately 2 years.

Within Site A or B, a substation would also be constructed. The substation would cover an area approximately 1 acre (0.4 ha) in size. The substation would serve as the interface connection of the solar PV system to the existing San Diego Gas & Electric (SDG&E) 12/69-kilovolt (kV) transmission line located west of the Stuart Mesa Housing complex (for Model 2). A 69-kV switching/metering station would also be constructed. The switching/metering station would cover approximately 2,000 square feet (185 square meters) and would meter the solar PV power generated at Sites A and B. Both the substation and the meter/switching station would be located within Sites A or B. A graveled buffer area would be developed around the substation and switching/metering station and a fence would be constructed to restrict access to the site.

Construction would create a minimal amount of construction debris that would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste). All construction would be conducted in compliance with all applicable rules and regulations.

#### 2.2.2.3 Operation and Maintenance

Post-construction site operations would include, but would not be limited to, use of existing access roads; electrical and mechanical systems; and maintenance and repair. Quarterly inspections of the solar PV system would be conducted to ensure infrastructure is in good operating condition. The partner or their designated contractor would conduct any repairs or regular service. Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up. One or two persons using a single water truck would perform this cleaning. All washing and use of water during maintenance of the solar PV panels would be done in accordance with best management practices (BMPs) and standard erosion control measures as identified in the Stormwater Pollution Prevention Plan (SWPPP). Water would be trucked in from an off-base source and water procurement would be the responsibility of the private partner.

---

<sup>4</sup> Glint is the momentary flash of bright light. Glare is a continuous source of bright light.

Access roads would be maintained as needed, and ground cover and other vegetation beneath and near the panels would be trimmed periodically. Vegetation beneath and near the panels could also be controlled with herbicides to ensure that it does not obscure or shadow the panels (State Water Resources Control Board [SWRCB] 2014).

All operations and maintenance would be conducted in compliance with all Navy and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

#### 2.2.2.4 Decommissioning

At the conclusion of the agreement, the private partner would be required to decommission the solar PV system and all associated features and return the project area to its pre-project condition. A decommissioning plan would be prepared in accordance with Navy requirements. The plan would ensure that the project facilities would be decommissioned and removed and that Sites A and B would be restored to pre-construction conditions. Soils and impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning and restoration process would likely involve the removal of aboveground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be used during the decommissioning phase of the project.

Anticipated decommissioning activities would use a mix of equipment and vehicles, likely to include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes. The decommissioning activities would likely occur over a period of approximately 2 months. Debris would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste), or any new documentation that might replace the Navy's 2009 statement in the future.

All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for hazardous material(s). A decommissioning staging area would be delineated within the overall project area and all work would be done on-site. Following decommissioning activities, the Navy would certify that the land condition was returned to its pre-project condition. All decommissioning activities would be done in compliance with all Navy regulations applicable to conducting work activities on MCB Camp Pendleton, and with adherence to Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

#### 2.2.2.5 Transmission Line Routes

Under Alternative 1, Model 2, the solar PV system would connect to the existing SDG&E 12/69-kV transmission line/power distribution system located adjacent to the eastern boundaries of Sites A and B. No additional transmission lines are needed for Model 2. Alternative 1 does not include a Model 3 connection to the MCB Camp Pendleton grid.

### **2.2.3 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C, and D**

Under Alternative 2, an up to 31 MW solar PV system would be constructed and operated at Sites A, B, C, and D. At the conclusion of the agreement (either 37 years [Model 2] or 27 years [Model 3]), the solar PV system would be decommissioned and the site returned to its pre-project condition. Under Alternative

2, up to approximately 215 acres (87 ha) at Sites A, B, C, and D would be developed to support the generation of up to 31 MW of solar PV power with the same features as were described in Section 2.2.2. The main difference between Alternative 1 and 2 is that Alternative 2 includes Sites C and D, and includes the two new transmission corridors between the PV site and Stuart Mesa Road (Figure 2-2).

Site C consists of approximately 6 acres (2 ha) of undeveloped land on the south end of Site A. Site D consists of approximately 14 acres (6 ha) to the northwest of Site B.

Under Alternative 2, the same solar PV system acquisition, construction, operation, and decommissioning activities as described under Alternative 1 would also occur.

Alternative 2 would rely upon either a Model 2 or a Model 3 acquisition strategy. Model 2 is described in Alternative 1. With Model 3, the Navy would enter into a lease agreement (or real estate outgrant) plus a Power Purchase Agreement, for a private partner to construct, operate, and own a solar PV system on MCB Camp Pendleton. Once the solar PV system is operational, the Navy would purchase and use all of the electricity generated from the solar PV system. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. The approximate contract duration would be 27 years. The 27-year agreement would consist of 2 years for construction, followed by an initial 20-year operating term and one, 5-year operating extension. This acquisition strategy limits the total capacity (size) of the system based on MCB Camp Pendleton's electrical demand, and not the total amount of land available. Existing Navy infrastructure would be used (transmission lines and substations).

Under both the Model 2 and Model 3 strategies, the land impact, function of the facility, conservation and construction measures would be nearly identical. The only notable difference would be the extent of construction and routing of electrical transmission corridors (i.e., point of connection of the solar PV system) to either serve the public grid or the MCB Camp Pendleton grid. Under the combination of Models 2 and 3 strategy, some power generated would be used by the Navy and some by outside regional customers. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. At the conclusion of the agreement, the private partner would decommission the solar PV system and return the site to pre-project conditions.

#### 2.2.3.1 Transmission Line Routes

Under Alternatives 2 and 3, Model 2, the solar PV system would connect to the existing SDG&E transmission line/power distribution system located adjacent to the eastern boundaries of Sites A and B and no new transmission lines are needed for Model 2.

Under Alternatives 2 and 3, Model 3, the solar PV system would connect to the existing MCB Camp Pendleton J circuit transmission line/power distribution system located east of Stuart Mesa Road. Power would be delivered via the existing transmission lines to existing on-base substations owned and operated by MCB Camp Pendleton.

Model 3 would require construction of two new transmission lines. One new transmission line would be located to the east of Site A between Site A and the J circuit, south of Stuart Mesa Housing complex. It would be a 1,720-foot (524-meter) long, 55-foot (17-meter) tall, steel pole supported transmission line. Approximately 28 poles would be required. The other new transmission line would be located to the north of Site B between Site B and the J circuit, northwest of Stuart Mesa Housing complex. It would be an 887-foot (270-meter) long, 55-foot (17-meter) tall, steel pole supported transmission line. Approximately 15 poles would be required (see Figure 2-1).



- Legend**
- Potential Solar PV Sites
  - Road

Alternative 2: Sites A, B, C, and D (215 Acres)

Figure 2-2  
Alternative 2:  
Up to 31 megawatts at  
Sites A, B, C, and D



Source: MCB Camp Pendleton 2015

## **2.2.4 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW PV System at Sites A, B, C, D, and E**

Under Alternative 3, an up to 39 MW solar PV system would be constructed and operated at Sites A, B, C, D, and E. At the conclusion of the agreement (either 37 years [Model 2] or 27 years [Model 3]), the solar PV system would be decommissioned and the site returned to its pre-project condition. Under Alternative 3, up to approximately 272 acres (110 ha) at Sites A, B, C, D, and E would be developed to support the generation of up to 39 MW of solar PV power with the same features as were described in Section 2.2.3. The main difference between Alternative 2 and 3 is that Alternative 3 includes Site E (Figure 2-3).

Site E consists of approximately 57 acres (23 ha) of undeveloped land south of Vandegrift Boulevard in the 12 Area.

### **2.2.4.1 Transmission Line Routes**

Under Alternative 3, the same solar PV system acquisition, construction, operation, and decommissioning activities as described under Alternative 1 would also occur. Under Alternative 3, Model 2, the solar PV system would connect to the existing SDG&E 12/69-kV transmission line/power distribution system located along Vandegrift Boulevard to the north of Site E. The connection would include construction of a 138-foot (42-meter) long, 20-foot (17-meter) tall steel-pole supported transmission line. Approximately four poles would be required.

Although no new transmission lines are needed at Site E under Model 3 because the solar PV system would connect to the existing MCB Camp Pendleton transmission lines along Vandegrift Boulevard near Site E, transmission lines are needed with Model 3 to access the MCB Camp Pendleton grid at Sites A and B with Alternative 3.

## **2.2.5 No-Action Alternative**

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV system at MCB Camp Pendleton. The No-Action Alternative represents the status quo. The No-Action Alternative does not meet the purpose and need with regard to meeting Navy renewable energy goals; however, the Navy has analyzed the No-Action Alternative in this EA in accordance with statutory requirements and to provide a baseline against which to measure environmental consequences of the action alternatives. The affected environment section of Chapter 3 describes the No-Action Alternative (existing conditions) for each resource area. The analysis of the No-Action Alternative in Chapter 3 assumes that the Navy would maintain operations at the status quo (no new solar PV acquisition, construction, operations/maintenance, or decommissioning would occur).



**Legend**

Potential Solar PV Sites  
 Road

Alternative 3: Sites A, B, C, D, and E (272 Acres)

Figure 2-3  
Alternative 3:  
Up to 39 Megawatts at  
Sites A, B, C, D, and E

0 1,000 2,000 Feet  
0 250 500 Meters

Source: MCB Camp Pendleton 2015

### 2.3 COMPARISON OF ACTION ALTERNATIVES

Table 2-1 summarizes and compares the features associated with the alternatives.

**Table 2-1. Summary and Comparison of Alternatives**

Alternative	System Size	Site(s)	Transmission Line Type	Power User
<b>Alternative 1 (see Figure 2-1)</b>				
Model 2	Up to a 28 MW solar PV system	A and B	No New Transmission Lines	Regional
<b>Alternative 2 (see Figure 2-2)</b>				
Model 2	Up to a 31 MW solar PV system	A, B, C, and D	No New Transmission Lines	Regional
Models 2 and 3			New 69-kV	Regional and MCB Camp Pendleton
Model 3			Two new 69-kV	MCB Camp Pendleton
<b>Alternative 3 (see Figure 2-3)</b>				
Model 2	Up to 39 MW solar PV system	A, B, C, D and E	New 69-kV	Regional
Models 2 and 3			New 69-kV	Regional and MCB Camp Pendleton
Model 3			Two New 69-kV	MCB Camp Pendleton
<b>No-Action Alternative</b>	None	None	None	None

### 2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED ANALYSIS

#### 2.4.1 Other Renewable Energy Sources

Given MCB Camp Pendleton’s location and associated available resources, the Navy has determined that solar PV represents the best renewable energy option for MCB Camp Pendleton when compared with other renewable energy options (e.g., wind, biomass, tidal, geothermal). Therefore, the Navy has eliminated *Other Renewable Energy Sources* from detailed analysis in this EA.

#### 2.4.2 Fallbrook Site

As described in Section 1.5.1, the Navy initially considered a site at Naval Weapons Station Seal Beach Detachment Fallbrook (referred to as the Fallbrook Site) as a potential solar PV site for implementation of the Proposed Action. The Fallbrook Site was evaluated, along with MCB Camp Pendleton’s Sites A and E, within the Environmental Feasibility Study that was conducted before this EA. The Fallbrook Site was determined to be environmentally and economically inferior for this solar PV project to the other sites because it had two federally-listed species, coastal California gnatcatcher and Stephens’ kangaroo rat requiring avoidance, permitting, and/or mitigation. In addition, the Fallbrook Site had eight archaeological sites that have not been evaluated for listing in the National Register of Historic Places (NRHP). The site contained wetlands and a riverine feature that would likely be considered waters of the U.S., possibly requiring avoidance, permitting, and/or mitigation. Therefore, the Navy has eliminated the Fallbrook Site from detailed analysis in this EA.

## **CHAPTER 3**

# **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

---

---

This chapter describes the existing environmental conditions and potential environmental consequences for the following resource areas analyzed in detail: biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities. Table 3-1 provides a summary of potential impacts and avoidance/minimization measures for each resource area from implementation of the alternatives.

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<b>Biological</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and DCSS, which are suitable habitat for the least Bell’s vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell’s vireo or the coastal California gnatcatcher. Moreover, the avoidance/minimization measures would be implemented to lessen potential impacts to biological resources.</p>	<p><u>No Significant Impact</u> Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat, which is suitable habitat for the least Bell’s vireo, is adjacent to, but not located within, the construction footprint. A small area (1.0 acre [0.4 ha]) of DCSS, which is suitable habitat for the coastal California gnatcatcher, is located within the transmission corridors. As such, implementation of Alternative 2 would not affect the least Bell’s vireo and may affect, but is not likely to adversely affect, the coastal California gnatcatcher. The avoidance/minimization measures would be implemented to lessen potential impacts to biological resources. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.</p>	<p><u>No Significant Impact</u> Construction of the proposed project at Sites A-D would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Site E provides greater value than the Stuart Mesa sites, particularly for DCSS and the coastal California gnatcatcher. Riparian habitat, which is suitable habitat for the least Bell’s vireo, is adjacent to, but not located within, the construction footprint of Sites A-D. Depending on the final plan of development, the implementation of Alternative 3 could result in the loss of up to 11.5 acres (4.7 ha) of DCSS that is suitable habitat for the coastal California gnatcatcher at Site E. As such, construction of the proposed project would not affect the least Bell’s vireo but would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
			mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.	
<i>Avoidance/Minimization Measures</i>	<p><b>Construction</b></p> <ul style="list-style-type: none"> <li>• <b>BR-1.</b> To further minimize potential impacts, no trees, including eucalyptus, would be removed for construction of the solar PV sites.</li> <li>• <b>BR-2.</b> To avoid impacts to all nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements.</li> <li>• The following avoidance/minimization measures would be implemented to specifically avoid or minimize impacts to the coastal California gnatcatcher and the least Bell’s vireo:               <ul style="list-style-type: none"> <li>○ <b>BR-3.</b> A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the coastal California gnatcatcher and the least Bell’s vireo, respectively. Surveys would be performed by a qualified ornithologist familiar with the coastal California gnatcatcher and the least Bell’s vireo (i.e., at least one field season and 40</li> </ul> </li> </ul>	<p>Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>BR-7.</b> DCSS would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). DCSS that cannot be avoided would be restored onsite or mitigated off-site.</li> <li>• <b>BR-8.</b> A live-trapping survey of both transmission line corridors for the Pacific pocket mouse would be performed in the portions of each corridor exhibiting the most suitable Pacific pocket mouse habitat. Survey results would confirm the presence or absence of the Pacific pocket mouse and would be shared with the USFWS during subsequent consultation. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted.</li> </ul>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>BR-9.</b> It is expected that additional avoidance and minimization measures would be identified during formal consultation with the USFWS if Alternative 3 were to be selected.</li> </ul>	No measures identified.

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<p>hours of experience with each species).                      Three pre-activity surveys for active coastal California gnatcatcher and least Bell’s vireo nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other on-going surveys to minimize disturbance to nesting coastal California gnatcatchers and least Bell’s vireos and to avoid redundant survey effort.</p> <ul style="list-style-type: none"> <li>○ <b>BR-4.</b> Construction activities during the nesting season within 500 feet (152 meters) of occupied coastal California gnatcatcher or least Bell’s vireo habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if coastal California gnatcatcher and least Bell’s vireo nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Fish and Wildlife Office would be notified of the location of the nest. Additionally, a 250-foot (76-meters) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season. <p><b>Operation</b></p> <ul style="list-style-type: none"> <li>• <b>BR-5.</b> To assess any potential impacts the solar PV system might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species</li> </ul> </li> </ul>			

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<p>would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations.</p> <ul style="list-style-type: none"> <li>• <b>BR-6.</b> Maintenance personnel would be trained to identify coastal California gnatcatchers and least Bell’s vireos and would report any observations of dead or injured California gnatcatchers and least Bell’s vireos to Environmental Security within 48 hours.</li> </ul>			
<b>Hazardous Materials and Waste</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. Site A hosts no open remediation sites; however, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by RWQCB.</p>	<p><u>No Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance.</p>	<p><u>Potential Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance. Inactive Range 404 (at Site E) requires remediation and closure. Without remediation and closure, potential significant impact could occur. Supplemental NEPA would be needed to incorporate the closure.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>HW-1.</b> Construction BMPs and SWMP would be required.</li> <li>• <b>HW-2.</b> The SWPPP at Site A is currently undergoing a closure action and confirmation of closure should be requested prior to any ground disturbance.</li> </ul>	<p>Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>HW-3.</b> Wait for closure of IR Site 1120 at Site D.</li> </ul>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>HW-4.</b> Remediate and close inactive Range 404 at Site E.</li> </ul>	<p>No measures identified.</p>

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<b>Water</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. New facilities on MCB Camp Pendleton would incorporate the concept of Low Impact Development (LID). All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base source.</p>	<p><u>No Significant Impact</u> Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.</p>	<p><u>No Significant Impact</u> Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 3. All activities associated with Alternative 3 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>WR-1.</b> The project would obtain coverage under the California Construction General Permit.</li> <li>• <b>WR-2.</b> A SWPPP that would include standard erosion control measures to reduce potential impacts resulting from erosion would be prepared. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. The standard erosion control measures as identified in the SWPPP would be utilized to reduce erosion during grading and construction activities.</li> <li>• <b>WR-3.</b> Projects on MCB Camp Pendleton with a footprint of 5,000 square feet or greater would implement Low Impact Development (LID) features in accordance with the <i>Department of Defense Unified Facilities Criteria Low Impact</i></li> </ul>	<p>Same as Alternative 1.</p>	<p>Same as Alternative 1.</p>	<p>No measures identified.</p>

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<p><i>Development</i> (Unified Facilities Criteria [UFC] 3-210-10) (2010) and Section 438 of the Energy Independence and Security Act (2007). A comprehensive set of stormwater planning, design, and construction elements would be used to maintain or restore predevelopment hydrology of the site with regard to volume, rate, and duration of flow, pollutant loading, and temperature for the 95<sup>th</sup> percentile, 24-hour storm. LID strategies are described in detail in UFC 3-210-10, Chapter 2. These strategies address the long-term post construction (operational) phase where ensuring water quality benefits are provided by low impact design, source controls, and treatment controls.</p>			
<b>Air Quality</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor, short-term emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.</p>	<p><u>No Significant Impact</u> Same as Alternative 1.</p>	<p><u>No Significant Impact</u> Same as Alternative 1.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>AQ-1.</b> Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment.</li> <li>• <b>AQ-2.</b> Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions.</li> </ul>	<p>Same as Alternative 1.</p>	<p>Same as Alternative 1.</p>	<p>No measures identified.</p>

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	<ul style="list-style-type: none"> <li>• <b>AQ-3.</b> After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).</li> </ul>			
<b>Land Use and Military Operations</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Temporary change in land use from agricultural to renewable energy. The construction, operation, and decommissioning of the solar PV system on Sites A and B would be inconsistent with the Master Plan. Also, portions of Site A encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee. MCB Camp Pendleton is exempt from the Farmland Protection Policy Act, as the land would be used for national defense purposes.</p>	<p><u>No Significant Impact</u> Potential impacts would be similar to those described for Alternative 1. Portions of Site A and the entirety of Site C encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee.</p>	<p><u>No significant impact</u> Potential impacts would be similar to those described for Alternative 1. Alternative 3 would be inconsistent with planned future land uses. The proposed solar PV system would encroach into the Oscar One Training Area (Sites A and C) and maneuver area (Site E); the expansions would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>LU-1.</b> The MCB Camp Pendleton Master Plan would need to be amended during the next amendment cycle to alter the land use within the project area.</li> </ul>	Same as Alternative 1.	Same as Alternative 1.	No measures identified.
<b>Cultural</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> The area has been previously surveyed for cultural resources. Site B would fall under the Programmatic Agreement (PA) signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one archaeological site (CA-SDI-17912) previously determined ineligible with SHPO concurrence that would not fall under the PA.</p>	<p><u>No Significant Impact</u> The area has been previously surveyed for cultural resources. Sites B and D would fall under the PA signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one ineligible archaeological site (CA-SDI-17912) and Site C has an archaeological site that is ineligible for NRHP listing (CA-SDI-12572). Sites A and C would not fall under the PA.</p>	<p><u>No Significant Impact</u> Same as Alternative 2.  Site E has been previously surveyed for cultural resources, none were found, and therefore Site E would fall under the PA.  For Sites B, D, and E, Camp Pendleton Streamlined Section 106 Programmatic Agreement could be used to complete the Section 106 process.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<i>Avoidance/ Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>CR-1.</b> All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site (CA-SDI-17912) within the APE in Site A would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner.</li> <li>• <b>CR-2.</b> A monitoring and discovery plan would be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations.</li> <li>• <b>CR-3.</b> A report detailing the monitoring results would be provided to SHPO at the conclusion of excavations.</li> </ul>	<p>Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>CR-4.</b> All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site CA-SDI-1572) within the APE in Site C would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which would be funded by the private partner.</li> </ul>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 2.</p>	<p>No measures identified.</p>
<b>Visual</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.</p>	<p><u>No Significant Impact</u> Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.</p>	<p><u>No Significant Impact</u> Construction and operational visual impacts would largely be the same as those described under Alternative 2, including the addition of Site E.</p>	<p><u>No Impact</u> The existing visual environment would not change from current conditions.</p>
<i>Avoidance/ Minimization Measures</i>	<p>No measures identified.</p>	<p>No measures identified.</p>	<p>No measures identified.</p>	<p>No measures identified.</p>

**Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures**

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
<b>Utilities</b>				
<i>Impact Summary</i>	<p><u>No Significant Impact</u> Potential for temporary and localized power disruption when solar PV system comes on-line. Would support achievement of Navy’s renewable energy goals and strategies. Under the Model 2 acquisition strategy, there would be an increase in regional power supply. Existing infrastructure would be sufficient to support the solar PV system. A sewer line may be present at Site A.</p>	<p><u>No Significant Impact</u> Potential impacts would be similar to those described for Alternative 1. Under the Model 2 and combination Models 2 and 3 strategies, there would be an increase in regional power supply. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton.</p>	<p><u>No Significant Impact</u> Potential impacts would be the same as those described for Alternative 2.  A 12-inch (30.5-cm) diameter polyvinyl chloride natural gas main transects the southwestern corner of Site E.</p>	<p><u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.</p>
<i>Avoidance/Minimization Measures</i>	<ul style="list-style-type: none"> <li>• <b>UT-1.</b> A utility investigation and survey would be conducted to determine presence, and obtain the exact depth and location of the sewer line on Site A for conflict avoidance.</li> </ul>	<p>Same as Alternative 1.</p>	<p>Alternative 3 includes all avoidance/minimization measures identified for Alternative 1 and adds the following:</p> <ul style="list-style-type: none"> <li>• <b>UT-2.</b> A utility investigation and survey would be conducted to obtain the exact depth and location of the natural gas line on Site E for conflict avoidance.</li> </ul>	<p>No measures identified.</p>

Notes: APE = area of potential effects; AQ = Air Quality; BMPs = Best Management Practices; BR = Biological Resources; CR = Cultural Resources; DCSS = Diegan coastal sage scrub; GHG = Greenhouse Gas; I = Interstate; IR = Installation Restoration; LU = Land Use and Military Operations; NEPA = National Environmental Policy Act; PA= Programmatic Agreement; POLs = petroleum, oils, lubricants; SHPO = State Historic Preservation Office; SWPPP = Stormwater Pollution Prevention Plan; SWMP = Solid Waste Management Plan; RWQCB = Regional Water Quality Control Board; U.S. = United States; USFWS = U.S. Fish and Wildlife Service; UT = Utilities; WR = Water Resources.

### 3.1 BIOLOGICAL RESOURCES

#### 3.1.1 Definition of Resource

Biological resources include plant and animal species, and the habitats within which they occur. This analysis focuses on species that are important to the function of ecosystems, are of special societal importance, or are protected under federal or state law. These resources are commonly divided into the following categories: *Plant Communities*, *Fish and Wildlife*, and *Special Status Species*.

Biological resources are grouped and analyzed in this EA as follows:

- *Plant Communities* include plant associations and dominant constituent species that occur in the project area. Special status plant species are discussed in more detail below.
- *Fish and Wildlife* includes the characteristic animal species that occur in the project area. Special consideration is given to bird species protected under the Migratory Bird Treaty Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special status wildlife species are discussed in more detail below.
- *Special Status Species* are those plant and animal species that are listed, have been proposed for listing, or are candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA), the California ESA, and other species of concern as recognized by state or federal agencies.

#### 3.1.2 Affected Environment

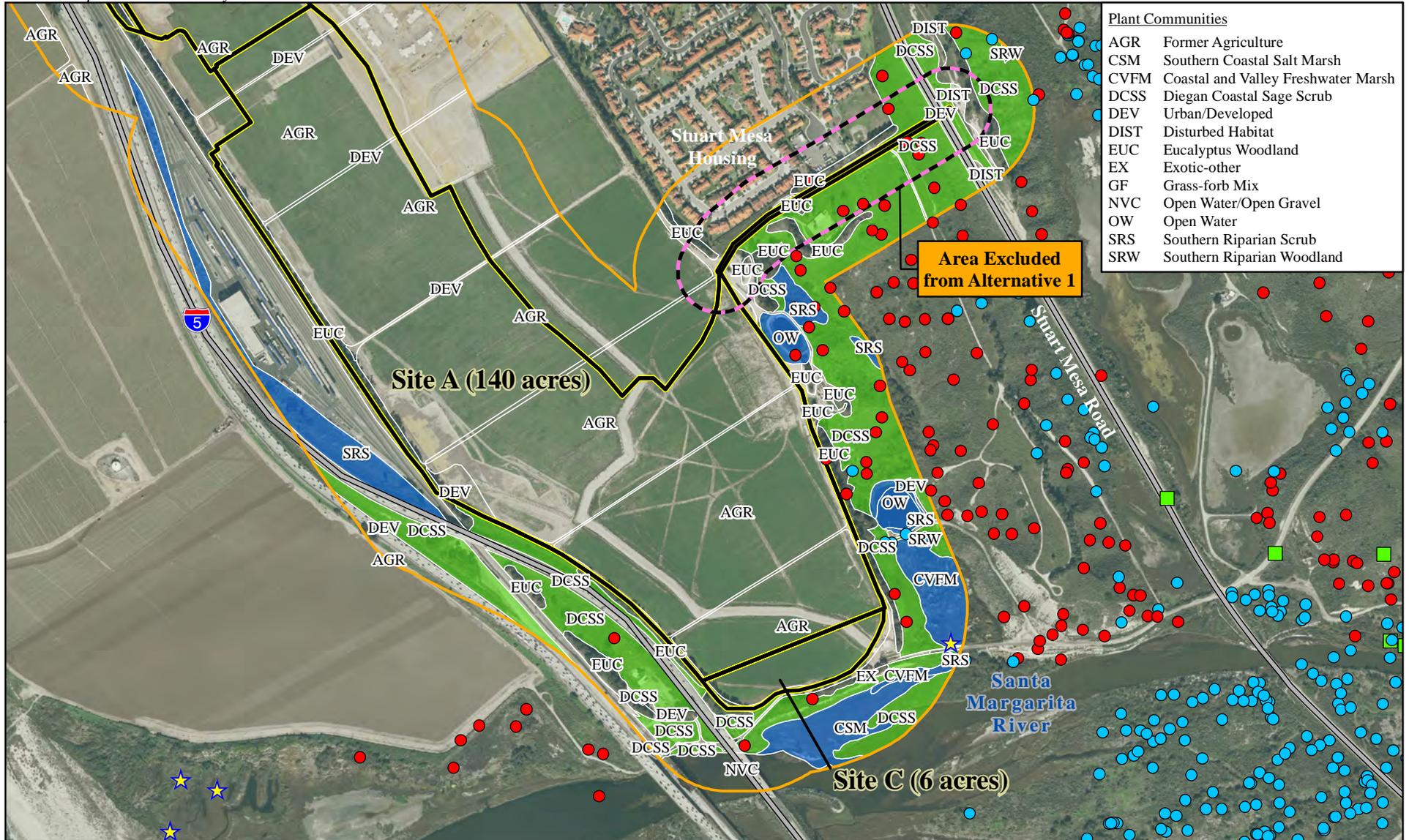
##### 3.1.2.1 Plant Communities

Plant communities are classified according to the classification system developed by R.F. Holland (1986). Holland’s system includes lists of dominant and characteristic species found in each community. Oberbauer et al. (2008) developed a slightly expanded version of Holland’s system for use in San Diego County; this version has been incorporated herein. Plant nomenclature follows Baldwin et al. (2012). Vegetation mapping for Sites A, B, C, and D is based on data in the current MCB Camp Pendleton geographic information system (GIS) dataset (MCB Camp Pendleton 2015a). A plant community survey of Site E was conducted in the spring of 2015 (MCB Camp Pendleton 2015b), the results of which are incorporated in this EA. Table 3.1-1 and Figures 3.1-1, 3.1-2, and 3.1-3 present the plant communities within the proposed project areas.

**Table 3.1-1. Plant Communities in the Project Area**

Plant Community	Area acres (ha)					
	Site A	Site B	Site C	Site D	Site E	TOTAL
Agriculture	131.4 (53.2)	54.2 (21.9)	5.9 (2.4)	7.3 (3.0)	-	<b>198.8 (80.5)</b>
Urban/Developed	5.0 (2.0)	0.9 (0.4)	0.3 (0.1)	4.9 (2.0)	-	<b>11.1 (4.5)</b>
Disturbed	-	0.1 (<0.1)	-	-	-	<b>0.1 (&lt;0.1)</b>
Diegan Coastal Sage Scrub	0.7 (0.3)*	0.3 (0.1)*	<0.1 (<0.1)	-	10.5 (4.2)	<b>11.5 (4.7)</b>
Eucalyptus Woodland	2.8 (1.1)	-	0.1 (<0.1)	1.8 (0.7)	-	<b>4.7 (1.9)</b>
Non-Native Grassland	-	<0.1 (<0.1)	-	-	32.9 (13.3)	<b>32.9 (13.3)</b>
Valley Needlegrass Grassland	-	-	-	-	13.1 (5.3)	<b>13.1 (5.3)</b>
<b>TOTAL</b>	<b>139.9 (56.6)</b>	<b>55.5 (22.5)</b>	<b>6.3 (2.5)</b>	<b>14.0 (5.7)</b>	<b>56.5 (22.0)</b>	<b>272.2 (110.2)</b>

Note: \* Values represent utility corridors. Utility corridors are not included in Alternative 1, but are included in Alternatives 2 and 3.



Plant Communities	
AGR	Former Agriculture
CSM	Southern Coastal Salt Marsh
CVFM	Coastal and Valley Freshwater Marsh
DCSS	Diegan Coastal Sage Scrub
DEV	Urban/Developed
DIST	Disturbed Habitat
EUC	Eucalyptus Woodland
EX	Exotic-other
GF	Grass-forb Mix
NVC	Open Water/Open Gravel
OW	Open Water
SRS	Southern Riparian Scrub
SRW	Southern Riparian Woodland

**Area Excluded from Alternative 1**

**Site A (140 acres)**

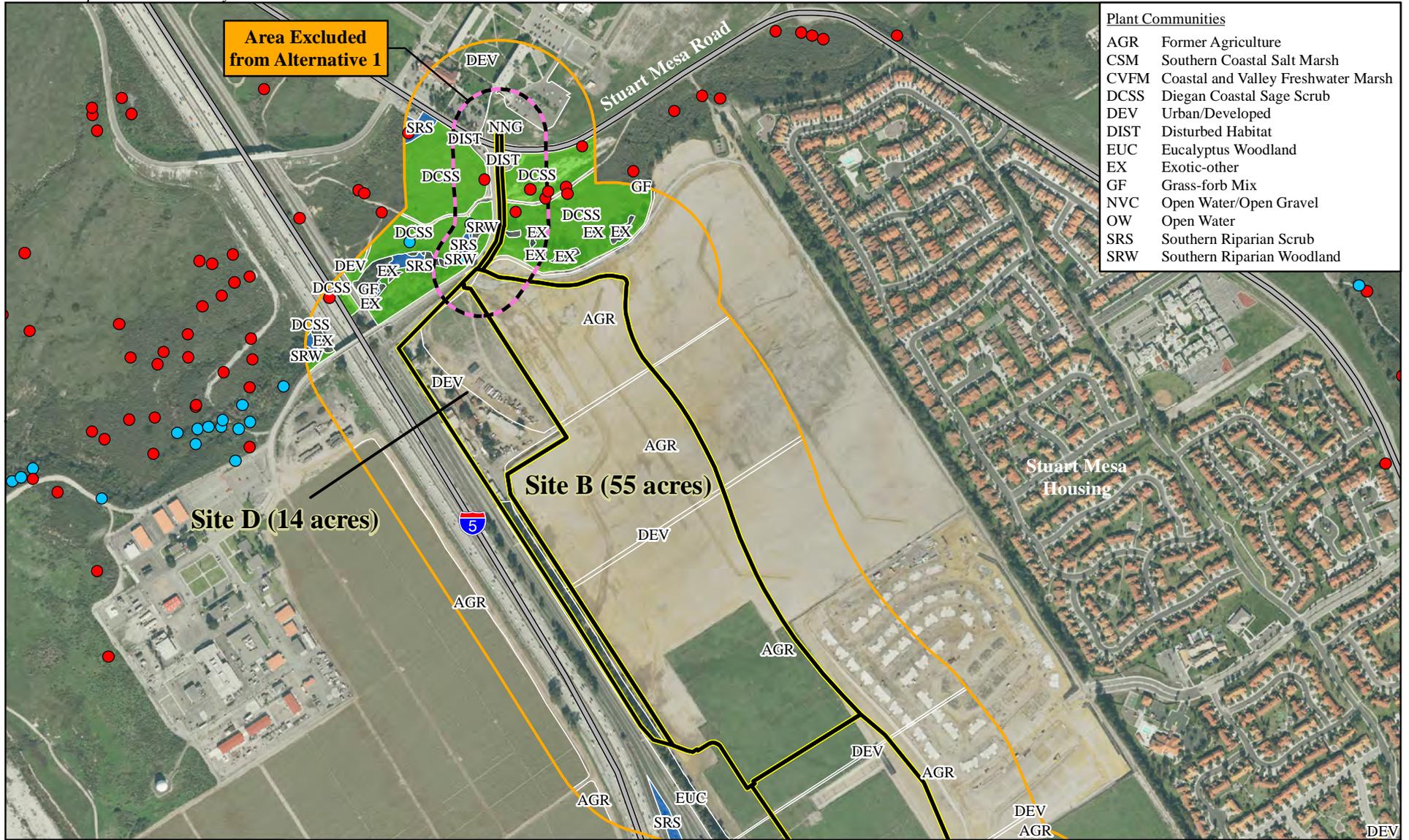
**Site C (6 acres)**



Legend		
Potential Solar PV Sites	Arroyo Toad	Potential Habitat within the 500' Site Buffer (2013)
500' Site Buffer	California Gnatcatcher	Least Bell's Vireo
Road	Ridgeway Rail	California Gnatcatcher
The Transmission Corridor Between the Potential PV Sites and Stuart Mesa Road is NOT Included in Alternative 1	Least Bell's Vireo	

**Figure 3.1-1**  
Biological Resources in the Vicinity of Sites A and C

Source: MCB Camp Pendleton 2015



Plant Communities	
AGR	Former Agriculture
CSM	Southern Coastal Salt Marsh
CVFM	Coastal and Valley Freshwater Marsh
DCSS	Diegan Coastal Sage Scrub
DEV	Urban/Developed
DIST	Disturbed Habitat
EUC	Eucalyptus Woodland
EX	Exotic-other
GF	Grass-forb Mix
NVC	Open Water/Open Gravel
OW	Open Water
SRS	Southern Riparian Scrub
SRW	Southern Riparian Woodland



**Legend**

Potential Solar PV Sites	<b>Camp Pendleton Sensitive Species</b>	<b>Potential Habitat within the 500' Site Buffer (2013)</b>
500' Site Buffer	California Gnatcatcher	Least Bell's Vireo
Road	Least Bell's Vireo	California Gnatcatcher
The Transmission Corridor Between the Potential PV Sites and Stuart Mesa Road is <b>NOT</b> Included in Alternative 1		

**Figure 3.1-2**  
Biological Resources in the Vicinity of Sites B and D

0 500 1,000 Feet  
0 100 200 Meters

Source: MCB Camp Pendleton 2015



Plant Communities	
DCSS	Diegan Coastal Sage Scrub
DEV	Urban/Developed
DIST	Disturbed Habitat
GF	Grass-forb Mix
NNG	Non-native Grassland
MW	Mixed Woodland
SMC	Southern Mixed Chaparral
SRS	Southern Riparian Scrub
SRW	Southern Riparian Woodland
VNG	Valley Needlegrass Grassland



Legend		
Potential Solar PV Sites	<u>Camp Pendleton Sensitive Species</u>	<u>Potential Habitat within the 500' Site Buffer (2013)</u>
500' Site Buffer	California Gnatcatcher	Least Bell's Vireo
Road	Least Bell's Vireo	California Gnatcatcher

Figure 3.1-3  
Biological Resources in the  
Vicinity of Site E

0 250 500  
Feet  
0 100 200  
Meters

Source: MCB Camp Pendleton 2015

*Agriculture* (AGR) includes land that is set aside for orchards, vineyards, row crops, grazing fields and pastures, and open spaces used for livestock. (The majority of Sites A, B, C, and D are mapped in MCB Camp Pendleton's GIS system as AGR, although these lands are currently vacant.)

