



Draft

Environmental Assessment for
Construction, Operation, and
Decommissioning of a Solar
Photovoltaic System at Marine
Air Ground Task Force Training
Command Marine Corps
Air Ground Combat Center
Twentynine Palms, California

July 2015

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



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List of Acronyms and Abbreviations

AB	Authorized Biologist	m	meter(s)
ac	acre(s)	MAGTFTC	Marine Air Ground Task Force
ac-ft	acre-feet		Training Command
AC	alternating current	MBTA	Migratory Bird Treaty Act
APLIC	Avian Power Line Interaction Committee	MCAGCC	Marine Corps Air Ground Combat Center
BLM	Bureau of Land Management	MCICOM	Marine Corps Installations Command
CAA	Clean Air Act	MCO	Marine Corps Order
CAAQS	California Ambient Air Quality Standards	µg/m ³	micrograms per cubic meter
CalEEMod	California Emissions Estimator Model	mg/m ³	milligrams per cubic meter
CALISO	California Independent System Operators	MDAB	Mojave Desert Air Basin
CARB	California Air Resources Board	MDAQMD	Mojave Desert Air Quality Management District
CDFW	California Department of Fish and Wildlife	MW	megawatt
CEQ	Council on Environmental Quality	MW-hour	megawatt hour
CFR	Code of Federal Regulations		
CH ₄	methane	N ₂ O	nitrous oxide
CO	carbon monoxide	N/A	not applicable
CO ₂	carbon dioxide	NAAQS	National Ambient Air Quality Standards
CO _{2e}	carbon dioxide equivalent	NAVFAC	Naval Facilities Engineering Command
CPUC	California Public Utilities Commission	NEPA	National Environmental Policy Act
CWA	Clean Water Act	NHPA	National Historic Preservation Act
		NO ₂	nitrogen dioxide
dB	decibels	NO _x	oxides of nitrogen
DC	direct current	NOA	Notice of Availability
DoD	Department of Defense	NREA	Natural Resources and Environmental Affairs
DoN	Department of the Navy	NRHP	National Register of Historic Places
		O ₃	ozone
EA	Environmental Assessment		
EIS	Environmental Impact Statement	PV	photovoltaic
EO	Executive Order	ppm	parts per million
ES	Executive Summary		
ESA	Endangered Species Act	REPO	Renewable Energy Program Office
		ROI	region of interest
ESTCP	Environmental Security Technology Certification Program	RWQCB	Regional Water Quality Control Board
		SCE	Southern California Edison
FCR	Field Contact Representative	SCM	special conservation measure
FONSI	Finding of No Significant Impact	SECNAV	Secretary of the Navy
ft	foot/feet	SELF	Strategic Expeditionary Landing Field
FY	fiscal year	SIP	State Implementation Plan
		SO ₂	sulfur dioxide
GHG	greenhouse gas	SWPPP	Stormwater Pollution Prevention Plan
GW	gigawatt	SWRCB	State Water Resources Control Board
ha	hectare(s)	TBD	to be determined
HAPs	Hazardous Air Pollutants	TOC	Table of Contents
km	kilometer(s)	U.S.	United States
kV	kilovolt	USACE	U.S. Army Corps of Engineers
		USC	U.S. Code

USDA	U.S. Department of Agriculture	USMC	U.S. Marine Corps
USEPA	U.S. Environmental Protection Agency		
USFWS	U.S. Fish and Wildlife Service	VOC	volatile organic compounds

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ENVIRONMENTAL ASSESSMENT

Lead Agency: United States Department of the Navy
Marine Air Ground Task Force Training Command, Marine Corps Air
Ground Combat Center, Twentynine Palms, California

Title of Proposed Action: Proposed Construction, Operation, and Decommissioning of a Solar
Photovoltaic System at Marine Corps Air Ground Combat Center,
Twentynine Palms, California

Affected Region: San Bernardino County, California

Designation: Environmental Assessment

Abstract

This Environmental Assessment (EA) has been prepared to evaluate the potential environmental impacts resulting from the construction and operation of a solar photovoltaic (PV) system in the Mainside area at Marine Air Ground Task Force Training Command (MAGTFTC), Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (herein referred to as the “Combat Center” or the “installation”). This EA has been prepared by the United States (U.S.) Department of the Navy (DoN) and the U.S. Marine Corps in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoN procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order P5090.2A, Change 3, dated 26 August 2013, *Environmental Compliance and Protection Manual*. Marine Corps Installations Command (MCICOM) is the action proponent for this project.

Under the Proposed Action, the DoN and a private partner would enter into an agreement to allow the private partner to use DoN land to construct, operate, and own the proposed solar 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. The EA analyzes the Proposed Action, two alternatives, and the No Action Alternative. This EA includes a detailed analysis of the Proposed Action’s potential environmental impacts on the following resources: biological resources, geological resources, water resources, cultural resources, air quality, and utilities.

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared to evaluate the potential environmental impacts resulting from the construction and operation of a solar photovoltaic (PV) system in the Mainside area at Marine Air Ground Task Force Training Command (MAGTFTC), Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (herein referred to as the “Combat Center” or the “installation”).

This EA has been prepared by the United States (U.S.) Department of the Navy (DoN) and the U.S. Marine Corps in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoN procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order (MCO) P5090.2A, Change 3, dated 26 August 2013, *Environmental Compliance and Protection Manual*. Marine Corps Installations Command (MCICOM) is the action proponent for this project.

The purpose of the Proposed Action is to increase DoN installation energy security, operational capability, strategic flexibility and resource availability through the development of renewable energy generation assets at DoN installations by the construction and operation of a solar PV system at the Combat Center. The Proposed Action is required to meet the renewable energy standards put forth by the 1 Gigawatt 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 DoN and a private partner, a requirement that project infrastructure be “micro-grid ready,” meaning that the DoN would have the option to use any energy produced on-installation in the event of an area power outage or other circumstances.

Alternatives to the Proposed Action must be considered in accordance with NEPA, CEQ regulations for implementing NEPA, and MCO P5090.2A. However, only those alternatives determined to be reasonable relative to their ability to fulfill the purpose of and need for the Proposed Action require detailed analysis. This EA analyzes the Proposed Action, two alternatives, and the No Action Alternative. Other action alternatives were considered but were not carried forward for analysis in this EA because they failed to satisfy the reasonable alternative screening criteria and, therefore, do not meet the purpose of and need for the Proposed Action. Although the No Action Alternative is not a viable alternative, it is evaluated in this EA as required by NEPA and CEQ regulations.

This EA includes a detailed analysis of the Proposed Action’s potential environmental impacts on the following resources: biological resources, geological resources, water resources, cultural resources, air quality, and utilities. Cumulative effects of the Proposed Action, in combination with other past, present, or reasonably foreseeable actions, were also analyzed. A summary of environmental consequences for each alternative by resource area is presented in Table ES-1. No significant impacts were identified for any of the alternatives.

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
<p>Biological Resources</p>	<p>Approximately 241 acres (ac) (97 hectares [ha]) of sparsely vegetated land on the eastern portion of Mesquite Dry Lake mapped as urban and playa habitat would be directly impacted. Wildlife and special status species, namely the desert tortoise and Mojave fringe-toed lizard, would potentially be exposed to direct and indirect impacts. However, with implementation of Avoidance and Impact Minimization Measures and Special Conservation Measures (SCMs) listed below, the Proposed Action/Alternative 1 is not likely to incidentally take or otherwise adversely affect desert tortoises, and effects to Mojave fringe-toed lizards and other wildlife species and their populations would be less than significant. Per the Basewide Biological Opinion, with the implementation of the proposed Impact Minimization Measures and SCMs, consultation with the United States Fish and Wildlife Service (USFWS) is not necessary. Monitoring of the solar photovoltaic (PV) site would be conducted to assess any potential negative effects to migratory birds and other species. Therefore, implementation of the Proposed Action/Alternative 1 would have less than significant impacts to biological resources.</p>	<p>Impacts to biological resources under Alternative 2 would be nearly identical to those under the Proposed Action/Alternative 1. Alternative 2 would be implemented in accordance with the same Avoidance and Impact Minimization Measures and SCMs as the Proposed Action/Alternative 1. Therefore, implementation of Alternative 2 would have less than significant impacts to biological resources.</p>	<p>Impacts to biological resources under Alternative 3 would be nearly identical to those under the Proposed Action/Alternative 1. Alternative 3 would be implemented in accordance with the same Avoidance and Impact Minimization Measures and SCMs as the Proposed Action/Alternative 1. Therefore, implementation of Alternative 3 would have less than significant impacts to biological resources.</p>	<p>Under the No Action Alternative, the Department of the Navy (DoN) would not enter into an agreement with a private partner to construct and operate a solar PV system at the Combat Center. Therefore, implementation of the No Action Alternative would have no impact to biological resources.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • BR-1. If construction or decommissioning activities occur during the recognized avian breeding season (1 February through 30 September), construction would occur in accordance with the Migratory Bird Treaty Act (MBTA) to avoid impacts to nesting migratory birds. Specifically, a biologist approved by the Combat Center’s Natural Resources and Environmental Affairs (NREA) office would survey the proposed project area for nesting birds prior to activities. If the biologist finds an active nest, construction workers would not directly or indirectly disturb the 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization</p>

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>nest or adjacent areas until the biologist determines the nest is no longer in use.</p> <ul style="list-style-type: none"> • BR-2. The private partner would construct all transmission towers, poles, and lines in accordance with the guidelines in <i>Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006</i> (Avian Power Line Interaction Committee [APLIC] 2006), or the most current version of the guidelines available at the time of construction, and in <i>Reducing Avian Collisions with Power Lines: The State of the Art in 2012</i> (APLIC 2012). • BR-3. An NREA-approved Authorized Biologist (AB) would be present during the initial groundbreaking during the construction and decommissioning phases and would conduct a clearance survey to ensure no tortoises are in the area. A tortoise exclusion fence would be constructed around the PV site and would remain in place for the duration of the construction and decommissioning phases. Temporary exclusion fencing would be built around the construction/decommissioning area for each steel tower that would support the new transmission lines. The NREA-approved AB would inspect the fence line of the tortoise exclusion fencing at least once every two weeks and within 24 hours of any rain event. • BR-4. Per the Basewide Biological Opinion, if a tortoise is found in the action area during ground breaking activities, all ground breaking activities must halt until NREA is contacted and NREA processes the tortoise and authorizes ground-breaking activities to resume. Following construction/decommissioning, the temporary tortoise fencing would be removed. • BR-5. An NREA-approved AB would be “on-call” during construction in case a desert tortoise is encountered. The DoN and private partner would provide NREA the names and qualifications of AB candidates, with ultimate approval coming from the USFWS and NREA. • BR-6. The private partner would designate a Field Contact Representative (FCR) once ground clearing is completed and the desert tortoise fence is installed. The FCR would be responsible for overseeing compliance with biological resources conservation measures. The FCR would be on-site during all project activities. The FCR would have the authority to halt construction, operation, or maintenance activities that are in violation of these measures. An NREA representative would make bi-weekly visits to ensure compliance. • BR-7. Before the start of construction activities, all personnel within the project work areas, including all participating agency employees, construction and maintenance personnel, and others who implement authorized actions, would receive worker training that includes the NREA-provided Environmental Awareness Training about desert tortoises, cultural resources, hazardous materials and hazardous wastes. • BR-8. All trash and food items generated by construction and maintenance activities would be promptly contained and regularly removed from the project area to reduce the attractiveness of the area to common ravens (<i>Corvus corax</i>) and other predators. Any trash receptacles used for waste storage would be equipped with latching/locking lids. The FCR would be responsible for ensuring that trash is removed regularly from the project area, and that the trash containers are kept securely closed when not in use. • BR-9. Vehicle speed limits within the project area and along access roads would not exceed 20 miles (32 kilometers [km]) per hour. Speed limits would be clearly marked by the private partner, and workers would be 			<p>measures/SCMs are proposed.</p>

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>made aware of these speed limits. Vehicles parked outside of exclusion fencing would be inspected underneath for desert tortoises immediately before the vehicle is moved. If a desert tortoise is found under a vehicle, the vehicle would not be moved, NREA would be contacted immediately, and the tortoise would be monitored for its safety until NREA processes the tortoise.</p> <ul style="list-style-type: none"> • BR-10. Should a dead or injured tortoise be located on-site at any time, the NREA would be notified immediately. In the case of an injury to a tortoise, NREA will contact USFWS immediately to decide the appropriate course of action. In the case of a dead tortoise, NREA will telephone and notify the USFWS within three days of the finding, and written notification within 15 days of the finding. Information to be provided to the USFWS would include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and any other pertinent information. • BR-11. The permanent security fence around the solar PV site would be contiguous to the permanent desert tortoise exclusion fence to prevent tortoises from burrowing under the fence. • BR-12. Monthly monitoring surveys would be conducted at the PV site by an NREA-approved biologist to assess use of the area by wildlife, vegetation changes, and potential bird/bat mortalities and/or injuries. In addition, project personnel working onsite would also record wildlife use of the project area. Results of the surveys and the data collected by project personnel would be provided to the NREA in quarterly reports for comments and recommendations to minimize impacts from continuing operations. • BR-13. If federally-listed species (e.g., desert tortoises) are observed in the project area during construction/decommissioning activities and/or during operation of the solar PV system, NREA will be notified immediately for further instructions, which may ultimately require USFWS instructions. The NREA would also be notified immediately if a dead or injured bird protected by the MBTA is found on-site at any time, or if any incidents occur that may affect the health and safety of project personnel (e.g., locating a rattlesnake within the project area). • BR-14. A revegetation and seeding plan approved by the NREA would be implemented following decommissioning activities to restore the site to pre-project conditions. • BR-15. An NREA-approved biological monitor would survey the solar PV site for mammals, reptiles, and/or nesting birds prior to 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-breeding season (October – January) prior to the start of decommissioning activities. If federally-listed species are found to occur in the solar PV site prior to the start of decommissioning activities, then activities will halt, NREA will be contacted, and the private partner would plan further action to avoid take of the listed species. • BR-16. The private partner would prepare and submit a Weed Management Plan to the NREA for review and approval. Once approved, the private partner would be responsible for implementing the Weed Management Plan. 			

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Geological Resources	<p>The Proposed Action/Alternative 1 is located in relatively flat areas that are not susceptible to landslides. The geology and topographic features of the project area would not be substantially altered and the project would not result in the loss of availability of a known mineral resource or fossils. With implementation of Avoidance and Impact Minimization Measures and SCMs listed below, erosion would be minimized during construction through adherence to the Combat Center’s Stormwater Pollution Prevention Plan (SWPPP) and facilities would be designed to accommodate poor drainage and high shrink-swell soils in Mesquite Dry Lake and potential geologic hazards. Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to geological resources.</p>	<p>Impacts under Alternative 2 would be similar to those described under the Proposed Action/Alternative 1, with the exception of impacts associated with the portion of the proposed Alternative 2 transmission line alignment that would be located along Mesquite Dry Lake. Therefore, with implementation of the proposed SCMs, Alternative 2 would have less than significant impacts to geological resources.</p>	<p>Impacts under Alternative 3 would be similar to those described under Alternative 2, except that the transmission line alignment located outside of the Combat Center (along Berkeley Avenue) would be required to comply with the California General Construction Permit, including preparation of separate SWPPP for this portion, as necessary. Therefore, with implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to geological resources.</p>	<p>Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to construct and operate a solar PV system at the Combat Center and construction activities would not occur. Baseline geological conditions would remain unchanged. No impacts to geological resources would occur as a result of implementation of the No Action Alternative.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • GR-1. The private partner would populate the Combat Center’s SWPPP prior to any construction activities and adhere to the Combat Center’s requirements related to stormwater pollution prevention and stormwater controls. The standard erosion control measures as identified in the Combat Center’s SWPPP would be utilized to reduce erosion during grading and construction activities. • GR-2. A geotechnical study would be performed by professional civil or geotechnical engineers or engineering geologists licensed in the State of California and would provide design and construction recommendations, as appropriate, to reduce potential impacts associated with soil conditions and geologic hazards. The project would incorporate the recommendations identified by the geotechnical study and the proposed facilities associated with the project would be designed to accommodate for soil conditions and geologic hazards. • GR-3. A Dust Abatement Plan would be prepared and dust control measures would be implemented. These dust control measures would minimize the amount of potential soil eroded and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1) wetting the soil during work; (2) the use of environmentally-friendly, biodegradable polymeric stabilizers and/or rock rip-rap to stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during conditions that prevent adequate dust control. 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are proposed.</p>

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
<p>Water Resources</p>	<p>There are no waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) located within the Proposed Action/Alternative 1 project area. Construction of transmission lines would not permanently alter or affect existing drainage patterns. Construction within the 100-year flood zone associated with Mesquite Dry Lake would be in compliance with Executive Order (EO) 11988, as amended. With implementation of Avoidance and Impact Minimization Measures and SCMs listed below, erosion would be minimized during construction through adherence to the Combat Center’s SWPPP and impacts to the Mesquite Dry Lake 100-year flood zone would be minimized. Transmission line poles and PV site posts would be designed such that they would not affect, nor would they be affected by, groundwater. The private partner would be responsible for identifying and contracting with one or more local water districts to purchase the water required for Alternative 1. Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to water resources.</p>	<p>Impacts under Alternative 2 would be similar to those described under the Proposed Action/Alternative 1. Therefore, with implementation of the proposed SCMs, Alternative 2 would have less than significant impacts to water resources.</p>	<p>Impacts under Alternative 3 would be similar to those described under the Proposed Action/Alternative 1. In addition, the transmission line alignment located outside of the Combat Center (along Berkeley Avenue) would be required to comply with the California General Construction Permit, including preparation of separate SWPPP for this portion, as necessary. Therefore, with implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to water resources.</p>	<p>Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to construct and operate a solar PV system at the Combat Center and construction activities would not occur. Baseline conditions of water resources, as described in Section 3.3.3, would remain unchanged. No impacts to water resources would occur as a result of implementation of the No Action Alternative.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • WR-1. The private partner would populate the Combat Center’s SWPPP prior to any construction activities and adhere to the Combat Center’s requirements related to stormwater pollution prevention and stormwater controls. The standard erosion control measures as identified in the Combat Center’s SWPPP would be utilized to reduce erosion during grading and construction activities. • WR-2. To minimize impacts within a 100-year flood zone, all excess soils and construction debris would be removed from the flood zone following construction. In addition, project facilities would be decommissioned and 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are</p>

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	removed and the 100-year flood zone would be restored to pre-construction conditions at the end of the agreement term. <ul style="list-style-type: none"> • WR-3. To reduce impacts to groundwater, reclaimed water would be used, as much as possible, for dust control. • WR-4. To reduce water requirements for dust control, it is expected that environmentally -friendly, biodegradable polymeric stabilizers and/or rock rip-rap would be used to stabilize unpaved roads. • WR-5. Transmission line poles and PV site posts would be designed such that they would not affect, nor would they be affected by, groundwater. 			proposed.
Cultural Resources	No National Register of Historic Places (NRHP)-eligible archaeological, architectural, or traditional cultural resources have been identified in the area of potential effect. As such, no cultural resources occur within the area of potential effect. Therefore, with implementation of the proposed monitoring requirements, and having received concurrence from the California State Historic Preservation Office (SHPO) (Appendix D), implementation of the Proposed Action/Alternative 1 would not affect cultural resources and impacts would be less than significant.	Subject to the survey results, impacts to cultural resources under Alternative 2 would be similar to those described above for the Proposed Action/ Alternative 1. Therefore, with implementation of the proposed monitoring requirements, and having received concurrence from the SHPO (Appendix D), implementation of the Alternative 2 would not affect cultural resources and impacts would be less than significant.	Subject to the survey results, impacts to cultural resources under Alternative 3 would be similar to those described above for the Proposed Action/ Alternative 1. Therefore, with implementation of the proposed monitoring requirements, and having received concurrence from the SHPO (Appendix D), implementation of the Alternative 3 would not affect cultural resources and impacts would be less than significant.	Under the No Action Alternative, the proposed PV, transmission line, and associated infrastructure would not be constructed, and existing conditions would remain unchanged. Therefore, there would be no impacts to cultural resources with implementation of the No Action Alternative.
	Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3: <ul style="list-style-type: none"> • CR-1. The private partner would be responsible for preparing and implementing a Monitoring and Discovery Plan prior to construction, and archaeological monitoring would be required during all ground disturbing activities. • CR-2. If cultural resources are found during ground-disturbing activities associated with this project, work would stop and the NREA Cultural Resources Manager would be contacted immediately. 			Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative: No avoidance and impact minimization measures/SCMs are proposed.
Air Quality	Estimated emissions associated with the Proposed Action/ Alternative 1 would be below the <i>de minimis</i> levels for Clean Air Act (CAA) Conformity. Therefore, with implementation of the proposed SCMs, the	Estimated emissions associated with Alternative 2 would be below the <i>de minimis</i> levels for CAA Conformity. Therefore, with implementation of the	Estimated emissions associated with Alternative 3 would be below the <i>de minimis</i> levels for CAA Conformity. Therefore, with implementation of the	Under the No Action Alternative, no construction activities would occur, and the existing air quality