*Urban/developed* (DEV) areas do not support native vegetation and are characterized by permanent or semi-permanent structures (e.g., routes, buildings, paving).

*Disturbed* (DIST) occur where past or present physical disturbance is prevalent such that an area is no longer recognizable as a native or naturalized vegetation association. Vegetation in disturbed areas is typically composed of non-native plant species that take advantage of disturbances.

*Diegan coastal sage scrub* (DCSS) is the dominant scrub community in coastal southern California. It is typically characterized by sparsely to densely spaced, low-growing, drought-deciduous shrubs, but comprises a variety of plant associations and can include larger, evergreen shrubs, as well as cacti. Plant species characteristic of DCSS include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), Menzies' goldenbush (*Isocoma menziesii*), California sunflower (*Encelia californica*), and sage (*Salvia* spp.). Coyote brush (*Baccharis pilularis*) is a common element of DCSS on disturbed sites and slopes, such as along the I-5 embankments. DCSS typically intergrades with grassland communities at lower elevations and chaparral communities at higher elevations. DCSS is protected and managed on MCB Camp Pendleton because it is habitat for the federally threatened coastal California gnatcatcher.

*Eucalyptus Woodland* (EUC) is a type of non-native woodland dominated by large gum trees (*Eucalyptus* spp.). The majority of EUC occurs along I-5 and was originally planted as a windbreak for the former agriculture fields. Eucalyptus woodlands within MCB Camp Pendleton have been used as wintering grounds for the monarch butterfly (*Danaus plexippus*) (Marriott 2009).

*Non-native grassland* (NNG) is dominated by non-native annual grasses and weedy herbaceous forbs. Dominant nonnative species include ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), wild oats (*Avena* spp.), wild barley (*Hordeum* spp.), soft chess brome (*Bromus hordeaceus*), filaree (*Erodium* spp.), sweet fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), and non-native mustards (*Brassica nigra* and *Hirschfeldia incana*). Areas consisting of NNG typically have experienced past disturbance or are subject to regular disturbance.

*Valley needlegrass grassland* (VNG) is dominated by the perennial, bunch-forming purple needlegrass (*Stipa pulchra*). This community usually occurs on fine-textured (often clay) soils. Native and introduced annual grasses usually occur between the perennials, often exceeding the bunchgrasses in cover. The percentage cover of native species at any one time may be quite low, but is considered native grassland if 20 percent aerial cover of native species is present (Oberbauer et al. 2008). Native and non-native herbs are typically present in VNG as well.

### 3.1.2.2 Fish and Wildlife

A diverse assemblage of mammals, birds, reptiles, amphibians, fish, and invertebrates occur within MCB Camp Pendleton. In addition to hundreds of invertebrates, MCB Camp Pendleton has documented the presence of more than 50 mammalian, 30 reptilian, 10 amphibian, 300 bird, and 60 fish species (MCB Camp Pendleton 2012).

Some species, especially those having special-status designations, are limited in distribution and/or occurrence to a single habitat type. Most, however, are generalists and use multiple habitats for breeding, shelter, and foraging. All of the reptiles and amphibians, most of the mammals, and a small percentage of the birds that occur on MCB Camp Pendleton are year-round residents. The rest are seasonal residents, wide-ranging migrants, or transient visitors. Nearly all bird species occurring on MCB Camp Pendleton are protected under the Migratory Bird Treaty Act and are given special consideration under EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

The majority of Sites A, B, C, and D consist of former agricultural land that supports limited wildlife species. The eucalyptus windbreaks on the edges of these sites support nesting birds including songbirds and raptors and may support wintering monarch butterflies.

Wildlife observed in the vicinity of Sites A, B, C, and D during surveys for the adjacent housing complex EA (referred to as CP VII) included California quail (*Callipepla californica*), white-crowned sparrow (*Zonotrichia leucophrys*), house finch (*Carpodacus mexicanus*), bobcat (*Lynx rufus*) (dead), mountain lion (*Puma concolor*) (tracks), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), and California towhee (*Pipilo crissalis*) (NAVFAC SW 2011).

Although Site E was formerly used for training purposes and has been previously disturbed, it contains more natural habitat than Sites A-D and likely supports a greater assemblage of wildlife species, including bird, mammal, and reptile species that are common to grassland and DCSS habitats.

### 3.1.2.3 Special Status Species

Based on review of the MCB Camp Pendleton GIS dataset (MCB Camp Pendleton 2015a) and current site conditions, eight federally-listed species (or suitable habitat for these species) are likely to occur at or in the vicinity of the project area and are listed in Table 3.1-2. No federally-listed species are likely to occur within the Stuart Mesa Sites because of lack of suitable habitat, although coastal California gnatcatchers are expected to occur within the transmission line routes for Site A and Site B. The occurrence of federally-listed species adjacent to these sites, as well as within and adjacent to Site E, is discussed below.

Although the arroyo toad (*Anaxyrus canorus*) occurs in the Santa Margarita River (SMR) and its tributaries, the downstream limit of the species along the SMR is approximately at the Stuart Mesa bridge (MCB Camp Pendleton 2012), presumably because of tidal marine influence and increasing salinity below that point. Therefore, the arroyo toad is not known or likely to occur in the portion of the SMR south of the Stuart Mesa Sites and is not discussed further in this EA.

#### Pacific Pocket Mouse

The Pacific pocket mouse is one of 19 subspecies of the little pocket mouse (*Perognathus longimembris pacificus*) in the heteromyid rodent family. This subspecies was historically rare and patchily distributed along coastal southern California. They were thought to be extinct until rediscovered in 1993 on Dana Point. Pacific pocket mouse were federally-listed as endangered on 29 September 1994 and were subsequently found in three locations within MCB Camp Pendleton in 1995 (North San Mateo, South San Mateo, and North Santa Margarita or "Oscar One"). These four locations comprise the only currently known extant populations of this subspecies (Brehme et. al 2012).

**Table 3.1-2. ESA Listed Species With the Potential to Occur in or in the Vicinity of the Project Area**

Common Name	Scientific Name	Federal Status	Habitat	Occurrence in Project Area
<b>Mammals</b>				
Pacific Pocket Mouse	<i>Perognathus longimembris pacificus</i>	Endangered	Open patches of sandy soils within coastal sage scrub	Occupied habitat exists near the project area.
Stephen’s kangaroo rat	<i>Dipodomys stephensi</i>	Endangered	Sparse DCSS & grassland	Suitable habitat does not occur in the project area.
<b>Birds</b>				
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	Threatened	Coastal sage scrub	Suitable habitat occurs within 500 feet (152 meters) of the Stuart Mesa Sites. Occupied habitat occurs within Site E.
Least Bell’s vireo	<i>Vireo bellii pusillus</i>	Endangered	Riparian	Occupied habitat occurs within 100 feet (30 meters) of the Stuart Mesa Sites and Site E.
Light-footed Ridgeway’s rail	<i>Rallus longirostris levipes</i>	Endangered	Coastal fresh and salt water marshes	Occurs in the SMR Estuary southwest of the Stuart Mesa Sites.
<b>Fish</b>				
Southern California steelhead	<i>Oncorhynchus mykiss</i>	Endangered	Rivers and major streams	Suitable habitat occurs in the SMR south of the Stuart Mesa Sites.
Tidewater goby	<i>Eucyclogobius newberryi</i>	Endangered	Estuaries/coastal brackish lagoons	Suitable habitat occurs in the SMR and Estuary south/southwest of the Stuart Mesa Sites.
<b>Plants</b>				
Thread-leaved brodiaea	<i>Brodiaea filifolia</i>	Threatened	Grasslands and sparse scrub communities	Potential habitat occurs in Site E.

Sources: MCB Camp Pendleton 2012, 2015a-d; SJM Biological Consultants 2015a, 2015b.

Pacific pocket mouse has been historically found on southern California marine terraces and alluvial plains within 2.5 miles (4 km) of the coast. They are typically associated with open patches of sandy soils within coastal sage scrub communities, although vegetation characteristics, such as shrub and grass cover, vary considerably (Brehme et. al 2012). Potential habitat does not occur at Stuart Mesa Sites (A, B, C, and D) or at Site E, but does occur in the utility corridors. Occupied habitat exists near the project area (SJM Biological Consultants 2015a).

Stephen’s Kangaroo Rat

Stephen’s kangaroo rats are endemic to the Perris and San Jacinto Valleys in western Riverside County and the San Luis Rey and Temecula Valleys in northern San Diego County. Stephen’s kangaroo rats reach their highest densities in intermediate successional stage grassland communities characterized by moderate to high amounts of bare-ground, high forb cover, moderate slopes, and well-drained soils (MCB Camp Pendleton 2012).

Large fluctuations in both distribution and density over time have been documented for this species. Ten-fold changes in abundance within and among years are common. Densities also vary over space due to

changes in habitat conditions and natural successional dynamics. At MCB Camp Pendleton, Stephen's kangaroo rats occur at scattered localities; the easternmost population occurs in the Juliett Training area, south of the southern border of the Naval Weapons Station Detachment Fallbrook (MCB Camp Pendleton 2012). Potential habitat does not occur at Stuart Mesa Sites (A, B, C, and D) or at Site E (SJM Biological Consultants 2015b).

#### Coastal California Gnatcatcher

Coastal California gnatcatchers are obligate permanent residents of coastal sage scrub vegetation that will also make limited use of adjacent habitats outside of the breeding season. The breeding season is from 15 February through 31 August, with peak nesting activities occurring from mid-March through May (U.S. Fish and Wildlife Service [USFWS] 2007).

Most coastal California gnatcatchers at Camp Pendleton are found at elevations below 490 feet (150 meters), on less than 15 percent slopes, in areas that have not burned in ten or more years. Coastal California gnatcatchers are found in the same general areas as in years past (MCB Camp Pendleton 2012). Base-wide surveys conducted in 2010 detected 268 nesting pairs. A decrease from the 668 observed in 2006 to 268 in 2010 represents the largest decrease recorded for MCB Camp Pendleton. This, combined with a similar decline in gnatcatcher numbers between the 1998 and 2003 survey efforts, is evidence that this population is subject to dramatic fluctuations (NAVFAC Atlantic 2011).

As provided by Table 3.1-3, and shown on Figures 3.1-1 through 3.1-3, 1.0 acre (0.4 ha) of suitable habitat occur within the utility corridors of Sites A and B, and 11.5 acres (4.7 ha) of suitable habitat occur within Site E. The agricultural and disturbed land that comprises most of the Stuart Mesa Sites does not afford cover and is unlikely to be used as foraging or dispersal habitat by gnatcatchers that inhabit adjacent DCSS. In contrast, grassland vegetation at Site E is nearly surrounded by occupied DCSS (refer to Figure 3.1-3) and is likely to be used for foraging and dispersal by gnatcatchers. Additionally, 75.3 acres (30.5 ha) and 77.1 acres (31.2 ha) of suitable habitat occur within 500 feet (152 meters) of the Stuart Mesa Sites and Site E, respectively. With the possible exception of some of the potential habitat west of Site A, along I-5 (refer to Figure 3.1-1), all potential habitat is considered to be occupied, although the DCSS at Stuart Mesa appears to be of poorer quality (based on the prevalence of coyote brush) and supports lesser numbers of gnatcatchers.

A USFWS-permitted biologist conducted coastal California gnatcatcher protocol surveys in suitable DCSS habitats within and surrounding Site E in the spring of 2015. Survey results indicated that coastal California gnatcatchers were using three areas of DCSS in and within 500 feet (152 meters) of Site E (MCB Camp Pendleton 2015c). All three of the coastal California gnatcatcher territories had patches of high quality DCSS, which were dominated by California sagebrush shrubs, and were relatively undisturbed. The DCSS in the project area mostly occurs in the 500-foot (152-meter) buffer surrounding Site E. Site E contains very little suitable DCSS habitat. The primary disturbance potentially affecting the California gnatcatcher within Site E and the 500-foot (152-meter) buffer appears to be Vandegrift Boulevard, which bisects the survey area, and associated visual and aural traffic disturbance (MCB Camp Pendleton 2015c).

**Table 3.1-3. Suitable Habitat within or Adjacent to the Project Area**

Area	Coastal California Gnatcatcher <i>acres (ha)</i>	Least Bell’s Vireo <i>acres (ha)</i>
Site A	0.7 (0.3)*	-
Site B	0.3 (0.1)*	-
Site C	0.03 (0.01)	-
Site D	-	-
Site E	11.5 (4.7)	-
Sites A-D 500-foot (152-meter) buffer	75.3 (30.5)	20.3 (8.2)
Site E 500-foot (152-meter) buffer	77.1 (31.2)	6.9 (2.8)
<b>Total</b>	<b>164.9 (66.8)</b>	<b>26.9 (11.0)</b>

Note: \* Values represent utility corridors. Utility corridors are not included in Alternative 1, but are included in Alternatives 2 and 3.

Least Bell’s Vireo

Least Bell’s vireos are small, migratory songbirds that arrive at MCB Camp Pendleton from wintering grounds in Baja, CA as early as mid-March and depart by September. The breeding season is from 15 March through 31 August. The least Bell’s vireo primarily inhabits dense willow-dominated riparian habitats with lush understory vegetation. The subspecies forages and nests primarily in willows (Lynn and Kus 2010).

As provided by Table 3.1-3, and shown on Figures 3.1-1 through 3.1-3, no suitable least Bell’s vireo riparian habitat is located within any of the proposed project sites. However, 20.3 acres (8.2 ha) and 6.9 acres (2.8 ha) of suitable habitat respectively occur within 500 feet (152 meters) of the Stuart Mesa Sites and Site E. The habitat east of Site A and northwest of Site B is occupied. The potential habitat within Site E’s 500-foot (152-meter) buffer is not known to be occupied. However, since least Bell’s vireos are known to occupy other nearby habitat (refer to Figure 3.1-3), this habitat has the potential to be occupied in the future.

Light-footed Ridgeway’s Rail

Light-footed Ridgeway’s rails are non-migratory marsh birds that live and breed in coastal and freshwater marshes. The SMR Estuary has been surveyed for light-footed Ridgeway’s rails every year since 1980, and other potential locations on MCB Camp Pendleton, including San Mateo Creek, Las Flores Creek, and Cocklebur Lagoon, have also been surveyed in most years (Zembal et al. 2009). However, with the exception of one reported sighting at Green Beach (MCB Camp Pendleton 2015e), since the 1980s, the species has been detected on MCB Camp Pendleton only at the SMR Estuary (MCB Camp Pendleton 2012) (refer to Figure 3.1-1). Annual surveys show at least one pair of birds present in the estuary near the mouth of the SMR during most years since 2002. A second pair of birds has been occasionally documented in brackish or freshwater marsh areas further upstream between the railroad tracks and Stuart Mesa Road (Zembal et al. 2009).

Southern California Steelhead

Southern California steelhead are an anadromous form of rainbow trout that use freshwater habitats during the first years of their lifecycle, then move to marine water for two to three years before returning to freshwater to spawn (USFWS 1998). Spawning season for this species occurs January through May (Boughton et al. 2006). Steelhead historically occurred within three drainages on MCB Camp Pendleton: San Mateo, San Onofre, and Santa Margarita.

Southern California steelhead have not been sighted in the SMR since the 1940s, and those sightings were anecdotal. It has been theorized that flow conditions in the SMR have been sufficient to support populations since at least the 1980s, with the exception of several individual dry years, but this species has not repopulated the river (USFWS 1998). However, a tissue sample obtained from a trout captured in the SMR during the spring of 2009 was identified through genetic testing to be of wild steelhead ancestry with no indication of hatchery origin (National Marine Fisheries Service 2010). Although genetic testing of the tissue sample positively identified the captured trout to be of wild steelhead ancestry, an otolith sample was not taken which would have confirmed whether the fish was an offspring of wild native resident trout or wild steelhead which had migrated upstream (Kalish 1990, Volk et al. 2000).

The mouth of the SMR, southwest of the Site C, may provide habitat for steelhead migratory passage.

#### Tidewater Goby

Tidewater gobies are small fish that live and reproduce in coastal lagoons. This goby inhabits shallow waters (less than 3 feet [0.9 meter] deep) that are slow moving to still but not stagnant. In southern California, San Mateo, San Onofre, and Las Flores creeks are considered by the USFWS to have the largest and most persistent populations of tidewater goby in the region (Lafferty 2012). Tidewater gobies occur in seven lagoons on MCB Camp Pendleton: San Mateo Creek Lagoon, San Onofre Creek Lagoon, Las Flores Creek Lagoon, Hidden Creek Lagoon, Aliso Creek Lagoon, French Creek Lagoon, and Cocklebur Creek Lagoon. Biannual presence/absence surveys for tidewater gobies are conducted at all above mentioned lagoons as well as the SMR Estuary. Since beginning presence/absence surveys in 2002, the SMR Estuary is the only sampling location on MCB Camp Pendleton that has not produced positive presence data for tidewater gobies (Lafferty 2012).

#### Thread-leaved Brodiaea

The thread-leaved brodiaea is a perennial herbaceous plant that produces leaves and flowers from an underground corm. It occurs at elevations between 10 feet (3 meters) and 2,500 feet (765 meters) (USFWS 2009, MCB Camp Pendleton 2012). In San Diego County, thread-leaved brodiaea typically occurs in clay soils associated with open native or non-native grassland, open DCSS, or open coastal sage scrub-chaparral communities (USFWS 2009, 2011). Potential habitat for thread-leaved brodiaea occurs in Site E. Surveys for thread-leaved brodiaea in Site E were conducted in Spring 2015. The surveys found no thread-leaved brodiaea in the Site E project area in 2015. However, during coastal California gnatcatcher surveys that were being conducted by Cardno biologists at Site E (including within a 500-foot [152-meter] buffer surrounding the project area) on 22 April 2015, two large thread-leaved brodiaea populations were discovered outside of the project area, north of Vandegrift Boulevard (MCB Camp Pendleton 2015d). These two populations were mapped and data sheets were completed for them, however, they were not revisited because they were not found during the protocol surveys and did not occur in the project area.

#### Other Special Status Species

There are a number of non-listed special status species that occur on MCB Camp Pendleton (MCB Camp Pendleton 2012) and that have the potential to occur in or transit through the potential solar PV sites. California Department of Fish and Wildlife (CDFW) special status wildlife and plant species have the potential to occur in the project area (CDFW 2015a, 2015b, MCB Camp Pendleton 2015a). The Stuart Mesa Sites provide little to no native habitat for such species, but the following special status wildlife species could potentially forage in or traverse through these sites as well as Site E: sharp-shinned hawk

(*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), and white-tailed kite (*Elanus leucurus*).

No federally-listed fairy shrimp (Riverside fairy shrimp [*Streptocephalus woottoni*] or San Diego fairy shrimp [*Branchinecta sandiegonensis*]), were detected or observed within or adjacent to Site E/Alternative 3 during protocol-level surveys conducted during 2014/2015. Surveys are planned in 2016 adjacent to Site E and would not affect the preferred alternative.

The only rare plant that was observed in the project area was Palmer's grappling hook (*Harpagonella palmeri*). Palmer's grappling hook is of limited distribution in California. It is not federally protected. In the two populations that occur in the project area at Site E, thousands of individuals were observed. Palmer's grappling hook blooms from February to May and occurs on dry slopes and mesas up to 1,500 feet (457 meters) in chaparral, coastal sage scrub, and grassland communities (MCB Camp Pendleton 2015d).

### 3.1.3 Environmental Consequences

#### 3.1.3.1 Alternative 1: Sites A and B

##### Construction

Under Alternative 1, construction activities at Sites A and B would have little impact on native and/or natural plant communities, as these sites are located in former agricultural land (and a small portion of eucalyptus woodland; see Table 3.1-1) that is largely devoid of native vegetation. To further minimize potential impacts, proposed measures described in Table 3-1 would prevent any tree outside of the agricultural fields, including eucalyptus, from being removed for construction of the solar PV sites. Therefore, there would be little to no impacts to plant communities, including eucalyptus woodland.

Construction activities at Sites A and B would likely have minimal impacts on wildlife populations. The former agricultural lands in Sites A and B provide little suitable habitat for most wildlife. Use of construction equipment and vehicles could potentially crush and/or injure wildlife, but because of the lack of suitable wildlife habitat within the potential PV sites, the likelihood of such impact is relatively low. Wildlife in the vicinity of construction activities would also be exposed to auditory and visual disturbance from human presence and construction equipment. However, the potential solar PV sites are immediately east of I-5 and active railroad tracks that produce near-constant visual and aural disturbance. Mobile species, such as birds and mammals, would leave the sites during construction and migrate to other more suitable locations.

Construction of the solar PV system would not result in a substantial loss of foraging, nesting, or roosting habitat for wildlife, including special status species, as all of the potential solar PV sites have been intensively used for agricultural purposes in the past and do not currently provide such habitat.

To avoid impacts to nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements.

Temporary direct effects associated with construction during the nesting season may include construction-related vibration, dust, and noise. These impacts may affect the suitability of localized habitat over the anticipated 2-year construction period. For example, if construction activities occur during the nesting season, noise may mask calls, change nesting or foraging patterns, or temporarily displace individuals

from the immediate vicinity of the project site. These temporary impacts, however, would be minimized by the proposed avoidance/minimization measures for coastal California gnatcatchers and least Bell's vireos described below.

Within the project area, potential habitat for thread-leaved brodiaea only occurs at Site E. As such, the implementation of Alternative 1 at Site A and Site B would not affect thread-leaved brodiaea.

The proposed project would not occur within light-footed Ridgeway's rail habitat, the light-footed Ridgeway's rail is not expected to occur in the vicinity of the proposed project site, and the implementation of a SWPPP (as described in Section 3.3.3.1, *Construction*) would prevent stormwater runoff from impacting downstream light-footed Ridgeway's rail habitat. As such, there would be no impact to the light-footed Ridgeway's rail or any fish species. Therefore, implementation of Alternative 1 would not affect the light-footed Ridgeway's rail, the southern California steelhead, or the tidewater goby.

Special status wildlife species within or adjacent to Site A or Site B would be subject to the same impacts described above. It is highly unlikely that any special status species would be present in the potential solar PV sites during construction activities. Although coastal California gnatcatchers and least Bell's vireos in the vicinity of the project area have likely become habituated to noise from I-5, the railway, Stuart Mesa Road, and the nearby housing development, there would likely be additional disturbance from proposed construction activities.

The following avoidance/minimization measures would be implemented to avoid or minimize impacts to the coastal California gnatcatcher and the least Bell's vireo:

- A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the coastal California gnatcatcher and the least Bell's vireo, respectively. Surveys would be performed by a qualified ornithologist familiar with the coastal California gnatcatcher and the least Bell's vireo (i.e., at least one field season and 40 hours of experience with each species). Three pre-activity surveys for active coastal California gnatcatcher and least Bell's vireo nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other on-going surveys to minimize disturbance to nesting coastal California gnatcatchers and least Bell's vireos and to avoid redundant survey effort.
- Construction activities during the nesting season within 500 feet (152 meters) of occupied coastal California gnatcatcher or least Bell's vireo habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if coastal California gnatcatcher and least Bell's vireo nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Fish and Wildlife Office would be notified of the location of the nest. Additionally, a 250-foot (76-meter) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season.

Due to the limited potential impacts (mainly temporary noise and visual stimuli) to the coastal California gnatcatcher and its habitat, and with implementation of the proposed avoidance/minimization measures,

construction activities associated with Alternative 1 may affect, but are not likely to adversely affect, the coastal California gnatcatcher and there would be no significant impact.

Due to the limited potential impacts (mainly temporary noise and visual stimuli) to the least Bell's vireo and its habitat, and with implementation of the proposed avoidance/minimization measures, construction activities associated with Alternative 1 would not affect the least Bell's vireo and there would be no significant impact.

### Operation

Following construction and during operation, ground cover and other vegetation beneath and near the panels would be trimmed periodically and likely controlled with herbicides to ensure that vegetation does not obscure or shadow the panels. Because of the historical agricultural use of the potential solar PV sites, the vegetation requiring mechanical and/or chemical control would primarily be non-native species. Therefore, there would be no impacts to plant communities.

Any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's approved Pesticide Application Plan as well as the Pesticide Management Plan; and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by Assistant Chief of Staff (AC/S) Facilities (phone: 760-763-5941). Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SWRCB 2014).

Chain link fencing around the potential solar PV sites would present barriers to overland movement by wildlife, especially to larger species. However, larger animals would likely be able to move around the fences without expending energy to the point of affecting major life functions, and it is expected that smaller species, such as invertebrates, reptiles, and small rodents, would be able to fit through the chain link fencing. Still, the solar panels themselves and the fencing surrounding the solar PV fields would alter the local environment to the point that hiding spots, preying strategies, and food availability would be changed. Conversion of the former agricultural fields to a PV array under Alternative 1 is likely to reduce bird abundance and diversity, although highly insectivorous species (e.g., swallows and flycatchers) may be less affected (DeVault et al. 2014); see below. In the case of Sites A and B, however, the existing condition is highly degraded, such that relatively small changes are expected.

Impact trauma was the leading cause of bird death documented at a single PV site in southern California in 2014 (Kagan et al. 2014). A large proportion of the birds died from striking project components, either because panels were oriented vertically and birds flew into them, or as a result of apparently mistaking the solar PV fields for water (Kagan et al. 2014). "Lake effect" is commonly used to describe the phenomenon whereby birds and their insect prey can mistake a reflective solar facility for a water body because they share several characteristics, namely large, smooth, dark surfaces that reflect horizontally polarized sunlight and skylight (Upton 2014).

Many insects rely on polarized light as a cue to indicate the presence of lakes and rivers (Horvath et al. 2010). As a result, flying insects could be attracted to PV panels, in which case they would likely attract insect-eating birds and/or bats, potentially increasing the likelihood of bird/bat collisions with PV panels

(Kagan et al. 2014). In contrast, DeVault et al. (2014) reported that (1) they found little evidence that birds using PV arrays responded to polarized light reflected by the PV panels or by increased abundance or availability of insects attracted to the panels, (2) they rarely observed birds foraging on or near PV arrays, and (3) several strongly insectivorous species (e.g., swallows and flycatchers) were, in general, at least as abundant at PV arrays as at (typically monoculture) airfield grasslands. Although PV panels are inherently absorptive (i.e., non-reflective), they do reflect horizontally polarized light similar to the way a lake's smooth, dark surface horizontally polarizes reflected sunlight and skylight. This feature may confuse birds that use polarized light for orientation or behavioral cues (Desert Renewable Energy Conservation Plan Independent Science Advisors 2010). Lake effect seems to be most influential when panels or heliostats are oriented horizontally, collectively forming a smooth, continuous surface (Kagan et al. 2014).

Estimating the number of birds that may be injured or killed due to lake effect as a result of the Proposed Action is impossible at this time because of the lack of studies on this phenomenon as it relates to solar projects. Under Section 1502.22 of CEQ Regulations for Implementing NEPA, "when an agency is evaluating reasonably foreseeable ... adverse effects on the human environment ... and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking" (40 CFR 1502.22). While the collective evidence suggests that lake effect does contribute to avian mortalities on solar PV projects, no scientifically rigorous studies have been conducted to test the validity of this conclusion. However, based on the available data, utility-scale solar power projects have the potential to cause some mortality to birds and bats. Efforts to minimize potential lake effect impacts to birds and bats from the implementation of the Proposed Action can still be achieved through the use of best available science and appropriate design specifications to be implemented during construction.

While acknowledging the incompleteness of the current data on the topic, this analysis concludes that any lake effect-related bird strikes at the proposed solar PV field location(s) would not rise to the level of a significant impact for purposes of NEPA analysis. Therefore, Alternative 1 is not expected to substantially adversely affect bird and bat populations as a result of mortalities related to lake effect.

To assess any potential impacts the solar PV field might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations. Additionally, maintenance personnel would be trained to identify coastal California gnatcatchers and least Bell's vireos and would report any observations of dead or injured California gnatcatchers and least Bell's vireos to Environmental Security within 48 hours.

Under Alternative 1, the likelihood of impacts to federally-listed species would be extremely low because suitable habitat does not occur at the proposed PV site and monitoring of the solar PV fields would be conducted to assess the potential use of the project area by wildlife, including federally-listed species. Results of the surveys would be provided to USFWS for comments and recommendations to minimize impacts from continuing operations.

### Decommissioning

Decommissioning of the solar PV sites would have similar impacts to construction activities. Work crews, vehicles, and equipment would require access to the sites for removal of all solar PV materials. No native or natural plant communities would be impacted by decommissioning activities, as bare ground and/or non-native herbaceous plants would be the dominant groundcover.

During operation of the solar PV sites, certain species may have become established in the habitats in and/or adjacent to the project area, including certain special status species. Therefore, a biological monitor would survey the solar PV sites for animal dens and nesting birds before commencing decommissioning activities. If nesting or denning animals are found to occur in the solar PV sites, they would be allowed to leave the sites on their own accord or would be passively relocated during the avian non-nesting season (September – February) before the start of decommissioning activities. If federally-listed species are found to occur in the solar PV sites before the start of decommissioning activities, then the USFWS would be notified and no actions would be taken until necessary measures are agreed upon by the Navy, the private partner, and the USFWS.

### Summary

Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and DCSS, which are suitable habitat for the least Bell's vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell's vireo or the coastal California gnatcatcher. Moreover, the avoidance/minimization measures listed in Table 3-1 would be implemented to lessen potential impacts to biological resources. Therefore, implementation of Alternative 1 would have no significant impact to biological resources.

#### 3.1.3.2 Alternative 2: Sites A, B, C and D

### Construction

#### *Sites A and B*

With the exception of the addition of the transmission line corridors, construction impacts at Sites A and B under Alternative 2 would be similar to those described for Alternative 1. Construction of the associated transmission lines could temporarily or permanently remove 1.0 acre (0.4 ha) of habitat (i.e., DCSS) occupied by coastal California gnatcatchers. Impacts to DCSS in the transmission line corridors would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). DCSS that cannot be avoided would be restored onsite or mitigated off-site.

The additional transmission lines from Site A and Site B to existing overhead lines may be used for perching by predatory birds, and would also represent a collision hazard for birds, especially during periods of low visibility. However, overhead transmission lines are already abundant in the vicinity of the project area, are part of the local environment, and would have a relatively small impact given the existing trees, snags, and structures (e.g., homes, fences, and baseball field lights) already located along the Site A transmission line route and the existing transmission lines located along and across the Site B transmission line route. In addition, all transmission towers, poles, and lines would be designed and constructed in accordance with the guidelines in Avian Power Line Interaction Committee (2006 and 2012), or the most current version of the guidelines available at the time of construction, to minimize collision and electrocution hazards of migratory birds from transmission lines.

Due to the limited potential impacts (mainly temporary noise and visual stimuli with limited direct habitat loss of 1.0 acre [0.4 ha] that would be restored or mitigated) to the coastal California gnatcatcher and its habitat, and with implementation of the proposed avoidance/minimization measures, construction activities associated with Alternative 2 may affect, but are not likely to adversely affect, the coastal California gnatcatcher and there would be no significant impact.

If Alternative 2 were to be selected, due to the general suitability of habitat for the Pacific pocket mouse at the two utility corridors and the proximity of both corridors to historically-occupied Pacific pocket mouse habitat, a live-trapping survey would be performed in the portions of each utility corridor exhibiting the most suitable Pacific pocket mouse habitat. Survey results would confirm the presence or absence of the Pacific pocket mouse and would be shared with the USFWS during subsequent consultation. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact.

#### *Sites C and D*

Construction impacts at Sites C and D, being similar to Sites A and B and almost entirely composed of AGR and DEV, with a small amount of EUC, generally would be as described for Sites A and B under Alternative 1.

#### Operation

##### *Sites A and B*

Operation impacts at Sites A and B under Alternative 2 would be identical to those described for Alternative 1.

##### *Sites C and D*

Operation impacts at Sites C and D, being similar to Sites A and B and almost entirely composed of AGR and DEV, with a small amount of EUC, generally would be as described for Sites A and B under Alternative 1.

#### Decommissioning

##### *Sites A and B*

Decommissioning impacts at Sites A and B under Alternative 2 would be identical to those described for Alternative 1.

##### *Sites C and D*

Decommissioning impacts at Sites C and D, being similar to Sites A and B and almost entirely composed of AGR and DEV, with a small amount of EUC, generally would be as described for Sites A and B under Alternative 1.

#### Summary

Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint. A small area (1.0 acre [0.4 ha]) of DCSS, which is suitable habitat for the coastal California gnatcatcher, is located within the transmission corridors. As such, implementation of Alternative 2 would not affect the least Bell's vireo and may affect, but is not likely to adversely affect, the coastal California gnatcatcher. The avoidance/minimization measures listed in Table 3-1 would be implemented to lessen potential impacts to biological resources. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no

significant impact to the Pacific pocket mouse. Therefore, implementation of Alternative 2 would have no significant impact to biological resources.

### 3.1.3.3 Alternative 3: Sites A, B, C, D, and E

#### Construction

##### *Sites A, B, C, and D*

Construction impacts at Sites A, B, C, and D under Alternative 3 would be identical to those described for Alternative 2.

##### *Site E*

Construction impacts at Site E would be similar to those described for Sites A-D, with the exception that Site E contains a greater amount of biological resources, particularly with respect to the vegetation communities and the greater diversity and abundance of wildlife that use these vegetation communities than Sites A-D. Depending on the final plan of development, construction at Site E could result in the loss of up to 11.5 acres (4.7 ha) of DCSS, 32.9 acres (13.3 ha) of NNG, and/or 13.1 acres (5.3 ha) of VNG. The DCSS at Site E is considered occupied habitat for the coastal California gnatcatcher, and all of the grassland is potential foraging and dispersal habitat for the coastal California gnatcatcher. Additionally, as shown on Figure 3.1-3, occupied coastal California gnatcatcher habitat also surrounds Site E. As such, the implementation of Alternative 3 would result in fragmentation of the coastal California gnatcatcher's habitat. However, given the relatively small size of Site E and the habitat connectivity in the vicinity that would remain, this impact would be minor.

To minimize potential impacts, all avoidance/minimization measures identified for construction activities under Alternative 2 would also be implemented during construction activities at Site E under Alternative 3. Site E under the Proposed Action would require formal consultation with the USFWS and would require mitigation for the loss of occupied coastal California gnatcatcher habitat and/or special conservation measures to avoid or minimize impacts to coastal California gnatcatchers. Federally listed fairy shrimp were not detected during protocol surveys in 2014/2015 and if they are detected in planned 2016 surveys, they would be avoided.

Therefore, for the reasons described above, the implementation of Alternative 3 would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact.

#### Operation

##### *Sites A, B, C, and D*

Operation impacts at Sites A, B, C, and D under Alternative 3 would be identical to those described for Alternative 2.

##### *Site E*

Upon completion of construction, Site E would be similar to Sites A and B under Alternative 2. Therefore, operational impacts at Site E generally would be as described for Sites A and B under Alternative 2.

## Decommissioning

### *Sites A, B, C, and D*

Decommissioning impacts at Sites A, B, C, and D under Alternative 3 would be identical to those described for Alternative 2.

### *Site E*

Decommissioning impacts at Site E under Alternative 3 would be identical to those described for Alternative 2.

## Summary

Construction of the proposed project at Sites A-D would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Site E provides greater value than the Stuart Mesa sites, particularly for DCSS and the coastal California gnatcatcher. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint of Sites A-D. Depending on the final plan of development, the implementation of Alternative 3 could result in the loss of up to 11.5 acres (4.7 ha) of DCSS that is suitable habitat for the coastal California gnatcatcher at Site E. As such, construction of the proposed project would not affect the least Bell's vireo but would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse in the transmission corridors of Sites A and B. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse. Therefore, implementation of Alternative 3 would have no significant impact to biological resources.

### 3.1.3.4 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV project at MCB Camp Pendleton. Therefore, the No-Action Alternative would have no impact on biological resources.

## **3.2 HAZARDOUS MATERIALS AND WASTE (HAZMAT/HAZWASTE)**

### **3.2.1 Definition of Resource**

HAZMAT is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors (Institute of Hazardous Materials Management 2010).

HAZWASTE is waste that is dangerous or potentially harmful to human health, animals, or the environment. Hazardous wastes take the form of liquids, solids, gases, or sludges, and are typically discarded commercial products or the by-products of manufacturing or operating processes (U.S. Environmental Protection Agency [USEPA] 2014a).

Safety refers to the level of risk involved with the utilization of HAZMAT or in the production of HAZWASTE in the process of carrying out the construction, operation, and maintenance of the proposed

project. Security refers to the safeguarding of HAZMAT/HAZWASTE storage and other “do not approach” areas.

All units, organizations and tenants of MCB Camp Pendleton must manage HAZMAT/HAZWASTE in accordance with the Basewide Hazardous Waste Management Plan (HWMP) (MCB Camp Pendleton 2011b). The HWMP incorporates federal, state, local (city and county) and military regulations prescribing responsibilities, policies, and procedures for generating, handling, storing, and managing HAZMAT/HAZWASTE at MCB Camp Pendleton.

The assessment of HAZMAT and HAZWASTE on MCB Camp Pendleton primarily focuses on the following:

**Installation Restoration Program (IRP) Sites:** The IRP is designed to identify, assess, characterize, and clean up or control, and thereby reduce contamination from past hazardous waste disposal operations and hazardous materials spills. The Department of Defense’s (DoD) equivalent to the USEPA Superfund program, the IRP was established to meet federal requirements regarding the cleanup of hazardous waste sites, outlined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by Superfund Amendments and Reauthorization Act.

**Munitions Response Plan (MRP) Sites:** The MRP addresses munitions response sites; sites that are known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. The MRP complies with environmental clean-up laws, such as CERCLA, also known as Superfund.

**Underground (or Leaking Underground) Storage Tanks (UST/LUST):** The USEPA has a UST/LUST program, authorized under Resource Conservation and Recovery Act to prevent the release of petroleum and other products stored in USTs. Congress enacted laws to clean up leaking tanks, prevent tanks from leaking, and detect leaks quickly if they do occur since leaking underground storage tanks have been a major cause of groundwater contamination in the U.S.

**Ammunition Storage Areas:** MCB Camp Pendleton has several ammunition storage areas which are storage facilities for live ammunition and explosives.

Safety and security on MCB Camp Pendleton are subject to the requirements of the Base’s applicable Standard Operating Procedures (SOP). The primary SOP regulating safety and security is the Range and Training Area SOP (Marine Corps Installations West – MCB Camp Pendleton Order [MCIWEST-MCB CAMPENO] 3500.1). As the proposed project would be located on an active military installation, Homeland Security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism, natural disasters, and disease outbreaks (USEPA 2014b). MCB Camp Pendleton has guidance documents including Base Orders, SOPs, and multiple management plans (e.g., environmental response, range and training, waste handling) that govern activities carried out on the Base.

The assessment of safety and security on MCB Camp Pendleton primarily focuses on the MCB Camp Pendleton Base Boundary (perimeter fence) and the following:

**Explosive Safety Quantity Distance (ESQD) Arcs:** ESQD calculations measure the effects of an explosion at a particular location and is expressed either as a mathematical formula or as an arc map, where the center of the arc is the source of an explosion and the arc's periphery is the maximum area over which the force of the explosion would reach.

**Intraline Arcs:** The minimum distance permitted between any two buildings within an explosives operating line to protect buildings from propagation of explosions due to blast effect.

**Live Fire Training or Munitions Impact Areas:** An impact area contains designated boundaries used to contain non-explosive military munitions; and sensitive and non-sensitive, high explosive, military munitions.

### 3.2.2 Affected Environment

#### 3.2.2.1 Sites A, B, C, and D

Sites A, B, C, and D are located adjacent to the Stuart Mesa Housing complex in the Stuart Mesa Housing area on a former agricultural field that pre-dates the inception of MCB Camp Pendleton in the 1940s, was active well into the 2000s. The lease on the agricultural fields was terminated in January of 2011 and the land is currently unutilized for agriculture purposes (Parsons 2015). The former agricultural land that comprises Sites A, B, C, and D is and has been historically known as the Stuart Mesa East Agricultural Fields (SMEAF). Prior to termination of the lease, the land which includes Sites A, B, and C (also known as the SMEAF Remediation Area) initiated remediation activities for the purpose of making land use acceptable and available for housing and related development. The SMEAF Remediation Area involved two concurrent cleanup areas/cases pertinent to Sites A, B, and C. These were designated by the California Water Resources Control Board (CWRCB) as:

- 1) “Stuart Mesa East Ag. Fields, Phases VIIA and VIIB”, GeoTracker Case #T10000001528, in September of 2009; and
- 2) “Stuart Mesa East Ag. Fields, Future Development”, GeoTracker Case # T10000002569, in September of 2010.

Both of these cases were remediated and closed by CWRCB in March of 2011 and April of 2012, respectively (CWRCB 2015a, 2015b). Another CWRCB remains open in Site D however, which is the Maintenance Facility Compound (also known as the Stuart Mesa Pesticide Maintenance Area) northwest of the SMEAF Remediation Area (CWRCB 2015c). Site assessments conducted in 2011 identified 15 subsites within the Maintenance Facility Compound that required remedial investigation. These subsites were added to the MCB Camp Pendleton IRP as Installation Restoration (IR) Site 1120 (Parsons 2015).

During the comment period of the review of Version 1 of this Draft EA, it was noted by the MCB Camp Pendleton IR/Remediation Branch that although Site A does not host any open remediation sites, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by Regional Water Quality Control Board (RWQCB) (MCB Camp Pendleton 2015f). The SWPPP is currently undergoing a closure action, and confirmation of closure should be requested prior to any ground disturbance at the site (MCB Camp Pendleton 2015g). Additionally, in the unlikely event that soil contamination (discolored and/or odorous) is discovered during construction, the action proponent, or their contractor will coordinate with the MCB Camp Pendleton IR/Remediation Branch to ensure all remedial requirements are met. Any contaminated encountered soil will be properly evaluated and managed (MCB Camp Pendleton 2015f).

The IRP, MRP, UST/LUST, or ammunition storage sites mapped by CWRCB within Sites A, B, C, and D are shown in Figure 3.2-1 and listed below (CWRCB 2015d):

#### Site A

There are two former, closed cleanup sites that occur partially or completely within Site A:

- Stuart Mesa East Agricultural Fields, Future Development (T10000002569)
- Stuart Mesa East Agricultural Fields, Phases VIIA and VIIB (T10000001528)

There is one cleanup site not listed as “closed” within Site A:

- Oceanside CP Site (80000338)

#### Site B

The two former, closed cleanup sites within Site B are the same as Site A. There are no open cleanup sites within Site B.

#### Site C

There are no open, nor former, or closed cleanup sites within Site C.

#### Site D

There is one cleanup site not listed as “closed” within Site D:

- IR Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)

#### Adjacent to Site A

There are four former, closed cleanup sites adjacent to Site A (CWRCB 2015d):

- Stuart Mesa Agricultural Lands Phase VI Housing Project - 31 Area (T10000000991)
- Stuart Mesa Agricultural Lands Sewer Line and Four SMAP Parcels - 31 Area (T10000001660)
- Stuart Mesa East Agricultural Fields, Final Phase (T10000003524)
- 31 Area - Building 31921-1 (T0608114719)

#### Adjacent to Site B

There is one former, closed cleanup site adjacent to Site B (CWRCB 2015d):

- 31 Area - Building. 31511 (T0607301857)

There is one cleanup site not listed as “closed” adjacent to Site B

- IR Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)

#### Adjacent to Site C

There is one cleanup site not listed as “closed” outside of the Stuart Mesa Housing Area, but adjacent to Site C (CWRCB 2015d):

- 31 Area - OU 4 - Site 30 - Firing Range Soil Fill (DOD100035300)
- Stuart Mesa East Agricultural Fields, Future Development (T10000002569)



<ul style="list-style-type: none"> <li> Potential Solar PV Sites</li> <li> 500' Site Buffer</li> <li> Road</li> <li> The Transmission Corridor Between the Potential PV Sites and Stuart Mesa Road is <u>NOT</u> Included in Alternative 1</li> </ul>	<p style="text-align: center;"><b>Legend</b></p> <p><u>MCB Camp Pendleton Environmental Hazards</u></p> <ul style="list-style-type: none"> <li> Installation Restoration Area</li> <li> Ammunition Storage Area</li> </ul>	<p><u>SWRCB Cleanup Sites</u></p> <ul style="list-style-type: none"> <li> Closed Site</li> <li> Open Site</li> </ul>
---	--	--

**Figure 3.2-1  
Hazardous Waste Sites in the  
Vicinity of the  
Sites A, B, C, and D**

Source: MCB Camp Pendleton 2015, SWRCB 2015

### Adjacent to Site D

There is one former, closed cleanup site adjacent to Site D (CWRCB 2015d):

- Stuart Mesa East Agricultural Fields, Phases VIIA and VIIB (T10000001528)

The status of these sites are discussed in Section 3.2.3, *Hazardous Materials and Waste (Environmental Consequences)*. There are no other active IRP, MRP, UST/LUST, or ammunition storage sites within or adjacent to Sites A, B, C, and D.

Site characteristics at Sites A, B, C, and D with the potential to affect, or be affected by, safety and security include proximities to military training activities, the SMR, aviation operations, the perimeter fence of MCB Camp Pendleton, and any identified munitions or waste cleanup sites.

There are no active ESQD arcs, intraline arcs, Live Fire Training or Munitions Impact areas, sites, or arcs within Sites A, B, C, and D (MCB Camp Pendleton 2015a). The perimeter fence of MCB Camp Pendleton borders the west side of each site along the I-5 and railroad easements.

#### 3.2.2.2 Site E

Site E in the 12 Area is situated in a developed area near Marine Corps Air Station (MCAS) Camp Pendleton in the south-central portion of MCB Camp Pendleton. Site E is located on a parcel of undeveloped hilly terrain positioned between Vandegrift Road and Rattlesnake Canyon Road, south of Lake O'Neill and east of MCAS Camp Pendleton.

The IRP, MRP, UST/LUST, or ammunition storage sites mapped by CWRCB within Site E are shown in Figure 3.2-2 and listed below (CWRCB 2015d):

There are no former, closed cleanup sites within Site E; however, there is one clean-up site not listed as "closed" within the vicinity of Site E (CWRCB 2015d):

- IR Site 1122 - 61 Area Shotfall Zone (T10000005481)

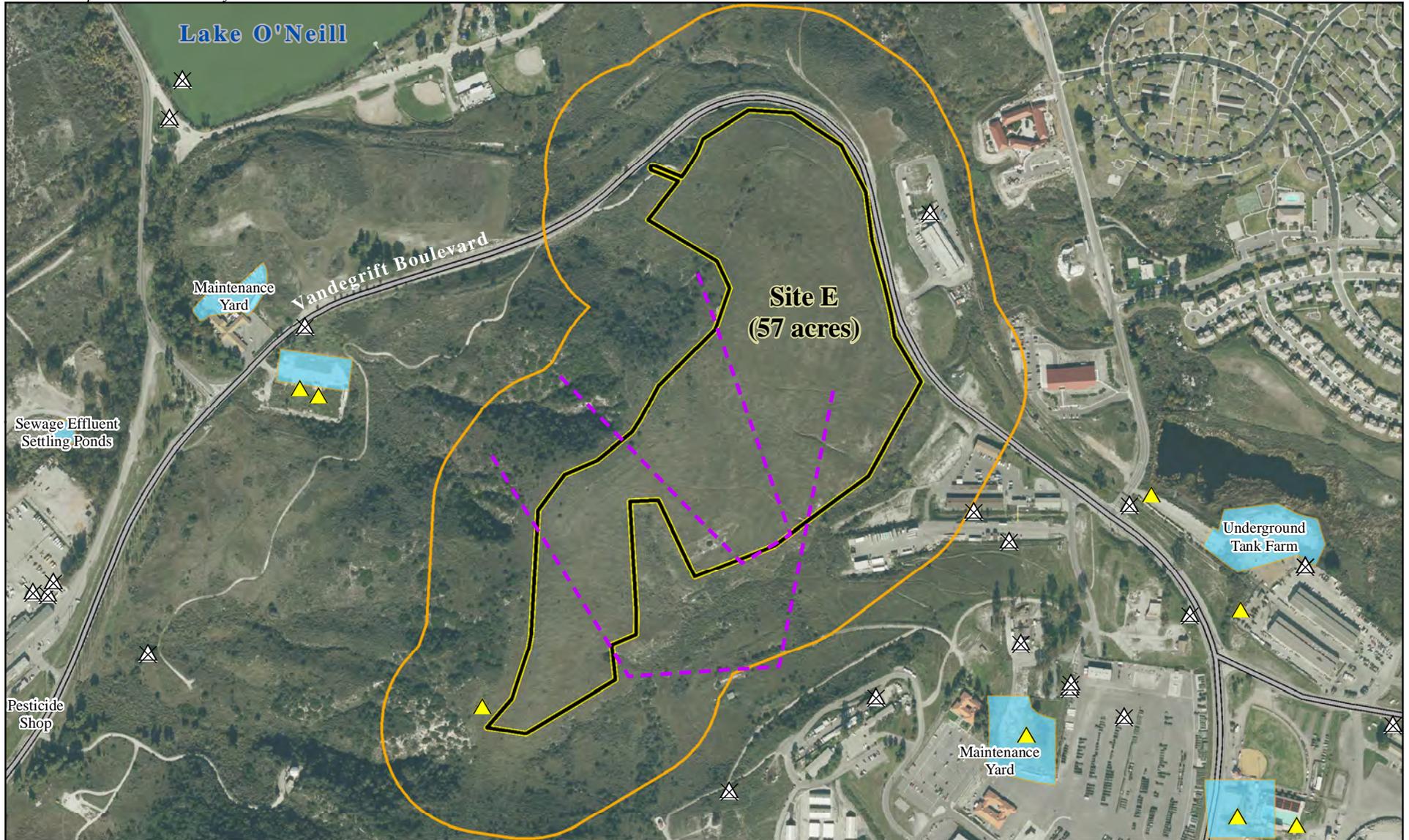
There are multiple open, former, and closed cleanup sites in the vicinity of Site E, but none immediately adjacent to Site E (CWRCB 2015d).

There is an inactive pistol range located within Site E that is not listed as "closed" (Figure 3.2-2; MCB Camp Pendleton 2015a, U.S. Army Corps of Engineers [USACE] 2001):

- Range 404

There are no active ESQD arcs, intraline arcs, or Live Fire Training or Munitions Impact areas within Site E (MCB Camp Pendleton 2015a).

The status of these sites are discussed in Section 3.2.3, *Hazardous Materials and Waste (Environmental Consequences)*. There are no other active IRP, MRP, UST/LUST, or ammunition storage sites within Site E.



**Legend**

Potential Solar PV Site	MCB Camp Pendleton Environmental Hazards	SWRCB Cleanup Sites
500' Site Buffer	Installation Restoration Area	Closed Site
Road	Historic Firing Line	Open Site

**Figure 3.2-2**  
Hazardous Waste Sites in the Vicinity of Site E

0 250 500  
Feet  
0 100 200  
Meters

Source: MCB Camp Pendleton 2015, SWRCB 2015

### 3.2.3 Environmental Consequences

#### 3.2.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

The “Oceanside CP Site (80000338)” is the only cleanup site not listed as “closed” within Alternative 1 (Sites A and B). According to MCB Camp Pendleton, this record is unfamiliar and the validity is suspect; MCB Camp Pendleton is investigating the validity of this record (2014a). The site is listed as inactive according to California Department of Toxic Substances Control (DTSC) and may be a relic database record (DTSC 2015). The information provided by DTSC on its Envirostor website is that this site (referred to as the “Oceanside Camp Site” in an Inventory Project Report [INPR]) was evaluated for inclusion into the Defense Environmental Restoration Program (DERP) in 1989; however, it was excluded from the DERP on the basis that it was part of an active DoD site (ostensibly a reference to MCB Camp Pendleton) (USACE 1989). These type of DERP INPRs are typically associated with Formerly Used Defense Sites (FUDS) evaluations, and sites determined to be “active” DoD sites do not qualify for classification as “formerly” used. During the DERP evaluation, the site was assigned a project number of “J09CA051900” which is consistent with the alpha-numeric codes assigned to FUDS. The DTSC database also lists the site type as “FUDS”. Although FUDS are managed by the USACE, no record of a FUDS with this site name or project number could be found in the available USACE online data (USACE 2013) or GIS (USACE 2012). Personal communication with the USACE Los Angeles District FUDS Program Manager revealed that this site was a “building area for radar” (USACE 2015). The USACE is currently looking in to the record to see if there is any more information available (USACE 2015). The developed nature of the southwest region of the Base, and the location of Sites A and B within an agricultural field that has been there for at least 70 years, suggest that the project site was not subject to the type of military activity that has occurred on other parts of the Base. Nevertheless, excavations on any military facility should be approached with caution.

#### Construction

Alternative 1 site construction is described in Section 2.2.2.2. Primary elements of the construction with the potential for HAZMAT, HAZWASTE, or safety concerns are:

- (up to) 28 MW ground-mounted solar PV panels
- underground and/or pole-mounted electrical infrastructure
- inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the solar PV system
- area lighting
- trenching for underground routing of PV panel wiring
- potential boring to support panel foundation mounting posts
- site grading
- construction vehicles, equipment, fuels, and lubricants
- installation of barbed wire fencing around site
- construction debris

The solar PV panels would either be fixed-, single-, or multi-axis type solar PV panels. If selected, the single-axis and/or multi-axis panels would include a drive shaft and motor that rotates the panels to follow the movement of the sun. Equipment used to construct the solar PV system would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. Within Site A or B, a substation would also be constructed. The substation would cover an

approximately 1-acre (0.4 ha) area. The substation would serve as the interface connection of the solar PV system to the existing SDG&E 12/69-kV transmission line located west of the Stuart Mesa Housing complex (for Model 2) or to the interface connection to the solar PV system to the existing MCB Camp Pendleton J circuit that runs parallel to the east side of Stuart Mesa Road from MACS Road to the 41 Area (for Model 3). A 69-kV switching/metering station would also be constructed.

Construction would create a minimal amount of construction debris that would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste). All construction would be conducted in compliance with all applicable rules and regulations. The use of standard construction BMPs and a Solid Waste Management Plan (SWMP) will maximize the control of HAZMAT/HAZWASTE components (e.g., fugitive petroleum, oils, and lubricants [POLs] from vehicles).

### Operation

Alternative 1 operation and maintenance is described in Section 2.2.2.3. Primary elements of the operation with the potential for HAZMAT, HAZWASTE, or safety concerns are:

- use and maintenance of existing access roads
- operation of electrical and mechanical systems
- solar PV system service, maintenance, and repair
- vegetation trimming
- herbicide treatments

Quarterly inspections of the solar PV system would be conducted to ensure infrastructure is in good operating condition. Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up.

Access roads would be maintained as needed, and ground cover and other vegetation beneath and near the panels would be trimmed periodically. Vegetation beneath and near the panels could also be controlled with herbicides to ensure that it does not obscure or shadow the panels. Any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the FIFRA labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's approved Pesticide Application Plan as well as the Pesticide Management Plan; and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by AC/S Facilities (phone: 760-763-5941). Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SWRCB 2014).

All operations and maintenance would be conducted in compliance with all Navy and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

## Decommissioning

Alternative 1 decommissioning is described in Section 2.2.2.4. Primary elements of the decommissioning with the potential for HAZMAT, HAZWASTE, or safety concerns are:

- removal of aboveground structures
- site grading
- use of construction equipment, vehicles, fuel, and lubricants
- construction (decommissioning) debris

Equipment and vehicles used in the decommissioning of the solar PV system would likely include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes. Debris would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste), or any new documentation that might replace the Navy's 2009 statement in the future. The use of standard construction BMPs and SWMP will maximize the control of HAZMAT/HAZWASTE components (e.g. fugitive POLs from vehicles).

All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for the hazardous material(s). A decommissioning staging area would be delineated within the overall project area and all work would be done on-site. Following decommissioning activities, the Navy would certify that the land condition was returned to its pre-project condition. All decommissioning activities would be done in compliance with all Navy regulations applicable to conducting work activities on MCB Camp Pendleton, and with adherence to Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

## Summary

As discussed above, the "Oceanside CP Site (80000338)" is a potentially insignificant or invalid record, and if so then implementation of Alternative 1 would have no significant impact to HAZMAT/HAZWASTE. Pending closure of the existing SWPPP on Site A, or alternately, the acquisition of additional information that nullifies the issue raised during the comment period (MCB Camp Pendleton 2015f), Sites A and B would have CWRCB approval for immediate development.

### 3.2.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C, and D

In addition to the "Oceanside CP Site (80000338)" addressed in Section 3.2.3.1 above, "Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)" is a cleanup site not listed as "closed" within Site D of Alternative 2. Site 1120 is also listed as a MCB Camp Pendleton IR Site and consists of 15 sub-sites in close proximity. According to CWRCB, the area was used as a maintenance facility compound for farming process functions for growing tomatoes and strawberries and other agricultural uses for at least 70 years. The property has been vacant since the lease to the farmer expired in January 2011. Areas of concern within the maintenance facility compound include two concrete wash pads and current and/or former aboveground storage tank locations (CWRCB 2015b).

According to CWRCB, MCB Camp Pendleton submitted a Draft Closure Report for Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286) to CWRCB on 27 March 2014, and requested a determination of "no further action" (CWRCB 2015e). In a letter dated 11 August 2014, CWRCB confirmed receipt of the Draft Closure Report; however, CWRCB requested that the report be expanded

to include “a more comprehensive complete presentation” of the initial site conditions (CWRCB 2015e). According to NAVFAC SW, activities leading to the completion of Phase II of the Remedial Investigation are underway for the IR Site 1120. A pre-draft report is targeted for August 2015 that would detail the extent and level of contamination. The awarding of the contract to perform the remediation for IR Site 1120 is expected this year, with the goal of completing the remediation in 2016 (NAVFAC SW 2015).

Proposed land use changes within IR Site 1120 would require the concurrence of the Federal Facilities Agreement (FFA) Stakeholders team. The FFA team includes the USEPA, DTSC, the RWQCB, NAVFAC SW, and the Marine Corps. Clean-up has been completed on IR Site 1120 in Site A, but that area of the property is not available until the soil is stabilized and the SWPPP is closed by RWQCB (MCB Camp Pendleton 2015f). As noted in Alternative 1, it is unclear if the area in need of a SWPPP closure is related to Site 1120 and/or Site A. This issue and additional information is being investigated and will be included in the next iteration of this EA.

Similar to Alternative 1, the developed nature of the southwest region of the Base and the location of Sites A, B, C, and D within an agricultural field that has been there for at least 70 years suggest that these sites were not subject to the type of military activity that has occurred on other parts of the Base. Nevertheless, excavations on any military facility should be approached with caution.

#### Construction

Under Alternative 2 an up to 31 MW solar PV system would be constructed and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 2 would not have a significant impact to HAZMAT/HAZWASTE.

#### Operation

Under Alternative 2 an up to 31 MW solar PV system would be operated and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 2 would not have a significant impact to HAZMAT/HAZWASTE.

#### Decommissioning

Under Alternative 2, impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 2 would not have a significant impact to HAZMAT/HAZWASTE.

#### Summary

As discussed above, the “Oceanside CP Site (80000338)” is a potentially insignificant or invalid record. A Draft Closure Report has been submitted for “Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)” and a full remediation of the site is expected in 2016. Therefore, implementation of Alternative 2 is unlikely to have a significant impact to HAZMAT/HAZWASTE. However, a determination of “no further action” by CWRCB would be needed to certify that no contamination nor hazardous substances remain at Site D prior to development of a solar PV system with implementation of Alternative 2, in order to achieve a finding of no significant impact. Pending closure of the existing SWPPP on Site A, or alternately, the acquisition of additional information that nullifies the issue raised during the comment period (MCB Camp Pendleton 2015f), Sites A, B, and C would have CWRCB approval for immediate development Site D has been identified for further regulatory action, and upon completion could be available for development.

### 3.2.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW solar PV System at Sites A, B, C, D, and E

In addition to the “Oceanside CP Site (80000338)” and “Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)” addressed in Sections 3.2.3.1 and 3.2.3.2 above, the “IR Site 1122 - 61 Area Shotfall Zone (T10000005481)” is mapped by CWRCB within the vicinity of Alternative 3 (Site E) and is not listed as “closed”. However, the “IR Site 1122 - 61 Area Shotfall Zone (T10000005481)” is located in the 61 Area, along the northwestern portion of MCB Camp Pendleton, near Avenida Acapulco and Cristianitos Road, and not in the 12 Area. Also according to MCB Camp Pendleton (2014a, 2015a), this record is mapped by CRWCB in the wrong location.

There is an inactive pistol range, Range 404, within Site E that is not listed as “closed” (refer to Figure 3.2-2) (MCB Camp Pendleton 2015a, USACE 2001). Range 404 is an inactive dual pistol range and its utilization ceased at one of the two ranges by the late 1960s and the other followed in the early 1970s (MCB Camp Pendleton 2015a). The inactive Range 404 has not been assessed for the presence or absence of munitions waste, nor officially closed as a range. Because the presence of munitions waste is unknown, presence is assumed until a site assessment has been conducted. If small arms munitions waste (e.g., shell casings or unspent rounds) remain in the ground, then a lead leachate hazard may exist to soil and groundwater and potentially even an explosive hazard may exist to personnel (such as by disturbing cartridges in a deteriorated state).

The CERCLA process for closing the inactive Range 404 would likely include some or all of the following steps. A remedial investigation (sample collection) would need to be conducted to determine the presence and amount of constituents of concern, and submitted in a report to USEPA, DTSC, and RWQCB. These agencies provide comments and typically additional requests for information and data, a process that can take at least six months to complete. If the site is found to be contaminated at levels that exceed a human health (residential) or ecological risk threshold, the site would need to be remediated to a level that supports future use. If the site is not cleaned up to a residential risk level, there would be land use restrictions and routine reporting (every 5 years) to regulatory agencies for the entire life of the site. Installation of solar panels on the site could potentially allow for cleanup levels to be reduced to an industrial risk level, which is less stringent than the residential level. However, all parties to the FFA (USEPA, DTSC, RWQCB, Navy and Marine Corps) would have to agree, and the Commanding General of MCB Camp Pendleton would need to approve land use restrictions on the Base. MCB Camp Pendleton does not typically recommend long-term land use restrictions unless there is absolutely no other alternative.

#### Construction

Under Alternative 3 an up to 39 MW solar PV system would be constructed and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 3 would not have a significant impact to HAZMAT/HAZWASTE.

#### Operation

Under Alternative 3 an up to 39 MW solar PV system would be operated and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 3 would not have a significant impact to HAZMAT/HAZWASTE.

### Decommissioning

Under Alternative 3, impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 3 would not have a significant impact to HAZMAT/HAZWASTE.

### Summary

As discussed above, the “Oceanside CP Site (80000338)” and “IRP Site 1122 - 61 Area Shotfall Zone (T10000005481)” records are potentially insignificant or invalid. A Draft Closure Report has been submitted for “Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286);” however, a determination of “no further action” by CWRCB would be needed to ensure that no contamination nor hazardous substances remain at the site. The inactive Range 404 has not been assessed for the presence or absence of munitions waste, nor officially closed as a range. If small arms munitions waste remain in the ground, then an explosive and/or a lead leachate hazard may exist. Without environmental remediation, abatement, and range closure, there would be a potential significant impact. Pending closure of the existing SWPPP on Site A, or alternately, the acquisition of additional information that nullifies the issue raised during the comment period (MCB Camp Pendleton 2015f), Sites A, B, and C presently have CWRCB approval for immediate development. Sites D and E have been identified for further regulatory actions, and upon completion could be available for development.

#### 3.2.3.4 No-Action Alternative

Under the No-Action Alternative, there would be no change to current conditions. Therefore, implementation of the No-Action Alternative would have no impact on HAZMAT, HAZWASTE or safety.

## **3.3 WATER RESOURCES**

### **3.3.1 Definition of Resource**

Water resources include surface water hydrology, groundwater, and water quality. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Surface water also includes floodplains, which are relatively flat areas adjacent to rivers, streams, watercourses, bays, or other bodies of water subject to inundations during flood events. A 100-year floodplain is an area that is subject to a 1 percent chance of flooding in any particular year, or, on average, once every 100 years. Groundwater refers to water held underground in the soil or in pores and crevices in rock. Groundwater resides in aquifers, areas of mostly high porosity rock substrate where water can be stored within pore spaces. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. For the purposes of this analysis, freshwater quality is evaluated with respect to possible releases of hazardous material and erosion-induced sedimentation resulting from the action alternatives.

The Clean Water Act (CWA) of 1972 is the primary federal law that protects the nation’s waters, including lakes, rivers, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation’s waters. Waters of the U.S. are regulated resources and are subject to federal authority under Section 404 of the CWA. Waters of the U.S. include navigable waters, tributary streams, wetlands, and various other water bodies that are deemed to have a significant nexus to a navigable water. Areas meeting the waters of the U.S. definition are under the jurisdiction of the USACE.

Section 401 of the CWA requires any applicant for a federal license or permit that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification from the state in which the discharge originates or would originate. In California, the SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives) required by the CWA, and regulating discharges to ensure dischargers meet water quality objectives. Projects that have a total area of 1 acre or more of soil disturbance, or are less than one acre but are part of a larger project (common plan of development) that is one acre or more must obtain coverage under the California Construction General Permit for stormwater, SWRCB Order No. 2009-0009-DWQ (NPDES No. CAS 000002), as amended in 2010 and 2012.

Stemming from the CWA, in October 2004, the DoD issued UFC on Low Impact Development (LID) (UFC 3-210-10). The DoD-issued guidance on LID was later updated on 15 November 2010. This is a stormwater management strategy designed to maintain the hydrologic functions of a site and mitigate the adverse impacts of stormwater runoff from DoD construction projects. All DoD construction projects are required to be compliant with these LID criteria. Following UFC 3-210-10, Section 438 of the Energy Independence and Security Act of 2007 (42 USC § 17094) has also been implemented by the DoD. This goes further with stricter stormwater runoff requirements for federal development projects. Section 438 requires federal agencies to develop facilities having a footprint that exceeds 5,000 square feet (465 square meters) in a manner that maintains or restores the pre-development site hydrology to the maximum extent technically feasible. Agencies can accomplish pre-development hydrology in two ways: (1) managing on-site the total volume of rainfall from the 95<sup>th</sup> percentile storm, or (2) managing on-site the total volume of rainfall based on a site-specific hydrologic analysis through various engineering techniques (e.g., detention basin or retention pond).

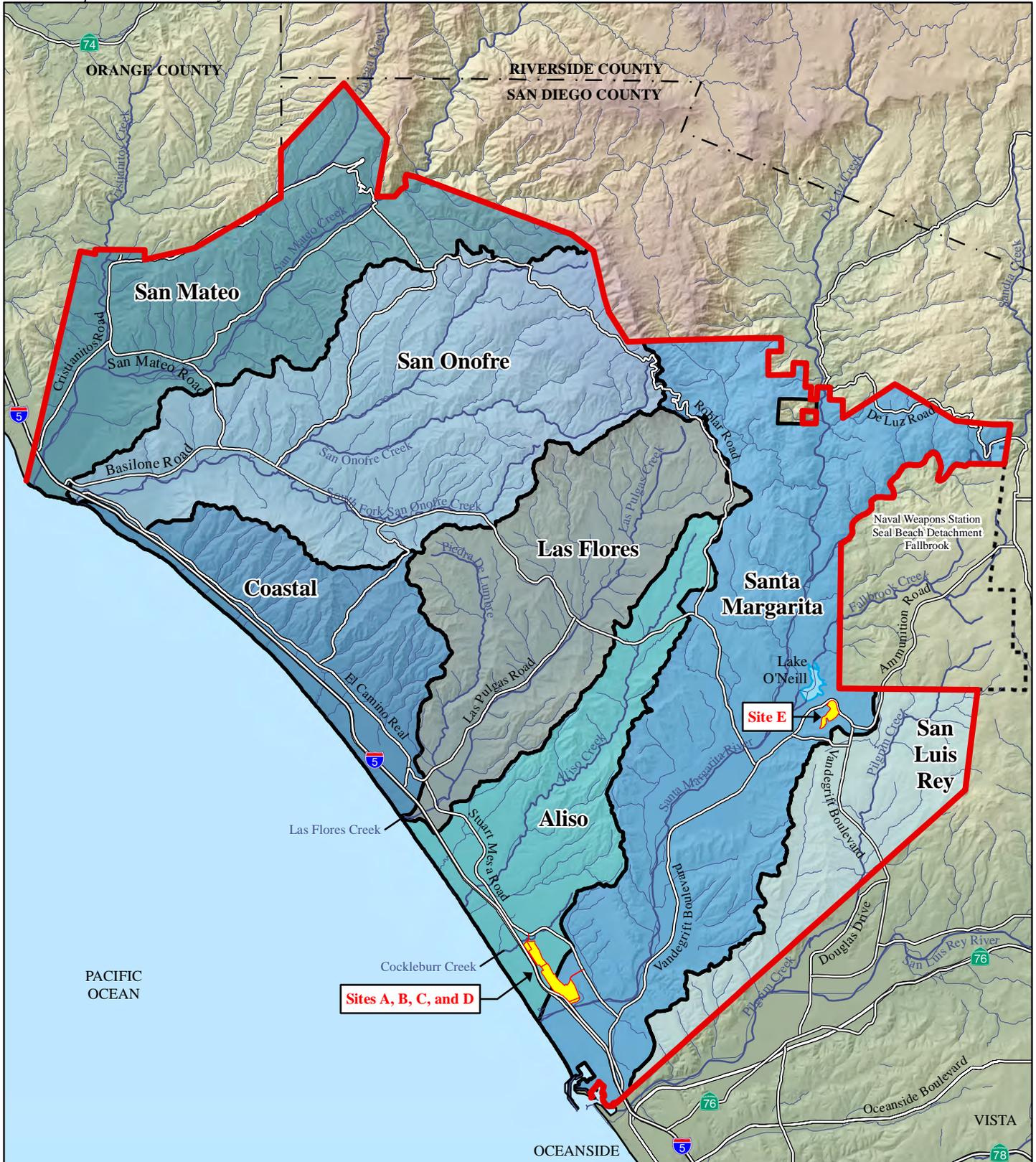
As required by EO 11988, *Floodplain Management*, federal agencies must take action to reduce the risk of flood loss and restore and preserve the values of floodplains. To minimize the risk of damage associated with these areas, EO 11988 was issued to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practical alternative. EO 11988 outlines different requirements for federal projects located in 100-year and 500-year floodplains (i.e., that area which has a 1 percent or greater chance or 0.2 percent or greater chance, respectively, of flooding in any given year). None of the potential solar PV sites occur within floodplains, therefore compliance with EO 11988 for construction in a 500-year floodplain will not be required.

### **3.3.2 Affected Environment**

#### **3.3.2.1 Surface Water Hydrology**

Hydrologic resources within MCB Camp Pendleton are broken down by hydrologic units, hydrologic areas, and watersheds. These terms are used to show the hierarchy of the overall flow of water on MCB Camp Pendleton. A hydrologic unit is the overall larger water basin that may accept water from other points outside its unit boundaries. A hydrologic area is the smaller area that only receives water from sources within its boundaries. The final category is a watershed, which is the area that captures precipitation and drains or seeps into groundwater or a marsh, stream, river, lake, or ocean.

Natural mountain and watershed relief divides MCB Camp Pendleton into seven distinct watersheds; four are large enough to provide potable and irrigation water supplies to MCB Camp Pendleton: Santa Margarita, Las Flores, San Onofre, and San Mateo (Figure 3.3-1). Sites B and D are completely contained in the Aliso watershed, Sites C and E are completely contained in the Santa Margarita watershed, and Site A occurs in both the Aliso and Santa Margarita watersheds.



**Legend**

- Potential Solar PV Site
- Watershed Area
- Installation Boundary
- Major Road
- Water Course

**Figure 3.3-1**  
Watersheds in the Vicinity of the Project Areas

0 2 4 Miles  
0 4 8 Kilometers

Sources: MCB Camp Pendleton 2015, USGS 2015

MCB Camp Pendleton's watersheds consist of coastal plains, coastal valleys, and mountainous areas. Several of the watersheds on the installation form broad alluvial plains as they approach the Pacific Ocean. The three largest estuaries on MCB Camp Pendleton are situated at the mouths of the SMR, Las Flores Creek, and San Mateo Creek. Most of the streams on Base are ephemeral and only flow following successive, major rain events. Due to the extreme variability of precipitation and runoff, the potential for large floods at MCB Camp Pendleton is high.

There are no jurisdictional wetlands or other waters of the U.S. in any of the proposed solar PV sites that would be subject to federal authority under Section 404 of the CWA. Sites A, B, C, and D are situated in between the floodplains of the SMR to the south and Cockleburr Creek to the North (Figure 3.3-2).