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>Proposed Action/Alternative 1 would have less than significant impacts to air quality.</p>	<p>proposed SCMs, Alternative 2 would have less than significant impacts to air quality.</p>	<p>proposed SCMs, Alternative 3 would have less than significant impacts to air quality.</p>	<p>environment would not be affected. Therefore, there would be no impacts to air quality.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • AQ-1. Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within design standards. • AQ-2. A Dust Abatement Plan would be prepared and dust control measures would be implemented. These dust control measures would minimize the amount of potential soil eroded and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1) wetting the soil during work; (2) the use of environmentally-friendly and biodegradable polymeric stabilizers and/or rock rip-rap to stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during conditions that prevent adequate dust control. • AQ-3. Construction vehicle engines (non-road diesel engines) would conform to U.S. Environmental Protection Agency Tier 4 emission standards, when applicable. 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are proposed.</p>
<p>Utilities</p>	<p>The Proposed Action would be sited within a reasonable proximity to interconnection facilities, and the energy generated by the Proposed Action would contribute to the Secretary of the Navy’s (SECNAV’s) initiative to generate power that would go into the civilian grid, a beneficial impact. Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to utilities.</p>	<p>Under Alternative 2, utilities impacts would be similar to but less than those described under the Proposed Action/ Alternative 1, since the proposed transmission line under Alternative 2 would be located away from existing utilities for the majority of the proposed transmission route. This would also reduce the amount of construction work involving operational, or “hot,” power transmission lines. Therefore, with implementation of the proposed SCMs, Alternative 2 would have less than significant impacts to utilities.</p>	<p>Under Alternative 3, utilities impacts would be similar to but less than those described under the Proposed Action/ Alternative 1, since the proposed transmission line under Alternative 3 would be located away from existing utilities for the majority of the proposed transmission route. This would also eliminate the need for construction work involving operational, or “hot,” power transmission lines. Therefore, with implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to utilities.</p>	<p>Under the No Action Alternative, the proposed PV, transmission line, and associated infrastructure would not be constructed, and existing conditions would remain unchanged. Therefore, there would be no impacts to utilities with implementation of the No Action Alternative.</p>

Table ES-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • UT-1. To avoid design and construction conflicts with the Combat Center’s internal utility network, a utility investigation would be conducted to obtain the exact depth and location of underground utilities (i.e., natural gas lines, wastewater lines, potable and non-potable water lines). • UT-2. Special consideration would be required for transmission pole replacement at the front of the wastewater detention ponds and during PV site construction near the existing overhead line. • UT-3. To avoid interrupting Combat Center operations, work along the entire transmission line would be completed while the existing power lines are operational, or “hot.” • UT-4. The private partner would be responsible for: <ul style="list-style-type: none"> ○ adhering to conditions for application processes established by the California Independent System Operators, Southern California Edison (SCE) (the local electrical utility), Federal Energy Regulatory Commission, and other entities, which include an application for interconnection, a systems impact study, and a facility study; and ○ off-installation utility upgrades required by the local utility for carrying the PV power, if necessary. • UT-5. The private partner would be responsible for obtaining the necessary water. It is expected that this water would come from one or more of the three nearby water districts (Twentynine Palms Water District, Joshua Tree Water District, and/or the Hi-Desert Water District). The private partner would also be responsible for shipping the water to the project site via truck. 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are proposed.</p>

Notes: BR = Biological Resources; GR = Geological Resources; WR = Water Resources; CR = Cultural Resources; AQ = Air Quality; UT = Utilities

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1 ENVIRONMENTAL ASSESSMENT FOR
2 CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF A
3 SOLAR PHOTOVOLTAIC SYSTEM AT
4 MARINE AIR GROUND TASK FORCE TRAINING COMMAND
5 MARINE CORPS AIR GROUND COMBAT CENTER
6 TWENTYNINE PALMS, CALIFORNIA
7

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CHAPTER 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION AND BACKGROUND

This Environmental Assessment (EA) has been prepared by the United States (U.S.) Department of the Navy (DoN) and the U.S. Marine Corps (USMC) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoN procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order P5090.2A, Change 3, dated 26 August 2013, *Environmental Compliance and Protection Manual*. This EA analyzes the potential environmental impacts resulting from the construction and operation of a solar photovoltaic (PV) system in the Mainside area at Marine Air Ground Task Force Training Command (MAGTFTC), Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (herein referred to as the “Combat Center” or the “installation”). This project is one of several renewable energy projects the DoN is currently evaluating within the Renewable Energy Program Office (REPO) Southwest area of responsibility. Marine Corps Installations Command (MCICOM) is the action proponent for this project.

The purpose of the Proposed Action is to increase DoN installation energy security, operational capability, strategic flexibility and resource availability through the development of renewable energy generation assets at DoN installations by the construction and operation of a solar PV system at the Combat Center. The Proposed Action is required to meet the renewable energy standards put forth by the 1 Gigawatt (GW) Initiative and the Secretary of the Navy (SECNAV) 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 DoN and a private partner, a requirement that project infrastructure be “micro-grid ready,” meaning that the DoN would have the option to use any energy produced on-installation in the event of an area power outage or other circumstances.

1.1.1 Secretary of the Navy Renewable Energy Goals and Strategies

1.1.1.1 Goals

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

1. The DoN 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.
2. Fifty percent of DoN 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) (DoN 2012).

1.1.1.2 Strategies

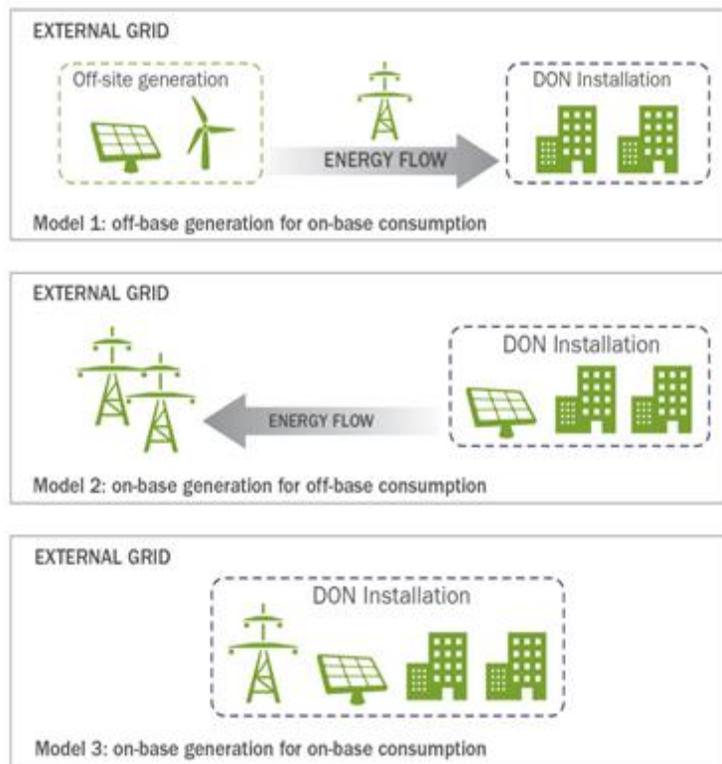
The DoN's energy strategy is centered on energy security, energy efficiency, and sustainability while remaining the pre-eminent maritime power:

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

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

3 Sustainable energy efforts protect mission capabilities. Investment in environmentally responsible
4 technologies afloat and ashore reduces greenhouse gas (GHG) emissions and lessens dependence on
5 fossil fuels (DoN 2015).

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



10 **Figure 1-1. Renewable Energy Models**

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

- 12
- 13 • DoN purchases new renewable energy generation for on-base load
 - 14 • Renewable energy generation provides price stability and diversifies energy portfolio
 - 15 • Acquisition: Inter-agency Agreement

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

- 17
- 18 • Private partner produces on DoN property & exports energy to grid (allows for much higher capacity of product versus Model 3)
 - 19 • DoN to receive energy security via lease terms
 - Acquisition: Real estate outgrant

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

- 2 • DoN consumes all energy generated
3 • Price stability and diversifies energy portfolio
4 • Acquisition: Power Purchase Agreement

5 The Combat Center already has a very large co-generation/micro-grid demonstration system, which is a
6 key component of a micro-grid; this system includes 16 MW of natural gas cogeneration and over 5 MW
7 of solar PV that provides for the vast majority of the Combat Center’s electricity requirements. As such,
8 the DoN proposes to implement Model 2 at the Combat Center to support achievement of the SECNAV’s
9 goals while simultaneously augmenting the existing co-generation/micro-grid system.

10 Under Model 2, the DoN and a private partner would enter into a 37-year agreement to allow the private
11 partner to use DoN land to construct, operate, and own the PV systems. Once the systems are operational,
12 the private partner would sell the power to regional customers. The private partner would be responsible
13 for maintenance, operation, and the eventual decommissioning of the solar PV system.

14 **1.1.2 Solar PV Systems**

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

23 Solar PV systems are comprised of hundreds and sometimes thousands of individual solar PV panels.
24 The vast majority of the solar PV market uses Flat Plate PV technology. In this design, the manufacturer
25 arranges the cells on a flat panel, sandwiches the cells between a transparent encapsulant and a thin
26 backing sheet of polymer, and then tops the cells with a layer of tempered glass that allows light to reach
27 the PV cells. An anti-reflective coating covers this top layer so more light can be absorbed by each cell
28 (Office of Energy Efficiency and Renewable Energy 2013a, 2013b).

29 The most common commercial PV module is approximately 77 inches (2 meters [m]) long by 39 inches
30 (1 m) wide in size and weighs about 40 pounds (18 kilograms) (Brightstar Solar 2014). Often, sets of
31 four or more smaller modules are framed or attached together by struts in what is called a panel. Panels
32 could be mounted on posts bored into the ground, on concrete foundations, or on concrete blocks placed
33 on the ground and are typically mounted between 3 feet (ft) to 5 ft (1 meter m to 2 m) above the ground.
34 PV panels are either tilted on fixed foundations (Photo 1) or on fixed foundations that allow the panels to
35 rotate (e.g., single-access tracking) (Photo 2). Fixed, non-tracking panels are more likely to be considered
36 for relatively flat areas, such as the proposed project area, to reduce construction cost; single access
37 tracking panels are more likely to be considered on slopes for maximum efficiency.

38 Solar PV energy projects generally require 10 acres (ac) (4 hectares [ha]) to produce 1 megawatt (MW) of
39 power. However, with the relatively high solar radiation values and favorable climate conditions at the
40 Combat Center, it is assumed that this proposed project would require approximately 7 ac (2.8 ha), or less
41 (depending on the type of PV panel selected), to generate 1 MW of power.

1 Photo 3 presents an existing solar PV system at the Combat Center. This solar PV system covers
2 approximately 6.5 ac and generates approximately 1.1 MW of power (National Renewable Energy
3 Laboratory 2012).



Photo 1. Typical Fixed-Tilt PV Panels



Photo 2. Typical Single-Access Tracking PV Panels



Photo 3. Existing Solar PV System at the Combat Center, Twentynine Palms

4
5 **1.1.3 History and Mission of the Combat Center**

6 The Combat Center is the world's largest Marine Corps installation and houses the premier training center
7 for live-fire practice. Nearly one-third of the Fleet Marine Force and Marine Reserve units participate in
8 the installation's training exercise program each year. These training exercises include a variety of

1 weapons systems, from small arms to attack aircraft, and are essential in maintaining the high levels of
2 readiness required of the USMC to fight and defend U.S. national interests.

3 The mission of the Combat Center is to conduct relevant live-fire combined arms training, urban
4 operations, and joint/coalition-level integration training that promote operational forces readiness and to
5 provide facilities, services, and support in response to the needs of resident organizations, Marines,
6 Sailors, and their families – both now and in the future. Significant commands at the installation include
7 the Marine Corps Communications-Electronics School, 7th Marine Regiment, Combat Service Support
8 Group-1, Air Ground Support Element, Headquarters Battalion, Training and Education Command, and
9 Naval Hospital (Naval Facilities Engineering Command [NAVFAC] Southwest 2011).

10 **1.2 PROJECT LOCATION**

11 The Combat Center is located in the Mojave Desert approximately 130 miles (209 kilometers [km]) east
12 of Los Angeles and 54 miles (87 km) northeast of Palm Springs in San Bernardino County, California
13 (refer to Figure 1-2). The southern boundary of the installation is located approximately 6 miles (10 km)
14 north of Highway 62, and the northern boundary is located south of Interstate 40. The City of
15 Twentynine Palms is adjacent to the southern boundary of the installation. The Combat Center is the
16 Marine Corps' only combined arms live-fire and maneuver training range complex. It encompasses
17 approximately 705,200 ac (285,400 ha) and is composed of multiple training areas, restricted areas, and
18 the Mainside cantonment area. The majority of the Combat Center is undeveloped and devoted to
19 combined arms live-fire and maneuver training activities.

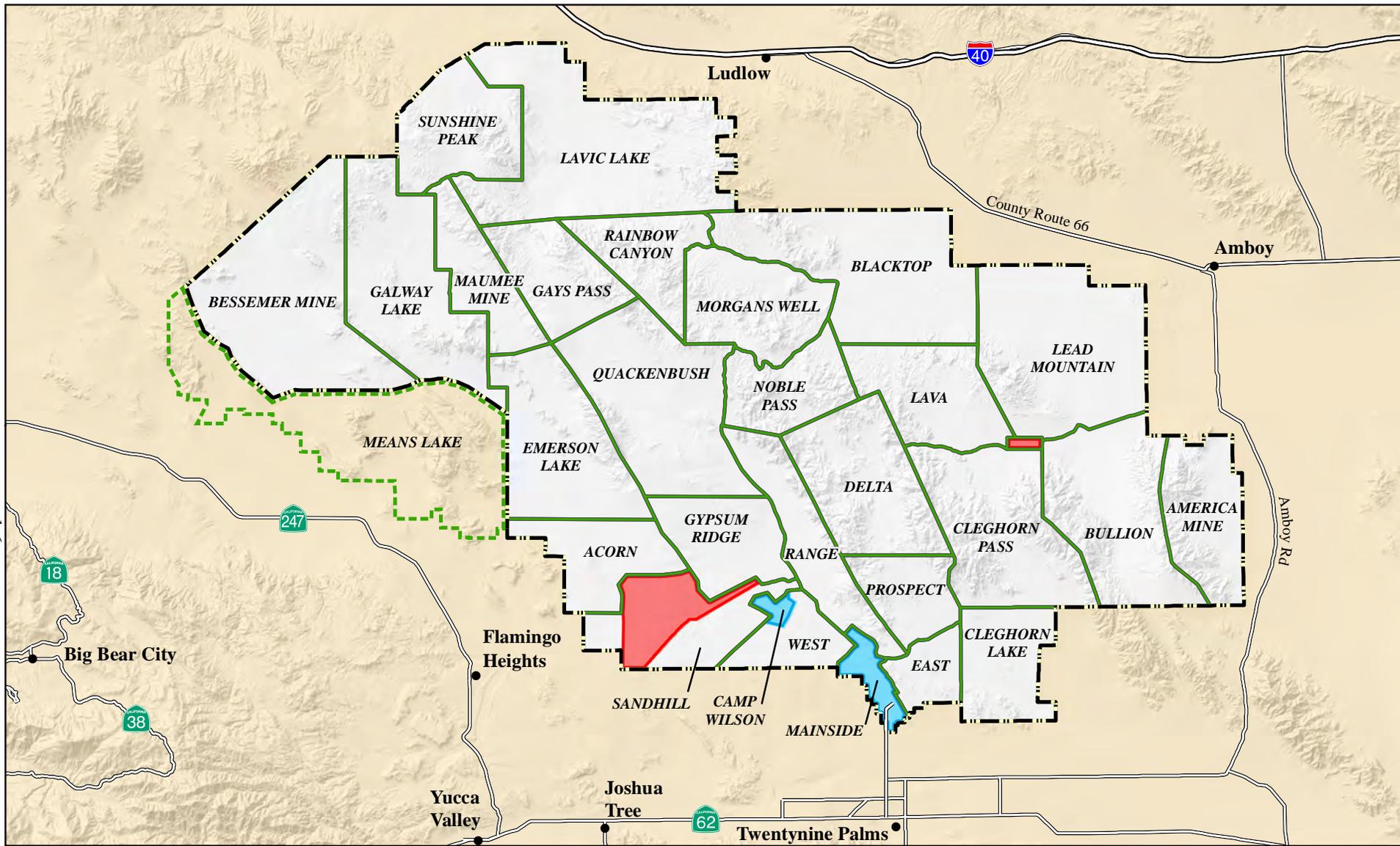
20 The Proposed Action would be located within the Mainside area, which is located in the southernmost
21 portion of the installation and is the primary developed area on the installation, providing an array of
22 maintenance, storage, administrative, commercial, and housing facilities.

23 **1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION**

24 The purpose of the Proposed Action is to increase DoN installation energy security, operational
25 capability, strategic flexibility and resource availability through the development of renewable energy
26 generating assets at DoN installations by the construction and operation of a solar PV system at the
27 Combat Center. The Proposed Action is needed to meet the renewable energy standards put forth by the
28 1 GW Initiative and the SECNAV Energy Goals. The policy requirements for energy security and
29 increased production of energy from alternative sources by 2020 are addressed in part by including, in
30 any potential agreement (or real estate outgrant) entered into by the DoN and a private partner, a
31 requirement that project infrastructure be “micro-grid ready,” meaning that the DoN would have the
32 option to use any energy produced on-installation in the event of an area power outage or other
33 circumstances.

34 **1.4 DECISION TO BE MADE**

35 The decision to be made as a result of the analysis in this EA is to decide if an Environmental Impact
36 Statement (EIS) needs to be prepared. An EIS will need to be prepared if it is determined that the
37 Proposed Action or other alternative ultimately selected for implementation would have significant
38 impacts to the human or natural environment. Should an EIS be deemed unnecessary based on the effects
39 analysis of the alternative selected for implementation, this selection would be documented in a Finding
40 of No Significant Impact (FONSI).



- Legend**
- Combat Center Boundary
 - Training Area Boundary
 - Road/Highway
 - Support Area
 - Restricted Area
 - Means Lake Training Area
(Used for Training 60-days per Year)

Figure 1-2
Regional Location and
Training Areas of the Combat
Center, Twentynine Palms

0 2.5 5 Miles
0 5 10 Kilometers

Source: MCAGCC 2015a,b

1 **1.5 SCOPE OF ANALYSIS**

2 **1.5.1 Previous Studies**

3 A 2012 study by the Department of Defense (DoD) Environmental Security Technology Certification
4 Program (ESTCP) analyzed the potential for solar energy development at seven military installations in
5 the Mojave and Colorado deserts (DoD ESTCP 2012). The study determined that, at the Combat Center,
6 Mainside is the only location where solar energy could be developed without impacting the Combat
7 Center's mission. The study also identified several areas at Mainside that could be suitable for such
8 development.

9 The 2012 study was followed by a 2014 Feasibility Study (DoN and USMC 2015) that determined that
10 only one area – the proposed solar PV system site – met all of the screening factors as described in
11 Section 2.1 of this EA. The Feasibility Study also determined the maximum output the proposed sites
12 could produce; evaluated the existing utility transmission system to determine a probable point of
13 interconnection, and identified potential project-related risks and constraints by resource. The results of
14 the 2014 Feasibility Study are integrated into this EA.