However, none of the proposed solar PV sites occur within the 100-year floodplains of either of these waterways. For Site E, MCB Camp Pendleton conducted a jurisdictional delineation of potential waters in February 2015 (MCB Camp Pendleton 2015h) and determined that no jurisdictional wetlands or other waters of the U.S. occur in Site E (Figure 3.3-2).

### 3.3.2.2 Groundwater

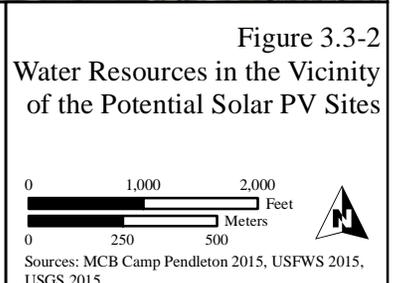
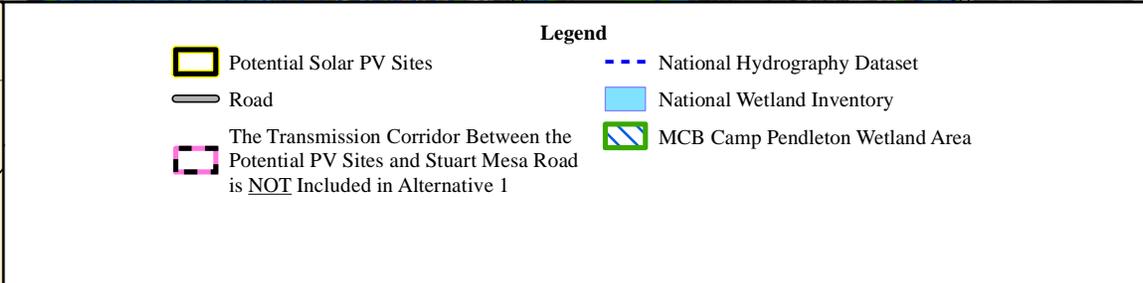
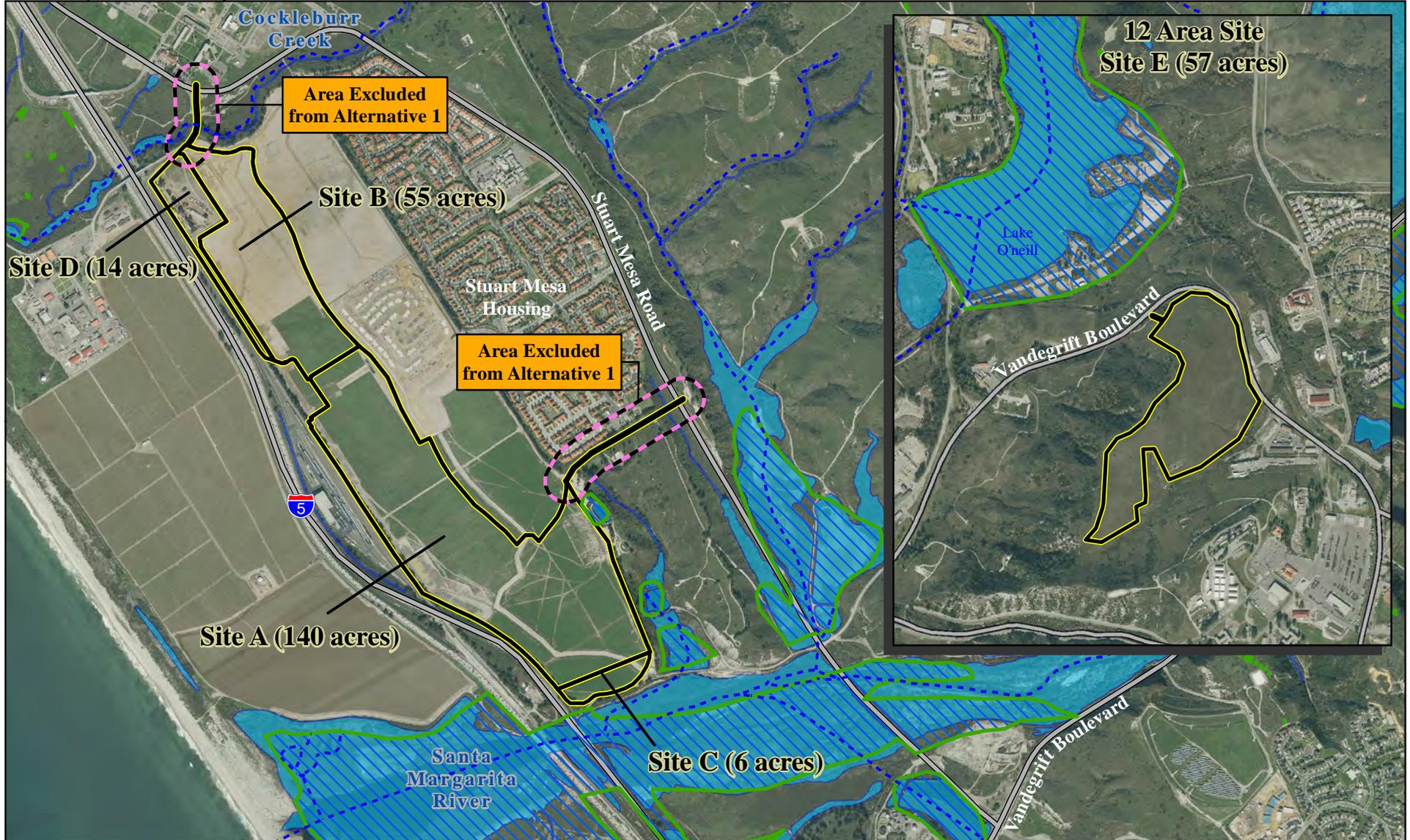
MCB Camp Pendleton has four groundwater basins that correspond to, and are connected with, the four major surface drainage basins (Santa Margarita, San Onofre, Las Flores and San Mateo). The regional flow of groundwater is suspected to be toward the southwest, from the slopes of the mountains toward the ocean. Overall, localized water tables can be expected at similar elevations to those of observed nearby flowing streams, or below the elevations of dry stream channels. The alluvial valleys formed by the downstream portion of all four major creeks contain the principal source of water for MCB Camp Pendleton (MCB Camp Pendleton 2012).

### 3.3.2.3 Water Quality

Water quality has always been a high priority at MCB Camp Pendleton as nearly all of the drinking water consumed by the Base is drawn from existing groundwater resources within its boundaries through a system of wells, water mains, booster pumps, and storage reservoirs located in the Santa Margarita, Las Flores, San Onofre, and San Mateo watersheds. The quality of MCB Camp Pendleton's drinking water generally meets or exceeds State of California and federal health-related drinking water standards.

Upstream users greatly affect the water quality of surface waters on Base as MCB Camp Pendleton is the last water user on the extensive SMR system and San Mateo Creek. SMR nutrient levels, particularly nitrogen, have increased in recent years due to intensive agricultural use of fertilizers in the upper watersheds. In addition, dramatic expansion of residential, commercial, and industrial development during the past decade in the upper part of this drainage has produced more urban runoff and wastewater discharge (MCB Camp Pendleton 2012).

The upper and lower portions of the SMR are CWA § 303(d) impaired water bodies for enterococcus, fecal coliform, phosphorus, toxicity, and total nitrogen due to urban/agricultural runoff, natural sources, and point source and nonpoint source pollution. The SMR flows into the Santa Margarita Estuary, which is 303(d) listed as impaired for eutrophic conditions likely caused by non-point source pollution, such as runoff from land that has higher nitrogen and phosphorous levels (SWRCB 2010).



In the lower SMR, turbidity and bacteria (fecal coliforms) are persistently above their respective benchmarks during wet weather conditions, and total suspended solids/total dissolved solids (TSS/TDS) are persistently above their benchmark levels during dry weather conditions. The high turbidity within the SMR receiving waters, caused by high levels of TSS/TDS, indicates that urban/agricultural runoff may be contributing to the receiving waters exceedances of water quality objectives (Weston 2009). Based on monitoring data from the lower portion of the SMR Watershed Management Area (Santa Margarita Hydrologic Unit), the primary land uses (military and open space/parks and recreation) have not been shown to contribute pollutants to receiving waters.

### 3.3.3 Environmental Consequences

Significant impacts to water resources would occur if the proposed action resulted in changes to water quality or supply, damage to unique hydrologic characteristics, increased public health hazards, or violations of established laws, regulations, or permit requirements.

#### 3.3.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

##### Construction

Grading activities associated with construction would temporarily (until construction is completed and the site is stabilized) increase the potential for localized erosion. Because the project would result in a total area of more than one acre or more of soil disturbance, the project must obtain coverage under the California Construction General Permit. Coverage under the California Construction General Permit would include the preparation and implementation of SWPPP. The SWPPP would include standard erosion control measures to reduce potential impacts resulting from erosion. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs. The standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities.

There are no jurisdictional waters of the U.S. or other surface water features in Sites A and B. Therefore, there would be no direct impacts to such resources.

No portion of the Proposed Action occurs within the 100-year floodplain of any waterway. Therefore, there would be no impact to floodplains protected under EO 11988.

Pole footings for the solar PV panels would be placed at a depth of 4 to 6.5 feet (1.2 to 2 meters) below ground surface. Therefore, construction activities associated with the Proposed Action would not reach depths that could affect groundwater resources.

Pumping of potable groundwater supplies in the project area would not be required under the Proposed Action because water used during construction for dust control would be trucked in from an off-base source.

Therefore, with implementation of the proposed avoidance/minimization measures in Table 3-1, and standard erosion control measures and BMPs that would be identified in the SWPPP, construction activities associated with the Proposed Action would have no significant impact to water resources.

### Operation

New facilities that result in the increase in stormwater runoff have the potential to affect surface water quality. Facilities associated with Alternative 1 do not involve the construction of large buildings or other large impervious areas such as parking lots and would therefore, contribute little additional stormwater runoff and/or pollutants to surface waters. However, all new facilities on MCB Camp Pendleton would incorporate the concept of LID as described in Table 3-1. Therefore, increased stormwater runoff and associated water quality impacts would be minimized.

Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up. All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base source.

Ground cover and other vegetation beneath and near the panels would potentially be controlled with herbicides to ensure that vegetation does not obscure or shadow the panels. To prevent runoff into nearby watercourses, any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the FIFRA labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's approved Pesticide Application Plan as well as the Pesticide Management Plan; and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by AC/S Facilities (phone: 760-763-5941). Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SRWB 2014).

Therefore, operation activities under Alternative 1 would have no significant impact to water resources.

### Decommissioning

Decommissioning activities would have similar impacts to water resources as construction activities. All decommissioning activities would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Therefore, decommissioning activities under Alternative 1 would have no significant impact to water resources.

### Summary

As noted above, no surface waters or groundwater would be directly affected with implementation of Alternative 1. All activities associated with Alternative 1 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 1 would have no significant impact to water resources.

#### 3.3.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

### Construction

Impacts to water resources from construction activities under Alternative 2 would be nearly identical to those under Alternative 1. Sites C and D are immediately adjacent to Sites A and B and are in the same

topographic setting, with no surface water features. As with Alternative 1, grading activities associated with construction would temporarily (until construction is completed and the site is stabilized) increase the potential for localized erosion. However, through compliance with the California Construction General Permit, a SWPPP that would include standard erosion control measures and BMPs to reduce potential impacts resulting from erosion and stormwater runoff would be prepared under Alternative 2.

Therefore, construction activities associated with Alternative 2 would have no significant impact to water resources.

#### Operation

Impacts to water resources from operation activities under Alternative 2 would be similar to those described under Alternative 1. Therefore, operation activities under Alternative 2 would have no significant impact to water resources.

#### Decommissioning

Impacts to water resources from decommissioning activities under Alternative 2 would be similar to those described under Alternative 1. Therefore, decommissioning activities under Alternative 2 would have no significant impact to water resources.

#### Summary

No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 2 would have no significant impact to water resources.

#### 3.3.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

#### Construction

Impacts to water resources from construction activities under Alternative 3 would be similar to those under Alternative 2. Impacts at Sites A, B, C, and D would be identical to those under Alternative 2. Site E has more topographic relief than the other sites and would likely increase the potential for erosion and stormwater runoff. However, through compliance with the California Construction General Permit, a SWPPP would be prepared under Alternative 3 that would include standard erosion control measures and BMPs specific to Site E to reduce potential impacts resulting from erosion and stormwater runoff.

Site E is not within the 100-year floodplain of any waterway, nor would construction activities associated with Alternative 3 reach depths that could affect groundwater resources.

Therefore, construction activities associated with Alternative 3 would have no significant impact to water resources.

#### Operation

Impacts to water resources from operation activities under Alternative 3 would be similar to those described under Alternative 1. Therefore, operation activities under Alternative 3 would have no significant impact to water resources.

## Decommissioning

Impacts to water resources from decommissioning activities under Alternative 3 would be similar to those described under Alternative 1. Therefore, decommissioning activities under Alternative 3 would have no significant impact to water resources.

## Summary

No surface waters or groundwater would be directly affected by Alternative 3. All activities associated with Alternative 3 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 3 would have no significant impact to water resources.

### 3.3.3.4 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV project at MCB Camp Pendleton. Therefore, the No-Action Alternative would have no impact on water resources.

## **3.4 AIR QUALITY**

### **3.4.1 Definition of Resource**

Air quality is defined by ambient (outdoor) air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health, safety, and welfare of the public. Ambient air quality refers to the amount of pollutants in a specified volume of air (or the atmospheric concentration of a specific compound) that occurs at a particular geographic location. Pollutant concentration is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Chemical reactions in the atmosphere can transform pollutant emissions into other chemical substances. Ambient air quality measured at a particular location is determined by the interaction of emissions, meteorology, and chemistry. Emissions include the types, amounts, and locations of pollutants discharged into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions.

Pollutant emissions typically refer to the amount of pollutants (or pollutant precursors) introduced into the atmosphere by a pollutant 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 air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as carbon monoxide (CO), sulfur dioxide ( $\text{SO}_2$ ), lead, and some particulates are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as ozone ( $\text{O}_3$ ), nitrogen dioxide ( $\text{NO}_2$ ), and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

### **3.4.2 Affected Environment**

#### 3.4.2.1 Federal Requirements

The USEPA established the National Ambient Air Quality Standards (NAAQS) and there are seven criteria pollutants of concern. The seven are CO,  $\text{SO}_2$ ,  $\text{NO}_2$ ,  $\text{O}_3$ , total suspended particulate matter less than or equal to 10 ( $\text{PM}_{10}$ ) and 2.5 ( $\text{PM}_{2.5}$ ) microns in diameter, and lead. The NAAQS represent

maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded (USEPA 2015a).

The USEPA designates an area as in attainment when it complies with the NAAQS. Areas that violate these ambient air quality standards are designated as nonattainment areas. Areas that have improved air quality from nonattainment to attainment are designated as attainment/maintenance areas. Varying levels of nonattainment are established for O<sub>3</sub>, CO, and PM<sub>10</sub> to indicate the severity of the air quality problem (i.e., the classifications run from moderate to serious PM<sub>10</sub> and from marginal to extreme for O<sub>3</sub>). The San Diego Air Basin (SDAB) is in nonattainment (marginal) of the 8-hour O<sub>3</sub> NAAQS (which includes its precursor pollutants of volatile organic compounds [VOCs] and nitrogen oxides [NO<sub>x</sub>]) and is classified as a maintenance area for the CO NAAQS (USEPA 2015b). All other criteria pollutants are in attainment of the NAAQS. Although VOCs or NO<sub>x</sub> other than NO<sub>2</sub> have no established ambient air quality standards, they are important as precursors to O<sub>3</sub> formation.

#### 3.4.2.2 State and Local Requirements

Each state is required by the Clean Air Act (CAA) to develop, adopt, and implement a State Implementation Plan (SIP) to achieve, maintain, and enforce the federal air quality standards across the state, for areas in nonattainment of the NAAQS. At the state level, the more stringent California Ambient Air Quality Standards (CAAQS) represent maximum acceptable pollutant concentrations that are not to be equaled or exceeded (California Air Resources Board [CARB] 2015a). Within California, the CARB is responsible for enforcing both the federal and state air pollution standards. The CARB is charged with developing the SIPs on a pollutant-by-pollutant basis for air quality standards in violation of the NAAQS and CAAQS.

With respect to the CAAQS, the SDAB is in nonattainment of the state standards for O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> (CARB 2015b), and is in attainment of all other CAAQS criteria pollutants. Table 3.4-1 presents the NAAQS and CAAQS for the criteria pollutants.

MCB Camp Pendleton is located within San Diego County and is under the jurisdiction of the San Diego County Air Pollution Control District (SDCAPCD). The SDCAPCD is the agency responsible for the administration of federal and state air quality laws, regulations, and policies in the SDAB, which is contiguous with San Diego County.

In terms of the CAAQS, SDAB is in nonattainment for particulate matter (both PM<sub>2.5</sub> and PM<sub>10</sub>) as well as O<sub>3</sub>. The 2007 *Eight-Hour Ozone Attainment Plan for San Diego County* is a comprehensive plan to bring the SDAB into compliance with the national standard for marginal O<sub>3</sub> nonattainment areas (SDCAPCD 2007). A *Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard* was adopted by the SDCAPCD in 2012 but has not yet been approved by the USEPA (SDCAPCD 2012). The 1996 *Carbon Monoxide Maintenance Plan* (later amended in 1998 and 2004) provides a road map for continued attainment of CO (CARB 1996, 1998, 2004).

The 2009 *Regional Air Quality Strategy Revision* is the most recent plan to bring SDAB into compliance with the CAAQS (SDCAPCD 2009). This plan includes all feasible control measures that can be implemented to reduce O<sub>3</sub> precursor emissions of VOCs and NO<sub>x</sub>. To be consistent with the Regional Air Quality Strategy, a project must conform to the defined emission growth factors.

**Table 3.4-1. National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	National <sup>1,2</sup>		California <sup>5</sup>
		Primary <sup>3</sup>	Secondary <sup>4</sup>	Concentration
O <sub>3</sub>	1-hour	—	—	0.09 ppm (180 µg/m <sup>3</sup> )
	8-hour	0.075 ppm (147 µg/m <sup>3</sup> )	Same as primary	0.07 ppm (137 µg/m <sup>3</sup> )
CO	1-hour	35 ppm (40 mg/m <sup>3</sup> )	—	20 ppm (23 mg/m <sup>3</sup> )
	8-hour	9 ppm (10 mg/m <sup>3</sup> )	—	9 ppm (10 mg/m <sup>3</sup> )
NO <sub>2</sub>	1-hour	0.10 ppm (188 µg/m <sup>3</sup> )	—	0.18 ppm (339 µg/m <sup>3</sup> )
	Annual	0.053 ppm (100 µg/m <sup>3</sup> )	Same as primary	0.03 ppm (57 µg/m <sup>3</sup> )
SO <sub>2</sub>	1-hour	0.075 ppm (105 µg/m <sup>3</sup> )	—	—
	3-hour	—	0.5 ppm (1,300 µg/m <sup>3</sup> )	—
	24-hour	—	—	0.04 ppm (105 µg/m <sup>3</sup> )
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	Same as primary	50 µg/m <sup>3</sup>
	Annual	—	—	20 µg/m <sup>3</sup>
PM <sub>2.5</sub>	24-hour	35 µg/m <sup>3</sup>	Same as primary	—
	Annual	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>
Lead	Rolling 3-month period	0.15 µg/m <sup>3</sup>	Same as primary	—
	30-day average	—	—	1.5 µg/m <sup>3</sup>

Source: USEPA 2015a; CARB 2015a.

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; mg/m<sup>3</sup> = milligrams per cubic meter.

<sup>1</sup> Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

<sup>2</sup> National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

<sup>3</sup> Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

<sup>4</sup> Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

<sup>5</sup> California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

### 3.4.2.3 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. To ensure that federal activities do not hamper local efforts to control air pollution, Section 176(c) of the CAA, 42 USC 7506(c) prohibits federal agencies from approving any action which does not conform to an approved SIP or federal implementation plan. SDCAPCD’s Rule 1501 contains rules and requirements to implement the General Conformity regulations within the District.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called *de minimis* levels. Table 3.4-2 identifies the federal nonattainment pollutants and the relevant *de minimis* emission thresholds.

**Table 3.4-2. Applicable Criteria Pollutant *de minimis* Levels (tons/year)**

VOCs <sup>1</sup>	NO <sub>x</sub> <sup>1</sup>	CO	SO <sub>2</sub>	PM <sub>10</sub> <sup>1</sup>	PM <sub>2.5</sub>
100	100	100	NA	NA	NA

Notes: <sup>1</sup> The SDAB is in nonattainment (marginal) of the 8-hour O<sub>3</sub> NAAQS (which includes its precursor pollutants of VOCs and NO<sub>x</sub>) and is in maintenance of the CO NAAQS.

NA = not applicable because the SDAB is currently in attainment of the NAAQS for these criteria pollutants.

Source: USEPA 2015b.

To demonstrate conformity with the CAA, a project must clearly demonstrate that it does not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard, any required interim emission reductions, or other milestones in any area. A conformity applicability analysis is required for each of the nonattainment pollutants or its precursor emissions.

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. If net emissions exceed the relevant *de minimis* level, a formal CAA Conformity Determination process must be followed.

#### 3.4.2.4 Other Requirements

##### Greenhouse Gases

GHGs trap heat in the atmosphere. These emissions occur from natural processes as well as from human activities. The accumulation of GHGs in the atmosphere regulates, in part, the earth’s temperature. Scientific evidence suggests a trend of increasing global temperature over the past century (U.S. Global Climate Change Program 2014). This warming is attributed to an increase in GHG emissions from human activities. Potential climate change associated with GHGs may produce economic and social consequences across the globe.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO<sub>2</sub>, which has a value of one. For example, CH<sub>4</sub> has a GWP of 21, which means that it has a global warming effect 21 times greater than CO<sub>2</sub> on an equal-mass basis. Total GHG emissions from a source are often reported as a CO<sub>2</sub> equivalent (CO<sub>2</sub>e). The CO<sub>2</sub>e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

Federal agencies are addressing emissions of GHGs by mandating GHG reductions in federal laws and EOs, most recently in EO 13693 (*Planning for Federal Sustainability in the Next Decade*) (EO 13693 superseded EO 13423 [*Strengthening Federal Environment, Energy, and Transportation Management*] and EO 13514 [*Energy Efficient Standby Power Devices*]). In 2009 the USEPA signed GHG

Endangerment Findings under Section 202(a) of the CAA, stating that six “key” GHGs are a threat to public health and welfare (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Since then, the USEPA has been creating standards and regulations for controlling GHG emissions from passenger vehicles. Additionally, since 2012 the USEPA has issued proposals and updated regulations to reduce carbon emissions from new and existing power plants, landfills, and oil and natural gas facilities. Despite these efforts, there are no promulgated federal regulations to date limiting GHG emissions.

Several states have passed GHG related laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 (Assembly Bill 32) directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. EO S-20-06 further directs state agencies to begin implementing Assembly Bill 32, including the recommendations made by the state’s Climate Action Team. Activities taken thus far to implement Assembly Bill 32 include mandatory GHG reporting and a cap-and-trade system for major GHG-emitting sources (CARB 2015c).

In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with goals set by EO 13693 and the Energy Policy Act of 2005, the Navy has implemented a number of renewable energy projects. The types of projects currently in operation within military installations include thermal and solar PV systems, geothermal power plants, and wind energy generators.

The potential effects of GHG emissions are by nature global and cumulative, and it is impractical to attribute climate change to individual projects (CEQ 2014). Therefore, the impact of GHG emissions associated with this project is discussed in the context of cumulative impacts in Section 4.4.4 of this EA.

#### 3.4.2.5 Hazardous Air Pollutants

In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs) that are regulated under Section 112(b) of the 1990 CAA and its amendments. The National Emission Standards for Hazardous Air Pollutants regulate 187 HAPs based on available control technologies (USEPA 2015c).

#### 3.4.2.6 Toxic Air Contaminants

Toxic compounds are toxic air contaminants that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources (CARB 2015c).

Emissions of hazardous air pollutants and toxic air contaminants fall under the Title V permitting process and not the NEPA process. Therefore, no further discussion of either is provided within this EA.

#### 3.4.2.7 Baseline Air Quality

Representative emissions data from SDCAPCD monitoring stations for the period 2009 to 2013 (the most recent data available) are shown in Table 3.4-3. Emission sources associated with the existing use of MCB Camp Pendleton include civilian and military personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, small stationary sources, and ongoing construction activities.

**Table 3.4-3. Representative Air Quality Data for MCB Camp Pendleton (2009-2013)**

Air Quality Indicator	2009	2010	2011	2012	2013
<b>O<sub>3</sub></b> <sup>(a)</sup>					
Peak 8-hour value (ppm)	0.08	0.08	0.07	0.08	0.07
Days above federal standard (0.075 ppm)	1	1	0	1	0
Days above state standard (0.070 ppm)	5	1	2	1	0
<b>NO<sub>2</sub></b> <sup>(a)</sup>					
Peak 1-hour value (ppm)	0.068	0.081	0.066	0.061	0.081
Days above federal standard (0.10 ppm)	0	0	0	0	0
Days above state standard (0.18 ppm)	0	0	0	0	0
<b>CO</b> <sup>(b)</sup>					
Peak 8-hour value (ppm)	3.24	2.46	2.20	3.61	NA
Days above federal and state standard (9.0 ppm)	0	0	0	0	NA
<b>PM<sub>10</sub></b> <sup>(b)</sup>					
Peak 24-hour value (µg/m <sup>3</sup> )	74.0	43.0	40.0	33.0	82.0
Days above federal standard (150 µg/m <sup>3</sup> )	0	0	0	0	0
Days above state standard (50 µg/m <sup>3</sup> )	1	0	0	0	1
<b>PM<sub>2.5</sub></b> <sup>(a)</sup>					
Peak 24-hour value (µg/m <sup>3</sup> )	29.5	27.3	27.42	28.0	42.3
Days above federal standard (35 µg/m <sup>3</sup> )	0	0	0	0	1
<b>SO<sub>2</sub></b> <sup>(c)</sup>					
Peak 24-hour value (ppm)	0.006	0.002	0.003	NA	NA
Days above federal standard (0.14 ppm)	NA	NA	NA	NA	NA
Days above state standard (0.04 ppm)	NA	0	0	NA	NA

Source: CARB 2015d.

Notes: <sup>(a)</sup> Data from the MCB Camp Pendleton Monitoring Station.

<sup>(b)</sup> Data from the Escondido Monitoring Station, no data were derived from the MCB Camp Pendleton Monitoring Station.

<sup>(c)</sup> Data from the San Diego-1110 Beardsley Street Monitoring Station.

NA = not available.

### 3.4.3 Environmental Consequences

This resource section focuses on groups of activities that have the potential to result in an impact to the ambient air quality. The analysis was separated by the three project phases as discussed in Chapter 2: construction, operation, and decommissioning. Types of activities that could affect air quality include operation of construction equipment, worker trips, and earth moving activities.

#### 3.4.3.1 Approach to Analysis

The air quality analysis estimated the magnitude of emissions that would occur from proposed construction and decommissioning activities. Construction related activities would include clearing vegetation, grading to prepare the site, trenching for utilities, pole mounting and/or concrete footing for the PV system installation, and construction/installation of the substation, switching/metering stations, transmission poles (if required), and solar PV panels. Although manufacturing of solar PV cells or panels is not part of this proposed action and would occur off-installation, the manufacturing of solar PV cells requires potentially toxic heavy metals such as lead, mercury, and cadmium. The manufacturing process can also produce greenhouse gases, such as CO<sub>2</sub>, that contribute to global climate change. However, existing research suggest that the operation of solar PV systems, compared with conventional fossil fuel-burning power plants, significantly reduces air pollution (Intergovernmental Panel on Climate Change 2012).

Operational emissions from maintenance and repair activities would be minor and infrequent, and are therefore evaluated qualitatively herein. Emissions would be generated from operational activities such as the use of vehicles and equipment with combustive engines, and generation of fugitive dust when driving vehicles on unpaved surfaces within and around the solar PV system.

3.4.3.2 Emissions Evaluation Methodology

Air quality impacts from construction activities proposed under each action alternative would primarily occur from combustive emissions due to the use of fossil fuel-powered equipment and fugitive dust emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) from the operation of equipment on exposed soil. Construction emissions were estimated using the California Emissions Estimator Model, which is the current comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model was developed in collaboration with the air districts of California and includes default data (e.g., emission factors, trip lengths, meteorology, source inventory) that have been provided by the various California air districts to account for local requirements and conditions (California Air Pollution Control Officers Association 2015). For this analysis, default data were overridden in the model by project-specific data (as provided in Chapter 2), when available. Assumptions were made regarding the total number of days each piece of equipment would be used and the number of hours per day each type of equipment would be used. Assumptions and model inputs are located within the modeling calculations in Appendix C.

3.4.3.3 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

Construction and Decommissioning Activities

Table 3.4-4 presents a summary of the annual emissions associated with construction and decommissioning activities at MCB Camp Pendleton under Alternative 1. Emission calculations are provided in Appendix C. Because the potential emissions from construction and decommissioning activities would be in different years, they are not additive. As shown in Table 3.4-4, estimated emissions from construction and decommissioning activities would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule.

**Table 3.4-4. Alternative 1 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity**

Emission Source	Emissions (tons/year)					
	VOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Alternative 1 - Construction</b>						
Year - 2016	1.65	16.89	11.03	0.02	1.98	1.36
Year - 2017	1.65	15.73	10.04	0.02	1.00	0.86
<b>Alternative 1 - Decommissioning</b>						
Year – 2053 (under Model 2; Model 3 would be 2043)	0.09	0.38	0.81	0.002	0.03	0.01
Conformity <i>de minimis</i> Limits	100	100	100	NA	NA	NA
Exceeds Conformity <i>de minimis</i> Limits?	No	No	No	No	No	No

Note: NA = not applicable.

During the proposed construction and decommissioning activities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions. After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).

## Operation

Operational air emissions refer to air emissions that may occur after the solar panels have been installed. Air emissions would primarily result from the use of employee vehicles traveling to the project site for maintenance and repair activities, and from travel on unpaved roads and surfaces. Routine maintenance and inspections would occur less than one time per month and would typically require one to two vehicles per event. Maintenance vehicles would travel on unpaved surfaces at slow speeds, to minimize fugitive dust generation. In addition, the gravel and soil stabilizers would be reapplied as needed.

On a region-wide scale, the use of solar PV panels would have beneficial air quality impacts because fossil fuels would not be used for the necessary electricity generation, resulting in fewer GHG and particulate matter emissions. Providing solar energy to MCB Camp Pendleton or the region would have long-term direct and indirect benefits to air quality in the SDAB.

## Summary

### *General Conformity Applicability Analysis*

To address the requirements of the General Conformity Rule, the estimated emissions from proposed construction and decommissioning activities were compared to the *de minimis* levels applicable to the region (refer to Table 3.4-2). Emission calculations are provided in Appendix C. As shown in Table 3.4-4, the emissions increases for NO<sub>x</sub>, VOCs, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> would be below the *de minimis* thresholds. A Record of Non-Applicability for CAA conformity has been prepared and is provide in Appendix C. A formal CAA Conformity Determination would not be required.

Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.

### *Hazardous Air Pollutants*

The USEPA has listed 188 substances that are regulated under Section 112 of the CAA, and the state of California has identified additional substances that are regulated under state and local air toxics rule. Emission factors for most HAPs from combustion sources are roughly three or more orders of magnitude lower than emission factors for criteria pollutants. Trace amounts of HAPs may be emitted from sources during the construction, operation, or decommissioning of the proposed solar PV project; however, the amounts that would be emitted would be small in comparison with the emissions of criteria pollutants. Emissions of HAPs would also be subject to dispersion due to wind mixing and other dissipation factors.

### *Summary*

Alternative 1 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 1 there would be no significant impact to air quality.

#### 3.4.3.4 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

## Construction and Decommissioning

Alternative 2 consists of all of the actions proposed under Alternative 1. With a site 20 acres larger than under Alternative 1, Alternative 2 is approximately ten percent larger than Alternative 1. Therefore,

implementation of Alternative 2 would be expected to result in similar, albeit slightly larger, air quality emissions as described under Alternative 1. Given that the air emissions under Alternative 1 are well below *de minimis* thresholds, and given that Alternative 2 is smaller than Alternative 3 (which not exceed *de minimis* thresholds), implementation of Alternative 2 would still produce emissions below the *de minimis* thresholds.

Operation

The operational air emissions from Alternative 2 would be as described for Alternative 1.

Summary

Alternative 2 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 2 there would be no significant impact to air quality.

3.4.3.5 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

Construction and Decommissioning Activities

Table 3.4-5 presents a summary of the annual emissions associated with construction and decommissioning activities at MCB Camp Pendleton under Alternative 3. Emission calculations are provided in Appendix C. Because the potential emissions from construction and decommissioning activities would be in different years, they are not additive. As shown in Table 3.4-5, construction and decommissioning emissions would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule.

**Table 3.4-5. Alternative 3 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity**

Emission Source	Emissions (tons/year)					
	VOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Alternative 3 - Construction</b>						
Year - 2016	2.18	22.31	15.42	0.02	2.52	1.75
Year - 2017	2.48	23.91	17.57	0.02	1.52	1.31
<b>Alternative 3 - Decommissioning</b>						
Year – 2053 (under Model 2; Model 3 would be 2043)	0.13	0.51	1.14	0.003	0.04	0.02
Conformity <i>de minimis</i> Limits	100	100	100	NA	NA	NA
Exceeds Conformity <i>de minimis</i> Limits?	No	No	No	No	No	No

Note: NA = not applicable.

During the proposed construction and decommissioning activities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions. After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).

Operation

The operational air emissions from Alternative 3 would be as described for Alternative 1.

## Summary

### *General Conformity Applicability Analysis*

To address the requirements of the General Conformity Rule, the estimated emissions from proposed construction and decommissioning activities were compared to the *de minimis* levels applicable to the region (refer to Table 3.4-2). Emission calculations are provided in Appendix C. As shown in Table 3.4-5, the emissions increases for NO<sub>x</sub>, VOCs, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> would be below the *de minimis* thresholds. A Record of Non-Applicability for CAA conformity has been prepared and is provide in Appendix C. A formal CAA Conformity Determination would not be required.

Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.

### *Summary*

Alternative 3 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 3 there would be no significant impact to air quality.

#### 3.4.3.6 No-Action Alternative

Under the No-Action Alternative, the proposed project would not be implemented and there would be no change in activities at Sites A, B, C, D, and E. The emissions levels would remain constant for those emission sources that are not affected by other federal, state, or local requirements to reduce air emissions. As a result, no net emission increases would result from implementation of the No-Action Alternative. With no net emission increases expected, the No-Action Alternative is exempt from the General Conformity Rule. Therefore, the No-Action Alternative would have no impact to air quality.

## **3.5 LAND USE AND MILITARY OPERATIONS**

### **3.5.1 Definition of Resource**

Land use refers to the various ways in which land might be used or developed (i.e., military training, parks and preserves, agriculture, commercial); the kinds of activities allowed (i.e., factories, mines, rights-of-way); and the type and size of structures permitted (i.e., towers, single family homes, multi-story office buildings). Land use is regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable and protect specially designated areas and environmentally sensitive resources.

Land use and development in MCB Camp Pendleton is guided by the MCB Camp Pendleton 2030 Base Master Plan (Master Plan) (MCB Camp Pendleton 2010). Undeveloped areas at the installation are primarily designated for training ranges and maneuvering areas that directly support the Base's training mission. Developed areas (referred to as cantonments or camps) are scattered throughout the installation. For each cantonment area, the Master Plan identifies existing land uses, development constraints, and areas considered suitable to accommodate projected future development. For some cantonment areas, the Master Plan presents 5-year and 20-year future development concepts.

MCB Camp Pendleton's principal mission is to operate a training base that promotes the combat readiness of the Operating Forces. As such, a majority of MCB Camp Pendleton's land use is designated

for military operations and training. The MCB Camp Pendleton Range Complex Management Plan provides an inventory and condition assessment of existing training ranges. As indicated in the Master Plan, any proposed cantonment area expansion must be approved by the Commanding Officer or designee (MCB Camp Pendleton 2014b).

This resource section includes a discussion of prime farmland. The Farmland Protection Policy Act (FPPA), 7 USC 4201, was enacted to minimize the loss of prime farmland and unique farmlands as a result of federal actions, through conversion of these lands to nonagricultural uses. This includes converting areas that have high quality soil for crop production.

### **3.5.2 Affected Environment**

#### **3.5.2.1 Sites A, B, C, and D**

##### Land Use

The majority of Sites A, B, C, and D are located primarily on vacant land that had been previously used for agriculture in the Stuart Mesa Housing area. There are no residences or other above ground structures on Sites A, B, and C. Site D contains abandoned farm buildings.