15 **1.5.2 Resources Analyzed in Detail**

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

- 17 • Biological Resources
- 18 • Geological Resources
- 19 • Water Resources
- 20 • Cultural Resources
- 21 • Air Quality
- 22 • Utilities

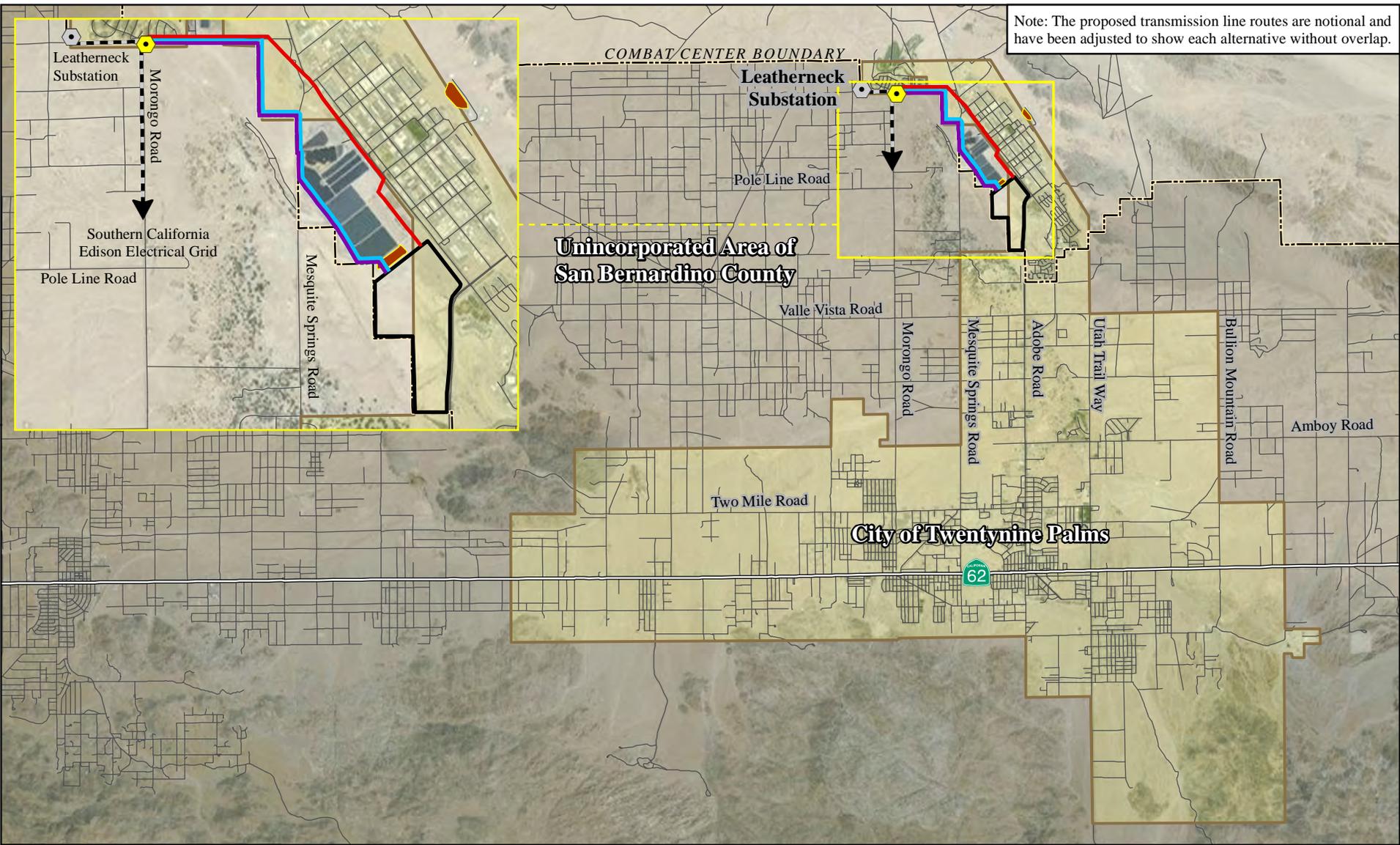
23 **1.5.3 Resources Not Analyzed in Detail**

24 Airspace, land use, aesthetics, recreation, hazardous materials and wastes, transportation, noise,
25 socioeconomics and environmental justice, and public health and safety/protection of children were not
26 carried forward for detailed analysis because the Proposed Action would not affect or would only
27 negligibly affect these resources. The rationale for not carrying these resources forward for detailed
28 analysis is summarized below and further discussed in Chapter 3.

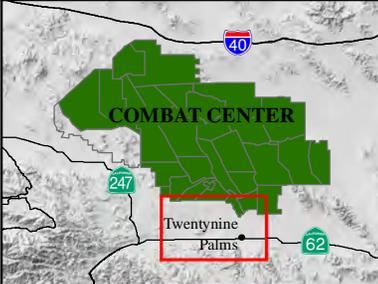
29 **Airspace** – The Proposed Action would not affect airspace because it would have an anti-reflective
30 coating that would improve light absorption and reduce or eliminate the potential for glint and glare
31 impacts. Furthermore, the proposed project would be located outside of the established Special Use
32 Airspace, Class-D Restricted Airspace, and restricted areas. Therefore, no significant impacts to airspace
33 would occur with implementation of the Proposed Action.

34 **Land Use** – Although the Proposed Action would be partially located within the Twentynine Palms city
35 boundary (Figure 1-3), the Proposed Action would be located on federal land, would not change or
36 modify existing land uses, and would be compatible with adjacent land use. The Proposed Action is not
37 required to comply with City of Twentynine Palms Ordinance 249 because it would be located on federal
38 land, and access to the site by the general public is restricted. Therefore, the proposed project would not
39 affect the use of any off-installation lands and would not adversely impact the City of Twentynine Palms'
40 rural and scenic character, small town sense of community, economy, recreational and cultural
41 opportunities, tax revenue, or overall quality of life. Therefore, no significant impacts to land use would
42 occur with implementation of the Proposed Action.

Note: The proposed transmission line routes are notional and have been adjusted to show each alternative without overlap.



1-8



- Proposed Features**
- Alternative 1 Transmission Line
 - Alternative 2 Transmission Line
 - Alternative 3 Transmission Line
 - Switching/Metering Station
 - Photovoltaic Site

- Legend**
- City of Twentynine Palms
 - Existing Southern California Edison 115-kV Transmission Line
 - Leatherneck Substation
 - Highway
 - Local Road
 - Combat Center Boundary

Figure 1-3
City of Twentynine Palms

Sources: City of Twentynine Palms 2012, MCA GCC 2015a

1 **Aesthetics** – The Proposed Action is not associated with a scenic vista or visual resource. While the
2 nearest potential receptors would normally be the most sensitive due to proximity, the adjacent land
3 outside of the Combat Center is sparsely populated (with no more than four residences located within 0.6
4 mile [1.0 km] of the Proposed Action site) and the Proposed Action would be partially or fully screened
5 to these residences by topography or vegetation. Due to the area’s topography, people traveling north on
6 Adobe Road at 2 Mile Road would have the greatest view of the proposed project, but at this distance
7 (approximately 4 miles [6.5 km]), the project would blend in with the existing development shown in
8 Figure 3-1. Therefore, no significant impacts to aesthetics would occur with implementation of the
9 Proposed Action.

10 **Recreation** – The Proposed Action would be designed such that the adjacent on-installation running track
11 would not be affected. As such, the Proposed Action would not affect recreational opportunities within or
12 adjacent to the project area. Therefore, no significant impacts to recreation would occur with
13 implementation of the Proposed Action.

14 **Hazardous Materials and Wastes** – The Proposed Action would not affect munitions response program
15 sites because none are located within the project area. The Proposed Action would not affect any
16 Installation Restoration sites, and the private partner would be required to comply with all federal, state,
17 county, local, DoD, DoN, USMC, and Combat Center environmental requirements, including those for
18 management and disposal of hazardous materials and wastes. Therefore, no significant impacts to
19 hazardous materials and wastes would occur with implementation of the Proposed Action.

20 **Transportation** – The existing transportation network leading to the project site and within the Combat
21 Center including Adobe Road and Del Valle Road, operates at adequate capacity (USMC 2012). Under
22 the Proposed Action, there would be a minor and temporary increase in traffic associated with worker
23 trips and the delivery of equipment and materials during construction and decommissioning activities.
24 During the operational phase, there would be no impact to transportation, as the maintenance activities
25 would only require a small number of vehicle trips per year. Therefore, no significant impacts to
26 transportation would occur with implementation of the Proposed Action.

27 **Noise** – Construction and decommissioning noise generated by the Proposed Action would be temporary,
28 limited to regular working hours, well removed from off-installation sensitive receptors, and negligible
29 when compared to the current noise environment. Recurring operational/maintenance activities would
30 generate negligible amounts of noise. Therefore, no significant impacts to noise would occur with
31 implementation of the Proposed Action.

32 **Socioeconomics and Environmental Justice** – The Proposed Action would occur within the boundaries
33 of a military installation, and the construction and operation activities associated with the Proposed
34 Action would not result in a permanent change to population, ethnicities, or age distribution. As such,
35 there would be no disproportionately high environmental or health impacts on low-income or minority
36 populations from implementation of the Proposed Action. Therefore, no significant impacts to
37 socioeconomics and environmental justice would occur with implementation of the Proposed Action.

38 **Public Health and Safety/Protection of Children** – The Proposed Action would be sited in accordance
39 with established land use development guidelines addressing safety, functionality, and environmental
40 protection zones. The project site is located in an industrial area of Mainside that is removed from
41 population centers and public facilities. Construction areas would be fenced to prevent access by
42 unauthorized persons, including children.

1 Ground disturbance during construction could result in the release of dust, which may carry spores from
 2 *Coccidioides immitis*, the fungus that causes coccidioidomycosis that is also known as Valley Fever. The
 3 number of documented cases in the United States has been steadily increasing over the past few years.
 4 There were over 20,000 reported cases in 2011, and the Center for Disease Control estimates that an
 5 additional 150,000 cases go undiagnosed each year. About 25% of all cases occur in California (Center
 6 for Disease Control 2012). In 2011, there were 75 cases of Valley Fever in San Bernardino County, an
 7 incidence rate of 3.4 cases per 100,000 people (San Bernardino County Department of Public Health
 8 2013). The Proposed Action would implement dust control measures and the preparation of a Dust
 9 Abatement Plan. These dust control measures would minimize the amount of spore-laden soil eroded
 10 and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1)
 11 wetting the soil during work; (2) the use of environmentally-friendly, biodegradable polymeric stabilizers
 12 and/or rock rip-rap to stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during
 13 conditions that prevent adequate dust control.

14 Operation of the proposed project would not pose a risk to public health or safety, and no changes to
 15 existing safety procedures or guidelines would occur. Therefore, no significant impacts to public health
 16 and safety or to the protection of children would occur with implementation of the Proposed Action.

17 **1.6 INTERGOVERNMENTAL COORDINATION**

18 **1.6.1 Agency Consultations**

19 Table 1-1 presents the anticipated agency permits and consultation potentially needed for the Proposed
 20 Action. As shown in the table, the Combat Center has consulted with the California State Historic
 21 Preservation Office (SHPO) under the National Historic Preservation Act (NHPA) as part of the NEPA
 22 process, and the private partner would be required to obtain approval from the California Public Utilities
 23 Commission (CPUC) and the California Independent System Operator (CAISO) after completion of the
 24 NEPA process. Per the Basewide Biological Opinion, with the implementation of the proposed
 25 Avoidance and Impact Minimization Measures/Special Conservation Measures (SCMs) listed in Table 2-
 26 1, consultation with the USFWS is not necessary.

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

Agency	Permit or Approval	Current Status
California SHPO	Section 106 of the NHPA	The USMC consulted with the SHPO and concurrence was provided (Appendix D).
CPUC	Public Utilities Code Section 399.11	The private partner would obtain a power purchase agreement from the CPUC after completion of the NEPA process
CAISO	Public Utilities Code Sections 2811-2816	The private partner would obtain an Interconnection Agreement from the CAISO after completion of the NEPA process

Notes: CAISO = California Independent System Operator; CPUC = California Public Utilities Commission; NHPA = National Historic Preservation Act; SHPO = State Historic Preservation Office; USMC = United States Marine Corps.

28 **1.6.2 Summary of Relevant Renewable Energy Policies**

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

30 **1.6.2.1 EO 13693, Planning for Federal Sustainability in the Next Decade**

31 EO 13693 (dated 19 March 2015) superseded EO 13423 (*Strengthening Federal Environment, Energy,*
 32 *and Transportation Management*) and EO 13514 (*Energy Efficient Standby Power Devices*). The goal of

1 EO 13693 is to maintain federal leadership in sustainability and greenhouse gas emission reductions. EO
2 13693 establishes policies to maintain federal leadership in sustainability and greenhouse gas emission
3 reductions. As relevant to this EA, EO 13693 identifies requirements relating to energy conservation,
4 efficiency, and management; minimum percentages of total building energy obtained from clean energy
5 sources; and, improvements in water use efficiency and management, including stormwater management.

6 1.6.2.2 Secretary of the Navy Energy Goals

7 On 14 October 2009, the SECNAV established five aggressive renewable energy goals for the DoN's
8 shore-based installations to meet by 2020. The goals pertain to improve fuel use in aircrafts as well as
9 energy reduction and production. The goal that pertains the most to this document is: The DoN will
10 produce at least 50 percent of shore-based energy requirements from alternative sources (refer to
11 Section 1.1.1, *Secretary of the Navy Renewable Energy Goals and Strategies*).

12 1.6.2.3 1 Gigawatt Initiative

13 In support of the SECNAV Energy Goals, 1 October 2012, Secretary Maybus chartered the 1 Gigawatt
14 Task Force (1 GW TF) to enable the DoN to procure one GW of renewable energy generation capacity by
15 2020. 1 GW of renewable energy generation directly addresses several of the mandates and goals for
16 which the DoN is accountable: EO 13693 (this EO superseded EOs 13423 and 13514), the 10 U.S. Code
17 (USC) §2911 “25 by 25” mandate (25 percent by 2025), Energy Policy Act 2005 graduated renewable
18 energy targets, the SECNAV’s departmental goals.

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

25 **1.7 PUBLIC AND AGENCY PARTICIPATION**

26 As described in Appendix A, *Public Involvement Process*, as part of this EA effort, the USMC has initiated a
27 public participation process to provide the public the opportunity to participate in the project by submitting
28 comments on the adequacy and accuracy of this Draft EA. The public participation process commenced with
29 publication of a Notice of Availability (NOA) of the Draft EA in two local newspapers. The Draft EA was made
30 available at the Twentynine Palms Branch and the Yucca Valley Branch Libraries and online, on the Combat
31 Center website (available at <http://www.29palms.marines.mil/Staff/G4InstallationsandLogistics/NREA.aspx>). A
32 30-day public comment period for the Draft EA commenced on 9 July 2015 and will conclude on 9 August 2015.

33 Written comments may be sent via mail to: Ryan Maynard, Twentynine Palms Solar PV System EA
34 Project Manager; NAVFAC Southwest; Central IPT, Building 1, 3rd Floor; 937 North Harbor Drive; San
35 Diego, California 92132.

36 The public participation process will conclude with the publication of a NOA of the Final EA. Pending
37 the results of this analysis, the decision document could be a FONSI. The NOA will be published in two
38 local newspapers. The Final EA and FONSI will be made available to the public in the Twentynine
39 Palms Branch and the Yucca Valley Branch Libraries and online at the website noted above.

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1 CHAPTER 2

2 PROPOSED ACTION AND ALTERNATIVES

3 This chapter discusses the reasonable alternative screening factors (Section 2.1), the Proposed Action and
4 action alternatives (Section 2.2) and the No Action Alternative (Section 2.3), and the alternatives
5 considered but eliminated from detailed analysis (Section 2.4); Section 2.5 provides a summary of the
6 environmental consequences.

7 2.1 REASONABLE ALTERNATIVE SCREENING FACTORS

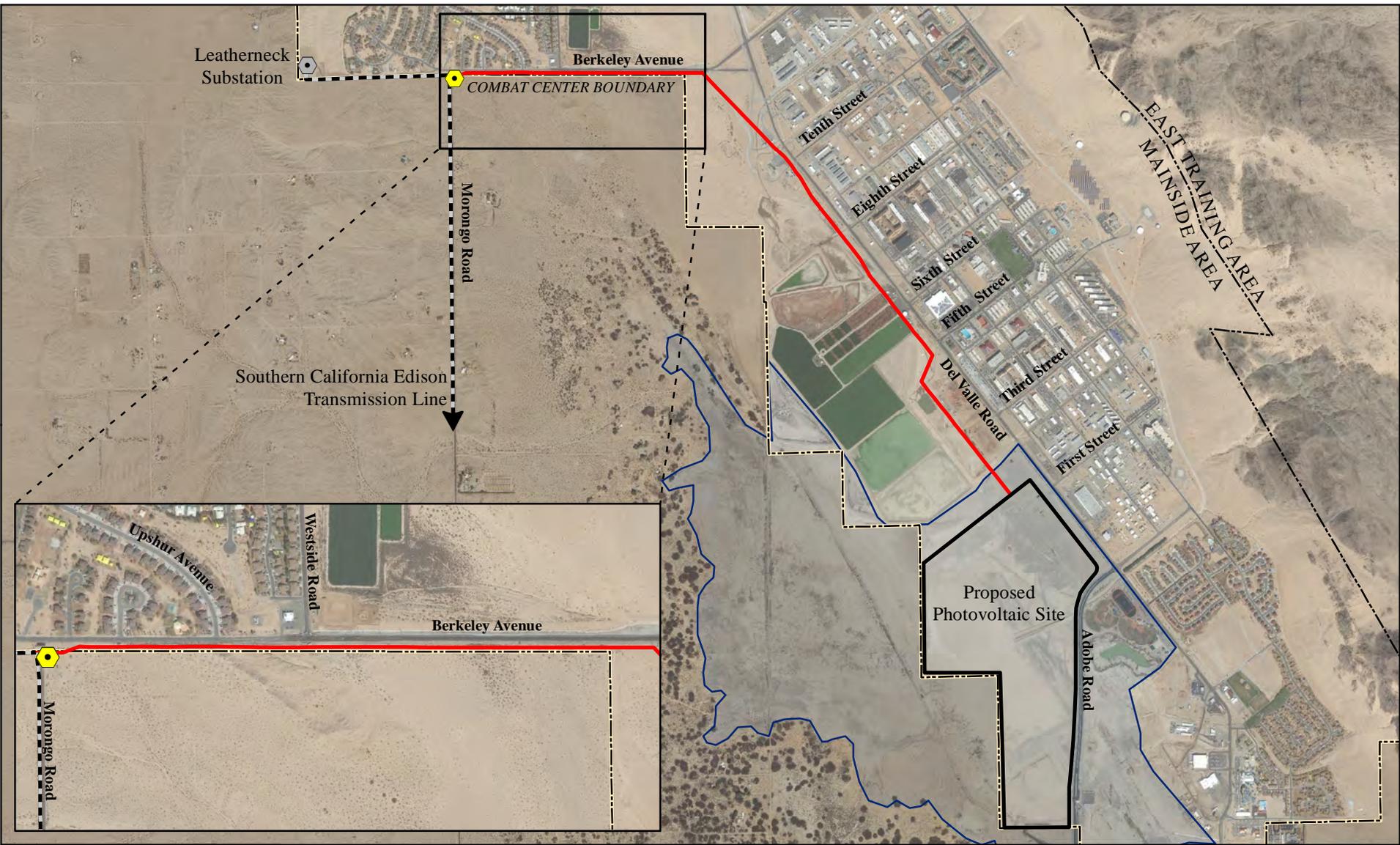
8 Alternatives to the Proposed Action must be considered in accordance with NEPA, CEQ Regulations for
9 Implementing the Procedural Provisions of the NEPA, and Marine Corps Order P5090.2A. CEQ
10 regulations, for example, establish a number of policies for federal agencies, including “using the NEPA
11 process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or
12 minimize adverse effects of these actions on the quality of the human environment” (40 CFR 1500.2 [e]).
13 However, only those alternatives determined to be reasonable relative to their ability to fulfill the purpose
14 of and need for the Proposed Action, as defined in Section 1.3, require detailed analysis. Action
15 alternatives were developed based upon whether a proposed alternative met the purpose of and need for
16 the project, and the below-listed reasonable alternative screening factors.

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

25 2.2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

26 2.2.1 Proposed Action/Alternative 1

27 The Proposed Action/Alternative 1 involves the construction, operation, maintenance, and eventual
28 decommissioning of a 241-ac (97-ha) solar PV system at Mainside, west of Adobe Road (Figure 2-1) and
29 a transmission line to transmit the energy to the civilian grid. The PV site consists of vacant land that was
30 previously disturbed for use as an airfield. The area is also referred to as Mesquite Dry Lake, a desert
31 playa that infrequently ponds with water after storm events. Depending on the type of PV panel selected
32 by the operator/lessee, the proposed project could produce between 25 MW and 57 MW of power, which
33 would produce between 65,700 MW-hours and 150,000 MW-hours of energy per year based on an annual
34 average of 7.2 hours of full sunlight per day (DoN 2012). Based on average annual household electricity
35 consumption in 2012, this would provide enough electricity for 6,000 to 13,800 homes (U.S. Energy and
36 Information Administration 2014). All components of the proposed solar PV site would be located at
37 least 33 ft (10 m) from the Combat Center’s perimeter fence to meet Anti-terrorism Force Protection
38 requirements.