The entirety of Sites A, B, and C were designated for military family housing within the Master Plan (Figure 3.5-1). The Master Plan indicates that Site D was not included within the planned future housing development.

The Stuart Mesa Housing complex, to the east of Sites A, B, C, and D is one of eight military family housing areas on MCB Camp Pendleton. At the time the Master Plan was prepared, the Stuart Mesa Housing complex included 1,498 enlisted single- and multi-family residential housing units. Additional Stuart Mesa Housing units have been constructed since the completion of the Master Plan. A portion of Site A is shown as future site for an elementary school (MCB Camp Pendleton 2010).

A railroad right-of-way is located to the west of Sites A, B, C, and D. The NCTD operates the 24-hour commuter rail maintenance facility and the Burlington-Northern Santa Fe railroad switching yard to the west of Site A. At present, the line is used by Metrolink commuter rail trains, Amtrak, and Burlington-Northern Santa Fe freight trains. About 54 trains per day use the right-of-way. In addition, the California Department of Transportation also has an easement for the I-5 freeway to the west of Sites A, B, C, and D (MCB Camp Pendleton 2014b). SDG&E has two electrical easements that bisect both Site A and Site B running from east to west.

##### Military Training

A portion of Site A and the entirety of Site C is located within the Oscar One Training Area. Oscar One Training Area is characterized by areas of mesa and rugged mountainous terrain. A majority of the Oscar One Training Area is relatively isolated and primarily supports weapons and the field training battalion (MCB Camp Pendleton 2014b).



**Legend**

Potential Solar PV Sites	Former Agricultural Lease Area	Cantonment Area
Road	Caltrans Right-of-Way	Oceanside Unified School District
The Transmission Corridor Between the Potential PV Sites and Stuart Mesa Road is <b>NOT</b> Included in Alternative 1	San Diego Gas and Electric Right-of-Way	Stuart Mesa Housing
	North County Transit District	Training Area

**Figure 3.5-1**  
Land Use in the Vicinity of Sites A, B, C, and D

0 1,000 2,000 Feet  
0 250 500 Meters

Source: MCB Camp Pendleton 2015

### Flight Safety

A substantial amount of research has recently been conducted on energy technologies and their impacts on aviation safety. The placement of solar projects near an airfield must assess three factors: airspace penetration, reflectivity, and interference with communications systems. For airspace penetration, objects or facilities cannot extend into the “imaginary surfaces” that define the navigable airspace. Such surfaces are closest to the ground nearest the runway and become higher with distance. Sites A, B, C, and D are located within imaginary surfaces in relation to MCAS Camp Pendleton, which is located approximately 4.5 miles (7.2 km) to the east. Sites A, B, and D are located within an approach clearance surface and Site C is located within an outer horizontal surface for MCAS Camp Pendleton flights.

Reflectivity problems preclude the use of several other solar energy technologies at the proposed sites. These technologies include the use of mirrors to focus sunlight onto a specified surface and produce substantial reflectivity, thereby, posing a glare hazard that may blind or distract pilots on approach to the runway (Federal Aviation Administration [FAA] 2010). The FAA recommends, therefore, against placing reflective technology within close a close proximity to airports. In contrast, the FAA study (2010) notes that PV employs glass panels designed for efficiency to maximize absorption and minimize reflection. PV panels consist of dark materials that absorb light, and the protective glass cover is coated with an anti-reflective film (FAA 2010). Such panels reflect as little as two percent of the incoming sunlight depending on the angle of the sun and as such pose no hazard to aviation. Flat-plate PV panels are manufactured to absorb rather than reflect sunlight, and can be placed low to the ground so as not to encroach on airfield flight operations. As a result of the FAA evaluation, flat-plate PV comprises the only viable and reasonable technology option for a solar PV system near MCAS Camp Pendleton. As Sites A, B, C, and D areas within close proximity to MCAS Camp Pendleton, several helicopter landing zones, and Class D airspace, the DoD Memorandum on Glint/Glare Issues on or near Aviation Operations will be followed during project planning (DoD 2014).

Communications interference can result from solar energy technologies. Potential impacts increase with larger structure size (and cross section) and shorter distance to radar facilities. The FAA operates a Very High Frequency Omni-directional Range Tactical Aircraft Control (VORTAC) facility in the Stuart Mesa West agricultural field. FAA policy states that no reflecting structures or heavy vegetation should be sited within 1,000 feet (305 meters) of a VORTAC facility.

### Prime Farmland

Sites A, B, C, and D contain Marina loamy coarse sand, a soil designated as prime farmland, if irrigated. Site A contains 137.6 acres (55.7 ha); Site B contains 55 acres (22.3 ha); Site C contains 6.1 acres (2.5 ha); and Site D contains 14 acres (5.7 ha) of Marina loamy coarse sand. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Generally, it has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management (U.S. Department of Agriculture 2015).

#### 3.5.2.2 Site E

### Land Use

Site E is located along the western side of Vandegrift Boulevard, to the north of De Luz Road. The site is vacant and generally undeveloped. Site E is located to the east of the existing 12 Area boundary, but the majority of the site is within 12 Area potential cantonment growth areas presented in the Master Plan. Although the land use to be provided in the expansion areas is not specified, the description of the 20-year

plan concept indicates Site E is assumed to be used primarily for maintenance and storage. The 20-year plan assumes that the undeveloped area of the 12 Area (Site E) would be isolated due to existing constraints relating to terrain and drainage (MCB Camp Pendleton 2010).

### Military Training

Site E is partially located on land that is designated as a maneuver area in the Master Plan (Figure 3.5-2). A maneuver area is a location where movement of military personnel, equipment and vehicles are facilitated, or at least relatively unrestricted by either terrain, vegetation, man-made constraints (e.g., buildings and developed areas) and/or environmental regulations (MCB Camp Pendleton 2012).

### Flight Safety

Site E is located within the conical surface of MCAS Camp Pendleton. The surface extends from the periphery of the inner horizontal surface outward and upward at a slope of 20:1 for a horizontal distance of 7,000 feet (2,133.6 meters) to a height of 500 feet above the established airfield elevation. As Site E is within close proximity to MCAS Camp Pendleton, several helicopter landing zones, and Class D airspace, the DoD Memorandum on Glint/Glare Issues on or near Aviation Operations will be followed during project planning (DoD 2014).

### Prime Farmland

Site E contains 2.8 acres (1.1 ha) of Greenfield sandy loam, a soil designated as prime farmland, if irrigated.

## **3.5.3 Environmental Consequences**

### **3.5.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B**

#### Construction

Under Alternative 1, the construction of a solar PV system would initiate a temporary change in land use on Sites A and B from vacant land to renewable energy. The Proposed Action would have a defined lifecycle (e.g., 30 years) and would be returned to existing conditions (i.e., vacant) by the private partner.

A portion of Site A is located within the Oscar One Training Area. As the proposed solar PV system would encroach into the training area, the expansion would need to be approved by the MCB Camp Pendleton Commanding Officer or designee. Site A is not regularly used for operations and training purposes due to its proximity to military housing. Therefore, the decrease in the size of Oscar One Training Area would not reduce active training space or impact MCB Camp Pendleton's mission.

In addition to the change in land use, construction of the solar PV system on Sites A and B may impact 192.6 acres (77.9 ha) soils designated as prime farmland. However, lands on MCB Camp Pendleton are exempt as identified in the FPPA Section 1547(b), as noted in 7 CFR 658(b) (citing USC 4208[b]).

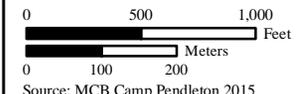
Acquisition or use of farmland by a federal agency for national defense purposes is exempt (7 CFR 658.3(b) [citing USC 4208(b)]). In addition, soils at Sites A and B have been vacant since the expiration of the agricultural leases of the area. Soils below the solar PV system would largely remain unchanged. At the conclusion of the solar PV agreement, the private partner would be required to decommission the solar PV field and all associated features and return the project area to its pre-project condition. Agricultural activities and/or residential development could occur, as determined by MCB Camp Pendleton.



Legend

- Potential Solar PV Sites
- Mary Fay Pendleton School
- Cantonment Area
- Deluz Housing Area
- Road
- Training Area

Figure 3.5-2  
Land Use in the Vicinity of  
Site E



Source: MCB Camp Pendleton 2015

### Operation

Implementation of Alternative 1 would construct the solar PV system on Sites A and B, areas that are designated for future residential development. Therefore, Alternative 1 would be inconsistent with the Master Plan. The site is near an Oceanside School District lease area, and California Department of Transportation and NCTD easements; however, the construction of the solar PV system would not impact these respective leases and easements. An NCTD rail station is planned to the west of Sites A and B, with an arterial connection that would transect Site A. If Alternative 1 is chosen, either an easement through the solar PV system would be necessary, or a separate entry/exit location to the planned rail station would be needed. The solar PV system operation would be passive and not impact adjacent land uses.

Alternative 1 would result in the placement of solar PV panels at Sites A and B, which are located within an approach clearance surface for MCAS Camp Pendleton. As previously mentioned, the FAA requires assessment of three factors for solar projects near airports: airspace penetration, reflectivity, and interference with communications systems. Considering these factors and the proximity of the MCAS Camp Pendleton, the flat-plate PV solar array technology is compatible for use at Alternative 1. Because the proposed solar PV project would extend no higher than 15 feet (5 meters) above the ground, the project would not penetrate within the imaginary surface and thus be consistent with flight safety protocol. In addition, there would be no impacts or interference to the VORTAC facility, as Sites A and B are located outside of the FAA's 1,000 foot (305 meter) reflectivity buffer.

### Decommissioning

The decommissioning of the solar PV system would return the project area to its pre-project condition. Land use would return to vacant land. Soils designated as prime farmland and impacted areas would be returned to a level that would support use of the land consistent with pre-construction activities. If determined necessary by MCB Camp Pendleton, the land within a portion of Site A could be reintegrated into Oscar One Training Area.

### Summary

The construction, operation, and decommissioning of the solar PV system on Sites A and B would require a Master Plan amendment, as it would be inconsistent with planned future land uses. Similarly, a portion of the proposed solar PV system on Site A would encroach into the Oscar One Training Area; the expansion would need to be approved by the MCB Camp Pendleton Commanding Officer or designee. MCB Camp Pendleton is exempt from the FPPA, as the land would be utilized for national defense purposes. Therefore, if the Master Plan amendment is implemented and the Commanding Officer approves the expansion, implementation of Alternative 1 would have no significant impact to land use, consistent with criteria the Master Plan and Commanding Officer identify as necessary.

#### 3.5.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

### Construction

Under Alternative 1, the construction of a solar PV system would temporarily change the existing land use on Sites A, B, C, and D from vacant land to renewable energy. The Proposed Action would have a defined lifecycle (e.g., 30 years) and would be returned to existing conditions (i.e., vacant land) by the private partner.

Similar to Alternative 1, Alternative 2 would slightly encroach into the Oscar One Training Area. Portions of Site A and the entirety of Site C is located within the training area. The encroachment would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.

Given the larger land area proposed for solar PV development on vacant, Alternative 2 may impact 212.7 acres (86.1 ha) soils designated as prime farmland. However, similar to Alternative 1, lands used for national defense purposes by a federal agency are exempt from the FPPA.

### Operation

Implementation of Alternative 2 would construct the solar PV system on Sites A, B, and C, areas that are designated for future residential development within the Master Plan. Therefore, Alternative 2 would be inconsistent with the Master Plan. Site D was not identified for future residential development.

Stuart Mesa Sites A, B, and D are located within an approach clearance surface and Site C is located within an outer horizontal surface for MCAS Camp Pendleton flights. Because the proposed solar PV project would extend no higher than 15 feet (5 meters) above the ground and the transmission lines would not exceed 55 feet (17 meters) above the ground, the project would not penetrate within the imaginary surface and thus be consistent with flight safety protocol. In addition, there would be no impacts or interference to the VORTAC facility, as Stuart Mesa Sites A, B, C, and D are located outside of the FAA's 1,000 foot (305 meter) reflectivity buffer.

### Decommissioning

Decommissioning impacts would be the same as those discussed under Alternative 1.

### Summary

The construction, operation, and decommissioning of the solar PV system on Sites A, B, C, and D would require a Master Plan amendment, as it would be inconsistent with planned future land uses. Similarly, a portion of the proposed solar PV system on Site A and the entirety of Site C would encroach into the Oscar One Training Area; the expansion must be approved by the MCB Camp Pendleton Commanding Officer or designee. MCB Camp Pendleton is exempt from the FPPA, as the land would be utilized for national defense purposes. Therefore, if the Master Plan amendment is implemented and the Commanding Officer approves the expansion, implementation of Alternative 2 would have no significant impact to land use, consistent with criteria the Master Plan and Commanding Officer identify as necessary.

#### 3.5.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

### Construction

Construction impacts associated with Alternative 3 would be the same as those discussed under Alternatives 1 and 2, with the addition of Site E. The land use at Site E would temporarily change from undeveloped to renewable energy.

Implementation of Alternative 3 would partially encroach into land that is designated as a maneuver area in the Master Plan. The encroachment into the Oscar One Training Area within Sites A and C, and the maneuver area associated with Site E would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.

Site E contains 2.8 acres (1.1 ha) of prime farmland that have not been used for agricultural purposes. Alternative 3 may impact 215.5 acres (87.2 ha) soils designated as prime farmland on Sites A, B, C, D,

and E. However, similar to Alternatives 1 and 2, MCB Camp Pendleton is exempt from the FPPA. At the conclusion of the solar PV agreement, the soils would be returned to their pre-project condition.

### Operation

Site E was planned as a potential growth area for the 12 Area, as presented in the Master Plan. Although the land use to be provided in the expansion area is not specified, the description of the 20-year plan concept indicates Site E is assumed to be used primarily for maintenance and storage. Therefore, implementation of Alternative 3 would be inconsistent with the Master Plan. The proposed solar PV project would extend no higher than 15 feet (5 meters) above the ground and the transmission line would extend no higher than 55 feet (17 meters), thus the project would not penetrate within the conical imaginary surface at Site E and would be consistent with flight safety protocol. Other operational impacts would be identical to those discussed under Alternatives 1 and 2.

### Decommissioning

Decommissioning impacts would be the same as those discussed under Alternatives 1 and 2.

### Summary

The construction, operation, and decommissioning of the solar PV system on Sites A, B, C, D, and E would require a Master Plan amendment, as it would be inconsistent with planned future land uses. Site E was planned for the maintenance and storage growth of the 12 Area. The proposed solar PV system would encroach into the Oscar One Training Area (Sites A and C) and maneuver area (Site E); the expansions would need to be approved by the MCB Camp Pendleton Commanding Officer or designee. MCB Camp Pendleton is exempt from the FPPA, as the land would be utilized for national defense purposes. Therefore, implementation of Alternative 3 would have no significant impact to land use.

#### 3.5.3.4 No-Action Alternative

Under the No-Action Alternative, the solar PV system would not be built. Sites A, B, and C may be utilized for future housing as outlined in the Master Plan. Land planned for storage and maintenance development associated with 12 Area growth would be available at Site E. Imaginary surfaces surrounding MCAS Camp Pendleton would continue to be unobstructed. Prime farmland would remain vacant. The Oscar One Training Area and maneuver area would remain unchanged. Therefore, implementation of the No-Action Alternative would have no impact to land use.

## **3.6 CULTURAL RESOURCES**

### **3.6.1 Definition of Resource**

Cultural resources is an inclusive label used to encompass any historic properties or traditional cultural properties and sacred sites valued by traditional communities (often but not necessarily Native American groups). Cultural resources are finite, nonrenewable resources, whose salient characteristics are easily diminished by physical disturbance; certain types of cultural resources also may be negatively affected by visual, auditory, and atmospheric intrusions.

Historic properties are defined in the federal regulations outlining Section 106 of the National Historic Preservation Act (NHPA), as amended (54 USC 300101 *et seq.*), 36 CFR Part 800, as prehistoric and historic sites, buildings, structures, districts, or objects listed or eligible for listing on the NRHP, as well as artifacts, records, and remains related to such properties. Compliance with Section 106 of the NHPA, which directs federal agencies to take into account the effect of a federal undertaking on a historic

property, is outlined in the Advisory Council on Historic Preservation's regulations, *Protection of Historic Properties* (36 CFR Part 800). A traditional cultural property can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Cultural resources are generally divided into three categories: archaeological resources, architectural resources, and traditional cultural resources:

**Archaeological resources** –places where people changed the ground surface or left artifacts or other physical remains (e.g., arrowheads or bottles).

**Architectural resources** –standing buildings, dams, canals, bridges, and other structures.

**Traditional cultural resources** –These include traditional cultural properties, which are associated with the cultural practices and beliefs of a living community that link that community to its past and help maintain its cultural identity. Traditional cultural resources may also include archaeological resources, locations of historic events, sacred areas, sources of raw materials for making tools, sacred objects, or traditional hunting and gathering areas.

The NHPA mandates guidelines for the protection of historic properties in Sections 106 and 110 of the law. Section 106 of the NHPA requires federal agencies to analyze the effect of an undertaking on cultural resources included in or eligible to the NRHP. Section 110 requires federal agencies to establish programs to locate, evaluate, and nominate all properties that qualify for inclusion in the NRHP.

Through a combination of cultural resource studies carried out to comply with Sections 106 and 110 of the NHPA, Sites A, B, C, D, E and the potential solar PV system support areas have been inventoried for cultural resources (Cheever and Collett 2002, York and Glenny 2008).

### 3.6.2 Affected Environment

The affected environment for cultural resources is based on the establishment of the area of potential effects (APE) of an undertaking, through consultation with State Historic Preservation Office (SHPO). An APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist” (36 CFR 800.16(d)). The APE for this project includes Sites A, B, C, D, and E.

#### 3.6.2.1 Prehistoric and Historic Setting

The following summary of the cultural context for the MCB Camp Pendleton Area is condensed from the *Integrated Cultural Resources Management Plan for Marine Corps Base Camp Pendleton* (MCB Camp Pendleton 2008).

#### 3.6.2.2 Regional Prehistory

The regional prehistory is divided into the Paleo-Indian, Archaic, and Late Prehistoric periods. The Paleo-Indian period dates to the terminal Pleistocene and the early Holocene, from before 10,000 Before Present (B.P.) to 8500/7500 B.P. Earlier sites may be present in San Diego County; evidence of Pleistocene occupations may be preserved along the coastlines. However, no strong evidence of these occupations currently exists (MCB Camp Pendleton 2008).

The Archaic period (approximately 8500 B.P. to 1300 B.P.) is characterized by a focus on shellfish as a dietary staple and people clustered around resource rich bays and estuaries. However, major changes in

human adaptations occurred around 4000 B.P. to 3000 B.P. when lagoon silting became extensive enough to cause a decline in associated shellfish populations. The decline of shellfish, as well as Torrey pine nuts and drinking water, resulted in a major depopulation of the coastal zone. Populations began to move inland to exploit terrestrial small game and plant resources. However, there is some evidence of continued occupation of the coastal area of Camp Pendleton throughout the Archaic Period. The evidence for this is strong, given the presence of large settlements with moderate to thick middens that were occupied for multiple seasons (MCB Camp Pendleton 2008).

The Late Prehistoric period (1300 B.P. to 800 B.P.) is linked with the ethnohistoric record of local Native Americans. The application of direct historical analogy to this time period assumes an ample period of stability during the Late Prehistoric period for populations, linguistic groups, and their territorial extent. This information was documented by Europeans from Spanish contact through early twentieth century ethnohistoric accounts. In general, the Late Prehistoric period is characterized by the appearance of small, pressure flaked projectile points (indicative of bow and arrow technology), the appearance of ceramics, the replacement of flexed inhumations with cremations, and an emphasis on inland plant food collection and processing (MCB Camp Pendleton 2008).

### 3.6.2.3 History of the MCB Camp Pendleton Area

Europeans first entered the area that is now MCB Camp Pendleton in 1769, when the Portola expedition passed through on its journey north to Monterey. This expedition sought to expand the string of Franciscan missions that began in Baja California in 1767, northward into Alta, California. The land that was to become MCB Camp Pendleton was transferred into direct Spanish control after the establishment of Mission San Juan Capistrano in 1776 and Mission San Luis Rey in 1799. After Mexico gained its independence from Spain in 1821, much of the MCB Camp Pendleton area became part of Rancho San Onofre and Rancho Santa Margarita. These ranchos were acquired in 1841 by Pio and Andres Pico. In 1844, the Pico brothers acquired Las Flores, one of the few Indian pueblos established by the Mexican government. The Pico brothers then created the Rancho Santa Margarita y Las Flores. Having acquired the rancho, the Picos established a thriving cattle ranch (MCB Camp Pendleton 2008).

By 1862, the Picos had begun to have financial difficulties. They sold part of the rancho to their brother-in-law Juan Forster as an attempt to avoid losing it to creditors. Forster died in 1882 after completing a number of improvements to the rancho. The rancho was eventually transferred to James C. Flood and Richard O'Neill. The rancho was managed by O'Neill with assistance from the Magee family who lived at the Las Flores Adobe from 1888 to 1968. O'Neill was awarded one-half of the ranch by Flood's heirs, holding the property until it was acquired by the USMC in 1942 (MCB Camp Pendleton 2008).

Since its establishment in 1942, major development at MCB Camp Pendleton has supported its mission as an amphibious training facility. Major development activities occurred during World War II (1942–1945), the Korean War (1950–1953), and the Vietnam era (1963–1975). Since the end of the Cold War (1976–1989) until just recently, development has largely focused on upgrades of World War II-era facilities (MCB Camp Pendleton 2008).

### 3.6.2.4 Cultural Resources within the Affected Environment

#### Archaeological Resources

Two archaeological sites have been identified within the boundaries of the APE. Site CA-SDI-17912 is an extensive scatter of shell and prehistoric artifacts. AECOM conducted excavations at Site CA-SDI-17912 in 2010 and determined that the site was ineligible for inclusion on the NRHP (Wahoff at el. 2010). Site CA-SDI-12572 is an extensive but dispersed scatter of lithic artifacts and marine shell situated along the

top of the bluff overlooking the SMR. ASM Affiliates (Reddy and O'Neil 2004) conducted subsurface testing and concluded that the site was ineligible for inclusion on the NRHP.

Isolated occurrences are cultural remains or features that do not meet the definition of an archaeological site. Due to the limited number of artifacts found at isolated occurrences and the low potential for providing information on prehistory or history, the isolated occurrences recorded in this APE are not recommended as eligible for inclusion in the NRHP.

All three of the alternatives fall under the *Programmatic Agreement among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton (PA)* signed in December 2014 (USMC 2014). The process defined in the Programmatic Agreement (PA) (Stipulations III.D (1) and IV.D) and outlined below, would be followed for all of the alternatives.

#### Architectural Resources

The APE does not contain any known architectural resources.

#### Traditional Cultural Resources

The APE does not contain any known traditional cultural properties or other traditional cultural resources.

### **3.6.3 Environmental Consequences**

#### **3.6.3.1 Alternative 1: Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B**

##### Construction

Under Alternative 1, up to 195 acres (79 ha) of land in Sites A and B would be converted to a solar PV system. Ground disturbing activities under Alternative 1 include trenching up to 3 feet (1 meter) for underground electrical lines and circuitry. Additionally, the solar PV panel mounting structures require foundations that reach at least 4 to 6.5 feet (1.2 to 2 meters) below ground surface.

One archaeological site is located within the APE for Alternative 1. Site CA-SDI-17912, located in Site A, is an extensive scatter of shell and prehistoric artifacts. The site is not considered eligible for inclusion in the NRHP. Therefore, disturbance of this site would not result in an adverse effect to a historic property. Despite a determination of ineligibility to the NRHP, site CA-SDI-17912 would still require cultural resources monitoring, as per the PA (USMC 2014).

This alternative falls under the Programmatic Agreement signed in December 2014 (Stipulation III.D (1) and IV.D); archaeological site (CA-SDI-17912) is within the APE and will require cultural resources monitoring. The following avoidance/minimization measures apply to Alternative 1:

- (1) All ground disturbing activities within the site boundary and a 5 meter buffer for archaeological site CA-SDI-17912 in Site A within the APE will be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner;
- (2) A monitoring and discovery plan must be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations;

(3) A report detailing the monitoring results will be provided to SHPO at the conclusion of excavations.

The monitoring and discovery plans are not available until the construction contract is awarded so that the actual design is available and the precise limits of disturbance are known. This project undertaking will be included in the PA's Annual Report to SHPO. In the event that archaeological materials (e.g. shell, wood, bone, or stone artifacts) are found or suspected during project operations or the project footprint is altered, work must be halted in the area of discovery and the Assistant Chief of Staff, Environmental Security, Cultural Resources Management Section notified at 760-725-9738, as soon as practicable, but no longer than 24 hours after the discovery. Project work at the discovery site shall not proceed until the Base Archaeologist has the opportunity to evaluate the find and gives permission to resume construction activities.

### Operation

Under Alternative 1, post-construction site operations would include use of the existing access roads as well as maintenance and repair work. These activities would occur along existing roads and infrastructure, and no ground disturbance would occur. No adverse effect to historic properties or traditional resources would occur.

### Decommissioning

The decommissioning of the solar PV panels would require similar activities to construction; work crews, vehicles, and equipment would be required to dismantle and remove the solar PV panels. Because these activities would occur in previously disturbed areas, no historic properties or traditional resources would be adversely affected. As with construction activities, if any unexpected cultural resources are encountered during decommissioning, work would cease and the MCB Camp Pendleton Cultural Resources Branch Head would be contacted before work could continue.

### Summary

One archaeological site is found within the APE of Alternative 1. This site, CA-SDI-17912, is ineligible for inclusion in the NRHP. However, in accordance with the PA (USMC 2014), monitoring of all ground disturbing activities within the site boundary and within a 5 meter buffer of the site boundary would occur. Through this process, the implementation of Alternative 1 would have no significant impact to cultural resources.

#### 3.6.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

### Construction

Under Alternative 2, up to 215 acres (87 ha) of land in Sites A, B, C, and D would be developed for a solar PV system. Construction impacts at Sites A and B under Alternative 2 would be similar to those described for Alternative 1. Two archaeological sites, CA-SDI-17912 in Site A and CA-SDI-12572 in Site C are within the APE for this alternative.

Despite a determination of ineligibility to the NRHP, both CA-SDI-17912 and CA-SDI-12572 would still require cultural resources monitoring as described in Alternative 1.

This alternative falls under the Programmatic Agreement signed in December 2014 (Stipulation III.D (1) and IV.D); archaeological sites (CA-SDI-17912 and CA-SDI-12572) are within the APE and will require cultural resources monitoring. The following avoidance/minimization measures apply to Alternative 2:

- (1) All ground disturbing activities within the site boundary and a 5 m buffer for archaeological site CA-SDI-17912 in Site A and archaeological site CA-SDI-12572 in Site C within the APE will be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner;
- (2) A monitoring and discovery plan must be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations;
- (3) A report detailing the monitoring results will be provided to SHPO at the conclusion of excavations.

The monitoring plans are not available until the construction contract is awarded so that the actual design is available and the precise limits of disturbance are known. This project undertaking will be included in the PA's Annual Report to SHPO. In the event that archaeological materials (e.g. shell, wood, bone, or stone artifacts) are found or suspected during project operations or the project footprint is altered, work must be halted in the area of discovery and the AC/S, Environmental Security, Cultural Resources Management Section notified at 760-725-9738, as soon as practicable, but no longer than 24 hours after the discovery. Project work at the discovery site shall not proceed until the Base Archaeologist has the opportunity to evaluate the find and gives permission to resume construction activities.

Site D has historic structures determined to be ineligible and has received SHPO concurrence.

By following the process defined in the PA (USMC 2014), under all construction components of Alternative 2, there would be no adverse effects to historic properties or impacts to known traditional resources.

#### Operation

Operation impacts at Sites A, B, C, and D under Alternative 2 would be similar to those described for Alternative 1, but would also occur within Sites C and D. As discussed under Alternative 1, these would occur along existing roads and infrastructure, and no ground disturbance would take place. Therefore, there would be no adverse effects to historic properties or impacts to known traditional resources.

#### Decommissioning

Decommissioning impacts at Sites A, B, C and D under Alternative 2 would be similar to those described for Alternative 1, but would also occur within Sites C and D. As discussed under Alternative 1, these would occur in previously disturbed areas. There would be no adverse effects to historic properties or impacts to known traditional resources.

#### Summary

Two archaeological sites are found within the APE of Alternative 2. In accordance with the PA (USMC 2014), monitoring of all ground disturbing activities within the site boundaries and within a 5 meter buffer of the site boundaries would occur. Through this process, implementation of Alternative 2 would have no significant impact to cultural resources.

### 3.6.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

#### Construction

Under Alternative 3, up to 272 acres (110 ha) of land in Sites A, B, C, D, and E would be converted to a solar PV system.

Construction impacts at Sites A, B, C, and D under Alternative 3 would be similar to those described for Alternative 2, but would also occur within Site E. No recorded cultural resources are present within Site E. By following the process outlined in Alternative 2, under all construction components of Alternative 3, there would be no adverse effects to historic properties or impacts to known traditional resources.

#### Operation

Operation impacts at Sites A, B, C, and D under Alternative 3 would be similar to those described for Alternative 2, but would also occur within Site E. As discussed under Alternative 1, these would occur along existing roads and infrastructure, and no ground disturbance would take place. There would be no adverse effects to historic properties or impacts to known traditional resources.

#### Decommissioning

Decommissioning impacts at Sites A, B, C and D under Alternative 3 would be similar to those described for Alternative 2, but would also occur within Site E. As discussed under Alternative 1, these would occur in previously disturbed areas. There would be no adverse effects to historic properties or impacts to known traditional resources.

#### Summary

Two archaeological sites are found within the APE of Alternative 3. Both of these sites are ineligible for inclusion in the NRHP. However, in accordance with the PA (USMC 2014), monitoring of all ground disturbing activities within the site boundaries and within a 5 meter buffer of the site boundaries would occur. Through this process, the implementation of Alternative 3 would have no significant impact to cultural resources.

### 3.6.3.4 No-Action Alternative

Under the No-Action Alternative, there would be no change to current conditions. Therefore, implementation of the No-Action Alternative would not have a significant impact to cultural resources.

## **3.7 VISUAL RESOURCES**

### **3.7.1 Definition of Resource**

Visual resources are the natural and man-made features that comprise the visual qualities of a given area, or “viewshed.” These features form the overall impression that an observer receives of an area or its landscape character. Topography, water, vegetation, man-made features, and the degree of panoramic view available are examples of visual characteristics of an area.

### 3.7.2 Affected Environment

#### 3.7.2.1 Sites A, B, C, and D

The majority of Sites A, B, C, and D consist of flat, vacant lands. The viewshed is composed primarily of non-native grasses, dirt access roads, small shrubs, and eucalyptus trees (Photo 3.7-1, Photo 3.7-2, and Photo 3.7-3). There are no unique visual features on these sites.



**Photo 3.7-1. South side of Site A, looking north.**



**Photo 3.7-2. North side of Site B, looking west.**



**Photo 3.7-3. East side of Site C, looking west.**

Visual features surrounding the sites include the I-5 freeway, eucalyptus trees, SMR, the railroad line, and associated railroad maintenance facility located immediately west of Site A. Additional vacant land occurs directly west of I-5. To the north are areas of open space, Stuart Mesa Road, and sparse development associated with the Edson Range area. The existing Stuart Mesa Housing complex is located adjacent to the site to the north and east of Site A. A 6 foot (1.8 meter) high wall separates the existing housing area from the proposed site. The existing housing area is composed of residential units, a community center, parks, an elementary school, and other community amenities. A canyon and open space are located directly to the east of Site A.

Sites A, B, C, and D are visible from many locations on and off MCB Camp Pendleton. The area is visible to motorists traveling northbound on I-5 and to passengers on Amtrak and Metrolink trains that pass immediately west of the site. Views of the site are also available from the existing housing area, though there is a slight topographical difference and a 6 foot (1.8 meter) brick wall separating the housing area from Sites A, B, C, and D (Photo 3.7-4, below). The sites can also be viewed from various locations along Stuart Mesa Road, specifically at the northern and southern ends of the Stuart Mesa Housing complex, however slight changes in topography mask most lines of sight to Sites A, B, C, and D. PV panels consist of dark materials that absorb light, and the protective glass cover is coated with an anti-reflective film (FAA 2010). Such panels reflect as little as two percent of the incoming sunlight depending on the angle of the sun and are manufactured to absorb rather than reflect sunlight.

#### 3.7.2.2 Site E

The viewshed at the 12 Area Site E consists of undeveloped non-native grasses with patches of coastal sage scrub and cactus (Photo 3.7-5, below). Vandegrift Boulevard and a wood pole 12-kV electrical distribution line run along the northern portion of the site (Photo 3.7-6, below). There are no unique visual features at the site. An existing 12-kV distribution line transects the northeast portion of Site E, which connects to MCB Camp Pendleton's existing energy grid (not visible).



**Photo 3.7-4. Looking northwest toward Site A.**



**Photo 3.7-5. Site E, looking north.**



**Photo 3.7-6. South side of Site E, looking northeast.**

From the site looking northwest, Lake O'Neill and the distant Santa Margarita Mountains are visible. To the southeast is the developed 12 Area, including the Child Development Center. The view to the west is obstructed by a hill. To the northeast of the site is a housing development.

Site E sits atop a mesa along Vandegrift Boulevard and is viewable from many residential, commercial, and industrial establishments in the vicinity.

### **3.7.3 Environmental Consequences**

#### **3.7.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B**

##### Construction

Construction of the 28 MW solar PV system on Sites A and B would occur over approximately two years. During this period, short-term visual impacts from construction would include, but would not be limited to, the staging of construction equipment, vehicles, materials, and workers, and the generation of dust during site grading. Visual effects from the construction of the solar PV system would be limited to adjacent roadways and parcels, due to the relatively flat topography of the sites. Impacts to the visual environment from construction would be temporary and depend on the viewer's proximity and line-of-sight to Sites A and B.

##### Operation

The operation of the 28 MW solar PV system would transform the visual landscape from vacant land, generally devoid of vegetation, to a utility-scale solar PV system. An aerial perspective of an existing solar PV system in Denver, Colorado within a developed landscape is shown in Photo 3.7-7. Upon



**Photo 3.7-7. A representative image of a solar PV system in a developed area.**

*Source: Blue Oak Energy 2015.*

completion, the highest point of the solar PV system would be no higher than approximately 15 feet (5 meters) above the ground.

Because the topography of the area is relatively flat, the visual sensitivity of the solar PV system, substation, and switching/metering station would be minimal as the system would only be viewable from I-5, nearby rail tracks, and from certain points along Stuart Mesa Road.

There may be some visual sensitivity from the Stuart Mesa Housing complex to the east, although lines of sight to Sites A and B are partially masked by the topography and a wall that surrounds the development.

The solar PV panels would have an anti-reflective coating that would improve light absorption and reduce or eliminate the potential for glint and glare impacts to nearby viewers. Vegetation and groundcover near the panels would be maintained beneath and surrounding the solar panels, which would not conflict with the visual character of the area.

Minimal visual impacts from the operation of the 28 MW solar PV system would result from the operation of Alternative 1.

Post-construction site operations would include, but would not be limited to, use of existing access roads; electrical and mechanical systems; and maintenance and repair – generally activities that would be consistent with on-going activities at MCB Camp Pendleton. Thus, visual impacts from post-construction operational maintenance would be negligible.

#### Decommissioning

The decommissioning of the solar PV system would return the project area to its pre-project condition. Decommissioning would include limited temporary visual impacts comparable to construction activities. Decommissioning of the solar PV system and associated support areas would include the deconstruction of the substation and switching/metering station. The visual landscape would return to vacant land.

### Summary

Construction and operation impacts to visual resources would be temporary and limited to those traveling along I-5, the rail tracks, and along the section of Stuart Mesa Road, specifically at the northern and southern ends of the Stuart Mesa Housing complex. Visual sensitivity would be minimal for the new substation and switching/metering station that would be built to support the solar PV system. These structures would not change the context of the visual environment. Therefore, implementation of Alternative 1 would have no significant impact to visual resources.

#### 3.7.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

### Construction

Under Alternative 2, the construction of an up to 31 MW solar PV system would temporarily alter a portion of the existing visual landscape on all or a combination of the Stuart Mesa Sites A, B, C, and D. Sites C and D are located adjacent to Site A and Site B, respectively, and are currently vacant land. The substation and metering/switching station that will be constructed under Alternative 1 will also be constructed under this alternative. Visual impacts from construction would be temporary and be the same as those described under Alternative 1.

### Operation

Under Alternative 2, operation of a solar PV system would transform the visual landscape from vacant land to a utility-scale solar PV system, with a footprint that is 20 acres (8 ha) larger than Alternative 1. As such, visual impacts would largely be the same as those described under Alternative 1. The visual landscape of Sites A, B, C, and D are very similar, as Site C is located on the south end of Site A, and Site D is located on the north end of Site B. Visual sensitivity would also be the same due to the proximity of Sites C and D to Sites A and B. All sites are only viewable from I-5, nearby rail tracks, and from certain points along Stuart Mesa Road. There may be some visual sensitivity from the Stuart Mesa Housing complex to the east, however, visual impacts would not have a significant impact for the following reasons: the solar PV project would extend no higher than 15 feet (5 meters) above the ground with two transmission lines supported by 55-foot (17-meter) tall steel poles; line of sight to Sites A, B, C, and D are partially masked by the topography; and a 6-foot (1.8-meter) wall surrounds the housing complex. As such, visual impacts during operations would be negligible.

### Decommissioning

Visual impacts from the decommissioning of the solar PV system would be the same under Alternative 2 as described under Alternative 1.

### Summary

Construction and operation visual impacts would largely be the same as those described under Alternative 1, as the scale of the solar PV system is similar. The same visual landscape is present across Sites A, B, C, and D. Therefore, implementation of Alternative 2 would have no significant impact to visual resources.

### 3.7.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

#### Construction

Under Alternative 3, construction of the solar PV on Sites A, B, C, D, and Site E of an up to 39 MW solar PV system would temporarily alter a portion of the existing visual landscape on all or a combination of the A, B, C, and D, and Site E (in the 12 Area). Visual impacts to Sites A, B, C, and D would remain the same as described under Alternative 2. Site E is located south of Vandegrift Boulevard, and sits atop a mesa along Vandegrift Boulevard. Site E is viewable from many residential, commercial, and industrial establishments in the vicinity of the proposed site. While there are potential lines-of-sight to Site E from the surrounding development, the impacts of construction would be temporary, lasting up to 2 years.

#### Operation

With the exception of Site E, the operation of the solar PV system would have the same negligible impacts described under Alternative 2. The visual landscape of Site E currently consists of undeveloped non-native grasses with patches of coastal sage scrub and cactus. Site E would be transformed to a solar PV system, similar to Alternative 2, but at a smaller scale. The visual character would be consistent with the developed area surrounding the site, and the existing 12-kV distribution line that is visible in the northeast portion of the site. There would be some visual sensitivity from the surrounding residential, commercial, and industrial uses nearby, but the impacts will be negligible.

#### Decommissioning

Visual impacts from the decommissioning of the solar PV system would be the same under Alternative 2 as described under Alternative 1 for all sites.

#### Summary

Construction and operation visual impacts would largely be the same as those described under Alternative 2, including the addition of Site E. The negligible impacts experienced at Site E do not significantly alter the visual character of the area. Therefore, implementation of Alternative 3 would have no significant impact to visual resources.

### 3.7.3.4 No-Action Alternative

Under the No-Action Alternative, the existing visual environment would not change. Existing visual conditions at Sites A, B, C, D, and E would remain. Therefore, implementation of the No-Action Alternative would have no impact to visual resources.

## **3.8 UTILITIES**

### **3.8.1 Definition of Resource**

This section focuses on utilities within the vicinity of the proposed project sites including electric, natural gas, sewer, water, and stormwater systems. As the Proposed Action involves the construction and operation of a solar PV system, this section primarily discusses electricity but also considers water supply and use.

#### 3.8.1.1 Electric, Natural Gas, Sewer, Water, and Stormwater Systems

SDG&E provides most of the electricity and all of the natural gas to MCB Camp Pendleton. SDG&E owns and maintains most of the electric transmission and distribution lines and related infrastructure

within the installation boundaries, but MCB Camp Pendleton also has many of their own electric transmission and distribution lines.

SDG&E currently provides power to MCB Camp Pendleton through a 69-kV substation located in Haybarn Canyon near the junction of Basilone Road and Vandegrift Boulevard, and through other 69-kV substations with radial feeds to different areas of the Base. In addition, the SDG&E holds more than 1,300 acres (526 ha) of leases/right-of-way agreements with the Base for transmission lines and various associated facilities.

The existing electrical distribution system, nearly 40 years old, was designed to supply the Base at that time in a reliable, redundant, and energy-efficient manner. The age of the system has made it difficult to maintain and the circuits are no longer reliable. New electrical loads have exceeded the capacity of the original system and the line losses have increased. As such, the electrical system has recently undergone upgrades, expansions, and improvements, including replacing the existing 4.16-kV and 12-kV electrical distribution systems to adequately address capacity requirements.

#### 3.8.1.2 Water Supply and Use

MCB Camp Pendleton's municipal and industrial water is pumped from on-Base wells. The potable water facilities within MCB Camp Pendleton are owned and operated by the Facilities Maintenance Department. The Base's potable water is locally produced from underground water aquifers located on Base and permitted by the State of California (MCB Camp Pendleton 2010). The San Diego County Water Authority provides water to the regional area.

### 3.8.2 Affected Environment

#### 3.8.2.1 Sites A, B, C, and D

There is an existing SDG&E overhead 69-kV transmission line that runs along the eastern boundary of Site B, to the west of the Stuart Mesa Housing complex. The 69-kV transmission line connects to the Cockleburr Substation, which is located to the northwest of the Stuart Mesa Housing complex.

A 12-kV electrical distribution line, "J" circuit, is located to the east of Stuart Mesa Road, southeast of Stuart Mesa Housing complex. The distribution line is available for "underbuild," and is owned and maintained by MCB Camp Pendleton. The line follows Stuart Mesa Road to the Stuart Mesa Substation (NREL 2014).

A 6-inch (15.2-cm) diameter polyvinyl chloride sewer main begins at Parker Road in the Stuart Mesa Housing complex, the main increases to an 8-inch (20.3-cm) diameter polyvinyl chloride along Joyner Street and then a 15-inch (38.1-cm) diameter line along Hamilton Street. The 15-inch (38.1-cm) diameter sewer line continues along the eastern edge of Site B to an existing sewer pump station. An existing 12-inch (30.5-cm) force main then runs east to Stuart Mesa Road and on to the Southern Region Tertiary Treatment Plant. An additional sewer line may be present in the center of Site A.

Eight-inch (20.3-cm) potable water lines are located north of Site B throughout the existing Stuart Mesa Housing complex. There are currently no stormwater facilities at Sites A, B, C, or D.

The existing SDG&E natural gas system consists of a 12-inch (30.5-cm) diameter, high-pressure natural gas pipe running east of I-5 along the western perimeter of the Stuart Mesa Sites. The existing Stuart Mesa Housing complex is served by a 4-inch (10.2-cm) diameter natural gas line that serves individual housing units.

### 3.8.2.2 Site E

A MCB Camp Pendleton 12-kV electrical transmission line runs along Vandegrift Boulevard and slightly encroaches into the northeastern section of the site. A perpendicular SDG&E 69-kV electrical transmission line runs to the northwest portion of Site E. Additionally, a 4-kV overhead electrical transmission line runs to the south of the site. An SDG&E 12-inch (30.5-cm) diameter polyvinyl chloride natural gas main transects the southwestern corner of Site E. There is no stormwater infrastructure at Site E.

## 3.8.3 Environmental Consequences

### 3.8.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

#### Construction

Construction activities would be mindful of the 12-kV overhead transmission lines that cross sites Site A and Site B. If necessary, appropriately low construction equipment would be utilized. Power used by construction equipment and vehicles would primarily be generated from the consumption of diesel and gasoline from mobile or portable sources (i.e., generators). Temporary and localized power disruption could potentially occur when the solar PV system is brought on-line.

The Proposed Action would require installation of the PV panels, construction of a substation, construction of a metering/switching station, and a connection between the solar PV system and the grid. The substation and switching/metering station would occur on Site A or Site B.

The Model 2 acquisition strategy would not require construction of a new transmission line. Under the Model 2 acquisition strategy, the solar PV system would connect to the existing overhead SDG&E 12/69-kV transmission line to the east of Sites A and B (Figure 3.8-1). Power generated would be used by regional customers. The power would be delivered via existing SDG&E infrastructure to customers located outside of MCB Camp Pendleton. Under Model 2, integration of solar PV power within the region would improve power supply, reliability, and availability.

Proposed construction activities related to all features of the solar PV system would require water, primarily for dust suppression during initial grading and site preparation activities. For development of up to a 28 MW solar PV system, as much as approximately 0.3 acre-feet of water per acre would be used; this equates to approximately 58.2 acre-feet of water for construction use over the course of two years. The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for construction activities. If available and feasible, reclaimed water (tertiary treated) would be used during construction and water use would be minimized to the extent practicable.

A sewer line may be located in the center of Site A. A utility investigation and survey would be conducted to determine presence, and obtain the exact depth and location of the sewer line on Site A.

#### Operation

Implementation of Alternative 1 would support achievement of the Navy's renewable energy goals and strategies and contribute towards meeting California's renewable portfolio standard (California Public Utilities Commission 2015).



**Legend**

- Potential Solar PV Sites
- Road

Transmission Line Ownership

- SDG&E (Model 2)
- Camp Pendleton (Model 3)
- Camp Pendleton (Model 3) Yet to be Built

**Figure 3.8-1**  
Electric Transmission Lines  
in the Vicinity of  
Sites A, B, C, and D

0 1,000 2,000 Feet  
0 250 500 Meters

Source: MCB Camp Pendleton 2015

Periodic cleaning of the solar PV panels would occur. The cleaning would require deionized water. Using a factor of 0.16 acre-foot of water per MW to periodically clean up to 28 MW of solar PV panels, an annual volume of approximately 4.6 acre-feet of deionized water would be required annually. The private partner would use deionized water provided by an off-site source. The water would be trucked in and then applied to the solar PV panels for cleaning. The periodic cleaning process is anticipated to produce little to no over-spray or accumulation of water below the solar PV panels. In addition, other cleaning techniques that use less water may be implemented to reduce the amount of water needed for cleaning.

### Decommissioning

At the conclusion of the agreement, the private partner would be required to decommission the solar PV system and all associated features and return the project area to its pre-project condition. Although the decommissioning of the solar PV system would eliminate the electricity generated from the proposed PV system, conditions would return to those described in Section 3.8.2. Temporary and localized power disruptions may occur when the system is decommissioned. Power used for construction equipment and vehicles would primarily be generated from the consumption of diesel and gasoline from mobile and portable sources.

Up to approximately 4.9 acre-feet of water over a 2-month period would be used during decommissioning activities, primarily for dust suppression. The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for decommissioning activities. If available and feasible, reclaimed water (tertiary treated) would be used during decommissioning activities.

### Summary

Under Alternative 1, there would be the potential for temporary and localized power disruption when the solar PV system comes on-line. Alternative 1 would support achievement of Navy's renewable energy goals and strategies. Under the Model 2 there would be an increase in regional power supply. Model 2 would require the use of existing SDG&E electrical infrastructure. New transmission lines would connect the solar PV system to the existing electrical infrastructure owned by MCB Camp Pendleton. The private partner would use off-site sources to meet all project water needs; MCB Camp Pendleton would not supply water. There would be no impact to MCB Camp Pendleton water supply or use. Therefore, implementation of Alternative 1 would have no significant impact to utilities.

#### 3.8.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Under Alternative 2, impacts to utilities would largely be the same as described for Alternative 1. Alternative 2 would be implemented as a Model 2 (described in Section 3.8.3.1) or as a Model 3 acquisition strategy. Model 3 acquisition strategy would require construction of two new transmission lines. Under the Model 3 acquisition strategy, the solar PV system would connect to the existing overhead MCB Camp Pendleton J circuit via two new transmission lines. One of the new transmission lines would accommodate 16 MW of solar PV power and be located between Site A and Stuart Mesa Road, south of the Stuart Mesa Housing complex (refer to Figure 3.8-1). The other new transmission line would accommodate 16 MW of solar PV power and would be located between Site B and Stuart Mesa Road, north of Site B. Both the new transmission lines would connect to MCB Camp Pendleton's J Circuit that is located parallel to the east side of Stuart Mesa Road and runs from MACS Road to the 41 Area. The existing transmission line has capacity to serve the load generated by the proposed solar PV system. The circuit has or could have switching installed that would permit interconnection with the Haybarn Substation to transmit energy throughout MCB Camp Pendleton. Under Model 3, a local renewable

energy source would be created for MCB Camp Pendleton and it would operate independent of the civilian (SDG&E) grid. It is anticipated that the power generated by the solar PV system could come close to meeting MCB Camp Pendleton's minimum weekend loads during March and April (timeframe studied during the NREL Feasibility Study [NREL 2014]). The integration of solar PV power within MCB Camp Pendleton would improve power supply, reliability, redundancy, and availability.

Regardless of the acquisition model, Alternative 2 provides up to 3 MW more generation power than Alternative 1. This is due to the inclusion of Sites C and D. Similar to Alternative 1, Alternative 2 would have no significant impact to utilities.

### 3.8.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

#### Construction

Construction impacts to Sites A, B, C, and D would be the same as those described under Alternative 2.

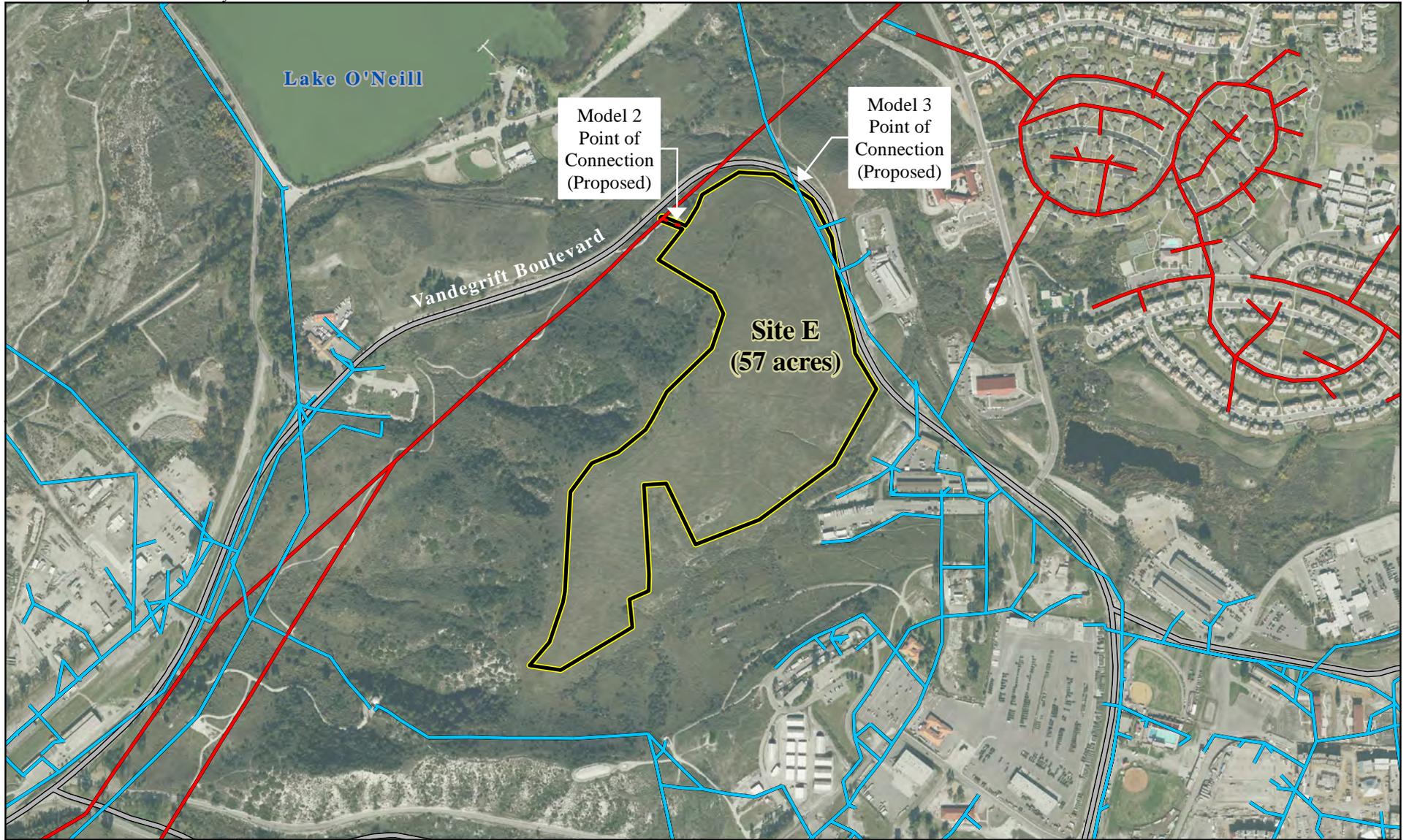
Site E contains a 12-inch (30.5-cm) diameter natural gas line and SDG&E 69-kV overhead electrical distribution line that transect the site. Appropriate safety measures should be enacted during construction activities to mitigate the overhead transmission line safety hazard. Temporary and localized power disruption could potentially occur when the solar PV system is brought on-line.

Alternative 3 would require the same level of utility construction as described in Alternative 2, with the addition of the installation of the PV panels, construction of a substation, construction of a metering/switching station, and a connection between the solar PV system and the grid at Site E. The connection to the grid would depend on the model.

Under the Model 2 acquisition strategy, the solar PV system would require construction of a short new power line to connect the solar PV system to the existing overhead SDG&E 69-kV transmission line to the northwest of Site E (Figure 3.8-2). From there, power would be delivered via existing SDG&E infrastructure to customers located outside of MCB Camp Pendleton. Power generated would be used by regional customers. The integration of solar PV power within the region would improve power supply, reliability, redundancy, and availability.

Under Model 3 acquisition strategy, the solar PV system would connect to the MCB Camp Pendleton grid at the northeast corner of Site E where there is an existing MCB Camp Pendleton 12-kV distribution line referred to as "The G Circuit." The G Circuit is located in Vandegrift Boulevard to the north and east of Site E. The G Circuit has capacity to serve the load generated by the proposed solar PV system. The circuit has or could have installed switching that would permit interconnection with the Haybarn Substation to transmit energy throughout MCB Camp Pendleton. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton. It is anticipated that the power generated by the solar PV system could come close to meeting MCB Camp Pendleton's minimum weekend loads during March and April (timeframe studied during the NREL Feasibility Study [NREL 2014]). The integration of solar PV power within MCB Camp Pendleton would improve power supply, reliability, redundancy, and availability.

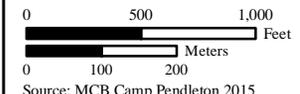
Proposed construction activities for Sites A-E would require water, primarily for dust suppression during initial grading and site preparation activities. For development of up to a 39 MW solar PV system, as much as approximately 0.3 acre-foot of water per acre would be used; this equates to approximately 81 acre-feet of water for construction use.



**Legend**

- Potential Solar PV Sites
- Road
- Transmission Line Ownership
- SDG&E (Model 2)
- SDG&E (Model 2) Yet to be Built
- Camp Pendleton (Model 3)

**Figure 3.8-2**  
Electric Transmission Lines  
in the Vicinity of Site E



Source: MCB Camp Pendleton 2015

The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for construction activities. If available and feasible, reclaimed water (tertiary treated) would be used during construction and water use would be minimized to the extent practicable.

### Operation

Operational impacts at Sites A, B, C, and D would be the same as those described under Alternative 2 and additional impacts would occur for Site E.

Periodic cleaning of the solar PV panels would occur. The cleaning would require deionized water. Using a factor of 0.16 acre-foot of water per MW to periodically clean up to 39 MW of solar PV panels, an annual volume of approximately 6.4 acre-feet of deionized water would be required annually. The private partner would use deionized water provided by an off-site source. The water would be trucked in and then applied to the solar PV panels for cleaning. The periodic cleaning process is anticipated to produce little to no over-spray or accumulation of water below the solar PV panels. In addition, other cleaning techniques that use less water may be implemented to reduce the amount of water needed for cleaning.

Alternative 3 would provide 11 MW of energy more than Alternative 1, and 8 more MW of energy than Alternative 2.

### Decommissioning

Decommissioning impacts would be the same as those described under Alternative 2.

Up to approximately 6.8 acre-feet of water over a 2-month period would be used during decommissioning activities, primarily for dust suppression. The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for decommissioning activities. If available and feasible, reclaimed water (tertiary treated) would be used during decommissioning activities.

### Summary

Under Alternative 3, there would be the potential for temporary and localized power disruption when solar PV system comes on-line. Alternative 3 would support achievement of Navy's renewable energy goals and strategies. Under the Model 2 and combination Models 2 and 3 acquisition strategies, there would be an increase in regional power supply. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton. Alternative 3 would supply the greatest amount of renewable energy when compared to Alternatives 1 and 2. Model 2 would require a new transmission line to connect to the existing SDG&E electrical infrastructure. Existing electrical infrastructure owned by MCB Camp Pendleton would be sufficient to support the solar PV system under Model 3. The private partner would use off-site sources to meet all project water needs; MCB Camp Pendleton would not supply water. There would be no impact to MCB Camp Pendleton water supply or use. Therefore, implementation of Alternative 3 would have no significant impact to utilities.

#### 3.8.3.4 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV project at MCB Camp Pendleton. The No-Action Alternative would not support the Navy's renewable energy goals and strategies. The existing electrical substations and transmission/distribution systems would continue to have adequate capacity to serve MCB Camp Pendleton's demand. There would be no impact to MCB Camp Pendleton water supply or use. Therefore, the No-Action Alternative would have no significant impact to utilities.

## CHAPTER 4

### CUMULATIVE IMPACT ANALYSIS

---

#### 4.1 INTRODUCTION

CEQ regulations implementing NEPA require that the cumulative impacts of a Proposed Action be assessed (40 CFR Parts 1500-1508). A cumulative impact is defined as the following:

*“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 CFR 1508.7)*

Cumulative effects are most likely to arise when a relationship exists between the Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997). The first step in assessing cumulative effects; therefore, involves identifying and defining the scope of other actions and their interrelationship with the Proposed Action or alternatives. The scope of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur. The scope must consider other projects that coincide with the location and timing of the Proposed Action and other actions, and the duration of potential effects on the environment. Section 4.2 identifies the projects considered in the cumulative analysis. Section 4.4 provides an analysis of potential cumulative impacts for each of the environmental resources discussed in this EA.

#### 4.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

This section identifies past, present, and reasonably foreseeable future actions not related to the Proposed Action that have the potential to cumulatively impact the resources in the affected environment for MCB Camp Pendleton and the associated regionally affected area. The geographic distribution, intensity, duration, and historical effects of similar activities were considered when determining whether a particular activity may contribute cumulatively to the impacts of the Proposed Action on the resources identified in this EA. Figure 4-1 depicts the locations of these projects.

##### 4.2.1 Past Actions

Past actions relevant to the analysis of cumulative impacts at MCB Camp Pendleton have been identified and are described below.

**PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS**

**Past Actions**

- 1 Grow the Force
- 2 Basewide Utilities Infrastructure Improvements (P-1094, P-1048)
- 3 Box Canyon Solar Photovoltaic System
- 4 Actions at Marine Corps Air Station (MCAS) Camp Pendleton
- 5 Actions at Oscar One/Edson Range Impact Area
- 6 North County Transit District SMR Bridge Replacement and Second Track Project
- 7 New Naval Hospital
- 8 New Main Exchange and Service Mall

**Present Actions**

- 9 MCB Camp Pendleton Military Family Housing Public-Private Venture (PPV-6)
- 10 Interstate 5 North Coast Corridor Project
- 11 Connection of North and South Water Systems (P-1045)

**Future Actions**

- 12 MCB Camp Pendleton Military Family Housing Public-Private Venture (PPV-7)
- 13 Stuart Mesa Bridge
- 14 Santa Margarita River Conjunctive Use Project
- 15 MCTSSA Cantonment Area Expansion (G/ATOR P-541)
- 16 Stuart Mesa West (AAV Course P-1508)

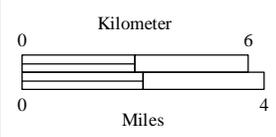
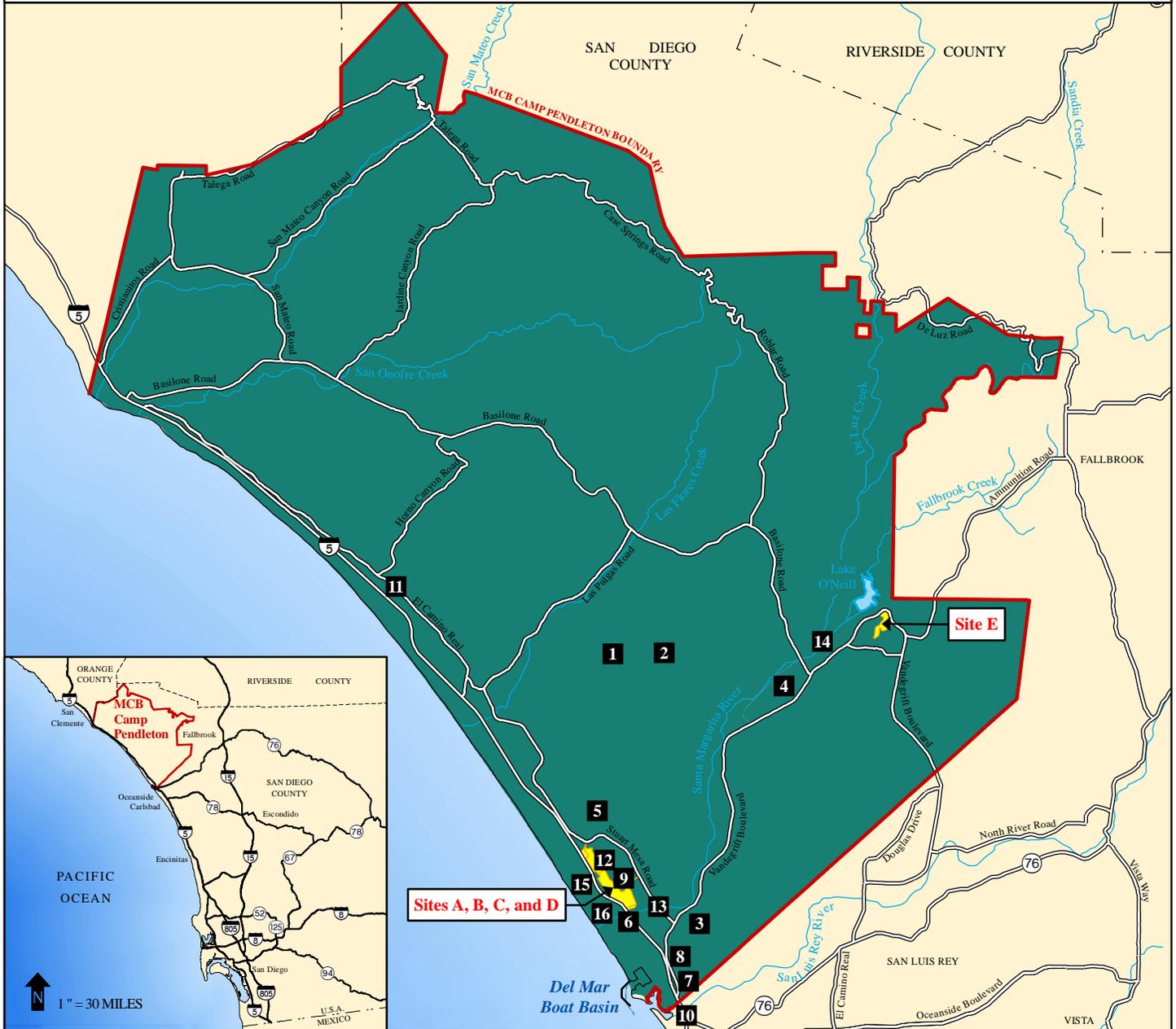


Figure 4-1  
Cumulative Project Locations



Source: MCB Camp Pendleton 2015

#### 4.2.1.1 Grow the Force

The Marine Corps 202k Plus Up, also known as “Grow the Force” would include an increase of approximately 3,000 personnel at MCB Camp Pendleton and the placement and use of temporary and permanent facilities. At present, the Grow the Force project includes approximately 60 construction projects at MCB Camp Pendleton. An EA evaluating the potential impacts of 39 projects has been completed and the Finding of No Significant Impact (FONSI) signed.

#### 4.2.1.2 Basewide Utilities Infrastructure Improvements

MCB Camp Pendleton has prepared an EIS for the proposed installation and operation of six utility infrastructure improvements throughout MCB Camp Pendleton. The proposed improvements would facilitate the mission of MCB Camp Pendleton by improving water, wastewater, natural gas, electrical and communication systems where they are deteriorating, insufficient or non-existent. Two of the infrastructure improvements are proposed, in part, within the vicinity of the Proposed Action and are discussed below:

- **P-1093 Communication Systems Upgrade.** P-1093 would provide both intercamp and intracamp fiber-optic cable and telephone cable connections. This project would provide a redundant communications network to resist single point failures by providing a minimum of two separate communication line paths to each area on MCB Camp Pendleton.
- **P-1094 Upgrade and Expand 12 kV Electrical Distribution Systems.** P-1094 would replace the existing 12-kV electrical distribution systems currently fed from the Haybarn substation, and the 4.16 kV subsystems fed from the 12-kV distribution system. The project would construct a total of eight new 12 kV circuits, which would be fed from the new 69-kV substation (P-1048), to provide approximately 60 percent of the electrical power for MCB Camp Pendleton.

The EIS discusses alternative alignments, alternatives involving various technologies, as well as the No-Action Alternative. The Record of Decision (ROD) for this project has been signed.

#### 4.2.1.3 Box Canyon Solar Photovoltaic System

Box Canyon solar PV system was constructed on top of the Box Canyon land fill at MCB Camp Pendleton. It generates 3 MW of solar energy on a daily basis. It went into service in February 2011. To avoid disturbing the earth, the solar panels were attached to frames anchored by massive concrete blocks which are set in beds of gravel on the ground.

#### 4.2.1.4 Actions at MCAS Camp Pendleton

One project associated with MCAS Camp Pendleton is a warehouse replacement (P-1037). Specific plans for this warehouse replacement have not been finalized. Actions that could affect aircraft operations at MCAS Camp Pendleton include proposed upgrades to the existing helicopter fleet. Upgrades would include newer, more powerful engines and increased number of blades (i.e., from two to four). Potential noise and air quality impacts were anticipated from Cobra and Huey engines. Noise testing occurred in late July 2006, and the EA was submitted in late November 2006. A FONSI was signed June 2007.

Another program associated with MCAS Camp Pendleton is the basing of the MV-22 Osprey tilt-rotor aircraft. This program would modernize the medium lift fleet, support I Marine Expeditionary Force, and improve operational capabilities for the Third and Fourth Marine Air Craft Wing squadrons. An EIS was prepared for the MV-22 West Coast Program and a ROD was signed November 2009.

#### 4.2.1.5 Actions at Oscar One/Edson Range Impact Area

MCB Camp Pendleton is implementing a project to repair existing dirt roads at the Edson Range Impact Area. Pacific pocket mouse, vernal pool, and archaeological resources surveys are required for the project. Other planned actions in the area (associated with Grow the Force) include recruit field barracks, an ammunition magazine, a marksmanship trainer facility, and Weapons & Field Training Battalion support facilities (P-1086). NEPA evaluation is on-going.

#### 4.2.1.6 North County Transit District SMR Bridge Replacement and Second Track Project

The Proposed Action for this project includes the replacement of the existing single-track SMR Railroad Bridge with a new two-track bridge, construction of a 0.8-mile (1.3-km) second rail track, and an upgrade and realignment of the existing Fallbrook Junction Passing Track (1.7 miles [2.7 km]) for higher speed. Completion of the new double-track segment portion of the project would connect the Stuart Mesa Passing Track with the Fallbrook Junction Passing Track to provide a 4.5-mile (7.2-km) segment of continuous double-track with maximum speeds between 75 and 90 miles per hour (121 and 145 km per hour). An EA was prepared to analyze potential environmental impacts of the project.

#### 4.2.1.7 New Naval Hospital

A new Naval Hospital to replace the existing facility in the 27 Area is has been constructed in the 20 Area, just north of the MCB Camp Pendleton Main Gate. The hospital is planned as a four-story facility with up to three parking structures that are each not to exceed five-stories. The hospital provides emergency services, in-patient services, out-patient clinics, ancillary services, surgical services, logistics, and meet other medical needs. An EA for this project was completed, and a FONSI was signed in January 2010.

#### 4.2.1.8 New Main Exchange and Service Mall

A new Main Exchange and Service Mall was completed in 2013 in the 20 Area, just north of the MCB Camp Pendleton Main Gate (north of the new Naval Hospital). The Exchange and Service Mall includes a large one story “big box” retail building and smaller buildings to support the following potential services: a military clothing store; service vendors; a restaurant; a credit union; a warehouse, administration and support; an outdoor lawn and garden shop; and surface parking for approximately 580 vehicles. An EA for this project was completed and a FONSI was signed in January 2010.

### 4.2.2 Present Actions

The following present actions are relevant to the analysis of cumulative impacts at MCB Camp Pendleton.

#### 4.2.2.1 MCB Camp Pendleton Military Family Housing Public-Private Venture

A new Public-Private Venture Military Family Housing (PPV-6) development is planned on 77 acres (31 ha) to the west of the existing Stuart Mesa Housing complex. The development includes the construction of up to 138 Military Family Housing units, off-street parking spaces for each dwelling unit, one full-size basketball court, one half-size basketball court, three tot lots, one play lot, and a chain-link fence surrounding the site on all sides except on the eastern boundary. NAVFAC SW prepared an EA for the development and alternatives. A FONSI was published in September 2009.

#### 4.2.2.2 I-5 North Coast Corridor Project

I-5 North Coast Corridor Project proposed improvements include one or two High Occupancy Vehicle Managed Lanes in each direction, auxiliary lanes where needed, and possibly one general purpose lane in

each direction. The main purpose of the project is to maintain or improve the existing and future traffic operations in the I-5 north coast corridor so as to improve the safe and efficient regional movement of people and goods for the design year of 2030. An Environment Impact Report/EIS was prepared and this project is currently under construction.

#### 4.2.2.3 Connection of North and South Water Systems (P-1045)

P-1045 would construct approximately 90,000 linear feet (27,000 meters) of potable waterlines sized approximately 36 inches (91 cm) in diameter to connect the northern and southern water systems of MCB Camp Pendleton. A water line would begin at the proposed northern Advanced Water Treatment Facility (P-1044), extend past the San Onofre Nuclear Generating Station Mesa facility, and then continue along the east side of I-5 before passing under San Onofre Creek. The line would travel south along Stuart Mesa Road, continue under the SMR, and then would connect to the southern water system at the intersection of Stuart Mesa Road and Vandegrift Blvd. The project would include approximately 7,000 linear feet (2,100 meters) of horizontal directional drilling beneath San Onofre Creek and the SMR. The project also would include three pump stations at the north, central, and south portions of MCB Camp Pendleton to connect Las Pulgas, Las Flores, and the Stuart Mesa areas to the South Water System. This project was analyzed in the Basewide Water Infrastructure EIS. A ROD was issued in 2012.

### 4.2.3 Future Actions

The following future actions are relevant to the analysis of cumulative impacts at MCB Camp Pendleton.

#### 4.2.3.1 MCB Camp Pendleton Military Family Housing Public-Private Venture

A new Public-Private Venture Military Family Housing (PPV-7) development is planned on 132 acres (53.48 ha) to the west of the existing Stuart Mesa Housing complex and to the east of Sites B as identified in the Solar PV EA. The Proposed Action would construct, operate, and maintain up to a maximum of 351 military family housing units and supporting infrastructure. The site design for the proposed residential housing would consist of multi-family residential three- and four-bedroom units. Utility connections for potable water, sewer, and electrical services are all part of the Proposed Action. In addition, the Proposed Action includes a stormwater retention area that is located in a portion of Sites A and B of the Solar PV EA, a temporary construction office location, and a temporary construction laydown area. Paving and site improvements would include paved roads and parking; curbs and gutters; sidewalks; landscaping and irrigation; and, pedestrian and bicycling features. Access to the new housing area would be provided via a new two-lane road that would extend from existing Cockleburr Canyon Road, west of the site, through the project site, to join existing Mitchel Boulevard, southeast of the site. A FONSI was published in June 2011.

#### 4.2.3.2 Stuart Mesa Bridge

Widening Stuart Mesa Bridge segment of Stuart Mesa Road is being considered by Camp Pendleton, which would include reconstruction of the existing bridge crossing over the SMR. Reconstruction of the existing bridge crossing over the SMR is needed because of susceptibility to floods. The new bridge would be four lanes, instead of the existing two lanes along Stuart Mesa Road. There are concerns that construction could result in potential environmental impacts to the riparian habitat below.