2-2



Legend

<u>Proposed Action/Alternative 1 Proposed Features</u>		Existing Southern California Edison 115-kV Transmission Line	
—	115-kV Transmission Line		
	Switching/Metering Station		Leatherneck Substation
	Photovoltaic Site		Mesquite Dry Lake
			Combat Center Boundary

Figure 2-1
Proposed Action/Alternative 1

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers

Source: MCAGCC 2015a



1 The solar PV site would consist of solar
2 PV panels, steel tracking structure,
3 inverters, combiner boxes, electrical
4 switchgear, a substation, and associated
5 electrical wiring, connections, and other
6 items required for the solar PV system.
7 All electrical equipment, including
8 inverters and transformers would be
9 constructed on concrete pads and solar
10 PV wiring would be underground and/or
11 pole mounted.

12 Metering and switching functions would
13 be accommodated either at a proposed
14 switching station southeast of Ocotillo
15 Gate or through an air-switch in the same
16 location combined with metering at the
17 PV site. A pilot wire or fiber optic cable
18 would accomplish the

19 switching/metering. If a switching station is required by the local utility, it would be the responsibility of
20 the private partner to acquire a lease for the land outside of the Combat Center boundary. No battery
21 backup would be provided and the proposed solar PV site would only generate power during the daylight
22 hours.

23 Under Model 2, the proposed PV facility would feed the Leatherneck Substation owned by SCE and
24 would not be directly connected to the MCAGCC electrical distribution system. For the proposed project
25 to contribute to the Combat Center's existing co-generation/micro-grid system, the electricity directed to
26 the Leatherneck Substation would need to be redirected to the Combat Center's electrical distribution
27 system, which may require additional communications, controls, relays, breakers and switches. For
28 purposes of this analysis, this additional infrastructure is assumed to be included within the proposed
29 project area.

30 Gravel roads would be graded between the rows of solar PV panels and around the site perimeter for
31 maintenance access. No other access improvements would be required as part of the Proposed
32 Action/Alternative 1 because the existing road network adjacent to the project area is sufficient. A chain
33 link fence with barbed-wire outriggers in accordance with force protection standards would enclose the
34 solar PV site to minimize the potential for unauthorized individuals to enter the area.

35 2.2.1.1 Agreement

36 The proposed solar PV system would be developed by a private partner who would construct, own,
37 operate, maintain and eventually decommission the system through an agreement with the DoN. The
38 private partner, or lessee, would provide the PV power to end-users via the Southern California Edison
39 (SCE) "civilian" grid. At the time of preparation of this document, there has been no determination
40 regarding the private partner/lessee or the end-user who would purchase the PV power generated by the
41 lessee.

42 The 37-year agreement would consist of 2 years for construction, followed by an initial 25-year operating
43 term and two, 5-year operating extensions (10 years). This acquisition strategy maximizes the total
44 capacity (size) of the system based on available land.

Understanding Power (MW) and Energy (MW-hour)

Power is analogous to speed: both measure the rate at which something is occurring, and both can be expressed in several ways. For example, speed can be expressed in miles per hour, feet per second, inches per minute, etc. Power can be expressed in joules (a unit of energy) per second. One joule per second is known as a watt, and a million joules per second is known as a megawatt (MW).

Energy is analogous to distance: both measure a set amount or quantity, and both can also be expressed in several ways. For example, distance can be expressed in miles, kilometers, feet, etc. Energy can be expressed in joules (a unit of energy), but often is expressed in MW-hours (a much bigger unit of energy): using one million joules per second (one MW of power) non-stop for an hour would use 3.6 billion joules, or one MW-hour, of energy.

For more information, please refer to BizEE Energy Lens (2014) online at:
<http://www.energylens.com/articles/kw-and-kwh>.

1 In keeping with authority of 10 U.S.C. §2667, outgrants (leases) under Model 2 shall provide for
2 consideration (rent) to be paid, either in cash or in-kind, in an amount not less than the fair market value
3 of the lease. Potential projects provided by lessee to apply towards rents as in-kind consideration will
4 meet necessary environmental regulations and requirements under separate reporting. The primary
5 financial benefit to the Combat Center is expected to be in the form of in-kind services that could include
6 the construction of facilities, utility services, or real property maintenance services. The type of
7 arrangement is considered a good option for installations that can accommodate a large PV project but
8 cannot consume the energy the project would produce (DoN 2012).

9 Tangible, valued, in-kind consideration that enhances DoN energy security posture is the primary
10 preference of consideration negotiation. In-kind benefits that do not enhance energy security and cash
11 consideration are allowed, but are less favorable to DoN. DoN and lessee shall coordinate during the
12 course of due diligence and preliminary feasibility analysis to define and agree on tangible, valued,
13 energy security benefits on a project by project basis.

14 All land transfer agreements for renewable energy will include the legal access to electricity generated by
15 assets built on DoN land.

16 2.2.1.2 Construction of the Solar PV System

17 The solar PV system being considered in this EA could be constructed on flat or sloped grades. Soil
18 disturbance would include multiple augured holes for pole mounting and/or concrete footings. The solar
19 PV panels would be mounted on poles at a height sufficient to prevent damage during a 100-year flood
20 event at the Mesquite Dry Lake. In addition, soil could be built up, compacted, and stabilized (potentially
21 with rock rip-rap) in a relatively small area to ensure the PV system's substation, inverters, and associated
22 transformers remain at least two feet above the flood zone. Soil used for this purpose would be collected
23 from the project area, and soil and topography would be managed in a manner that would ensure there is
24 no net reduction in the project site's ability to retain stormwater. The private partner or construction
25 contractor would also be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) that would
26 adhere to Combat Center requirements for storm water pollution prevention and control.

27 The project site would be watered as needed for dust control during construction activities. Based on a
28 nearby 35-acre PV project that requested 26 acre-feet (ac-ft) (8.5 million gallons), it is expected that the
29 proposed project could require as much as 179 ac-ft (58.3 million gallons) of water for dust control. The
30 private partner would be responsible for obtaining the necessary water; it is expected that this water
31 would come from one or more of the three nearby water districts (Twentynine Palms Water District,
32 Joshua Tree Water District, and/or the Hi-Desert Water District). The private partner would also be
33 responsible for shipping the water to the project site via truck. To reduce impacts to groundwater,
34 reclaimed water would be used as much as possible. It is also expected that environmentally-friendly,
35 biodegradable polymeric stabilizers and/or rock rip-rap would be used to stabilize unpaved roads and
36 reduce the need to use water to control dust.

37 The private partner would ensure that all lighting used temporarily during construction or permanently as
38 part of the proposed project would comply with the City of Twentynine Palms lighting and night sky
39 ordinances. Generally, this requires all outdoor lighting fixtures to be fully shielded or constructed so that
40 light rays emitted by the fixtures are not directed upward or onto an adjacent property.

41 Project construction would take approximately two years to complete and would require up to 150
42 personnel to be on-site at any time during construction if a 50-MW facility is constructed.

1 2.2.1.3 Operations and Maintenance

2 Maintenance of the proposed solar PV system is expected to involve periodic washing of the panels to
3 eliminate dirt and dust as needed. If not maintained, dirt and dust can accumulate on the PV panel's
4 surfaces, thereby blocking some of the sunlight and reducing insolation efficiency (i.e., output). Washing
5 would occur when the ambient temperature is low to prevent thermal expansion, which could damage or
6 compromise the structure of the PV panels, and would be conducted from water trucks filled with
7 deionized water obtained from an off-installation source. It is expected that this water would come from
8 one or more of the three nearby water districts mentioned above. Based on estimates that the Cascade
9 Solar Plant near Joshua Tree, CA would require 2 ac-ft (652,000 gallons) of water for an 18.5 MW
10 project (Joshua Basin Water District 2011), the proposed 50 MW PV solar system at the Combat Center
11 is expected to annually require approximately 5.4 ac-ft (1.8 million gallons) of water for washing, dust
12 control, and personnel use. To reduce impacts to groundwater, reclaimed water would be used as much as
13 possible. To reduce water requirements for dust control on unpaved roads, it is expected that
14 environmentally-friendly, biodegradable polymeric stabilizers and/or rock rip-rap would be used to
15 stabilize unpaved roads. Any vegetation underneath the panels would be compatible with the solar PV
16 system and can reduce dust and minimize erosion. Vegetation under the panels is expected to be similar
17 to existing conditions (i.e., minimal).

18 2.2.1.4 Decommissioning

19 A decommissioning plan would be prepared in accordance with DoN requirements. The plan would
20 ensure that the project facilities would be decommissioned and removed and that the site would be
21 restored to pre-construction conditions. Soils and impacted areas would be reclaimed to a level that
22 would, at a minimum, support uses for the land consistent with pre-construction activities. The
23 decommissioning and restoration process would likely involve the removal of above ground structures,
24 possible grading, and restoration of topsoil. A revegetation and seeding plan approved by the Combat
25 Center's Natural Resources and Environmental Affairs (NREA) office would be implemented following
26 decommissioning activities to restore the site to pre-project conditions for specific areas within, or
27 adjacent to, the Mesquite Dry Lake or along the transmission line corridor. Temporary erosion and
28 sedimentation control best management practices would be used during the decommissioning phase of the
29 project.

30 Pre-existing Combat Center power poles that were replaced with taller wooden poles to carry the PV
31 energy, would be topped off (i.e., cutting off the power pole just above the existing cross arms and wires)
32 and left in place. In so doing, the pole would be returned to the height it was at before the higher PV
33 wires were installed. Steel poles would be removed by the private partner at the discretion of the Combat
34 Center.

35 Anticipated decommissioning activities would be completed using a mix of equipment and vehicles,
36 likely to include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes, and are
37 estimated to occur over a period of approximately two months. Water, environmentally-friendly and
38 biodegradable polymeric stabilizers, and/or rock rip-rap would continue to be used to control dust during
39 decommissioning activities. It is expected that as much as 15 ac-ft (4.9 million gallons) of water could be
40 used during decommissioning from the same off-installation sources as identified for construction. To
41 reduce impacts to groundwater, reclaimed water would be used as much as possible.

42 All hazardous materials would be disposed of in accordance with applicable regulations at an
43 appropriately accredited facility for the hazardous material(s). A decommissioning staging area would be
44 delineated within the overall project area and all work would be done on-site. Following

1 decommissioning activities, the DoN would certify that the land condition has been returned to its pre-
2 project condition. All decommissioning activities would be conducted in compliance with all regulations
3 applicable to conducting work activities at the Combat Center, and adherence to the environmental
4 protection measures presented in Section 2.5, *Summary of Environmental Consequences*.

5 2.2.1.5 Transmission Line

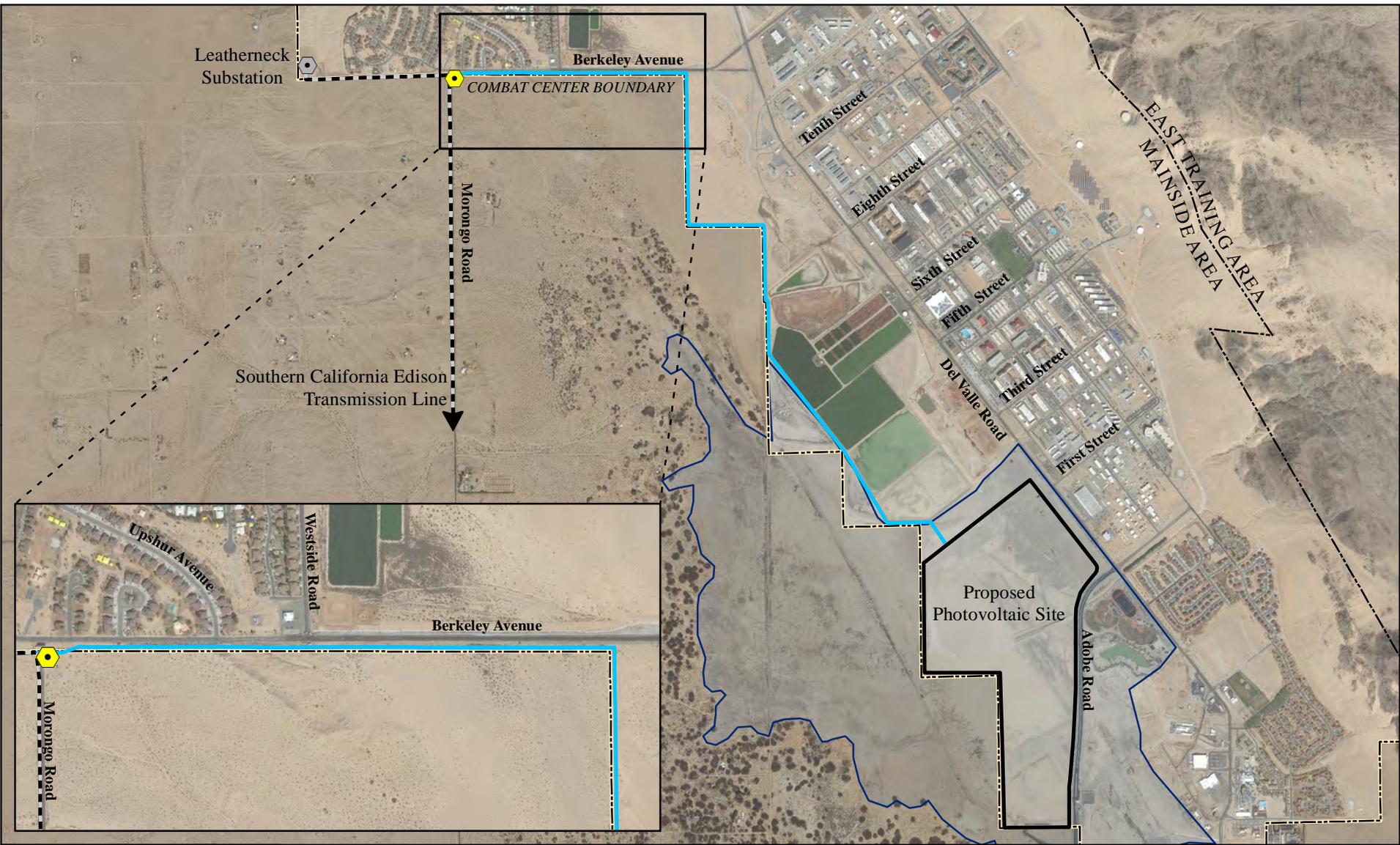
6 A new transmission line would be installed to transmit the PV energy to the civilian grid. The new
7 transmission line would share the existing 34.5-kilovolt (kV) transmission line alignment that generally
8 parallels Del Valle Drive from the PV site to the northwest. This existing utility alignment turns west
9 toward the Leatherneck Substation along the south side of Berkeley Avenue. At Berkeley Avenue, the
10 transmission line would turn west and connect to a potential switching and metering facility, located to
11 the east of the Leatherneck Substation near Ocotillo Gate outside of the Combat Center. Implementation
12 of the Proposed Action/Alternative 1 would require replacing every other existing, wooden power pole
13 with a taller pole. At each dead-end, and at each change in direction, an 80-ft tall steel pole with a
14 concrete base would be installed. To avoid interrupting Combat Center operations, work along the entire
15 transmission line would be completed while the existing transmission lines are operational, or “hot.”
16 Once the work is completed, the existing lines would remain as they are (but would be attached to the
17 new poles) and a new 115-kV transmission line would be located above the existing lines near the top of
18 the new poles. The new line would allow power to be transmitted from the proposed solar PV site to the
19 switching and metering facility, and then to the SCE electrical grid. The transmission line portion of the
20 Proposed Action/Alternative 1 is 2.6-mile (4.2-km) long.

21 2.2.2 Alternative 2

22 Alternative 2 consists of all of the actions proposed under Proposed Action/Alternative 1, with the only
23 difference being the location for the new transmission line (Figure 2-2). The new transmission line would
24 follow the Combat Center’s boundary to the west and northwest of the proposed solar PV site. At
25 Berkeley Avenue, the new line would turn west. The portion of Alternative 2 along Berkeley Avenue
26 would be identical to the Proposed Action/Alternative 1 (i.e., sharing the alignment with the existing
27 34.5-kV transmission line and replacing every other power pole). Construction work would be done
28 while the existing transmission lines are operational. Under Alternative 2, power would be transmitted
29 from the proposed solar PV site to the switching and metering facility and then to the SCE electrical grid,
30 similar to the Proposed Action/Alternative 1. The transmission line portion of Alternative 2 is 2.9-mile
31 (4.7-km) long.

32 2.2.3 Alternative 3

33 Alternative 3 consists of all of the actions proposed under Proposed Action/Alternative 1, the only
34 difference being the location for the new transmission line (Figure 2-3). The new transmission line would
35 follow the same route as Alternative 2 except for the portion of the line along Berkeley Avenue. Along
36 Berkeley Avenue, instead of sharing the alignment with the existing 34.5-kV transmission line (as in the
37 Proposed Action and Alternative 2), at Berkeley Avenue the new transmission line would exit the Combat
38 Center and be located outside of the Combat Center. The new line would allow power to be transmitted
39 from the proposed solar PV site to the switching and metering facility, independent from the existing
40 Combat Center infrastructure, and then to the SCE electrical grid. The transmission line portion of
41 Alternative 3 is 2.9-mile (4.7-km) long, 0.24 mile (0.38 km) of which would be located outside of the
42 Combat Center’s boundary. This alternative would require the private partner to acquire an easement for
43 the off-Combat Center portion of the transmission line. Separate environmental review would be required
44 for development outside of the Combat Center.