#### 4.2.3.3 Santa Margarita River Conjunctive Use Project

This project addresses the proposed conjunctive use of surface and groundwater in the lower SMR basin. The project would perfect the water rights permits that were assigned to the Bureau of Reclamation in 1974 (Permits 15000, 8511, and 11357), provide a physical solution to long-standing litigation, reduce

dependence on imported water (primarily for the Fallbrook Public Utility District [FPUD]), maintain watershed resources, and improve water supply reliability by managing the yield of the lower SMR basin. The Department of the Interior, Bureau of Reclamation, the Navy, MCB Camp Pendleton, and FPUD are preparing an Environmental Impact Report/EIS for this proposed project.

#### 4.2.3.4 MCTSSA Cantonment Area Expansion

An EA has been prepared to evaluate the expansion of the existing MCTSSA Cantonment Area by 31 acres (13 ha) and include the construction and operation of radar antennae (temporary and permanent); a vehicle testing area; support facilities; and site improvements. The Proposed Action is located west of I-5 and south of the MCTSSA Center. A FONSI was signed 12 September 2014.

#### 4.2.3.5 G/ATOR Maintenance and Test Support Facilities

This project constructs a G/ATOR Maintenance and Test Support Facilities at MCTSSA that includes a G/ATOR building, an attached / co-located training resources and visitor's center building, and an Operating Forces Tactical Systems Support Center and Technical Infrastructure and Services Group building. Construction is expected in 2018.

#### 4.2.3.6 Stuart Mesa West Training and Conversion EA

An EA is being prepared to develop a new training area on MCB Camp Pendleton on approximately 233 acres (94 ha) of land between I-5 and the Pacific Ocean, north of SMR, for combined air, land, and sea training operations. The EA is in process.

#### 4.2.3.7 Assault Amphibious Vehicle (AAV) Drivers Course (P-1508)

This project constructs a new AAV driver and test course in the Stewart Mesa West area to fully support entry-level AAV driver license requirements.

### **4.3 METHODOLOGY**

#### **4.3.1 Geographic Scope of the Cumulative Effects**

For this analysis, a geographic scope, or region of influence (ROI), for each cumulative effects issue was established. The ROI is generally based on the natural boundaries of the resources affected, rather than jurisdictional boundaries. The geographic scope may be different for each cumulative effects issue. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed action and alternatives. However, if the proposed action and alternatives are determined to have no direct or indirect effects on a resource, no future cumulative effects analysis is necessary.

#### **4.3.2 Time Frame of the Cumulative Effects Analysis**

A time frame for each issue related to cumulative effects has been determined. The time frame is defined as the long-term and short-term duration of the effects anticipated. Long-term can be as the longest lasting effect. Time frames, like geographic scope, can vary by resource. Each project in a region has its own implementation schedule, which may or may not coincide or overlap with the schedule for implementing the proposed action. This is a consideration for short-term impacts from the proposed action. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the proposed action.

Past actions are projects that have been approved and/or permitted, and that have either very recently completed construction/implementation or have yet to complete construction/be implemented. Present

actions are actions that are ongoing at the time of the analysis. Reasonably foreseeable future actions are those for which there are existing decisions, funding, or formal proposals, or which are highly probable based on known opportunities or trends. However, these are limited to within the designated geographic scope and time frame. Reasonably foreseeable future actions are not limited to those that are approved for funding. However, this analysis does not speculate about future actions that are merely possible, but not highly probable based on information available at the time of this analysis.

For this cumulative effects analysis, the time frame considered for cumulatively considerable projects includes projects recently approved or completed that are not yet addressed as part of the existing conditions of the area, projects under construction, and projects that are in the environmental review or planning process and for which enough information is available to discern their potential impacts. Projects for which no or insufficient information is known, or for which substantial uncertainty exists regarding the project, are considered speculative and are not evaluated as part of this analysis.

#### **4.4 CUMULATIVE IMPACT ANALYSIS**

This section addresses the potential cumulative impacts of the proposed action in conjunction with the aforementioned cumulative projects. These projects represent past, present, and reasonably foreseeable actions with the potential for cumulative impacts when considered in conjunction with the potential impacts from the proposed action.

##### **4.4.1 Biological Resources**

The Proposed Action entails construction, operation, and decommissioning of a solar PV system on lands that were formerly used for agricultural or training purposes and are vacant. If implemented, Alternative 1 and Alternative 2 may affect, but are unlikely to adversely affect, the coastal California gnatcatcher. If implemented, Alternative 3 would result in adverse impacts to the coastal California gnatcatcher, but the implementation of the proposed avoidance/minimization measures and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS would minimize impacts to less than significant. The Proposed Action would not be likely to adversely affect any other federally-listed threatened or endangered species or species of concern. Past, present, and future projects, including other solar PV system projects and the MCAS Camp Pendleton Clear and Transition Zone maintenance, have been, and would similarly be, required to avoid or minimize direct and indirect effects to biological resources. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to biological resources.

##### **4.4.2 Hazardous Materials and Waste**

Implementation of the Proposed Action at Sites A, B, C, D, and E would generate small amounts of HAZWASTE, but far less than would be generated through implementation of the MCB Camp Pendleton Master Plan, which called for future housing, storage, and maintenance at the sites. Implementation of the Proposed Action at Site E would likely significantly improve HAZMAT/HAZWASTE conditions as it would require remediation actions as a precursor to closing the inactive Range 404. The Proposed Action would require small HAZMAT presence and HAZWASTE streams, in the form of oils and lubricants for operation and maintenance of the drive shafts and motors that rotate the panels, if the single- or multi-axis type solar PV panels are selected for use. Additional HAZMAT associated with operation would be the application of herbicides treatments as necessary. There would be temporary debris created at the site during construction and decommissioning activities that would be removed and disposed of upon completion. Identified cumulative projects would not impact HAZMAT/HAZWASTE at the Proposed Action, nor would the Proposed Action impact HAZMAT/HAZWASTE at the identified cumulative

projects. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, and 3 would not result in significant cumulative HAZMAT/HAZWASTE impacts.

#### 4.4.3 Water Resources

Implementation of any of the proposed alternatives would result in less than significant impacts to water resources. Water supplies for construction and solar PV panel cleaning would be trucked in from an off-base source and water procurement would be the responsibility of the private partner. The amount of water used would be dependent on the level of dust control and panel maintenance needed, but would not affect the MCB Camp Pendleton potable water supply. The Proposed Action would not affect local, regional, or statewide water sources, including groundwater and surface water. Cumulatively, the construction projects described in Section 4.1 would not have any appreciable cumulative impact to water resources in terms of quality and availability. No significant cumulative impacts on water resources would occur.

#### 4.4.4 Air Quality

In addition to the potential cumulative impacts of additional criteria pollutants, the cumulative effects analysis for air quality would determine if the Proposed Action would contribute to global climate change (in combination with the other identified past, present, and future projects). The most recent California Climate Change Scenarios Assessment predicts that temperatures in California could increase by approximately 2.7 degrees Fahrenheit (°F) by 2050, and up to 8.6°F by 2100 (California Energy Commission 2012). Predictions of long-term negative environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of droughts, changes to local and regional ecosystems including the potential loss of species, and a substantial reduction in winter snow pack. In California, predictions of these effects include exacerbation of air quality problems, a reduction in municipal water supply, increased impacts from coastal flooding, an increase in the number and intensity of wild fires, and damage to marine and terrestrial ecosystems (California Energy Commission 2012). Similar effects would be anticipated within San Diego County (County of San Diego 2012).

In December of 2014 the CEQ issued revised draft guidance for federal agencies, to guide them on when and how to consider the effects of GHG emissions and climate change in their projects (CEQ 2014). In the analysis of the direct effects of a Proposed Action, the CEQ proposes that it would be appropriate to (1) quantify cumulative emissions over the life of the project; (2) discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and (3) qualitatively discuss the link between such GHG emissions and climate change. Therefore, formulating significance criteria for GHG emissions is problematic, as it is difficult to determine what level of proposed emissions would substantially contribute to global climate change. The CEQ recommends that 25,000 metric tons of CO<sub>2e</sub> or more being produce by a Proposed Action be considered the threshold warranting a more substantial evaluation of—but not necessarily a determination of—significance of climate change impact (CEQ 2014).

The ROI in this air quality cumulative effects analysis includes the SDAB. The minor impacts to air quality from Alternatives 1, 2, or 3 that could contribute to potential cumulative impacts would be from the short-term air emissions from trucks and vehicles used during the construction of the project. Operational air emissions from the action alternatives would be negligible compared to the existing condition, and would not result in significant long-term increases in air emissions.

The combined air emissions of Alternatives 1, 2, or 3 and potentially cumulative projects would not contribute to an exceedance of an ambient air quality standard. As a result, proposed construction and operational activities would produce less than cumulatively considerable air quality impacts. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to air quality.

4.4.4.1 Greenhouse Gasses Cumulative Effects Analysis

The potential effects of GHG emissions are by nature global and cumulative and it is impractical to attribute climate change to individual activities. Therefore, an appreciable impact on global climate change would only occur when GHG emissions associated with the Proposed Action or other alternatives are combined cumulatively with GHG emissions from other human-made activities on a global scale.

Alternative 1: Sites A and B

Table 4.4-1 summarizes the annual GHG emissions that would occur with implementation of Alternative 1.

**Table 4.4-1. Estimated Annual GHG Emissions – Alternative 1**

Scenario/Activity	Metric tons per year			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e <sup>1</sup>
<b>Construction</b>				
Year 1 - 2016	1,432.73	0.39	0.00	1,440.98
Year 2 - 2017	1,619.23	0.41	0.00	1,627.94
<b>Decommissioning</b>				
Year 2053 (Model 2)	181.42	0.007	0.00	181.57

Note: <sup>1</sup>CO<sub>2</sub>e = CO<sub>2</sub> + (21 \* CH<sub>4</sub>) + (310 \* N<sub>2</sub>O).

As an indication of the nominal relative magnitude of these emissions, total annual CO<sub>2</sub>e emissions in the U.S. were approximately 5.5 billion metric tons (USEPA 2015d). Total CO<sub>2</sub>e emissions in California in 2012 were approximately 474 million metric tons (CARB 2014).

Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. Alternative 1 in conjunction with the other past, present, and future solar energy projects would have a beneficial impact to the SDAB as a whole due to the potential reduction in GHG as compared to burning fossil fuels for electricity generation. Therefore, when GHG impacts from Alternative 1 are added to the GHG impacts from the cumulative projects, there would not be significant GHG cumulative impacts to global climate change from implementation of Alternative 1. There would also be no significant cumulative impact from the emission of criteria pollutants in conjunction with the other past, present, and reasonably foreseeable actions.

Alternative 2: Sites A, B, C, and D

The GHG effects from the implementation of Alternative 2 would be slightly greater to those effects from Alternative 1. However, the potential GHG emissions would still be nominal as compared to the total annual CO<sub>2</sub>e emissions in the U.S. Therefore, when GHG impacts from Alternative 2 are added to the GHG impacts from the cumulative projects, there would not be significant GHG cumulative impacts to global climate change from implementation of Alternative 2.

Alternative 3: Sites A, B, C, D, and E

Table 4.4-2 summarizes the annual GHG emissions that would occur with implementation of Alternative 1.

**Table 4.4-2. Estimated Annual GHG Emissions – Alternative 3**

Scenario/Activity	Metric tons per year			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e <sup>1</sup>
<b>Construction</b>				
Year 1 - 2016	1,787.23	0.49	0.00	1,797.60
Year 2 - 2017	2,111.39	0.56	0.00	2,123.05
<b>Decommissioning</b>				
Year 2053 (Model 2)	298.38	0.01	0.00	298.60

Note: <sup>1</sup>CO<sub>2</sub>e = CO<sub>2</sub> + (21 \* CH<sub>4</sub>) + (310 \* N<sub>2</sub>O).

As an indication of the nominal relative magnitude of these emissions, total annual CO<sub>2</sub>e emissions in the U.S. were approximately 5.5 billion metric tons (USEPA 2015d). Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. Alternative 3 in conjunction with the other past, present, and future solar energy projects would have a beneficial impact to the SDAB as a whole due to the potential reduction in GHG as compared to burning fossil fuels for electricity generation. Therefore, when GHG impacts from Alternative 3 are added to the GHG impacts from the cumulative projects, there would not be significant GHG cumulative impacts to global climate change from implementation of Alternative 3. There would also be no significant cumulative impact from the emission of criteria pollutants in conjunction with the other past, present, and reasonably foreseeable actions.

4.4.4.2 No-Action Alternative

Under the No-Action Alternative, no project activities would occur; therefore, there would be no GHG impacts to global climate change and no significant cumulative impact from the emission of criteria pollutants.

**4.4.5 Land Use and Military Operations**

Implementation of the Proposed Action at Sites A and B would be in areas that are designated for future housing as identified in the Master Plan would need to be revised and approved by the Commanding Officer or designee to confirm the appropriate current land use as housing market conditions and Navy priorities may have changed since the housing was approved in 2011.

Implementation of the Proposed Action at Sites A and B would be in areas that are designated for a future detention basin associated with the residential development as documented in the MCB Camp Pendleton Military Family Housing PPV-7 EA. The Commanding Officer or designee would confirm the appropriate land use depending on which project is implemented.

The solar PV system would also encroach into designated training and maneuver areas at Sites A and E, however, the sites are rarely, if ever, used for military training and would not impact the larger mission of MCB Camp Pendleton. Identified cumulative projects would not impact training and maneuver area land. Prime farmland at the proposed sites would be available for future agricultural use at MCB Camp Pendleton’s discretion. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, and 3 would not result in significant cumulative impacts to land use.

#### **4.4.6 Cultural Resources**

The Proposed Action entails construction, operation, and decommissioning of a solar PV system on currently vacant lands, formerly used for agricultural purposes, and that are highly disturbed. The Proposed Action would not be likely to adversely affect any cultural resources. Past, present, and future projects, including other solar PV system projects, have been, and would similarly be required to avoid or minimize direct and indirect impacts to cultural resources. The region surrounding the project area is largely composed of agricultural land that has been disturbed, with a low likelihood of containing intact cultural resources. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to cultural resources.

#### **4.4.7 Visual Resources**

Implementation of the Proposed Action would alter the existing visual environment from unoccupied agricultural to a solar PV system. The past, present, and reasonably foreseeable cumulative projects described would add development to MCB Camp Pendleton including potential residential development and electrical transmission infrastructure. While additional military housing could add visual sensitivity factors near the Stuart Mesa Sites A, B, C, and D additional features (such as fences or walls around the housing) could be added to obscure direct lines of sight to the solar PV system. The solar PV system is relatively low to the ground; the highest point of the solar PV field would be no higher than approximately 15 feet (5 meters) above the ground surface under the Proposed Action. Additionally, ground cover under and/or around the solar PV system could be designed to improve the visual character of the site. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to visual resources.

#### **4.4.8 Utilities**

Implementation of the Proposed Action would generate additional electricity for regional customers (Model 2) or for MCB Camp Pendleton (Model 3). Similarly, other cumulative renewable energy projects in the region and on Base would generate additional electricity for customers. For example, the recently constructed cumulative project, the Box Canyon Solar PV System, generates 3 MW of renewable energy on a daily basis for MCB Camp Pendleton. Identified and proposed upgrades to systems that require additional load requirements, and short- and long-term infrastructure needs throughout MCB Camp Pendleton would continue to be upgraded under the Basewide Utilities Infrastructure Improvements project. Transmission planning off-Base would continue to be identified and improved by the CAISO. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to utilities.

## CHAPTER 5 OTHER NEPA CONSIDERATIONS

### 5.1 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS

An assessment of the Proposed Action indicates that the three action alternatives (Alternative 1, 2, and 3) would not conflict with the objectives of other regulations. A summary of regulatory compliance status is presented in Table 5-1.

**Table 5-1. Summary of Applicable Environmental Regulations and Regulatory Compliance**

Plans, Policies, and Controls	Responsible Agency	Compliance status	EA Section
NEPA	Navy and USMC	This EA has been prepared in accordance with NEPA, CEQ regulations implementing NEPA, and Navy NEPA procedures.	Entire EA
CAA, CAAQS, SDAPCD Rules and Regulations for Title V and non-Title V sources	USEPA and CARB	The air quality analysis in this EA concludes that proposed emissions under Alternatives 1, 2, and 3: (1) would not exceed <i>de minimis</i> levels, (2) would not create a major regional source of air pollutants or affect the current attainment status at MCB Camp Pendleton, and (3) would comply with all applicable state and regional air agency rules and regulations.	3.4, 4.4.4
EO 12898, Environmental Justice	Navy and USMC	Based on the analysis in this EA, Navy and USMC conclude that Alternatives 1, 2, or 3 would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	1.4.2
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	Navy and USMC	Based on the analysis in this EA, Navy and USMC conclude that Alternatives 1, 2, or 3 would not result in environmental health risks and safety risks that may disproportionately affect children.	1.4.2
NHPA	SHPO	None of the archaeological sites within the Project Area are eligible for listing under the NRHP.	3.6, 4.4.6
CWA	USEPA, USACE, and California SWRCB	The Proposed Action would be implemented in compliance with California’s General Construction Permit. Proposed construction and decommissioning activities would require preparation of a SWPPP and use of BMPs to limit potential erosion and runoff.	3.3, 4.4.3
ESA	USFWS	Alternative 1, 2, and 3 would not affect ESA-listed species or suitable habitat for ESA-listed species at MCB Camp Pendleton.	3.1, 4.4.1
Migratory Bird Treaty Act	USFWS	The Proposed Action would not increase impacts to migratory birds.	3.1

### 5.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES CONSIDERED

Energy demands would primarily occur during the construction/decommissioning phases of the project. The energy demands for the implementation of Alternative 1, which has the smallest footprint, would

have lower energy demands. Alternative 2 would have a slightly greater energy demand compared to Alternative 1. Alternative 3 would have the highest energy demand, as it has the largest footprint.

Construction/decommissioning activities would consume large volumes of nonrenewable fossil fuel, in the form of diesel gasoline, for the operation of construction equipment. One of the primary opportunities for conservation of fuel is the regular maintenance of vehicles and equipment to maximize their fuel efficiency. All equipment would be in proper working order. Equipment would not be allowed to idle when not in service, as is required for minimizing air quality impacts. In addition, all equipment would be shut down when not in operation for any extended periods of time.

Maintenance activities would require a small number of vehicles. In addition to the conservation options described above, fuel consumption could be further reduced by using a fuel efficient vehicle fleet, and limiting the use of less efficient vehicles and equipment to when they are required by the situation. Once operational, the Proposed Action would be net renewable energy producer for the region.

### **5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

NEPA requires that environmental analysis include identification of "...any irreversible or irretrievable commitments of resources that would be involved if the proposed action is implemented." The term "resources" (both renewable and nonrenewable) means the natural and cultural resources committed to, or lost by, the action, as well as labor, funds, and materials committed to the action.

The permanent use and subsequent loss of non-renewable resources, such as oil, natural gas, and iron ore, are considered irreversible because non-renewable resources cannot be replenished by natural means. An action that causes a loss in the value of an affected resource, which cannot be restored (e.g., disturbance of a cultural site), is considered an irretrievable commitment of resources. Similarly, the consumption of a renewable resource that would be lost for a period of time is also considered an irretrievable commitment of resources. Renewable natural resources include water, lumber, and soil, all of which can be replenished by natural means within a reasonable timeframe. Alternatives 1, 2, and 3 would require the irretrievable commitments of both non-renewable and renewable resources in the use of fuel, construction materials, and labor. The operation and maintenance of the solar PV system would require fuel and certain types of materials.

The Proposed Action would comply with EO 13693, *Planning for Federal Sustainability in the Next Decade*. EO 13693 superseded EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. The goal of EO 13693 is to maintain federal leadership in sustainability and greenhouse gas emission reductions.

Alternative 1 would require the least amount of construction materials and energy, as it has the smallest footprint. Alternative 2 and Alternative 3 would require slightly more construction materials and energy relative to their individual footprints. The total amount of construction materials (e.g., concrete, insulation, wiring) required for the Proposed Action is relatively small when compared to the resources available in the region. The construction materials and energy required for facility development and operations are not in short supply. Moreover, the use of construction materials and energy would not have an adverse impact on the continued availability of these resources. The commitment of energy resources to implement the Proposed Action is not anticipated to be excessive in terms of region-wide usage. Furthermore, compliance with EO 13693 would minimize irreversible or irretrievable effects to multiple non-renewable and renewable resources, while implementation of the Proposed Action would further the

goals and intentions of EO 13693 by increasing the amount of energy generated and/or used at MCB Camp Pendleton that is derived from renewable sources.

#### **5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY**

Short-term uses of the environment associated with the Proposed Action would include the elimination of vegetative ground cover at the project sites. Project-related construction activities would temporarily increase air pollution emissions in the immediate vicinity of the affected area(s). Sustainability principles would be incorporated into building design and practices in accordance with NAVFAC Instruction 9830.1, Sustainable Development Policy (Navy 2003).

As discussed in Chapter 3, the action alternatives would result in both short- and long-term environmental effects. Construction, operation, and decommissioning of the solar PV system is unlikely to result in the types of impacts that would reduce environmental productivity, have long-term impacts on sustainability, affect biodiversity, or narrow the range of long-term beneficial uses of the environment.

The Proposed Action has a defined lifecycle in which long term, i.e., more than 30 years post-implementation, the project area would be returned to existing conditions and functioning with minimal net change from the pre-project environment. In the interim, however, biotic productivity within the affected sites would be eliminated, while renewable energy benefits would be realized.

#### **5.5 ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION**

No resource area would be subject to significant adverse impacts that would require mitigation. Table 3-1 presents the identified resource area avoidance/minimization measures for the alternatives. No adverse environmental effects would occur.

## **CHAPTER 6**

### **LIST OF AGENCIES AND PERSONS CONTACTED**

---

---

Mark Delaplaine, CCC, San Francisco, CA

Stacey Love, Recovery Permits Coordinator, USFWS, Carlsbad, CA

## CHAPTER 7

### LIST OF PREPARERS

---

Cardno prepared this EA under the direction of the NAVFAC SW. Members of the project team include the following Navy, MCB Camp Pendleton, and contractor staff:

#### Navy

Ryan Maynard

*NEPA Planner, NAVFAC SW*

Connie Moen

*N45 NEPA Coordinator*

Julien Trinh

*Project Manager, Renewable Energy Program Office, NAVFAC SW*

#### MCB Camp Pendleton

Mark Anderson, Environmental Security, Consultation Section

*NEPA Planner*

Greg Bergado, Public Works Department

*Assistant Chief of Staff G-F, NEPA Planner*

Bill Eich, Public Works Department

*Branch Head*

Charles Howell, Facilities Maintenance Department

*Energy Planner*

Luis Ledesma

*Head, Installation Restoration Section*

Matt Lorne, Environmental Security, Consultation Section

*Natural Resource Specialist*

Robert Marshall, Facilities Department (Housing)

*Assistant Chief of Staff G-F, Housing Director*

Danielle Page, Environmental Security, Cultural Resources Branch

*Branch Head*

Tracy Sahagun, Environmental Security, Resource Conservation and Recovery Act Division

*Division Head*

Joe Shields, Public Works Department

*Utility Planner*

Mark Vidal, Public Works Department

*Assistant Chief of Staff G-F, Community Planner*

Cardno

Stella Acuna, Solana Beach, CA

*Project Manager, 25 years of experience*

Jackie Brownlow, Solana Beach, CA

*Graphics, 5 years of experience*

Shannon Brown, Solana Beach, CA

*GIS Analyst, 5 years of experience*

Selena Buoni, Santa Barbara, CA

*Air Quality, 10 years of experience*

Blake Claypool, Solana Beach, CA

*Senior Biologist, 16 years of experience*

J. Scott Coombs, Santa Barbara, CA

*Geological and Water Resources, 15 years of experience*

Mike Dungan, Santa Barbara, CA

*Biological Resources, 32 years of experience*

Melanie Hernandez, Solana Beach, CA

*Quality Assurance Review, 18 years of experience*

Caitlin Jafolla, Solana Beach, CA

*Visual Resources and Data Management, 3 years of experience*

Christopher Noddings, Santa Barbara, CA

*Biological Resources, 8 years of experience*

Terry Rudolph, Boise, ID

*Cultural Resources, 35 years of experience*

Clint Scheuerman, Santa Barbara, CA

*Biological Resources, 11 years of experience*

Richard Stolpe, Solana Beach, CA

*Hazardous Materials, 12 years of experience*

Claudia Tan, Solana Beach, CA

*Document Production Manager, 12 years of experience*

Lisa Woeber, Solana Beach, CA

*Technical Review, 19 years of experience*

## CHAPTER 8

### REFERENCES

---

- Avian Power Line Interaction Committee. 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, Avian Power Line Interaction Committee, and the California Energy Commission. Washington, D.C. and Sacramento, CA.
- Avian Power Line Interaction Committee. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and Avian Power Line Interaction Committee. Washington, D.C.
- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press, Berkeley.
- Blue Oak Energy. 2015. *Project: Denver Federal Center Solar Park*. Digital image – web. <http://www.blueoakenergy.com/public-sector>. Accessed 25 March 2015.
- Boughton, D. A., P. B. Adams, E. Anderson, C. Fusaro, E. Keller, E. Kelley, L. Lentsch, J. Nielsen, K. Perry, H. Regan, J. Smith, C. Swift, L. Thompson, and F. Watson. 2006. Steelhead of the South-Central/Southern California Coast: Population Characterization for Recovery Planning. NOAA-TM-NMFS-SWFSC-394.
- Brehme, C.S., T.A. Matsuda, L.R. Albert, B.H. Smith, and R.N. Fisher. 2012. Pacific Pocket Mouse Studies 2010, MCB, Camp Pendleton; Discovery and Population Mapping-- with additional studies for scent effects on detectability and surveys for the Argentine ant at North and South San Mateo. Marine Corps Base, Camp Pendleton. Prepared for AC/S Environmental Security, Marine Corps Base, Camp Pendleton. 40p.
- CARB. 1996. California State Implementation Plan for Maintenance of Carbon Monoxide.
- CARB. 1998. Revision to 1996 Carbon Monoxide Maintenance Plan for 10 Federal Planning Areas. 6 October.
- CARB. 2004. 2004 Revision to the California State Implementation Plan for Carbon Monoxide, Updated Maintenance Plan for Ten Federal Planning Areas. 22 July.
- CARB. 2014. California Greenhouse Gas Emission Inventory, 2000-2012. May.
- CARB. 2015a. California Ambient Air Quality Standards. Accessed at <http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm>. 14 February.
- CARB. 2015b. Area Designation Maps, State and National. Accessed at <http://www.arb.ca.gov/desig/adm/adm.htm>. 14 February.
- CARB. 2015c. Toxic Air Contaminant Identification List. Accessed at <http://www.arb.ca.gov/toxics/id/taclist.htm>. 14 February.
- CARB. 2015d. iADAM: Air Quality Data Statistics, Top 4 Summary: Highest 4 Daily Maximum Averages. Accessed at <http://www.arb.ca.gov/adam/topfour/topfour1.php>. 14 February.
- Cardno. 2015a. Coastal California Gnatcatcher Report for Site E in Support of the Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California. July.

- California Air Pollution Control Officers Association. 2015. California Emissions Estimator Model™. <http://www.aqmd.gov/caleemod/>. Accessed on 3 April 2015.
- California Energy Commission. 2012. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. A Summary Report on the Third Assessment from the California Climate Change Center. Accessed at <http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf>. Accessed 14 February 2015.
- California Public Utilities Commission. 2015. Renewable Standard Program Overview. <http://www.cpuc.ca.gov/PUC/energy/Renewables/overview.htm>. Accessed 3 April 2015.
- CEQ. 1997. Environmental Justice Guidance Under the National Environmental Policy Act. 10 December.
- CEQ. 2014. Revised Draft Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews. Accessed at <http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance>. December.
- CDFW. 2015a. Special Animals List. March. Available online at: <https://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf>. Accessed on 12 March 2015.
- CDFW. 2015b. Special Vascular Plants, Bryophytes, and Lichens List. January. Available online at: <https://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>. Accessed on 12 March 2015.
- Cheever, M. Dayle and Russell O. Collett. 2002. *Results of A Phase 1 Survey of Nine Cantonment Areas, U.S. Marine Corps Base Joseph H. Pendleton*. RECON Environmental, Inc. Submitted to NAVFAC SW, Contract No. N63387-98-D5753. October.
- County of San Diego. 2012. County of San Diego Climate Action Plan. June.
- CWRCB. 2015a. GeoTracker record for Stuart Mesa East Ag. Fields, Phases VIIA and VIIB (T10000001528). Available at: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T10000001528](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000001528). Accessed on 23 March.
- CWRCB. 2015b. GeoTracker record for Stuart Mesa East Ag. Fields, Future Development (T10000002569). Available at: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T10000002569](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000002569). Accessed on 23 March.
- CWRCB. 2015c. GeoTracker record for Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286). Available at: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T10000004286](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000004286). Accessed on 23 March.
- CWRCB. 2015d. Map query search of “Camp Pendleton, CA.” to view the Stuart Mesa Sites and the 12 Area Site. CWRCB GeoTracker© website. Available at: <http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=camp+pendleton%2C+ca>. Last Updated: 2010. Accessed on 23 March.
- CWRCB. 2015e. Letter from Beatrice Griffey of CWRCB to Teresa Morley of NAVFAC SW, dated 11 August 2014. Available at: [http://geotracker.waterboards.ca.gov/regulators/deliverable\\_documents/8906278848/03\\_2014.pdf](http://geotracker.waterboards.ca.gov/regulators/deliverable_documents/8906278848/03_2014.pdf). Accessed on 23 March.

- Department of Energy. 2011. Energy Basics: Flat-Plate Photovoltaic Modules. [http://www.eere.energy.gov/basics/renewable\\_energy/flat\\_plate\\_pv\\_modules.html](http://www.eere.energy.gov/basics/renewable_energy/flat_plate_pv_modules.html). Accessed on 5 November 2014.
- Desert Renewable Energy Conservation Plan Independent Science Advisors. 2010. Recommendations of Independent Science Advisors for The California Desert Renewable Energy Conservation Plan (DRECP). Available at: <http://www.energy.ca.gov/2010publications/DRECP-1000-2010-008/DRECP-1000-2010-008-F.PDF>.
- DeVault, T.L., T.W. Seamans, J.A. Schmidt, J.L. Belant, B.F. Blackwell, N. Mooers, L.A. Tyson, and L. Van Pelt. 2014. Bird use of solar photovoltaic installations at US airports: implications for aviation safety. *Landscape and Urban Planning* 122, 122–128. Available online at: [http://www.aphis.usda.gov/wildlife\\_damage/nwrc/publications/14pubs/14-046%20devault.pdf](http://www.aphis.usda.gov/wildlife_damage/nwrc/publications/14pubs/14-046%20devault.pdf).
- DoD. 2014. Memorandum on Glint/Glare Issues on or near Department of Defense Aviation Operations. June.
- DTSC. 2015. EnviroStor record for Oceanside CP Site (80000338). Available at: [http://www.envirostor.dtsc.ca.gov/public/profile\\_report.asp?global\\_id=80000338](http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=80000338). Accessed on 23 March.
- FAA. 2010. Technical Guidance for Evaluating Selected Solar Technologies on Airports. Office of Airport Planning and Programming, Airport Planning and Environmental Division (APP-400), 800 Independence Avenue SW, Washington, DC. November.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California Resources Agency, Department of Fish and Game, Sacramento, CA. October.
- Horvath, G., Blaho, M., Egri, A., Kriska, G., Seres, I., and B. Robertson. 2010. Reducing the Maladaptive Attractiveness of Solar Panels to Polarotactic Insects. *Conservation Biology*. 24(6):1644-53.
- Institute of Hazardous Materials Management. 2010. What are Hazardous Materials. Webpage. Available at: <http://www.ihmm.org/about-ihmm/what-are-hazardous-materials>. Last Updated: 2010. Accessed on 30 July 2014.
- Intergovernmental Panel on Climate Change. 2012. “Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change.” [http://srren.ipcc-wg3.de/report/IPCC\\_SRREN\\_Full\\_Report.pdf](http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf). Accessed on 6 February 2015.
- Kagan, R.A., Viner, T.C., Trail, P.W. and E.O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory. 23 April.
- Kalish, John M. 1990. Use of Otolith Microchemistry to Distinguish the Progeny of Sympatric Anadromous and Non-anadromous Salmonids. Department of Zoology, University of Tasmania.
- Lafferty, K.D. 2012. Camp Pendleton Tidewater Goby Monitoring Project Report (2012 Update). Prepared by U.S. Geological Survey, Western Ecological Research Center, San Diego, CA for MCB Camp Pendleton, CA.
- Lynn, S. and B.E. Kus. 2010. Distribution, Abundance, and Breeding Activities of the Least Bell’s Vireo at Marine Corps Base Camp Pendleton, California. 2010 Annual Report. Prepared by U.S. Geological Survey, Western Ecological Research Center, San Diego, CA for AC/S Environmental Security, MCB Camp Pendleton, CA.

- Marriott, D.F. 2009. Assessment of the Recently Burned Monarch Butterfly (*Danaus plexippus*) Roost Site and Preparation of Monarch Butterfly Restoration Plan On Marine Corps Base, Camp Pendleton, California. Prepared for Naval Facilities Engineering Command, Southwest. 6 November.
- MCB Camp Pendleton. 2008. Integrated Cultural Resources Management Plan Marine Corps Base Camp Pendleton.
- MCB Camp Pendleton. 2010. 2030 Base Master Plan. December.
- MCB Camp Pendleton. 2011a. Pendleton Strives to Go Green With New Photovoltaic System. <http://www.pendleton.marines.mil/PendletonNews/NewsArticleDisplay/tabid/5440/Article/537343/pendleton-strives-to-go-green-with-new-photovoltaic-system.aspx>. 7 February. Accessed on 2 December 2014.
- MCB Camp Pendleton. 2011b. Final Hazardous Waste Management Plan. November.
- MCB Camp Pendleton. 2012. Integrated Natural Resources Management Plan: Marine Corps Base Camp Pendleton. March 2007 (March 2012 Update). Environmental Security.
- MCB Camp Pendleton. 2014a. Telephone interview with Ms. Tracy Sahagun, MCB Camp Pendleton Resource Conservation and Recovery Act Division Head, by Mr. Richard Stolpe and Mr. Scott Barker, Cardno. 17 July.
- MCB Camp Pendleton. 2014b. Range Complex Management Plan. October.
- MCB Camp Pendleton. 2015a. GIS Data layers. Environmental Security.
- MCB Camp Pendleton. 2015b. Vegetation Survey and Plant Community Mapping Report of Site E in Support of the Construction and Operation of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton. May.
- MCB Camp Pendleton. 2015c. Coastal California Gnatcatcher Report at Site E in Support of the Construction and Operation of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton. May.
- MCB Camp Pendleton. 2015d. Rare Plant Report for Site E in Support of the Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California. July.
- MCB Camp Pendleton. 2015e. EA for Construction and Operation of a Solar Photovoltaic System at MCB Camp Pendleton Comments on Draft V.1 by A. Wirsching.
- MCB Camp Pendleton. 2015f. EA for Construction and Operation of a Solar Photovoltaic System at MCB Camp Pendleton Comments on Draft V.1 by L. Ledesma.
- MCB Camp Pendleton. 2015g. EA for Construction and Operation of a Solar Photovoltaic System at MCB Camp Pendleton Comments on Draft V.2 by L. Ledesma.
- MCB Camp Pendleton. 2015h. Jurisdictional Delineation of Site E in Support of the Construction and Operation of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California. April.
- National Marine Fisheries Service. 2010. Letter from R. McInnis, Regional Administrator, NOAA Fisheries, to W. Berry, Resources Management Division Head, MCB Camp Pendleton. 12 March.

- NAVFAC Atlantic. 2011. Coastal California Gnatcatcher (*Polioptila californica californica*) General Inventory and Breeding Status Assessment Study on Marine Corps Base, Camp Pendleton, California. February.
- NAVFAC SW. 2011. EA Camp Pendleton VII Military Family Housing. MCB Camp Pendleton. San Diego County, California. June.
- NAVFAC SW. 2014. Environmental Feasibility Study for Proposed Photovoltaic System at Marine Corps Base Camp Pendleton and Naval Weapons Station Seal Beach Detachment Fallbrook San Diego County, California. October.
- NAVFAC SW. 2015. Personal communication between Theresa Morley and Ryan Maynard, both of NAVFAC SW, via email on 19 February.
- Navy. 2003. NAVFAC 9830.1, Sustainable Development Policy. 9 June.
- Navy. 2012. Strategy for Renewable Energy. Published by the 1 Gigawatt Task Force. October.
- Navy. 2014. Energy, Environment, and Climate Change. <http://greenfleet.dodlive.mil/energy/>. Accessed on 11 November 2014.
- NREL. 2013. Land-Use Requirements for Solar Power Plants in the United States. <http://www.nrel.gov/docs/fy13osti/56290.pdf>. June. Accessed on 2 December 2014.
- NREL. 2014. Solar Opportunity: MCB Camp Pendleton, NWS Fallbrook. Draft. September.
- Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County. Based on “Preliminary Descriptions of the Terrestrial Natural Communities of California” prepared by Robert F. Holland, Ph.D. (October 1986). March.
- Parsons. 2015. Marine Corps Base (MCB) Camp Pendleton Federal Facilities Agreement (FFA) Meeting (No. 114). Project Note No. 64. 15 January 2015. Available at: <http://www.pendleton.marines.mil/Portals/98/Docs/InstallationRestor/114th%20FFA%20Meeting%20Minutes.pdf>. Accessed on 28 April.
- Reddy, Seetha N. and Colin O’Neil. 2004. Evaluation of a Repeatedly Occupied Site (SDI-12,572) Along Santa Margarita River, Camp Pendleton, California. ASM Affiliates, Inc. Prepared for NAVFAC SW, Contract No. N68711-D98-D-5762.
- SDCAPCD. 2007. Eight-Hour Ozone Attainment Plan for San Diego County. May.
- SDCAPCD. 2009. Regional Air Quality Strategy Revision. 22 April.
- SDCAPCD. 2012. Resignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County. 5 December.
- SJM Biological Consultants. 2015a. Habitat assessment for the federally endangered Pacific pocket mouse at the northern and southern potential utility corridors at and near the Stuart Mesa Housing Complex, Marine Corps Base Camp Pendleton, California (the Base). 4 August.
- SJM Biological Consultants. 2015b. Habitat assessment for the federally endangered Stephens’ kangaroo rat (*Dipodomys stephensi*) (SKR) at the 57-acre Site E of the Proposed Construction and Operation of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California (the Base). 22 April.

- SWRCB. 2010. 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) – Statewide. California Environmental Protection Agency. Available online at: [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2010.shtml?wbid=CAR9021100019980911161346](http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml?wbid=CAR9021100019980911161346). Accessed on 6 March 2015.
- SWRCB. 2014. General Permit for Biological and Residual Pesticide Discharges from Vector Control Applications. 2014. [http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2014/wqo2014\\_0106\\_dwq\\_redline.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0106_dwq_redline.pdf). 2 July. Accessed on 27 May 2015.
- Upton, John. 2014. Solar Farms Threaten Birds. Scientific American. Published online at: <http://www.scientificamerican.com/article/solar-farms-threaten-birds/>. August.
- USACE. 1989. Defense Environmental Restoration Program Inventory Project Report for Oceanside Camp Site (J09CA051900), Santa Margarita River, CA. Available at: [http://www.envirostor.dtsc.ca.gov/regulators/deliverable\\_documents/5881330192/CA0519L1\\_Ocean\\_side\\_Camp\\_Site.pdf](http://www.envirostor.dtsc.ca.gov/regulators/deliverable_documents/5881330192/CA0519L1_Ocean_side_Camp_Site.pdf). Accessed on 3 June 2015.
- USACE. 2001. Final Archives Search Report, Marine Corps Base, Camp Pendleton, Oceanside, California. St. Louis District. December. p. 7-74.
- USACE. 2012. Formerly Used Defense Sites Geographic Information System. FUDS Public GIS – 2012 Annual Report to Congress. Available at: [http://rsgisias.crrel.usace.army.mil/apex/f?p=516:2:0:::.](http://rsgisias.crrel.usace.army.mil/apex/f?p=516:2:0:::) Accessed on 3 June 2015.
- USACE. 2013. Formerly Used Defense Sites (FUDS) Per State – California. 30 September 2013. Available at: [http://www.usace.army.mil/Portals/2/docs/Environmental/FUDS/FUDS\\_Inventory/FUDS\\_Inventory\\_California.pdf](http://www.usace.army.mil/Portals/2/docs/Environmental/FUDS/FUDS_Inventory/FUDS_Inventory_California.pdf). Accessed on 3 June 2015.
- USACE. 2015. Personal communication between Jeffrey Armentrout, USACE Los Angeles District FUDS Program Manager, and Richard Stolpe of Cardno. Email correspondence between 25-26 August.
- U.S. Department of Agriculture. 2015. Prime Farmland. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wv/home/?cid=nrcs143\\_014052](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wv/home/?cid=nrcs143_014052). Accessed on 10 March 2015.
- USEPA. 2014a. Wastes – Hazardous Wastes. Webpage. Available at: <http://www.epa.gov/osw/hazard/>. Last Updated: July 15, 2014. Accessed on 30 July 2014.
- USEPA. 2014b. Wastes – Waste Management for Homeland Security Incidents. Webpage. Available at: <http://www.epa.gov/osw/homeland>. Last Updated: 17 January 2014. Accessed on 31 July 2014.
- USEPA. 2015a. National Ambient Air Quality Standards. Accessed at <http://www.epa.gov/air/criteria.html>. 14 February.
- USEPA. 2015b. The Green Book Nonattainment Areas for Criteria Pollutants. Accessed at <http://www.epa.gov/oaqps001/greenbk/index.html>. 14 February.
- USEPA. 2015c. The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants. Accessed at <http://www.epa.gov/ttn/atw/orig189.html>. 14 February.
- USEPA. 2015d. 2012 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012. Accessed at <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. 14 February.

- USFWS. 1998. Endangered and Threatened Wildlife and Plants; Listing of Several Evolutionarily Significant Units of West Coast Steelhead; Final Rule. Federal Register 63: 32996-32998.
- USFWS. 2007. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Coastal California Gnatcatcher (*Polioptila californica californica*); Final Rule. Federal Register 72: 72009-72213.
- USFWS. 2009. *Brodiaea filifolia* (thread-leaved brodiaea) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Carlsbad, California. August.
- USFWS. 2011. Endangered and Threatened Wildlife and Plants; Final Revised Critical Habitat for *Brodiaea filifolia* (Thread-Leaved Brodiaea); Final Rule. Federal Register 76: 6848-6925. 8 February. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2011-02-08/pdf/2011-2403.pdf>
- U.S. Global Climate Change Program. 2014. Overview: Climate Change Impacts in the United States. U.S. National Climate Assessment. Accessed at: <http://nca2014.globalchange.gov/downloads.14February2015>.
- USMC. 2014. Programmatic Agreement Among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton. Final.
- Volk, E.C., A. Blakley, S.L. Schroder, and S.M. Kuehner. 2000. Otolith chemistry reflects migration characteristics of Pacific salmonids: using core chemistry to distinguish maternal associates with sea and freshwaters. Fisheries Research 46:251-266.
- Wahoff, T., A. York, and T. Cooley. 2010. Archaeological Testing and Evaluation of Site CA-SKI-17,912, Military Family Housing PPV Phase VI Marine Corps Base Camp Pendleton San Diego County, California.
- Weston. 2009. Santa Margarita River Urban Runoff Monitoring Report. Available at: [http://www.projectcleanwater.org/pdf/science\\_mon/08-09monitoring/section\\_3\\_smg.pdf](http://www.projectcleanwater.org/pdf/science_mon/08-09monitoring/section_3_smg.pdf). Accessed on 6 March 2015.
- York, Andrew L. and Wayne J. Glenny. 2008. Archaeological Studies for Military Housing Project, Stuart Mesa, Marine Corps Base Camp Pendleton San Diego County, California. EDAW, Inc. Submitted to NAVFAC SW, Contract No. N62477-02-D-0106. June.
- Zemba R., S. Hoffman, and J. Konecny. 2009. Light-footed Clapper Rail Management, Study, and Propagation in California, 2009. State of California Department of Fish and Game, South Coast Region, San Diego, California.

# **APPENDIX A**

## **AGENCY CORRESPONDENCE**

---

---



**UNITED STATES MARINE CORPS**  
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE  
BOX 555008  
CAMP PENDLETON, CALIFORNIA 92055-5008

IN REPLY REFER TO:  
5090  
ENVSEC  
14 Sept 2015

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

SUBJECT: NEGATIVE DETERMINATION FOR CONSTRUCTION OF SOLAR  
PHOTOVOLTAIC SYSTEM, MARINE CORPS BASE CAMP PENDLETON

Dear Mr. Delaplaine:

In accordance with the Federal Coastal Zone Management Act of 1972 as amended, Section 307c(1), the United States Marine Corps (USMC) has determined that the proposed construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base (MCB) Camp Pendleton, San Diego will not affect the coastal zone, does not require a consistency determination, and is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. This correspondence updates the USMC Negative Determination for this site dated November 14, 2008 by changing the proposed land use from military family housing to a solar PV system.

The purpose of the proposed action is to increase Navy installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy installations by the construction and operation of a solar PV system at MCB Camp Pendleton. The proposed action is required to meet the renewable energy standards put forth by the 1 GW Initiative and the Secretary of the Navy Energy Goals. The policy requirements for energy security and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the Navy and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning that the Navy would have the option to use any energy produced "on-Base" in the event of an area power outage or other circumstances.

Following execution of the agreement with the private partner, an up to 28 megawatt ground-mounted solar PV system would be constructed at MCB Camp Pendleton. The 194-acre project site is located on vacant land, formerly used for agricultural purposes, east of Interstate (I)-5 and adjacent to the existing Stuart Mesa Housing complex, west and south of Stuart Mesa Road, in the southwest portion of the Base. The site is on relatively flat land and devoid of vegetation. Site preparation activities would include trenching (up to 3 feet deep) for underground electrical lines and circuitry. The solar PV system would consist of solar PV panels, a substation, a switching/metering station, underground and/or pole-mounted electrical infrastructure, area lighting, concrete foundations, and concrete masonry units for inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the solar PV system. All electrical equipment, including inverters and transformers would be constructed on concrete pads. All solar PV panel wiring would be routed underground. Gravel roads would be graded between the rows of solar PV panels and around the site perimeter for maintenance access.

MCB Camp Pendleton has determined that the proposed action, as described above, would occur outside the coastal zone. As defined in Section 304 of the Act, 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." This section of San Diego County is within the Federal reservation, and is wholly owned and operated by the United States Marine Corps, Department of Defense, and therefore is excluded from the coastal zone. However, MCB Camp Pendleton recognizes that actions outside the coastal zone may affect land or water uses, or natural resources along the coast, and therefore, are subject to the provisions of the Act. Consequently, an analysis of the impacts of the proposed action on the coastal zone was conducted for aesthetics (visual quality), biological resources, water resources, and public access.

Aesthetics (Visual Quality)

Development of the site with a solar PV system would represent a visual change from its undeveloped character. However, because the topography of the area is relatively flat, the visual sensitivity of the solar PV system, substation, and switching/metering station would be minimal as the system would only be viewable from I-5, nearby rail tracks, and from certain points along Stuart Mesa Road. Since PV systems are intended to collect solar energy rather than reflect it, their surfaces would not create additional daytime onsite glare. Consequently, no increase in daytime glare would be perceived from public view corridors. The proposed action is not visible from any off-Base residential areas or from any beaches. There are no designated scenic areas visible to the general public on the proposed action site. The proposed action would not obstruct any current public views toward the ocean. Therefore, no significant impacts to aesthetics would occur in the coastal zone.

### Biological Resources

The project site does not provide habitat for federally listed threatened and endangered species, and no listed species are known to occur at the project site. Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and Diegan Coastal Sage Scrub, which are suitable habitat for the least Bell's vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell's vireo or the coastal California gnatcatcher. Moreover, avoidance/minimization measures would be implemented to lessen potential impacts to biological resources. In addition, operational activities associated with the project would not result in a significant increase in noise levels over those that currently exist in the mostly developed project vicinity. Therefore, construction and operation of the project would not result in significant impacts to federally listed species in the project vicinity.

The proposed action is located on prime agricultural land. Due to the lack of suitable land for a solar PV system development, the USMC has come to the decision that conversion from agricultural use to a solar PV system in this location is necessary to achieve the mission of the Base. Soils below the solar PV system would largely remain unchanged. At the

conclusion of the solar PV agreement, the private partner would be required to decommission the solar PV field, and all associated features, and return the project area to its pre-project condition. Agricultural activities and/or residential development could again occur, as determined by MCB Camp Pendleton. Therefore, the proposed action would not affect biological resources in the coastal zone.

#### Water Resources

Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures, as identified in the Stormwater Pollution Prevention Plan (SWPPP), would reduce potential impacts resulting from erosion during grading and construction activities. All washing, and use of water during maintenance of the solar PV panels, would be done in accordance with Best Management Practices (BMPs) and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-Base source.

While the proposed action would generate a larger impervious area than exists now, measures to reduce runoff by incorporating Low Impact Development (LID) construction designs would reduce the rate of runoff, filter out pollutants, and facilitate infiltration of water into the ground. Incorporation of LID designs would not only reduce water pollutants but would also increase groundwater recharge. Additionally, LID designs would help to improve the quality of receiving waters and stabilize flow rates of nearby streams. The adjacent Santa Margarita River will benefit from LID Design and BMPs prior to project grading. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. Therefore, the proposed action would not affect any water resources in the coastal zone.

#### Public Access

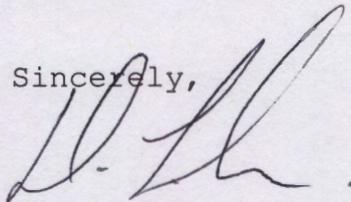
No access improvements would be required because the existing road network adjacent to the project area is sufficient. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the solar PV field to minimize the

5090  
ENVSEC  
14 Sept, 2015

potential for unauthorized individuals to enter the area. There is no public access to the coastal zone from the proposed site, therefore development would not reduce public access, public safety, or result in an overuse of a coastal area. The proposed action would not interfere with or reduce the opportunity for coastal recreation, such as boating or other water sports, or related facilities. Therefore, the proposed action would not affect public access to the coastal zone.

MCB Camp Pendleton has determined that the proposed construction, operation, and decommissioning of a solar PV system at MCB Camp Pendleton would not affect the aesthetics, biological resources, water resources, or public access to the coastal zone at the project site or in the project vicinity. If you need additional information, or if you have any questions, please do not hesitate to call Mr. Matthew Lorne at (760)763-4143, or email at matthew.lorne@usmc.mil.

Sincerely,



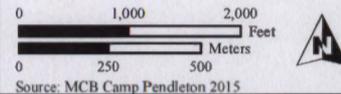
D.F. LEVI  
Head, Conservation Division  
By direction  
of the Commanding Officer



**Legend**  
 [Yellow outline] Potential Solar PV Sites  
 [Grey line] Road

Alternative 1: Site A and Site B (194 Acres)

Figure 2-1  
 Alternative 1:  
 Up to 28 Megawatts at  
 Sites A and B



Source: MCB Camp Pendleton 2015

**CALIFORNIA COASTAL COMMISSION**

45 FREMONT, SUITE 2000  
SAN FRANCISCO, CA 94105-2219  
VOICE (415) 904-5200  
FAX (415) 904-5400  
TDD (415) 597-5885



October 13, 2015

D.F. Levi  
Head, Conservation Division  
MCI West - Marine Corps Base  
ATTN: Matthew Lorne  
Box 555008  
Camp Pendleton, CA 92005-5008

Subject: Negative Determination ND-0031-15 (Construction of Solar Photovoltaic System at Marine Corps Base Camp Pendleton, San Diego County)

Dear Mr. Levi:

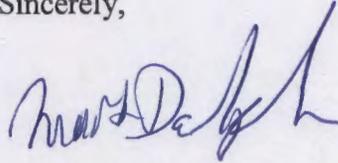
The Coastal Commission staff has reviewed the above-referenced negative determination. In cooperation with a private partner, the Marine Corps proposes to construct and operate (and eventually decommission) a 28-megawatt, ground-mounted solar photovoltaic (SPV) system on Stuart Mesa in the southwest portion of Marine Corps Base Camp Pendleton. The 194-acre project site is located on vacant land, formerly used for agricultural production, east of Interstate 5 and west of the existing Stuart Mesa housing complex. In February 2009 the Commission's Executive Director concurred with negative determination ND-060-08 for construction of military family housing on a 390-acre parcel of land on Stuart Mesa immediately west of the existing housing complex. That parcel of land includes the property now proposed as the site of the SPV system. The Marine Corps constructed 116 housing units at the eastern side of the 390-acre parcel and is about to commence construction of an additional 250 units at this location. The remainder of the parcel is now proposed for the SPV system rather than the balance of the previously-approved housing. The Marine Corps states that the project purpose is to increase installation energy security and that the project is required in order to meet the renewable energy standards put forth by the *1 GW Initiative* and the *Secretary of the Navy Energy Goals* programs. The project includes the installation of concrete foundations, solar photovoltaic panels, substation, switching/metering station, underground and/or pole-mounted electrical infrastructure, area lighting, gravel roads for access and maintenance, and other electrical equipment required for the SPV system.

The proposed project is located east of Interstate 5 and entirely within the boundaries of Marine Corps Base Camp Pendleton; the project will not affect public access to the shoreline and will not obstruct or adversely affect any public views towards the ocean. The existing row of tall, mature eucalyptus trees along the east side of I-5 is located outside the project area, will not be removed as a part of this project, and will serve to screen the project site from I-5. No

environmentally sensitive habitat is present on the project site and construction of the SPV system will not adversely affect listed species. The SPV system is designed to collect solar energy rather than reflect it and as such the panel surfaces will not create additional daytime on-site glare that could affect avian species. At the conclusion of the SPV program, the private partner will be required to decommission the SPV system and return the project area to its pre-project condition. At that time, previously-approved military housing units could be constructed or agricultural operations could resume, as determined by the Marine Corps. The Marine Corps states that the project incorporates low impact development construction design measures, a storm water pollution prevention plan (SWPPP), and standard best management practices to reduce the rate of storm water runoff, filter out pollutants, and facilitate the infiltration of storm water into the ground. All washing and use of water during maintenance of the SPV panels would be done in accordance with the SWPPP, and water used for panel washing and dust control would be trucked-in from an off-base source.

In conclusion, the Commission staff **agrees** that construction and operation of the proposed solar photovoltaic system at Marine Corps Base Camp Pendleton will not adversely affect coastal resources. We therefore **concur** with your negative determination made pursuant to 15 CFR 930.35 of the NOAA implementing regulations. Please contact Larry Simon at (415) 904-5288 should you have any questions regarding this matter.

Sincerely,



(for)

CHARLES LESTER  
Executive Director

cc: CCC – San Diego Coast District

# **APPENDIX B**

# **PUBLIC PARTICIPATION**

---

---

## OUTLINE OF THE PUBLIC INVOLVEMENT PROCESS

### Introduction

The United States Department of the Navy has conducted a public participation process to provide the public the opportunity to participate in this project. The purpose of the public involvement process is to notify and inform interested and potentially affected stakeholders and the general public about the Proposed Action and solicit their input on the environmental analysis. The National Environmental Policy Act (NEPA), and regulations for implementing NEPA as set forth by the Council on Environmental Quality (CEQ), requires federal agencies to make diligent efforts to involve stakeholders and tribes in the development of environmental documents and stipulates public involvement during various stages of the environmental review process (42 U.S. Code § 4321, as amended; CEQ Regulations for Implementing NEPA, 40 Code of Federal Regulations Part 1500, as amended).

### Public Involvement Overview

The public participation process commenced with publication of a Notice of Intent To Prepare (NTP) the EA in a local newspaper (the San Diego Union Tribune, formerly known as the North County Times and the Union Tribune North County). The NTP was published for a total of three days over a weekend on 29, 30, and 31 May 2015. No public meeting was held. Written comments were to be sent via mail or email to:

NAVFAC Southwest  
Attention: PV EA at MCB Camp Pendleton  
Project Manage Code RAD20.RM  
1220 Pacific Highway  
San Diego, California 92132  
Email: ryan.maynard01@navy.mil

### Conclusion

No comments were received on the NTP for the EA.

The public participation process will conclude with publication of a Notice of Availability (NOA) of the Final EA and Decision Document. The NOA will be published for a total of three days over a weekend in the Union Tribune. Pending the results of this analysis, the decision document could be a Finding of No Significant Impact (FONSI). The Final EA and potential FONSI (if appropriate) will be made available to the public for review in the Oceanside Public Library and online on a MCB Camp Pendleton website that is publicly accessible.

**PROOF OF PUBLICATION  
(2010 & 2011 C.C.P.)**

This space is for the County Clerk's Filing Stamp

**STATE OF CALIFORNIA  
County of San Diego**

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of

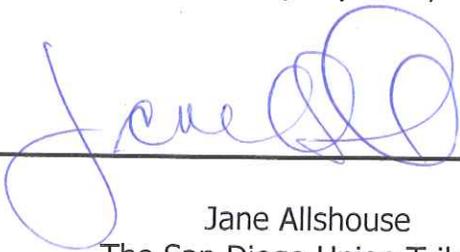
**The San Diego Union Tribune**

Formerly known as the North County Times and UT North County and which newspaper has been adjudicated as a newspaper of general circulation by the Superior Court of the County of San Diego, State of California, for the City of Oceanside and the City of Escondido, Court Decree numbers 171349 & 172171, for the County of San Diego, that the notice of which the annexed is a printed copy (set in type not smaller than nonpariel), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

**May 29<sup>th</sup>, 30<sup>th</sup> & 31<sup>st</sup>, 2015**

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at **Oceanside**, California  
On This **01<sup>st</sup>**, day June, 2015



Jane Allshouse  
The San Diego Union Tribune  
Legal Advertising

**Proof of Publication of**

**NOTICE OF INTENT TO PREPARE  
Environmental Assessment for the Construction and Operation  
of a Solar Photovoltaic System  
Marine Corps Base Camp Pendleton,  
San Diego County, California**

Marine Corps Installation Command gives notice that an Environmental Assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA) for the Construction and Operation of a Solar Photovoltaic System at Marine Corps Base (MCB) Camp Pendleton.

Under the Proposed Action, the U.S. Navy and a private partner would enter into an agreement to allow the private partner to use U.S. Marine Corps land to construct, operate, and own the solar photovoltaic (PV) system. The partner would sell the generated power to regional customers and/or the Navy. The project is part of the Secretary of the Navy's plan to obtain one gigawatt of renewable energy for the Department of the Navy Installations. The EA analyzes three siting alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative.

Please contact Naval Facilities Engineering Command Southwest (NAVFAC SW) with questions, comments, or for further information about either the proposed action or the NEPA process at:

Point-of-Contact: NAVFAC SW  
ATTN: PV EA at MCB Camp Pendleton  
Project Manager Code RAE20.RM  
1220 Pacific Highway San Diego, CA 92132  
Email: ryan.maynard1@navy.mil

**APPENDIX C**  
**RECORD OF NON-APPLICABILITY AND AIR QUALITY**  
**CALCULATIONS**

---

---



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

5090  
ENV/PLN  
10 DEC 2015

MEMORANDUM FOR THE RECORD

Subj: RECORD OF NON-APPLICABILITY FOR CONSTRUCTION AND  
OPERATION OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS  
BASE, CAMP PENDLETON

- Ref:
- (a) U.S. Environmental Protection Agency, Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, published in the Federal Register on 30 November 1993 (40 CFR Parts 6, 51, and 93)
  - (b) U.S. Environmental Protection Agency, Revisions to the General Conformity Regulations; Final Rule, published in the Federal Register on 5 April 2010 (40 CFR Parts 51 and 93)
  - (c) OPNAVINST 5090.1C.
  - (d) Environmental Assessment (EA) for Construction and Operation of a Solar Photovoltaic System at Marine Corps Base, Camp Pendleton, April 2015.

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

2. The Proposed Action would occur within the San Diego Air Basin (SDAB) portion of Marine Corps Base, Camp Pendleton (MCB CamPen). This portion of the SDAB is currently in non-attainment of the 8-hour ozone (O<sub>3</sub>) NAAQS and is a maintenance area for carbon monoxide (CO) NAAQS. The SDAB is in attainment of the NAAQS for all other criteria pollutants. Therefore, only project emissions of CO and O<sub>3</sub> (or its precursors, volatile organic compounds (VOCs) and oxides of nitrogen (NO<sub>x</sub>)) were analyzed in reference (d) for conformity rule applicability. The annual de minimis threshold levels for this region are 100 tons of VOC, NO<sub>x</sub>, and CO. Federal actions may be exempt from conformity determinations if they do not exceed designated de minimis threshold levels.

FOR OFFICIAL USE ONLY

Subj: RECORD OF NON-APPLICABILITY FOR CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS BASE, CAMP PENDLETON

3. Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar photovoltaic (PV) system. The partner would sell the generated power to regional customers. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. It has been estimated that all construction activities would be completed over the course of 2 years and would begin in Fiscal Year (FY) 2016 and end in FY 2017. Decommissioning activities are expected to occur over the course of two months and were assumed to occur in 2053.

4. Estimated emissions due to implementation of the Proposed Action are shown in Table 1. The data presented in Table 1 represent the estimated emissions with implementation of Alternative 1, the Preferred Alternative. Based on the air quality analysis, the maximum estimated emissions would be below conformity de minimis threshold levels for the SDAB. Although there would be an increase in emissions during the construction and decommissioning phases, operations would continue to be consistent with existing levels and would not represent a significant change in mobile sources of air pollutants or fugitive dust at MCB CamPen. No additional operational emissions from new traffic trips would be anticipated and no significant impact to air quality would occur.

Table 1. Proposed Action Annual Construction and Decommissioning Emissions at MCB CamPen with Evaluation of Conformity.

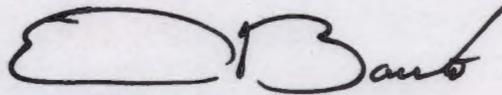
Emission Source	Emissions (tons/year)					
	VOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<i>Alternative 1 - Construction</i>						
Year - 2016	1.65	16.89	11.03	0.02	1.98	1.36
Year - 2017	1.65	15.73	10.04	0.02	1.00	0.86
<i>Alternative 1 - Decommissioning</i>						
Year - 2053	0.09	0.31	0.81	0.00	0.03	0.01
Conformity de minimis Limits	100	100	100	NA	NA	NA
Exceeds Conformity de minimis Limits?	No	No	No	No	No	No

Note: NA = Not applicable.

Subj: RECORD OF NON-APPLICABILITY FOR CONSTRUCTION AND  
OPERATION OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS  
BASE, CAMP PENDLETON

5. The United States Marine Corps concludes that de minimis thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting that conclusion are shown in Table 1, which is a summary of the calculations, methodology, and data attached to this Record of Non-Applicability. Therefore, the Marine Corps determined that additional emissions analyses are not warranted for the Proposed Action. A formal Conformity Determination was not considered necessary.

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

A handwritten signature in black ink, appearing to read "E. D. Banta". The signature is stylized with a large, looped initial "E" and a cursive "Banta".

EDWARD D. BANTA

Copy to:  
File

## Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

### San Diego Air Basin, Annual

### 1.0 Project Characteristics

---

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

#### 1.2 Other Project Characteristics

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2016
<b>Utility Company</b>	San Diego Gas & Electric				
<b>CO2 Intensity (lb/MW hr)</b>	720.49	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - CalEEMod does not have a "Utility" land use type as a default option; therefore, "General Light Industry" was chosen as the closest appropriate option.

Construction Phase - No demolition, paving, or architectural coating phases. Total construction is estimated to last two years. Assumed 4 months site prep, 4 months grading, 16 months construction/installation.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks and "Other construction equipment" = pile drivers.

Grading - Conservatively assumes that the full project footprint would be graded & prepped (194 ac for PV footprint), but all cut/fill would remain onsite.

Trips and VMT - "Vendor" trips include water truck trips to and from the site.



## Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	4/30/2016	5	86	
2	Grading	Grading	5/1/2016	8/30/2016	5	87	
3	Building Construction	Building Construction	9/1/2016	12/31/2017	5	347	

**Acres of Grading (Site Preparation Phase): 194**

**Acres of Grading (Grading Phase): 194**

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Scrapers	2	6.00	361	0.48
Site Preparation	Off-Highway Trucks	2	6.00	400	0.38
Grading	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Generator Sets	3	6.00	84	0.74
Building Construction	Cranes	2	6.00	226	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Site Preparation	Graders	2	6.00	174	0.41
Building Construction	Other Construction Equipment	2	6.00	171	0.42
Building Construction	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Trenchers	2	6.00	80	0.50
Grading	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	15	6.00	97	0.37
Building Construction	Rubber Tired Loaders	5	6.00	199	0.36
Grading	Tractors/Loaders/Backhoes	10	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	10	6.00	97	0.37
Grading	Graders	4	6.00	174	0.41
Site Preparation	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Welders	3	6.00	46	0.45

## Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	21	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	21	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	37	59.00	23.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

**MCB Solar PV System - Alternative 1 - Decommissioning**  
**San Diego Air Basin, Annual**

**1.0 Project Characteristics**

---

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2035
<b>Utility Company</b>					
<b>CO2 Intensity (lb/MWhr)</b>	0	<b>CH4 Intensity (lb/MWhr)</b>	0	<b>N2O Intensity (lb/MWhr)</b>	0

**1.3 User Entered Comments & Non-Default Data**

Construction Phase - Estimated two months for decommissioning.  
 Off-road Equipment - Equipment mix per DOPAA.  
 Trips and VMT - "Vendor" trips include water truck trips to and from the site.



## MCB Solar PV System - Alternative 1 - Decommissioning

### 3.0 Construction Detail

---

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2053	2/28/2053	5	43	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Scrapers	1		361	0.48
Demolition	Off-Highway Trucks	2		400	0.38
Demolition	Concrete/Industrial Saws	1	8.00	8	0.73
Demolition	Rubber Tired Dozers	5	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	10	8.00	97	0.37

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	19	48.00	6.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

## MCB Camp Pendleton - Alternative 3 Construction

### San Diego Air Basin, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

### 1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	40
Climate Zone	13			Operational Year	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MW hr)	720.49	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

### 1.3 User Entered Comments & Non-Default Data

Construction Phase - No demolition, paving, or architectural coating phases. Total construction is estimated to last two years.

Off-road Equipment - Construction mix per DOPAA.

Grading - Conservatively assumes that the full project footprint would be graded & prepped (270 ac for PV footprint).

Trips and VMT - "Vendor" trips includes water truck trips to and from the site to deliver water.

## 2.0 Emissions Summary

### 2.1 Overall Construction

#### Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
2016	2.1766	22.3161	15.4157	0.0193	2.7492	1.2163	3.9655	1.3511	1.1228	2.4739	0.0000	4,787.2312	4,787.2312	0.4938	0.0000	1,797.6010
2017	2.4774	23.9087	17.5738	0.0234	0.1487	1.3727	1.5214	0.0399	1.2729	1.3128	0.0000	2,111.3928	2,111.3928	0.5553	0.0000	2,123.0539
<b>Total</b>	<b>4.6540</b>	<b>46.2248</b>	<b>32.9896</b>	<b>0.0427</b>	<b>2.8979</b>	<b>2.5890</b>	<b>5.4869</b>	<b>1.3911</b>	<b>2.3957</b>	<b>3.7867</b>	<b>0.0000</b>	<b>3,898.62</b>	<b>3,898.62</b>	<b>1.0491</b>	<b>0.0000</b>	<b>3,920.65</b>

## MCB Camp Pendleton - Alternative 3 Construction

### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	2.1766	22.3160	15.4157	0.0193	1.3025	1.2163	2.5188	0.6254	1.1228	1.7482	0.0000	1,787.2292	1,787.2292	0.4938	0.0000	1,797.5991
2017	2.4774	23.9087	17.5738	0.0234	0.1487	1.3727	1.5214	0.0399	1.2729	1.3128	0.0000	2,111.3905	2,111.3905	0.5553	0.0000	2,123.0515
<b>Total</b>	<b>4.6540</b>	<b>46.2247</b>	<b>32.9895</b>	<b>0.0427</b>	<b>1.4512</b>	<b>2.5890</b>	<b>4.0402</b>	<b>0.6654</b>	<b>2.3957</b>	<b>3.0610</b>	<b>0.0000</b>	<b>3,898.6197</b>	<b>3,898.6197</b>	<b>1.0491</b>	<b>0.0000</b>	<b>3,920.6506</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>49.92</b>	<b>0.00</b>	<b>26.37</b>	<b>52.17</b>	<b>0.00</b>	<b>19.16</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	4/30/2016	5	86	
2	Grading	Grading	5/1/2016	8/30/2016	5	87	
3	Building Construction	Building Construction	9/1/2016	12/30/2017	5	347	

**Acres of Grading (Site Preparation Phase): 270**

**Acres of Grading (Grading Phase): 270**

## MCB Camp Pendleton - Alternative 3 Construction

### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Scrapers	3	6.00	364	0.48
Site Preparation	Off-Highway Trucks	2	6.00	400	0.38
Grading	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Generator Sets	3	6.00	84	0.74
Building Construction	Cranes	2	6.00	226	0.29
Building Construction	Forklifts	5	6.00	89	0.20
Site Preparation	Graders	3	6.00	174	0.41
Building Construction	Other Construction Equipment	2	6.00	171	0.42
Building Construction	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Trenchers	4	6.00	80	0.50
Grading	Rubber Tired Dozers	6	6.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	18	6.00	97	0.37
Building Construction	Rubber Tired Dozers	7	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	12	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	12	6.00	97	0.37
Grading	Graders	5	6.00	174	0.41
Site Preparation	Rubber Tired Dozers	6	6.00	255	0.40
Building Construction	Welders	3	6.00	46	0.45

### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	26	65.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	25	63.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	46	79.00	27.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

## MCB Camp Pendleton - Alternative 3 Construction

### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

## MCB Solar PV System - Alternative 3 - Decommissioning San Diego Air Basin, Annual

### 1.0 Project Characteristics

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

#### 1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	40
Climate Zone	13			Operational Year	2035
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MW hr)	720.49	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

#### 1.3 User Entered Comments & Non-Default Data

Construction Phase - Estimated two months for decommissioning.  
 Off-road Equipment - Equipment mix per DOPAA.  
 Trips and VMT - "Vendor" trips include water truck trips to and from the site.

### 2.0 Emissions Summary

#### 2.1 Overall Construction

##### Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.1332	0.5058	1.1357	3.0800e-003	0.0406	0.0115	0.0520	7.8200e-003	0.0115	0.0193	0.0000	298.3759	298.3759	0.0106	0.0000	298.5979
<b>Total</b>	<b>0.1332</b>	<b>0.5058</b>	<b>1.1357</b>	<b>3.0800e-003</b>	<b>0.0406</b>	<b>0.0115</b>	<b>0.0520</b>	<b>7.8200e-003</b>	<b>0.0115</b>	<b>0.0193</b>	<b>0.0000</b>	<b>298.3759</b>	<b>298.3759</b>	<b>0.0106</b>	<b>0.0000</b>	<b>298.5979</b>

## MCB Solar PV System - Alternative 3 - Decommissioning

### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.1332	0.5058	1.1357	3.0800e-003	0.0281	0.0115	0.0395	5.9300e-003	0.0115	0.0174	0.0000	298.3756	298.3756	0.0106	0.0000	298.5975
<b>Total</b>	<b>0.1332</b>	<b>0.5058</b>	<b>1.1357</b>	<b>3.0800e-003</b>	<b>0.0281</b>	<b>0.0115</b>	<b>0.0395</b>	<b>5.9300e-003</b>	<b>0.0115</b>	<b>0.0174</b>	<b>0.0000</b>	<b>298.3756</b>	<b>298.3756</b>	<b>0.0106</b>	<b>0.0000</b>	<b>298.5975</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>30.79</b>	<b>0.00</b>	<b>24.01</b>	<b>24.17</b>	<b>0.00</b>	<b>9.81</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2053	2/28/2053	5	43	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	4	6.00	81	0.73
Demolition	Off-Highway Trucks	2	6.00	400	0.38
Demolition	Rubber Tired Dozers	7	6.00	255	0.40
Demolition	Scrapers	2	6.00	36	0.48
Demolition	Tractors/Loaders/Backhoes	12	6.00	97	0.37

## MCB Solar PV System - Alternative 3 - Decommissioning

### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	27	68.00	8.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area



**“I’m directing my administration** to allow the development of clean energy on enough public land to power 3 million homes. And I’m proud to announce that the Department of Defense, working with us, the world’s largest consumer of energy, will make one of the largest commitments to clean energy in history, with the Navy purchasing enough capacity to power a quarter of a million homes a year.”

— *President Barack Obama*

**“Changing the way we get and use energy is a priority for the Navy** because energy security is critical to our national security. One gigawatt of renewable energy produced from sources like solar, wind, and geothermal could power a city the size of Orlando, Florida, while increasing the security and flexibility of the energy grid.”

— *Secretary of the Navy Ray Mabus*