2-7

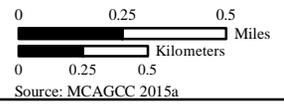


- Alternative 2 Proposed Features**
- 115-kV Transmission Line
 - Switching/Metering Station
 - Photovoltaic Site

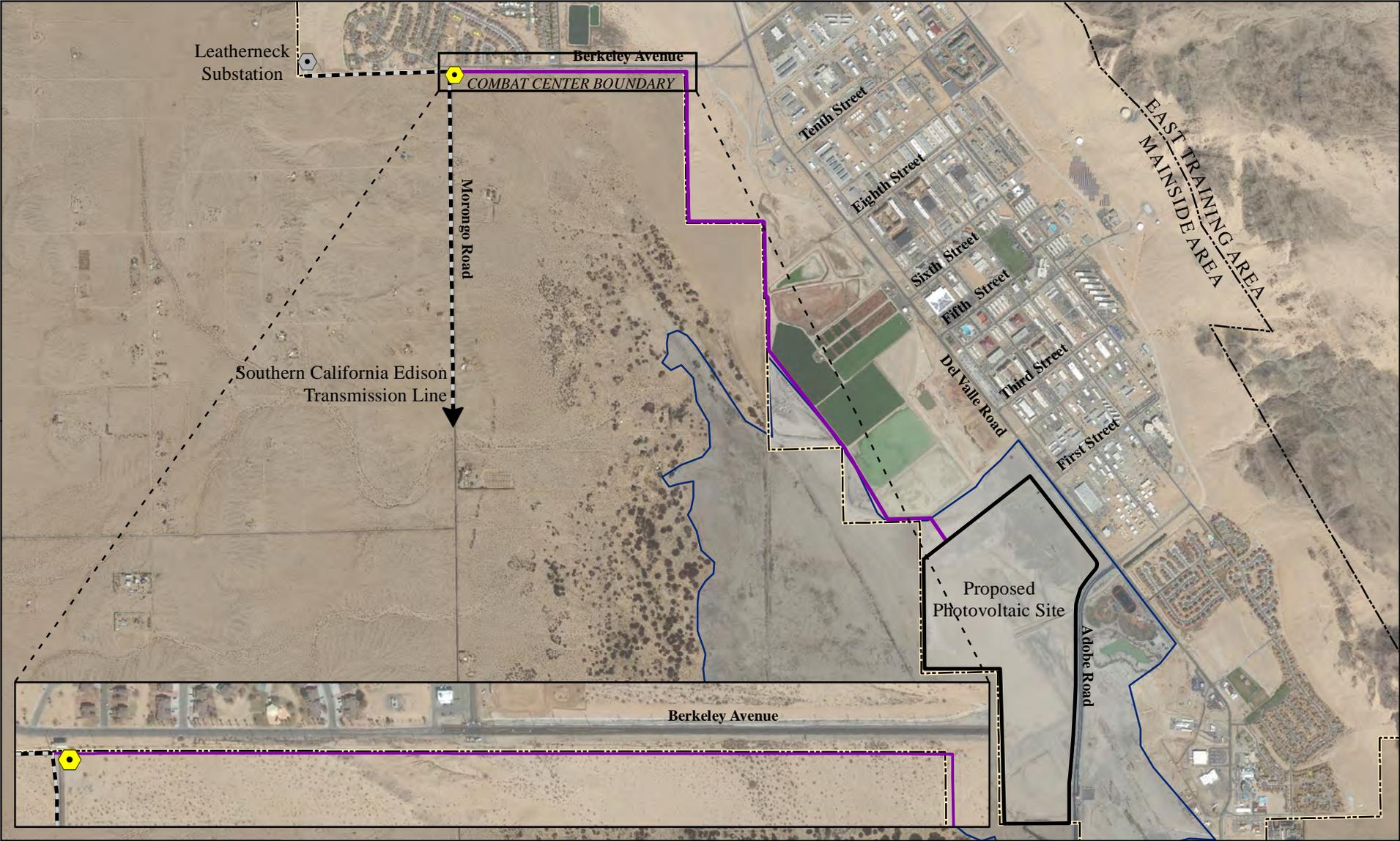
Legend

- Existing Southern California Edison 115-kV Transmission Line
- Leatherneck Substation
- Mesquite Dry Lake
- Combat Center Boundary

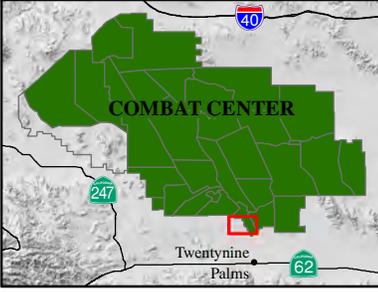
Figure 2-2
Alternative 2



Source: MCAGCC 2015a



2-8

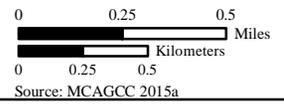


- Alternative 3 Proposed Features**
- 115-kV Transmission Line
 - ⬠ Switching/Metering Station
 - Photovoltaic Site

Legend

- Existing Southern California Edison 115-kV Transmission Line
- ⬠ Leatherneck Substation
- Mesquite Dry Lake
- Combat Center Boundary

Figure 2-3
Alternative 3



Source: MCAGCC 2015a

1 **2.3 NO ACTION ALTERNATIVE**

2 Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to
3 construct and operate a solar PV system at the Combat Center. The No Action Alternative represents the
4 status quo. The No Action Alternative does not meet the purpose and need with regard to meeting DoN
5 renewable energy goals; however, the DoN has analyzed it in this EA to provide a baseline against which
6 to measure environmental consequences of the action alternatives. The affected environment section of
7 Chapter 3 describes the No Action Alternative (existing conditions) for each resource area. The analysis
8 of the No Action Alternative in Chapter 3 assumes energy generation at the Combat Center would remain
9 status quo (no new solar PV construction, operations/maintenance, or decommissioning would occur) and
10 the PV site would continue to be vacant.

11 **2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

12 During the planning process, the Combat Center identified and then eliminated the following potential
13 action alternatives because they did not meet the purpose of and need for the project, the reasonable
14 alternative screening factors, or were not feasible otherwise.

15 **2.4.1 Other Locations at the Combat Center**

16 The 2012 study identified four areas that could potentially support large-scale PV development: the
17 proposed project area, an area southeast of the proposed project area on the opposite side of Adobe Road,
18 and two areas at the northwest end of Mainside along Del Valle Road (DoD ESTCP 2012). These areas
19 were further reviewed during the 2014 Feasibility Study (DoN and USMC 2015). Except for the
20 proposed project area, all areas identified would 1) impact existing or planned land uses, and therefore the
21 Combat Center’s mission, as identified in the Combat Center’s 2009 Master Plan (MCAGCC 2009); or 2)
22 have increased impacts to biological resources due to the occurrence of creosote bush scrub throughout
23 the site. As such, the other areas identified by the 2012 study would not meet the purpose and need for
24 the proposed project.

25 **2.4.2 Concentrated Solar Power Technology**

26 Concentrating solar power systems use mirrors to reflect and concentrate sunlight into receivers. These
27 receivers then convert the sunlight into thermal energy that is used to produce electricity through a steam
28 turbine. Consequently, these energy systems require large quantities of water. Parabolic troughs and
29 “solar power towers” are the most common forms of concentrated solar power technology. Concentrated
30 solar power technologies do not meet the purpose of the proposed project to build a PV system and also
31 have increased environmental impacts due to increased water use and more stringent grading
32 requirements. As such, concentrated solar power technology would not meet the purpose and need for the
33 proposed project.

34 **2.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

35 Table 2-1 provides a summary of environmental consequences for each alternative by resource area. As
36 described in Section 1.5.3, *Resources Not Analyzed in Detail*, several resources were not carried forward
37 for detailed analysis because the project would not affect, or would only negligibly affect, these resources.

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
<p>Biological Resources</p>	<p>Approximately 241 acres (ac) (97 hectares [ha]) of sparsely vegetated land on the eastern portion of Mesquite Dry Lake mapped as urban and playa habitat would be directly impacted. Wildlife and special status species, namely the desert tortoise and Mojave fringe-toed lizard, would potentially be exposed to direct and indirect impacts. However, with implementation of Avoidance and Impact Minimization Measures and Special Conservation Measures (SCMs) listed below, the Proposed Action/Alternative 1 is not likely to incidentally take or otherwise adversely affect desert tortoises, and effects to Mojave fringe-toed lizards and other wildlife species and their populations would be less than significant. Per the Basewide Biological Opinion, with the implementation of the proposed Impact Minimization Measures and SCMs, consultation with the United States Fish and Wildlife Service (USFWS) is not necessary. Monitoring of the solar photovoltaic (PV) site would be conducted to assess any potential negative effects to migratory birds and other species. Therefore, implementation of the Proposed Action/Alternative 1 would have less than significant impacts to biological resources.</p>	<p>Impacts to biological resources under Alternative 2 would be nearly identical to those under the Proposed Action/Alternative 1. Alternative 2 would be implemented in accordance with the same Avoidance and Impact Minimization Measures and SCMs as the Proposed Action/Alternative 1. Therefore, implementation of Alternative 2 would have less than significant impacts to biological resources.</p>	<p>Impacts to biological resources under Alternative 3 would be nearly identical to those under the Proposed Action/Alternative 1. Alternative 3 would be implemented in accordance with the same Avoidance and Impact Minimization Measures and SCMs as the Proposed Action/Alternative 1. Therefore, implementation of Alternative 3 would have less than significant impacts to biological resources.</p>	<p>Under the No Action Alternative, the Department of the Navy (DoN) would not enter into an agreement with a private partner to construct and operate a solar PV system at the Combat Center. Therefore, implementation of the No Action Alternative would have no impact to biological resources.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • BR-1. If construction or decommissioning activities occur during the recognized avian breeding season (1 February through 30 September), construction would occur in accordance with the Migratory Bird Treaty Act (MBTA) to avoid impacts to nesting migratory birds. Specifically, a biologist approved by the Combat Center’s Natural Resources and Environmental Affairs (NREA) office would survey the proposed project area for nesting birds prior to activities. If the biologist finds an active nest, construction workers would not directly or indirectly disturb the 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization</p>

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>nest or adjacent areas until the biologist determines the nest is no longer in use.</p> <ul style="list-style-type: none"> • BR-2. The private partner would construct all transmission towers, poles, and lines in accordance with the guidelines in <i>Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006</i> (Avian Power Line Interaction Committee [APLIC] 2006), or the most current version of the guidelines available at the time of construction, and in <i>Reducing Avian Collisions with Power Lines: The State of the Art in 2012</i> (APLIC 2012). • BR-3. An NREA-approved Authorized Biologist (AB) would be present during the initial groundbreaking during the construction and decommissioning phases and would conduct a clearance survey to ensure no tortoises are in the area. A tortoise exclusion fence would be constructed around the PV site and would remain in place for the duration of the construction and decommissioning phases. Temporary exclusion fencing would be built around the construction/decommissioning area for each steel tower that would support the new transmission lines. The NREA-approved AB would inspect the fence line of the tortoise exclusion fencing at least once every two weeks and within 24 hours of any rain event. • BR-4. Per the Basewide Biological Opinion, if a tortoise is found in the action area during ground breaking activities, all ground breaking activities must halt until NREA is contacted and NREA processes the tortoise and authorizes ground-breaking activities to resume. Following construction/decommissioning, the temporary tortoise fencing would be removed. • BR-5. An NREA-approved AB would be “on-call” during construction in case a desert tortoise is encountered. The DoN and private partner would provide NREA the names and qualifications of AB candidates, with ultimate approval coming from the USFWS and NREA. • BR-6. The private partner would designate a Field Contact Representative (FCR) once ground clearing is completed and the desert tortoise fence is installed. The FCR would be responsible for overseeing compliance with biological resources conservation measures. The FCR would be on-site during all project activities. The FCR would have the authority to halt construction, operation, or maintenance activities that are in violation of these measures. An NREA representative would make bi-weekly visits to ensure compliance. • BR-7. Before the start of construction activities, all personnel within the project work areas, including all participating agency employees, construction and maintenance personnel, and others who implement authorized actions, would receive worker training that includes the NREA-provided Environmental Awareness Training about desert tortoises, cultural resources, hazardous materials and hazardous wastes. • BR-8. All trash and food items generated by construction and maintenance activities would be promptly contained and regularly removed from the project area to reduce the attractiveness of the area to common ravens (<i>Corvus corax</i>) and other predators. Any trash receptacles used for waste storage would be equipped with latching/locking lids. The FCR would be responsible for ensuring that trash is removed regularly from the project area, and that the trash containers are kept securely closed when not in use. • BR-9. Vehicle speed limits within the project area and along access roads would not exceed 20 miles (32 kilometers [km]) per hour. Speed limits would be clearly marked by the private partner, and workers would be 			<p>measures/SCMs are proposed.</p>

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>made aware of these speed limits. Vehicles parked outside of exclusion fencing would be inspected underneath for desert tortoises immediately before the vehicle is moved. If a desert tortoise is found under a vehicle, the vehicle would not be moved, NREA would be contacted immediately, and the tortoise would be monitored for its safety until NREA processes the tortoise.</p> <ul style="list-style-type: none"> • BR-10. Should a dead or injured tortoise be located on-site at any time, the NREA would be notified immediately. In the case of an injury to a tortoise, NREA will contact USFWS immediately to decide the appropriate course of action. In the case of a dead tortoise, NREA will telephone and notify the USFWS within three days of the finding, and written notification within 15 days of the finding. Information to be provided to the USFWS would include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and any other pertinent information. • BR-11. The permanent security fence around the solar PV site would be contiguous to the permanent desert tortoise exclusion fence to prevent tortoises from burrowing under the fence. • BR-12. Monthly monitoring surveys would be conducted at the PV site by an NREA-approved biologist to assess use of the area by wildlife, vegetation changes, and potential bird/bat mortalities and/or injuries. In addition, project personnel working onsite would also record wildlife use of the project area. Results of the surveys and the data collected by project personnel would be provided to the NREA in quarterly reports for comments and recommendations to minimize impacts from continuing operations. • BR-13. If federally-listed species (e.g., desert tortoises) are observed in the project area during construction/decommissioning activities and/or during operation of the solar PV system, NREA will be notified immediately for further instructions, which may ultimately require USFWS instructions. The NREA would also be notified immediately if a dead or injured bird protected by the MBTA is found on-site at any time, or if any incidents occur that may affect the health and safety of project personnel (e.g., locating a rattlesnake within the project area). • BR-14. A revegetation and seeding plan approved by the NREA would be implemented following decommissioning activities to restore the site to pre-project conditions. • BR-15. An NREA-approved biological monitor would survey the solar PV site for mammals, reptiles, and/or nesting birds prior to 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-breeding season (October – January) prior to the start of decommissioning activities. If federally-listed species are found to occur in the solar PV site prior to the start of decommissioning activities, then activities will halt, NREA will be contacted, and the private partner would plan further action to avoid take of the listed species. • BR-16. The private partner would prepare and submit a Weed Management Plan to the NREA for review and approval. Once approved, the private partner would be responsible for implementing the Weed Management Plan. 			

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Geological Resources	<p>The Proposed Action/Alternative 1 is located in relatively flat areas that are not susceptible to landslides. The geology and topographic features of the project area would not be substantially altered and the project would not result in the loss of availability of a known mineral resource or fossils. With implementation of Avoidance and Impact Minimization Measures and SCMs listed below, erosion would be minimized during construction through adherence to the Combat Center’s Stormwater Pollution Prevention Plan (SWPPP) and facilities would be designed to accommodate poor drainage and high shrink-swell soils in Mesquite Dry Lake and potential geologic hazards. Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to geological resources.</p>	<p>Impacts under Alternative 2 would be similar to those described under the Proposed Action/Alternative 1, with the exception of impacts associated with the portion of the proposed Alternative 2 transmission line alignment that would be located along Mesquite Dry Lake. Therefore, with implementation of the proposed SCMs, Alternative 2 would have less than significant impacts to geological resources.</p>	<p>Impacts under Alternative 3 would be similar to those described under Alternative 2, except that the transmission line alignment located outside of the Combat Center (along Berkeley Avenue) would be required to comply with the California General Construction Permit, including preparation of separate SWPPP for this portion, as necessary. Therefore, with implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to geological resources.</p>	<p>Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to construct and operate a solar PV system at the Combat Center and construction activities would not occur. Baseline geological conditions would remain unchanged. No impacts to geological resources would occur as a result of implementation of the No Action Alternative.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • GR-1. The private partner would populate the Combat Center’s SWPPP prior to any construction activities and adhere to the Combat Center’s requirements related to stormwater pollution prevention and stormwater controls. The standard erosion control measures as identified in the Combat Center’s SWPPP would be utilized to reduce erosion during grading and construction activities. • GR-2. A geotechnical study would be performed by professional civil or geotechnical engineers or engineering geologists licensed in the State of California and would provide design and construction recommendations, as appropriate, to reduce potential impacts associated with soil conditions and geologic hazards. The project would incorporate the recommendations identified by the geotechnical study and the proposed facilities associated with the project would be designed to accommodate for soil conditions and geologic hazards. • GR-3. A Dust Abatement Plan would be prepared and dust control measures would be implemented. These dust control measures would minimize the amount of potential soil eroded and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1) wetting the soil during work; (2) the use of environmentally-friendly, biodegradable polymeric stabilizers and/or rock rip-rap to stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during conditions that prevent adequate dust control. 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are proposed.</p>

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
<p>Water Resources</p>	<p>There are no waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) located within the Proposed Action/Alternative 1 project area. Construction of transmission lines would not permanently alter or affect existing drainage patterns. Construction within the 100-year flood zone associated with Mesquite Dry Lake would be in compliance with Executive Order (EO) 11988, as amended. With implementation of Avoidance and Impact Minimization Measures and SCMs listed below, erosion would be minimized during construction through adherence to the Combat Center’s SWPPP and impacts to the Mesquite Dry Lake 100-year flood zone would be minimized. Transmission line poles and PV site posts would be designed such that they would not affect, nor would they be affected by, groundwater. The private partner would be responsible for identifying and contracting with one or more local water districts to purchase the water required for Alternative 1. Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to water resources.</p>	<p>Impacts under Alternative 2 would be similar to those described under the Proposed Action/Alternative 1. Therefore, with implementation of the proposed SCMs, Alternative 2 would have less than significant impacts to water resources.</p>	<p>Impacts under Alternative 3 would be similar to those described under the Proposed Action/Alternative 1. In addition, the transmission line alignment located outside of the Combat Center (along Berkeley Avenue) would be required to comply with the California General Construction Permit, including preparation of separate SWPPP for this portion, as necessary. Therefore, with implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to water resources.</p>	<p>Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to construct and operate a solar PV system at the Combat Center and construction activities would not occur. Baseline conditions of water resources, as described in Section 3.3.3, would remain unchanged. No impacts to water resources would occur as a result of implementation of the No Action Alternative.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • WR-1. The private partner would populate the Combat Center’s SWPPP prior to any construction activities and adhere to the Combat Center’s requirements related to stormwater pollution prevention and stormwater controls. The standard erosion control measures as identified in the Combat Center’s SWPPP would be utilized to reduce erosion during grading and construction activities. • WR-2. To minimize impacts within a 100-year flood zone, all excess soils and construction debris would be removed from the flood zone following construction. In addition, project facilities would be decommissioned and 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are</p>

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	removed and the 100-year flood zone would be restored to pre-construction conditions at the end of the agreement term. <ul style="list-style-type: none"> • WR-3. To reduce impacts to groundwater, reclaimed water would be used, as much as possible, for dust control. • WR-4. To reduce water requirements for dust control, it is expected that environmentally -friendly, biodegradable polymeric stabilizers and/or rock rip-rap would be used to stabilize unpaved roads. • WR-5. Transmission line poles and PV site posts would be designed such that they would not affect, nor would they be affected by, groundwater. 			proposed.
Cultural Resources	No National Register of Historic Places (NRHP)-eligible archaeological, architectural, or traditional cultural resources have been identified in the area of potential effect. As such, no cultural resources occur within the area of potential effect. Therefore, with implementation of the proposed monitoring requirements, and having received concurrence from the California State Historic Preservation Office (SHPO) (Appendix D), implementation of the Proposed Action/Alternative 1 would not affect cultural resources and impacts would be less than significant.	Subject to the survey results, impacts to cultural resources under Alternative 2 would be similar to those described above for the Proposed Action/ Alternative 1. Therefore, with implementation of the proposed monitoring requirements, and having received concurrence from the SHPO (Appendix D), implementation of the Alternative 2 would not affect cultural resources and impacts would be less than significant.	Subject to the survey results, impacts to cultural resources under Alternative 3 would be similar to those described above for the Proposed Action/ Alternative 1. Therefore, with implementation of the proposed monitoring requirements, and having received concurrence from the SHPO (Appendix D), implementation of the Alternative 3 would not affect cultural resources and impacts would be less than significant.	Under the No Action Alternative, the proposed PV, transmission line, and associated infrastructure would not be constructed, and existing conditions would remain unchanged. Therefore, there would be no impacts to cultural resources with implementation of the No Action Alternative.
	Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3: <ul style="list-style-type: none"> • CR-1. The private partner would be responsible for preparing and implementing a Monitoring and Discovery Plan prior to construction, and archaeological monitoring would be required during all ground disturbing activities. • CR-2. If cultural resources are found during ground-disturbing activities associated with this project, work would stop and the NREA Cultural Resources Manager would be contacted immediately. 			Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative: No avoidance and impact minimization measures/SCMs are proposed.
Air Quality	Estimated emissions associated with the Proposed Action/ Alternative 1 would be below the <i>de minimis</i> levels for Clean Air Act (CAA) Conformity. Therefore, with implementation of the proposed SCMs, the	Estimated emissions associated with Alternative 2 would be below the <i>de minimis</i> levels for CAA Conformity. Therefore, with implementation of the	Estimated emissions associated with Alternative 3 would be below the <i>de minimis</i> levels for CAA Conformity. Therefore, with implementation of the	Under the No Action Alternative, no construction activities would occur, and the existing air quality

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>Proposed Action/Alternative 1 would have less than significant impacts to air quality.</p>	<p>proposed SCMs, Alternative 2 would have less than significant impacts to air quality.</p>	<p>proposed SCMs, Alternative 3 would have less than significant impacts to air quality.</p>	<p>environment would not be affected. Therefore, there would be no impacts to air quality.</p>
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • AQ-1. Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within design standards. • AQ-2. A Dust Abatement Plan would be prepared and dust control measures would be implemented. These dust control measures would minimize the amount of potential soil eroded and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1) wetting the soil during work; (2) the use of environmentally-friendly and biodegradable polymeric stabilizers and/or rock rip-rap to stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during conditions that prevent adequate dust control. • AQ-3. Construction vehicle engines (non-road diesel engines) would conform to U.S. Environmental Protection Agency Tier 4 emission standards, when applicable. 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are proposed.</p>
<p>Utilities</p>	<p>The Proposed Action would be sited within a reasonable proximity to interconnection facilities, and the energy generated by the Proposed Action would contribute to the Secretary of the Navy’s (SECNAV’s) initiative to generate power that would go into the civilian grid, a beneficial impact. Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to utilities.</p>	<p>Under Alternative 2, utilities impacts would be similar to but less than those described under the Proposed Action/ Alternative 1, since the proposed transmission line under Alternative 2 would be located away from existing utilities for the majority of the proposed transmission route. This would also reduce the amount of construction work involving operational, or “hot,” power transmission lines. Therefore, with implementation of the proposed SCMs, Alternative 2 would have less than significant impacts to utilities.</p>	<p>Under Alternative 3, utilities impacts would be similar to but less than those described under the Proposed Action/ Alternative 1, since the proposed transmission line under Alternative 3 would be located away from existing utilities for the majority of the proposed transmission route. This would also eliminate the need for construction work involving operational, or “hot,” power transmission lines. Therefore, with implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to utilities.</p>	<p>Under the No Action Alternative, the proposed PV, transmission line, and associated infrastructure would not be constructed, and existing conditions would remain unchanged. Therefore, there would be no impacts to utilities with implementation of the No Action Alternative.</p>

Table 2-1. Summary of Environmental Consequences

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	<p>Avoidance and Impact Minimization Measures/SCMs included with the Proposed Action/Alternative 1, Alternative 2, and Alternative 3:</p> <ul style="list-style-type: none"> • UT-1. To avoid design and construction conflicts with the Combat Center’s internal utility network, a utility investigation would be conducted to obtain the exact depth and location of underground utilities (i.e., natural gas lines, wastewater lines, potable and non-potable water lines). • UT-2. Special consideration would be required for transmission pole replacement at the front of the wastewater detention ponds and during PV site construction near the existing overhead line. • UT-3. To avoid interrupting Combat Center operations, work along the entire transmission line would be completed while the existing power lines are operational, or “hot.” • UT-4. The private partner would be responsible for: <ul style="list-style-type: none"> ○ adhering to conditions for application processes established by the California Independent System Operators, Southern California Edison (SCE) (the local electrical utility), Federal Energy Regulatory Commission, and other entities, which include an application for interconnection, a systems impact study, and a facility study; and ○ off-installation utility upgrades required by the local utility for carrying the PV power, if necessary. • UT-5. The private partner would be responsible for obtaining the necessary water. It is expected that this water would come from one or more of the three nearby water districts (Twentynine Palms Water District, Joshua Tree Water District, and/or the Hi-Desert Water District). The private partner would also be responsible for shipping the water to the project site via truck. 			<p>Avoidance and Impact Minimization Measures/SCMs included with the No Action Alternative:</p> <p>No avoidance and impact minimization measures/SCMs are proposed.</p>

Notes: BR = Biological Resources; GR = Geological Resources; WR = Water Resources; CR = Cultural Resources; AQ = Air Quality; UT = Utilities

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1 **CHAPTER 3**
2 **AFFECTED ENVIRONMENT AND ENVIRONMENTAL**
3 **CONSEQUENCES**

4 NEPA, CEQ regulations, and DoN and USMC procedures for implementing NEPA specify that an EA
5 should only focus on those environmental resource areas potentially subject to impacts. In addition, the
6 level of analysis should be commensurate with the anticipated level of impact. Accordingly, the
7 discussion of the affected environment and associated environmental analysis presented herein focuses on
8 biological resources, geological resources, water resources, cultural resources, air quality, and utilities.
9 Conversely, the following resources were not carried forward for analysis in this EA, as potential impacts
10 were considered to be negligible or non-existent.

11 **Airspace.** The Proposed Action would not affect airspace because it would have an anti-reflective coating
12 that would improve light absorption and reduce or eliminate the potential for glint and glare impacts.
13 Furthermore, the proposed project would be located outside of the established Special Use Airspace,
14 Class-D Restricted Airspace, and restricted areas. Therefore, no significant impacts to airspace would
15 occur with implementation of the Proposed Action.

16 **Land Use.** Although the Proposed Action would be partially located within the Twentynine Palms city
17 boundary (see Figure 1-3), the Proposed Action would be located on federal land and would not change,
18 modify, or conflict with existing land uses, including those identified in the Combat Center's Master Plan
19 (MCAGCC 2009). Furthermore, Combat Center selected the project site because it is compatible with
20 adjacent land use.

21 The Twentynine Palms City Council passed Ordinance 249 in January 2013 to prohibit the development
22 of commercial solar farms within city boundaries. Ordinance 249 was passed in response to a variety of
23 concerns raised by residents about the potential adverse impacts that commercial solar development might
24 have on the City of Twentynine Palms. Concerns included the potential for such projects to impact the
25 City's rural and scenic character, small town sense of community, economy, recreational and cultural
26 opportunities, tax revenue, water resources, biological resources, air quality, health and safety, and overall
27 quality of life (Basin Energy Assessment Team 2013).

28 Although the Proposed Action is not required to comply with City of Twentynine Palms Ordinance 249
29 because it would be located on federal land, it would generally not affect the concerns raised by local
30 residents for several reasons. Since the Proposed Action is located entirely on federal land and access to
31 the site by the general public is already restricted, there would be no impacts to off-installation land use,
32 recreational opportunities, cultural opportunities, or tax revenue. Furthermore, since the Proposed Action
33 would be located on the edge of the City of Twentynine Palms's boundary, adjacent to industrialized
34 Mainside, there would be little to no impact to the City's rural character and small town sense of
35 community. Therefore, no significant impacts to land use would occur with implementation of the
36 Proposed Action. Potential impacts to the local economy, tax revenue, water resources, biological
37 resources, air quality, and health and safety are discussed elsewhere in this chapter.

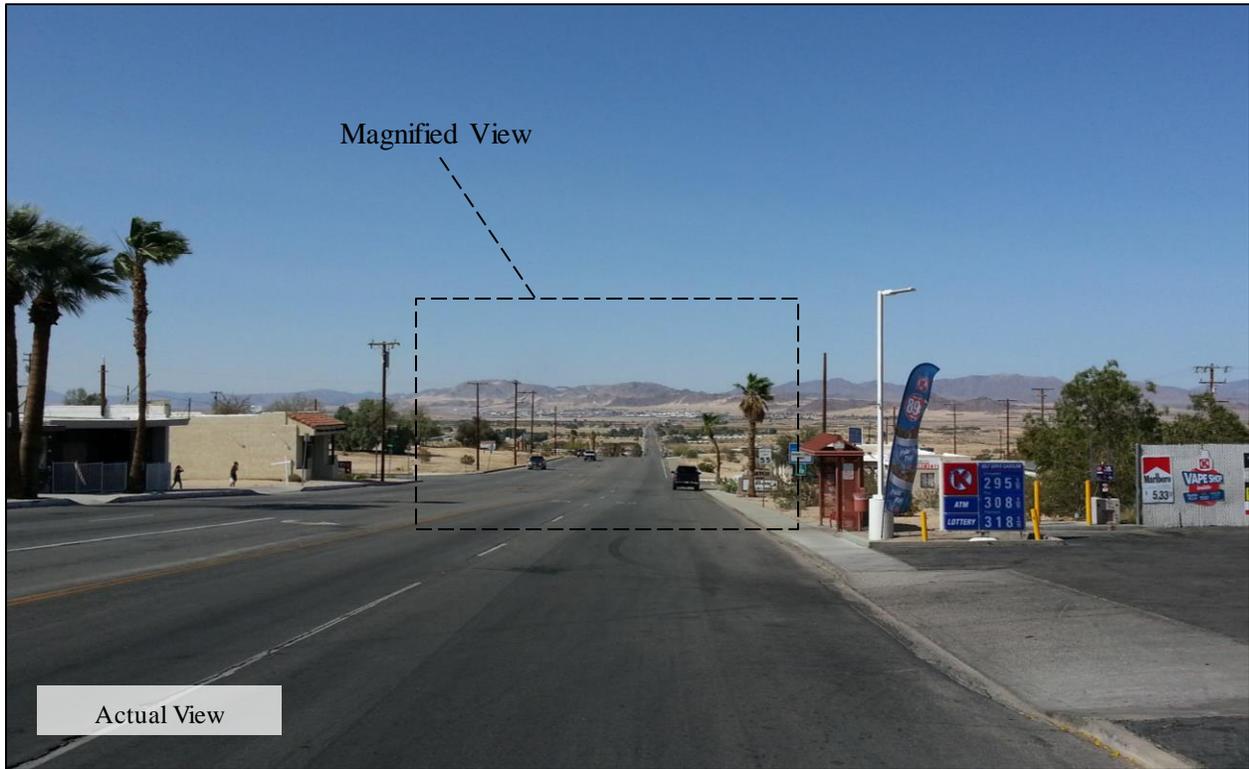
38 **Aesthetics.** The Proposed Action is not associated with a scenic vista or visual resource. While the
39 nearest potential receptors would normally be the most sensitive due to proximity, the adjacent land
40 outside of the Combat Center is sparsely populated (with no more than four residences located within
41 0.6 mile [1.0 km] of the Proposed Action site) and the Proposed Action would be partially or fully

1 screened to these residences by topography or vegetation. Due to the area's topography, people traveling
2 north on Adobe Road at 2 Mile Road would have the greatest view of the proposed project, but at this
3 distance (approximately 4.0 miles [6.4 km] from the southern edge of the project area), the project would
4 blend in with the existing development shown in Figure 3-1. Therefore, no significant impacts to
5 aesthetics would occur with implementation of the Proposed Action.

6 **Recreation.** The Proposed Action would be designed such that the adjacent on-installation running track
7 would not be affected, and access to the proposed project area by the public is already restricted. As such,
8 the Proposed Action would not affect recreational opportunities within or adjacent to the project area.
9 Therefore, no significant impacts to recreation would occur with implementation of the Proposed Action.

10 **Hazardous Materials and Wastes.** The Proposed Action would not affect Munitions Response Program
11 sites because none are located within the project area. The Proposed Action would not affect any current
12 Installation Restoration sites, and the construction of the Proposed Action on closed Installation
13 Restoration sites within the project footprint would not pose a hazard to construction workers. If either
14 Alternative 2 or Alternative 3 were selected, the transmission line would be designed to span Installation
15 Restoration Site 10 to avoid ground disturbance in this area. In the unlikely event that avoiding the site is
16 not feasible, any excavated soil would be tested for waste characteristics and disposed of off-site at an
17 appropriate landfill based upon the test results. Additionally, any backfill would be from clean import fill
18 that has been sampled to ensure that there are no contaminants. Hazardous materials used during the
19 construction phase would consist primarily of fuels and hydraulic fluid for vehicles and equipment. To
20 minimize the potential for environmental impacts, contractors would be required to keep their equipment
21 in good condition to prevent accidental spills/releases of fuels and hydraulic fluid on the job site and
22 would also be required to have spill kits onsite to quickly contain any spill that might occur. As described
23 in Section 3.3.4, *Environmental Consequences for Water Resources*, construction activities are required to
24 populate the Combat Center's SWPPP and adhere to the Combat Center's requirements related to storm
25 water pollution prevention. Small amounts of grease, lubricants, and paints would be used in the
26 assembly of the solar PV system; these materials would be consumed in use. Contractors would be
27 required to comply with all federal, state, county, local, DoD, DoN, USMC, and Combat Center
28 environmental requirements, including those for the management of hazardous materials and hazardous
29 waste, and to properly containerize, label, and dispose of all hazardous waste resulting from project
30 activities. No polychlorinated biphenyls (PCBs) would be used in the construction of any of the project
31 components (e.g., pole line transformers and switchgear) in the new switching/metering station on
32 Berkeley Avenue. During the operational phase, hazardous material use would be minimal, mostly
33 consisting of aerosol solvents and lubricants for equipment maintenance. These materials would also be
34 consumed in use, and equipment maintenance personnel would be required to comply with all federal,
35 state, county, local, DoD, DoN, USMC, and Combat Center environmental requirements, including those
36 for hazardous waste. Therefore, no significant impacts with respect to hazardous materials and wastes
37 would occur with implementation of the Proposed Action.

38 **Transportation.** The existing transportation network leading to the project site and within the Combat
39 Center, including Adobe Road and Del Valle Road, operates at adequate capacity (USMC 2012). The
40 proposed PV site and the majority of the Alternative 1 transmission line route are located along Adobe
41 Road and Del Valle Drive. Adobe Road, a north-south, four lane roadway that links Mainside to the City
42 of Twentynine Palms and State Route 62, is the primary transportation route to and from the installation.
43 All visitors and vehicles with two or more axles must enter and exit via Adobe Road, where the
44 installation's Main Gate is located. Adobe Road also serves as the principal arterial for military convoys
45 moving off of the installation to access peripheral training areas.



1 **Figure 3-1. Existing Development Near the Proposed PV Site As Seen From 2 Mile Road At**
2 **Adobe Road (4.0 miles [6.4 km])**

1 The circulation system of Mainside consists of a small urban grid network of roadways, and Del Valle
2 Road is the primary road servicing the Mainside grid. The intersection of Adobe Road and Del Valle
3 Road is the key intersection within Mainside, with an average daily traffic volume of approximately
4 14,500 (USMC 2012).

5 Under the Proposed Action, the private partner would prepare and submit a traffic plan to the Combat
6 Center's traffic engineer for review and approval to ensure that the temporary increase in traffic
7 associated with worker trips and the delivery of equipment, materials, and water during construction and
8 decommissioning activities, as well as worker and water truck trips during operations, would result in no
9 more than a minor impact to traffic. During the operational phase, there would be no impact to
10 transportation, as the maintenance activities would only require a small number of vehicle trips per year.
11 Therefore, no significant impacts to transportation would occur with implementation of the Proposed
12 Action.

13 **Noise.** Construction activities would require the use of heavy equipment for site preparation and
14 development that would result in increased noise levels within the immediate area. However, the
15 proposed solar PV site, the majority of the Alternative 1 transmission line route, and portions of the
16 transmission line route under Alternatives 2 and 3, are located within a noisy area due to the proximity to
17 Adobe Road, Del Valle Drive, and the Combat Center's Strategic Expeditionary Landing Field (SELF).
18 Adobe Road and Del Valle Drive are routinely traversed by heavy equipment and tanks that can produce
19 75 decibels (dB) at 100 ft (30 m). All potential sensitive receptors near the proposed PV site at the
20 Combat Center are located on the opposite side of Adobe Road or Del Valle Drive. Moderate noise levels
21 between 60 dB and 65 dB reach the northwest portions of Mainside, including Berkeley Avenue, due to
22 the SELF (MCAGCC 2009).

23 Adjacent land outside of the Combat Center is sparsely populated. Potential off-installation sensitive
24 receptors include no more than four residences within 0.6 mile (1.0 km) of the proposed PV site, the
25 nearest of which is more than 0.2 mile (0.3 km) from the southernmost edge of the proposed project
26 boundary. The nearest off-installation sensitive receptor is also 0.2 mile (0.3 km) from Adobe Road.

27 Construction and decommissioning noise generated by the Proposed Action would be temporary, limited
28 to regular working hours, well removed from off-installation sensitive receptors, and negligible when
29 compared to the current noise environment. Recurring operational/maintenance activities would generate
30 negligible amounts of noise. Therefore, no significant impacts to noise would occur with implementation
31 of the Proposed Action.

32 **Socioeconomics and Environmental Justice.** EO 12898, *Federal Actions to Address Environmental*
33 *Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider
34 human health and environmental conditions in minority and low-income communities. The Proposed
35 Action would occur within the boundaries of a military installation, and the construction and operation
36 activities associated with the Proposed Action would not result in a permanent change to population,
37 ethnicities, or age distribution. The creation of up to 150 construction-related jobs for up to two years
38 would provide a temporary benefit to the local economy. Furthermore, off-installation land near
39 Mainside is sparsely populated and has a low value; as such, impacts to land value would be negligible.
40 Moreover, since the proposed PV site would be located entirely on federal land, there would be no change
41 to local tax revenue. As such, there would be no disproportionately high environmental or health impacts
42 on low-income or minority populations from implementation of the Proposed Action. Therefore, no
43 significant impacts to socioeconomics and environmental justice would occur with implementation of the

1 Proposed Action, and the Proposed Action would comply with EO 12898, *Federal Actions to Address*
2 *Environmental Justice in Minority and Low-income Populations*.

3 **Public Health and Safety/Protection of Children.** EO 13045, *Protection of Children from*
4 *Environmental Health Risks and Safety Risks*, helps ensure that federal agencies' policies, programs,
5 activities, and standards address environmental health and safety risks to children. The Proposed Action
6 would be sited in accordance with established land use development guidelines addressing safety,
7 functionality, and environmental protection zones. The project site is located in an industrial area of
8 Mainside that is removed from population centers and public facilities and where access is controlled.
9 Construction areas would also be fenced to prevent access by unauthorized persons, including children.

10 Ground disturbance during construction could result in the release of dust, which may carry spores from
11 *Coccidioides immitis*, the fungus that causes coccidioidomycosis that is also known as Valley Fever. The
12 number of documented cases in the United States has been steadily increasing over the past few years.
13 There were over 20,000 reported cases in 2011, and the Center for Disease Control estimates that an
14 additional 150,000 cases go undiagnosed each year. About 25% of all cases occur in California (Center
15 for Disease Control 2012). In 2011, there were 75 cases of Valley Fever in San Bernardino County, an
16 incidence rate of 3.4 cases per 100,000 people (San Bernardino County Department of Public Health
17 2013). The Proposed Action would implement dust control measures and the preparation of a Dust
18 Abatement Plan. These dust control measures would minimize the amount of spore-laden soil eroded
19 and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1)
20 wetting the soil during work; (2) the use of environmentally-friendly, biodegradable polymeric stabilizers
21 and/or rock rip-rap to stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during
22 conditions that prevent adequate dust control.

23 Operation of the proposed project would not pose a risk to public health or safety, and no changes to
24 existing safety procedures or guidelines would occur. Therefore, no significant impacts to public health
25 and safety, schools, or to the protection of children would occur with implementation of the Proposed
26 Action, and the Proposed Action would comply with EO 13045, *Protection of Children from*
27 *Environmental Health Risks and Safety Risks*.

28 **3.1 BIOLOGICAL RESOURCES**

29 **3.1.1 Definition of Resource**

30 Biological resources include plants and animals and the habitats in which they occur. Biological
31 resources are further subdivided into Plant Communities, Wildlife, and Special Status Species. Special
32 consideration is given to bird species protected under the Migratory Bird Treaty Act (MBTA) and EO
33 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special Status Species include
34 federally-listed, proposed, and candidate threatened, and endangered plant and wildlife species, state of
35 California threatened and endangered species, and species of concern as recognized by state or federal
36 agencies.

37 **3.1.2 Regulatory Framework**

38 Biological resources occurring in the proposed 241-ac (98-ha) solar PV site and transmission line routes
39 that would potentially be impacted by project activities are protected by, and managed in accordance
40 with, the following statutory and executive requirements:

- 41 • Endangered Species Act (16 USC §§ 1531-1599);
- 42 • MBTA (16 USC §§ 703-712) and EO 13186;

- 1 • EO 11990 – *Protection of Wetlands*; and
- 2 • EO 13112 – *Invasive Species*.

3 3.1.3 Affected Environment

4 3.1.3.1 Plant Communities

5 The proposed solar PV site is located on the eastern portion of Mesquite Dry Lake, a desert playa that
6 ponds infrequently except following major storm events. The site consists of vacant, previously disturbed
7 land that was formerly used as an airfield. The majority of the solar PV site is unvegetated and is mapped
8 as urban and playa, dry lake bed with sparse vegetation, as presented on Figure 3-2 (MCAGCC 2015a).
9 Playas fill after heavy rains or thunderstorms from direct precipitation and ephemeral surface flow from
10 shallow drainages. Low infiltration rates in the playas are due to clay soils. Evaporation of playa waters
11 results in alkali salts on the playas (MCAGCC 2012a).

12 The Proposed Action/Alternative 1 transmission line corridor is 2.6 miles (4.2 km) long and consists of
13 creosote bush shrubland, playa, and urban areas (Figure 3-2). Creosote bush shrubland is sparsely
14 vegetated and dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*),
15 with variable cover of annuals depending on rainfall (MCAGCC 2009, 2012a). The majority of the
16 Proposed Action/Alternative 1 transmission line corridor is within urban areas adjacent to a sewage
17 treatment plant and a residential housing area.

18 The Alternative 2 transmission line corridor is 2.9 miles (4.7 km) long and also consists of creosote bush
19 shrubland, playa, and urban areas.

20 The Alternative 3 transmission line corridor is also 2.9 miles (4.7 km) long, but at Berkeley Avenue the
21 new transmission line would exit the Combat Center and be located outside of the Combat Center.

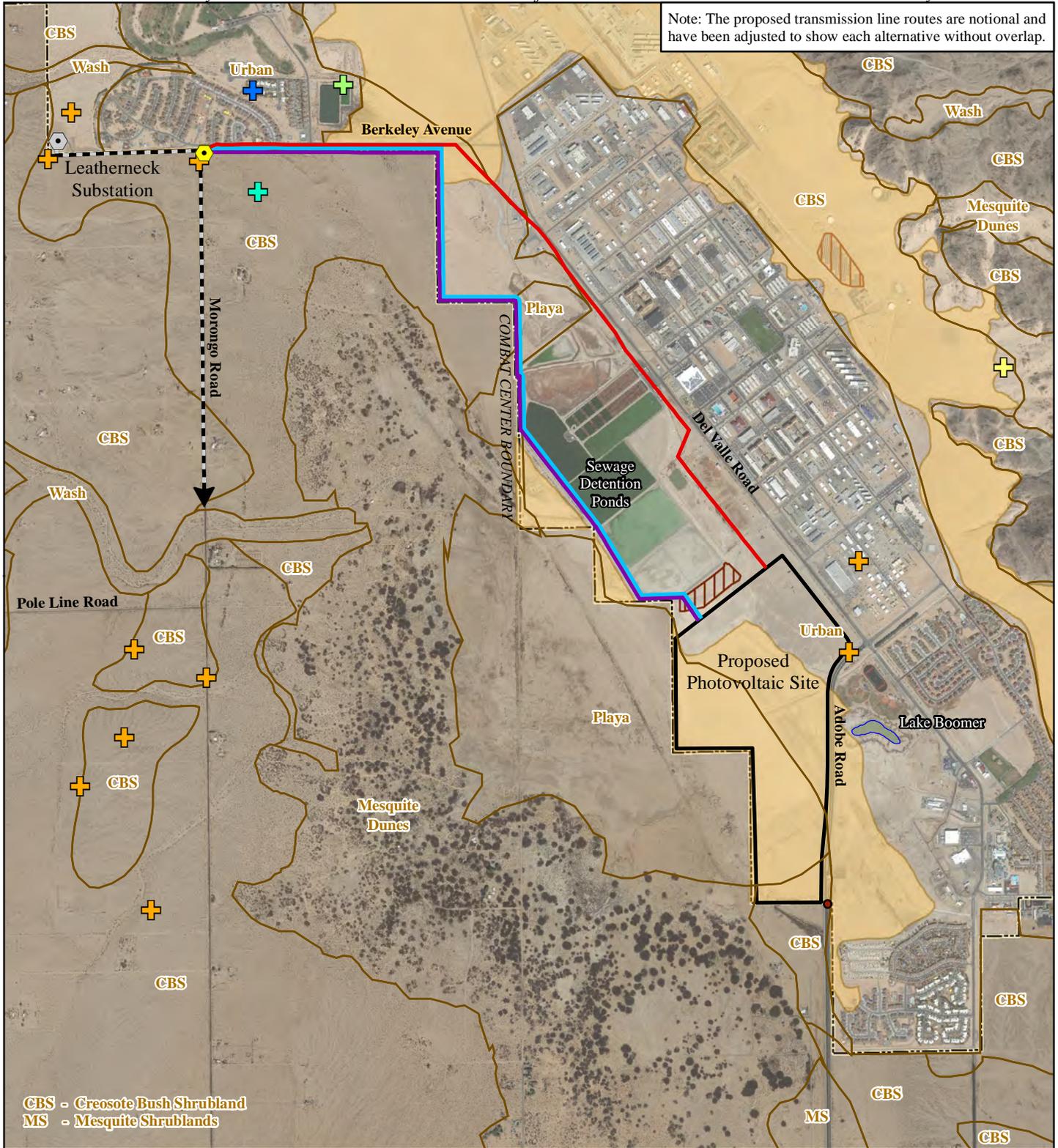
22 3.1.3.2 Wildlife

23 The proposed solar PV site and transmission line corridor(s) would likely support side-blotched lizard
24 (*Uta stansburiana*); small mammals including kangaroo rats (*Dipodomys* spp.) and pocket mice
25 (*Chaetodipus* spp.); and migratory and resident birds including house finch (*Carpodacus mexicanus*),
26 common raven (*Corvus corax*), great-horned and barn owls (*Bubo virginianus* and *Tyto alba*), and greater
27 roadrunner (*Geococcyx californianus*) (CaliforniaHerps.com 2014; MCAGCC 2012a; USMC 2010a).
28 Mallards (*Anas platyrhynchos*), American coots (*Fulica americana*), and other migratory birds that are
29 likely to use Lake Boomer and the sewage detention ponds will fly over the project area (see Figure 3-2).
30 When filled with water, Mesquite Dry Lake attracts waterfowl (MCAGCC 2012a). Shorebirds (e.g.,
31 killdeer [*Charadrius vociferus*], American avocet [*Recurvirostra americana*], and black-necked stilt
32 [*Himantopus mexicanus*]) have the potential to forage in the playa of the proposed solar PV site after a
33 large rain event. All of the aforementioned bird species are protected under the MBTA.

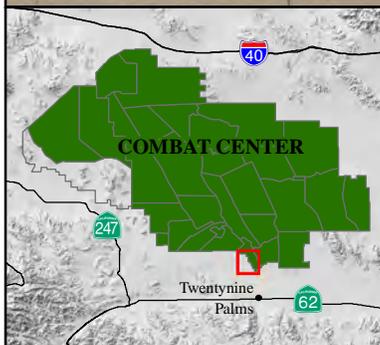
34 3.1.3.3 Special Status Species

35 A California Department of Fish and Wildlife (CDFW) California Natural Diversity Database query for
36 known occurrences of special-status species in the vicinity of the project area was conducted
37 (CDFW 2014a). Based on the query, the habitat that occurs within the project area, and past projects and
38 surveys in the area, the only federally-listed wildlife species with the potential to occur in the project area
39 is the Agassiz's desert tortoise (*Gopherus agassizii*).

Note: The proposed transmission line routes are notional and have been adjusted to show each alternative without overlap.



CBS - Creosote Bush Shrubland
MS - Mesquite Shrublands



Legend

- Combat Center Boundary
- ⊙ Leatherneck Substation
- ▭ Land Vegetation
- Existing 115-kV Transmission Line
- Proposed Features**
- Alternative 1 Transmission Line
- Alternative 2 Transmission Line
- Alternative 3 Transmission Line
- ⬡ Switching/Metering Station
- ▭ Photovoltaic Site
- ▭ Previously Approved Solar Energy Development
- ▭ Mojave Fringe-toed Lizard Habitat
- Special Status Species**
- + LeConte's thrasher
- + Loggerhead shrike
- + Mojave fringe-toed lizard
- + Prairie falcon
- + Desert Tortoise

Figure 3-2
Biological Resources in the Vicinity of the Proposed Photovoltaic Site and Associated Transmission Lines at Mainside

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers

Sources: USMC 2010a, USMC 2012, MCAGCC 2015a

1 The proposed solar PV site and transmission line corridor is adjacent to Agassiz's desert tortoise foraging
2 and burrowing habitat (Figure 3-2). The proposed solar PV site consists of hard clay soil and compacted
3 urban soil that is not suitable for digging burrows. The majority of the transmission line corridors are
4 within urban areas. Although the desert tortoise occurs nearby, the species is almost never found on
5 playas and tends to avoid them (MCAGCC 2014a).

6 Tortoises have been spotted adjacent to and near both the PV site and western portion of the transmission
7 line, especially near Berkeley Road (see Figure 3-2). A desert tortoise was hit and killed by a vehicle in
8 the developed area northeast of the proposed PV site, and one desert tortoise has been observed on several
9 occasions near Leatherneck Substation (MCAGCC 2014a, 2015a). Other tortoises have been observed
10 approximately 1.5 miles (2.4 km) west of the proposed solar PV site (see Figure 3-2) (USMC 2010a). In
11 June 2015, a tortoise was struck and killed on Morongo Road, south of Pole Line Road (see Figure 3-2)
12 (MCAGCC 2015c). Tortoises in the vicinity of the project area could use the project area for dispersal or
13 other overland movement.

14 The Mojave fringe-toed lizard (*Uma scoparia*), a California species of special concern, is likely to occur
15 in the project area. Approximately 180.5 ac (73.0 ha) of the project area is mapped as Mojave fringe-toed
16 lizard habitat (MCAGCC 2012a; MCAGCC 2015a). Mojave fringe-toed lizard habitat consists of
17 sparsely-vegetated areas with fine wind-blown sand (CaliforniaHerps.com 2014; Jones and Lovich 2009).

18 Three U.S. Fish and Wildlife (USFWS) birds of conservation concern, loggerhead shrike (*Lanius*
19 *ludovicianus*) (CDFW species of special concern), prairie falcon (*Falco mexicanus*) (CDFW watch list
20 species), and Le Conte's thrasher (*Toxostoma lecontei*) (CDFW species of special concern), have been
21 documented near the transmission line corridor (see Figure 3-2) (MCAGCC 2015a; CDFW 2014a,
22 2014b).

23 No special status plants are known to occur in the project area (California Native Plant Society 2015;
24 CDFW 2014a; MCAGCC 2015a).

25 **3.1.4 Environmental Consequences**

26 The significance of potential impacts to biological resources is based on: (1) the importance (i.e., legal,
27 commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that
28 would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed
29 activities; and (4) the duration or ecological ramifications of the impact(s). Impacts to biological
30 resources would be significant if species or habitats of concern were adversely affected over relatively
31 large areas or if disturbances caused reductions in population size or distribution of a special status
32 species.

33 Avoidance and Impact Minimization Measures and SCMs listed in Table 2-1 would be implemented to
34 minimize impacts to biological resources under the Proposed Action/Alternative 1, Alternative 2, and
35 Alternative 3.

36 **3.1.4.1 Proposed Action/Alternative 1**

37 Construction

38 Under the Proposed Action/Alternative 1, approximately 241-ac (97-ha) of sparsely vegetated land on the
39 eastern portion of Mesquite Dry Lake mapped as urban and playa habitat would be converted to a solar
40 PV system. The urban and playa habitats currently provide marginal habitat for wildlife (for which better
41 habitat is generally available in the vicinity) and do not contain suitable burrowing habitat for desert
42 tortoises. These areas represent poor-quality habitat that would not support maintenance or recovery of

1 the desert tortoise and would likely not support an individual tortoise. No tree removal would be required
2 for construction of the solar PV system.

3 Construction activities would likely have minimal impacts on wildlife populations. Wildlife in the
4 vicinity of construction activities would be exposed to aural and visual disturbance from human presence
5 and construction equipment. Use of construction equipment and vehicles could potentially crush and/or
6 injure wildlife, primarily burrow-dwelling animals, and species with slower or constrained mobility (e.g.,
7 snakes and lizards). More mobile species, like birds and large mammals, are likely to relocate and utilize
8 an adjacent habitat area if they are present during construction. However, because of the relative lack of
9 suitable wildlife habitat in the potential PV site, the likelihood of such impact is relatively low.

10 Special status wildlife species would be subject to the same impacts described in the above paragraph.
11 The Proposed Action could potentially result in permanent and temporary impacts to special status
12 wildlife species. Permanent impacts to special status wildlife species could include: habitat
13 fragmentation, where removal of habitat elements results in isolated patches of formerly connected
14 habitat; edge effects that could increase the potential for non-native plant and opportunistic species
15 invasion (e.g., common raven, coyote, and feral dog); alteration of hydrology, runoff, and sedimentation,
16 which may cause alterations to plant species composition and habitats used by special-status wildlife
17 species. Avoidance and Impact Minimization Measures and SCMs listed in Table 2-1 would lessen the
18 significance of these impacts.

19 Suitable Mojave fringe-toed lizard habitat is located near much of the solar PV site and transmission
20 corridors, and the potential for occurrence there is moderate (Figure 3-2). In addition to habitat loss,
21 construction activities may result in temporary displacement of individuals, injury or mortality by
22 equipment or vehicles, and increased susceptibility to predation during construction. Because the species
23 lays its eggs in the sand (Hollingsworth and Beaman 1998), construction activities may destroy eggs that
24 are within the project area during the breeding season (May – July). Compaction of sandy areas due to
25 construction and vehicular traffic may degrade habitat suitability for this fossorial species. Avoidance
26 and Impact Minimization Measures and SCMs listed in Table 2-1 (e.g., BR-8, BR-9, BR-10, and BR-15)
27 would reduce impacts to the Mojave fringe-toed lizard.

28 Although desert tortoises have the potential to transit through the project area, the proposed solar PV site
29 consists of hard clay soil and compacted urban soil that is not suitable for digging burrows. The majority
30 of the transmission line corridors are within urban areas. Although the desert tortoise occurs nearby, the
31 species is almost never found on playas and tends to avoid them (MCAGCC 2014a). Therefore, it is
32 unlikely that a desert tortoise will be encountered during construction activities, and direct impacts to
33 desert tortoises from the implementation of the Proposed Action/Alternative 1 are unlikely. As described
34 in Table 2-1, the proposed solar PV site would be surveyed for desert tortoises and monitored by an
35 Authorized Biologist (AB) prior to and during construction. The proposed solar PV site would be fenced
36 during the construction and operations phases to exclude desert tortoises from the area.

37 The potential exists for desert tortoises to be injured or killed by construction equipment and vehicles.
38 Therefore, as listed in Table 2-1, pre-construction clearance surveys at all proposed construction areas
39 would be required before commencing construction activities. Additionally, if a desert tortoise is
40 encountered during construction, appropriate measures listed in Table 2-1 would be implemented to
41 minimize impacts to the species. Per the Basewide Biological Opinion, if a tortoise is found in the action
42 area during ground breaking activities, all ground breaking activities must halt until NREA is contacted
43 and NREA processes the tortoise and authorizes ground-breaking activities to resume. Following
44 construction, the temporary tortoise fencing would be removed. In addition, construction vehicles would

1 drive 20 miles (32 km) per hour or less in construction areas and on access roads. Speed limits would be
2 clearly marked by the private partner, and workers would be made aware of these speed limits. Also,
3 vehicles parked outside of exclusion fencing would be inspected underneath for desert tortoises
4 immediately before the vehicle is moved. If a desert tortoise is found under a vehicle, the vehicle would
5 not be moved, NREA would be contacted immediately, and the tortoise would be monitored for its safety
6 until NREA processes the tortoise.

7 Operations and Maintenance

8 Although the solar PV panels would alter the sun/shade regime of the ground and plants below them, it is
9 expected that sparse vegetation would reestablish during the operations and maintenance phase.
10 Consistent with BR-16, the private partner would prepare and submit a Weed Management Plan to the
11 NREA for review and approval. Once approved, the private partner would be responsible for
12 implementing the Weed Management Plan.

13 Chain link fencing around the solar PV site would present barriers to wildlife overland movement,
14 especially to larger species. However, larger animals would likely be able to move around the fences
15 without expending energy to the point of affecting major life functions. Smaller species, such as lizards
16 and rodents, would be able to fit through the chain link fencing. Still, the solar panels themselves and the
17 fencing surrounding the solar arrays would alter the local environment to the point that hiding spots,
18 predator/prey relationships, and food availability would likely be changed.

19 Migratory birds, including USFWS birds of conservation concern described in Section 3.1.3.3, *Special*
20 *Status Species*, are likely to transit through, roost, forage, and possibly nest in the solar PV site. The loss
21 of the eastern portion of the playa habitat (the Mesquite Dry Lake bed) would not significantly impact
22 migratory birds as they would be able to continue to forage after rainfall events in the large area of playa
23 habitat west of the project area (see Figure 3-2).

24 Solar PV panels over and adjacent to the playa would potentially pose a risk to bird and bat species. Bird
25 and bat mortalities have been documented at utility-scale solar projects in southern California (Kagan et
26 al. 2014; Bureau of Land Management [BLM] 2014). Three main causes of bird mortality have been
27 documented at solar energy facilities in southern California: impact trauma, solar flux, and predation
28 (Kagan et al. 2014). Solar flux has been identified as a major threat to bird species at solar power towers
29 that use mirrors to focus solar energy to a tower. However, in Kagan et al. (2014), of 61 bird deaths
30 analyzed at a solar PV system, solar flux was not documented as a cause of death in a single case, as solar
31 PV systems do not create temperatures high enough to scorch flying birds.

32 Impact trauma was the leading cause of bird death documented at a single PV site in southern California
33 in 2014 (Kagan et al. 2014). A large proportion of birds killed at utility-scale solar projects die from
34 striking project components because panels are oriented vertically, or as a result of apparently mistaking
35 the solar arrays for water (Kagan et al. 2014). “Lake effect” is commonly used to describe the
36 phenomenon whereby birds and their insect prey can mistake a reflective solar facility for a water body
37 because they share several characteristics, namely large, smooth, dark surfaces that reflect horizontally
38 polarized sunlight and skylight (Upton 2014).

39 Many insects rely on polarized light as a cue to indicate the presence of lakes and rivers (Horvath et al.
40 2010). Aggregations of flying insects at PV panels attract insect-eating birds and/or bats, thereby
41 increasing the likelihood of bird/bat collisions with PV panels (Kagan et al. 2014). Although PV panels
42 are inherently absorptive (i.e., non-reflective), they do reflect horizontally polarized light similar to the
43 way a lake’s smooth, dark surface horizontally polarizes reflected sunlight and skylight. This feature may

1 confuse birds that use polarized light for orientation or behavioral cues (Desert Renewable Energy
2 Conservation Plan Independent Science Advisors 2010). The lake effect seems to be most influential
3 when panels or heliostats are oriented horizontally, collectively forming a smooth, continuous surface
4 (Kagan et al. 2014). This effect could be intensified after rainfall events when the proposed solar PV site
5 could visually connect to the water in the playa. In Kagan et al. (2014), birds for which the primary
6 habitat is water, including coots, grebes, and cormorants, were over-represented in an inventory of
7 mortalities at a PV facility in southern California (44%) compared to other bird species. The proposed
8 PV site occurs in a dry lake bed and is adjacent to Lake Boomer (Figure 3-2), both of which attract
9 waterfowl and shorebirds when water is present. It is likely that nearby bodies of water that birds can
10 readily use can increase the lake effect of solar PV systems and subsequent bird impacts (Kagan et al.
11 2014).

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

24 Since the current science on the subject of lake effect mortality is limited, it is recommended to
25 incorporate an adaptive management strategy into the design and operation of the facility. For example,
26 the efficacy of measures that could reduce wildlife mortality, such as providing visual or auditory
27 deterrence, or interspersing gaps or features that break up the visual continuity of the dark surface, could
28 be tested. Results from monitoring (see below) could inform the subsequent design process.

29 The proposed location does not support large concentrations of migratory birds or bird species of special
30 concern that would be especially vulnerable to the potential lake effect of the panels. While
31 acknowledging the incompleteness of the current data on the topic, it seems reasonable to conclude that
32 any lake effect-related bird strikes at the proposed location would not rise to the level of a significant
33 impact for purposes of NEPA analysis. Therefore, the Proposed Action/Alternative 1 is not expected to
34 substantially adversely affect bird and bat populations as a result of mortalities related to lake effect.

35 As discussed in Table 2-1, monthly monitoring of the solar PV site would be conducted to assess any
36 potential impacts the PV arrays might be having on wildlife and special status species, including visual
37 reconnaissance of dead and/or injured species. In addition, personnel working onsite would also record
38 wildlife use of the project area. Results of the surveys and the data collected by project personnel would
39 be provided to the NREA in quarterly reports for comments and recommendations to minimize impacts
40 from continuing operations.

41 The Mojave fringe-toed lizard may be exposed to long-term predation vulnerability during operation and
42 maintenance of the solar PV system due to vegetation loss, which decreases dispersal and refuge
43 opportunities from predators. In addition, the solar PV system and associated structures may increase

1 perching opportunities for predators (e.g., common raven); therefore, making the Mojave fringe-toed
2 lizard more vulnerable to predation.

3 Under the Proposed Action/Alternative 1, the likelihood of impacts to the desert tortoise during operation
4 and maintenance of the solar PV system would be extremely low because fencing would deter tortoises
5 from entering the PV site and there is no suitable burrowing habitat in the project area. Monthly
6 monitoring of the solar PV arrays would be conducted, and opportunistic data would be collected by
7 project personnel, to assess the potential use of the project area by wildlife, including special status
8 species. Results of the surveys and monitoring would be provided to the NREA in quarterly reports for
9 comments and recommendations to minimize impacts from continuing operations.

10 Decommissioning

11 Decommissioning of the solar PV system would have similar impacts to construction activities. Work
12 crews, vehicles, and equipment would require access to the sites for removal of all solar PV materials.
13 All relevant construction Avoidance and Impact Minimization Measures and SCMs listed in Table 2-1
14 would be followed during decommissioning activities. Consistent with BR-14, a revegetation and
15 seeding plan approved by the NREA would be implemented following decommissioning activities to
16 restore the site to pre-project conditions.

17 As it is expected that during operation of the solar PV sites, certain species would have become
18 established in the habitats in and/or adjacent to the project area, including certain special status species, an
19 NREA-approved biological monitor would survey the solar PV site for mammals, reptiles, and/or nesting
20 birds prior to decommissioning activities. If nesting or denning animals are found to occur in the solar
21 PV sites, they would be allowed to leave the sites on their own accord or would be passively relocated
22 during the avian non-breeding season (October – January) prior to the start of decommissioning activities.
23 If federally-listed species are found to occur in the solar PV site prior to the start of decommissioning
24 activities, then activities will halt, NREA will be contacted, and the private partner would plan further
25 action to avoid take of the listed species.

26 Transmission Line

27 Under the Proposed Action/Alternative 1, the addition of approximately 2.6 miles (4.2 km) of new 115-
28 kV overhead transmission line has the potential to adversely affect bird species, including special status
29 birds. The new line would be used for perching, but would also represent a collision hazard for birds,
30 especially during periods of low visibility. However, overhead transmission lines are already abundant in
31 the vicinity of the project area and are part of the local environment. In addition, all transmission towers,
32 poles, and lines would be designed and constructed in accordance with the guidelines in APLIC (2006
33 and 2012), or the most current version of the guidelines available at the time of construction, to minimize
34 collision and electrocution hazards of migratory birds from transmission lines.

35 As described in Table 2-1, an NREA-approved AB would conduct pre-construction surveys at each
36 location where a new steel pole would be installed. Temporary desert tortoise exclusion fencing, under
37 monitoring by an NREA-approved AB, would be built around the construction area for each steel tower
38 that would support the new transmission lines. These measures would reduce the likelihood of directly
39 impacting wildlife and sensitive species.

40 Conclusion

41 Implementation of the Proposed Action/Alternative 1 would directly impact approximately 241-ac (97-
42 ha) of sparsely vegetated land on the eastern portion of Mesquite Dry Lake mapped as urban and playa

1 habitat. Wildlife and special status species, namely the desert tortoise and Mojave fringe-toed lizard,
2 would potentially be exposed to direct and indirect impacts. However, with implementation of Avoidance
3 and Impact Minimization Measures and SCMs listed in Table 2-1, the Proposed Action is not likely to
4 incidentally take or otherwise adversely affect desert tortoises, and effects to Mojave fringe-toed lizards
5 and other wildlife species and their populations would be less than significant. Per the Basewide
6 Biological Opinion, with the implementation of the proposed Impact Minimization Measures and SCMs
7 listed in Table 2-1, consultation with the USFWS is not necessary. Monthly monitoring of the solar PV
8 site would be conducted, and opportunistic data would be collected by project personnel, to assess any
9 potential negative effects to migratory birds and other species. Therefore, implementation of the
10 Proposed Action/Alternative 1 would have less than significant impacts to biological resources.

11 3.1.4.2 Alternative 2

12 Impacts to biological resources under Alternative 2 would be nearly identical to those under the Proposed
13 Action/Alternative 1. Alternative 2 would be implemented in accordance with the same Avoidance and
14 Impact Minimization Measures and SCMs as the Proposed Action/Alternative 1. Therefore,
15 implementation of Alternative 2 would have less than significant impacts to biological resources.

16 3.1.4.3 Alternative 3

17 Impacts to biological resources under Alternative 3 would be nearly identical to those under the Proposed
18 Action/Alternative 1. Alternative 3 would be implemented in accordance with the same Avoidance and
19 Impact Minimization Measures and SCMs as the Proposed Action/Alternative 1. Therefore,
20 implementation of Alternative 3 would have less than significant impacts to biological resources.

21 3.1.4.4 No Action Alternative

22 Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to
23 construct and operate a solar PV system at the Combat Center. Therefore, implementation of the No
24 Action Alternative would have no impact to biological resources.

25 **3.2 GEOLOGICAL RESOURCES**

26 **3.2.1 Definition of Resource**

27 Geological resources are generally defined as the topography, geology, soils, and geologic hazards within
28 a given area. Topography generally refers to elevation, slope, and surface features found within a given
29 area. Geology includes bedrock materials, mineral deposits, and fossils. Soil refers to unconsolidated
30 earthen materials overlying bedrock or other parent material. Geologic hazards can include many
31 phenomena including landslides and earthquakes.

32 **3.2.2 Regulatory Framework**

33 Construction plans are reviewed for conformance with provisions of the Alquist-Priolo Earthquake Fault
34 Zoning Act (California Public Resource Code §§ 2621-2630; 1972 amended 1994) and State Seismic
35 Hazards Mapping Act (California Public Resource Code §§ 2690-2699, 1990); and the California
36 Building Code (California Seismic Safety Commission 2005). The Alquist-Priolo Act prohibits the
37 construction of “structures intended for human occupancy” within 50 ft (15 m) of an active fault. An
38 “active fault” is a fault that has been active within the Holocene Epoch (i.e., in the past 11,000 years). A
39 “structure for human occupancy” is any structure used or intended for supporting or sheltering any use or
40 occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year

1 (14 California Code of Regulations Article 3). The proposed solar PV site does not include any structures
 2 for human occupancy.

3 **3.2.3 Affected Environment**

4 3.2.3.1 Topography

5 The mountains surrounding the project area vary in elevation from 3,500 ft (1,100 m) to more than 5,000
 6 ft (1,500 m) above mean sea level. However, the project area is located within a broad alluvial plain and
 7 dry lake bed that has relatively flat topography with minimal changes in slope and elevation.

8 3.2.3.2 Geology

9 The project area is within the south central Mojave Desert Geomorphic Province. This province is
 10 characterized by expansive desert with isolated fault-controlled, northwest-trending mountain ranges.
 11 The project area lies within a west-southwest sloping alluvial plain bound to the east by the southern
 12 Bullion Mountain range and to the west by an eastern sloping alluvial plain east of the Copper Mountains.
 13 The Combat Center geology consists of tertiary basement rock with overlying quaternary alluvial
 14 deposits. The basement rock is nearly impermeable except where it has been fractured or weathered.
 15 Sediments at the project area are estimated to range in age from Holocene to Pliocene (the Pliocene
 16 Epoch refers to time period from 2.6 to 5.3 million years ago). Deposition is still ongoing, with the
 17 youngest sediments filling drainage channels and young lake beds. Mesquite Dry Lake is a playa
 18 composed of stratified impermeable alluvium deposits (Figure 3-3). There are no known mineral deposits
 19 of value or fossils in the project area.

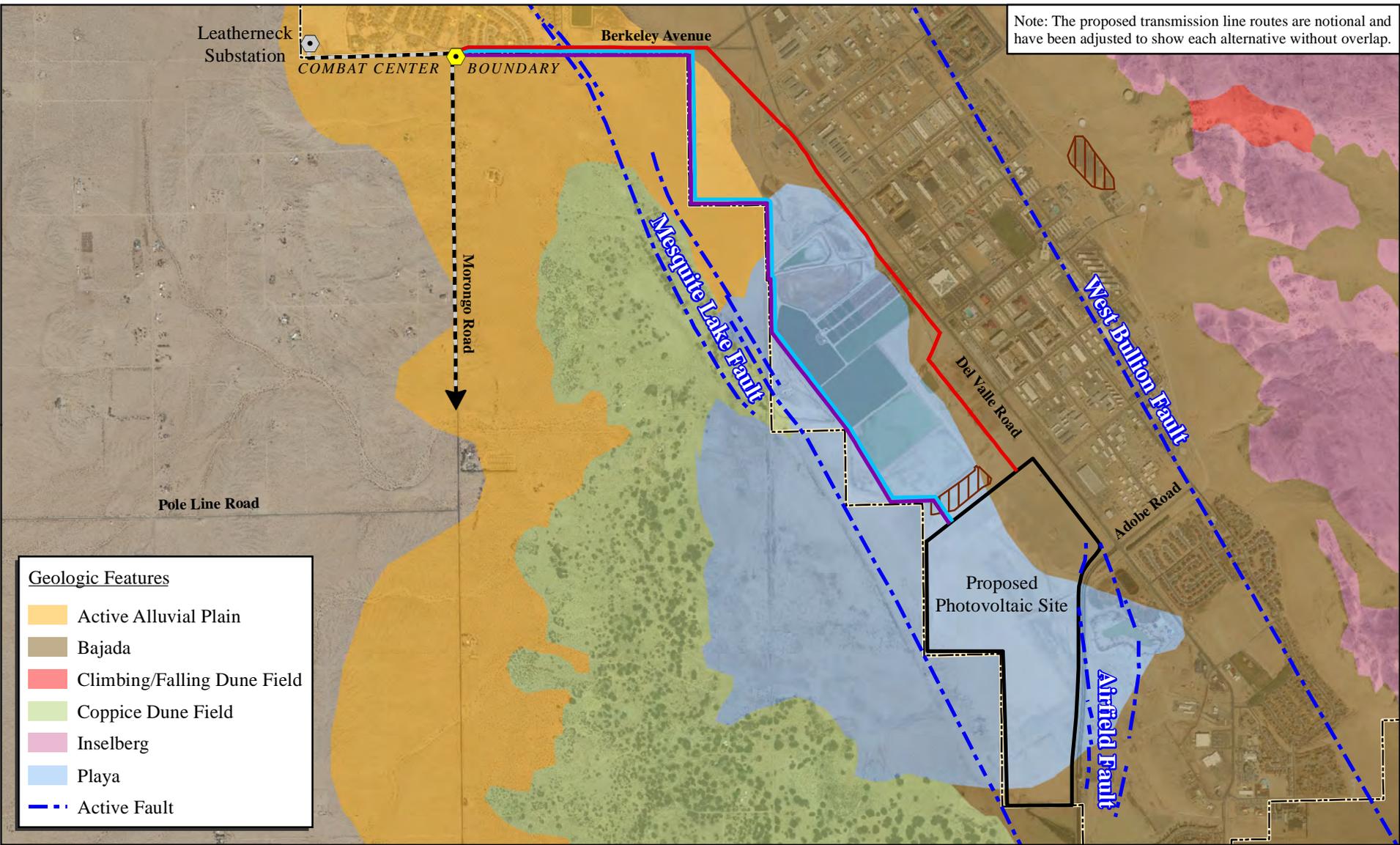
20 3.2.3.3 Soils

21 The predominant soils in the project area generally consist of younger alluvium and older alluvium
 22 derived from the Mesozoic-age Bullion Mountain range containing granitic rocks consisting of biotite-
 23 rich quartz monzonite (MCAGCC 2012b). Younger Alluvium is typically unconsolidated silt, sand, and
 24 gravel deposited in active washes and on active to recently active alluvial fan and valley surfaces. Calcio-
 25 Edalph-Calcio, Urban land-Cajon complex, Cajon loamy sand, and typic haplosalids (playa) soils are
 26 located in the project area (Figure 3-4). These soils have slight erosion potential and are not classified as
 27 prime farmland soils (U.S. Department of Agriculture [USDA] 2014). All soils but the typic haplosalids
 28 (playa) have good drainage and low shrink-swell potential; the typic haplosalids located in Mesquite Dry
 29 Lake have poor drainage and high shrink-swell potential (USDA 2014). The composition of surface soils
 30 (i.e., 0-6 inches depth) is provided in Table 3-1.

31 **Table 3-1. Composition of Soils in the Project Footprint**

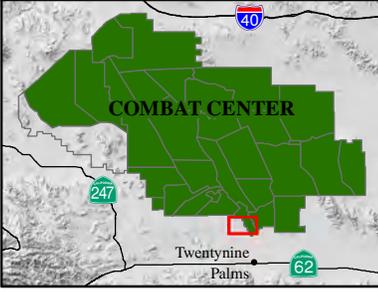
Soil Unit	Texture Classification	Clay (percent)	Silt (percent)	Sand (percent)
Calcio-Edalph-Calcio	sandy loam	14.8	19.7	65.5
Urban land-Cajon complex	course sand	NA	NA	NA
Cajon loamy sand	loamy sand	6.6	11.9	81.5
Typic Haplosalids	clay	46.1	28.9	25.0

Notes: NA = Not Available; composition percentages are for the upper 6 inches of soil.
 Source: USDA 2015.



Geologic Features

- Active Alluvial Plain
- Bajada
- Climbing/Falling Dune Field
- Coppice Dune Field
- Inselberg
- Playa
- Active Fault



Legend

 Proposed Features	 Leatherneck Substation
 Alternative 1 Transmission Line	 Existing 115-kV Transmission Line
 Alternative 2 Transmission Line	 Previously Approved Solar Energy Development
 Alternative 3 Transmission Line	 Combat Center Boundary
 Switching/Metering Station	
 Photovoltaic Site	

Figure 3-3
Geology and Faults in the Vicinity of the Proposed Photovoltaic Site and Associated Transmission Lines at Mainside

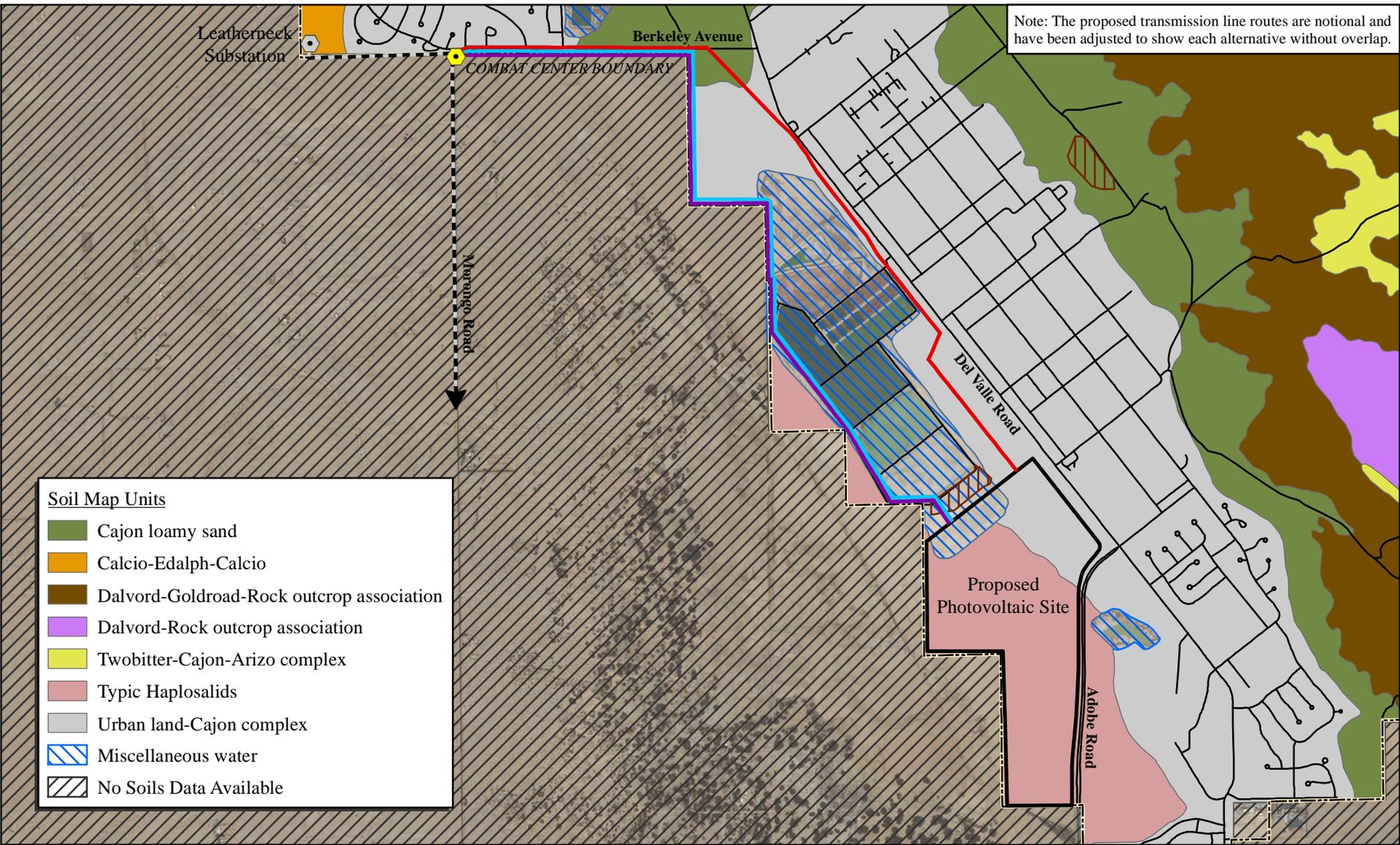
July 2015

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers

Sources: California Geological Survey 2005, MCAGCC 2015a

3-15

Note: The proposed transmission line routes are notional and have been adjusted to show each alternative without overlap.



Soil Map Units	
	Cajon loamy sand
	Calcio-Edalph-Calcio
	Dalvord-Goldroad-Rock outcrop association
	Dalvord-Rock outcrop association
	Twobitter-Cajon-Arizo complex
	Typic Haplosalids
	Urban land-Cajon complex
	Miscellaneous water
	No Soils Data Available

3-16



Proposed Features		Legend	
	Alternative 1 Transmission Line		Leatherneck Substation
	Alternative 2 Transmission Line		Existing 115-kV Transmission Line
	Alternative 3 Transmission Line		Road
	Switching/Metering Station		Previously Approved Solar Energy Development
	Photovoltaic Site		Combat Center Boundary

Figure 3-4
 Soils in the Vicinity of the Proposed Photovoltaic Site and Associated Transmission Lines at Mainside

0 0.25 0.5 Miles
 0 0.25 0.5 Kilometers

Sources: USDA 2014, MCAGCC 2015a

1 3.2.3.5 Geologic Hazards

2 The Combat Center is located within a seismically active region within the Eastern California Shear Zone.
3 The Eastern California Shear Zone is thought to accommodate approximately 20–25 percent of total
4 relative motion between the Pacific and North American plates. In the Mojave Desert, the Eastern
5 California Shear Zone comprises a 62-mile (100-km) wide network of faults.

6 The Proposed Action/Alternative 1 project area is adjacent to and crosses the Mesquite Lake Fault (see
7 Figure 3-3). The Mesquite Lake Fault is estimated to be capable of generating an earthquake of
8 magnitude 7.3 if it ruptures with other faults to the north (City of Twentynine Palms 2012). The West
9 Bullion Fault is also located near the project area. In 1999, a magnitude 7.1 earthquake, known as the
10 Hector Mine earthquake, ruptured the Lavic Lake Fault and the East and West Bullion sections of the
11 Pisgah-Bullion fault zone, with the epicenter approximately 25 miles (40 km) north of the project area.
12 The West Bullion Fault lies within the Mainside and in close proximity to the project area (see Figure 3-
13 3). Currently, the West Bullion Fault is not defined as active under the Alquist-Priolo Earthquake Fault
14 Zoning Act. However, recent fault rupture analysis reports determined the potential for fault rupture
15 within the project area to be low but also recommend that the fault be classified as active (MCAGCC
16 2012b, 2012c). The Airfield Fault is an open fissure on the southeastern bank of Mesquite Dry Lake
17 located to the east of the proposed project area (see Figure 3-3). The fissure is believed to have been
18 caused by the creeping of West Bullion and Mesquite Lake faults that caused tensile and compressive
19 stresses in the soil mass in directions approximately 45 degrees from the faults.

20 **3.2.4 Environmental Consequences**

21 The alteration of topography, protection of unique geological features, minimization of soil erosion, and
22 siting of facilities away from potential geological hazards are considered when evaluating the potential
23 impacts of an action. Generally, geological resource impacts can be avoided or minimized if proper
24 construction techniques, erosion control measures, and structural engineering components are
25 incorporated into project design.

26 3.2.4.1 Proposed Action/Alternative 1

27 Topography

28 Construction activities would occur in relatively flat areas; therefore, while the proposed construction
29 activities would require limited excavation, grading, and placement of fill material, no prominent
30 topographic features would be affected or permanently altered. Areas that would be built up to ensure the
31 PV system's substation, inverters, and associated transformers remain at least 2 feet above the flood zone
32 would be compacted and stabilized (potentially with rock rip-rap) to minimize slope failure. Soil used for
33 this purpose would be collected from the project area, and soil and topography would be managed in a
34 manner that would ensure there is no net reduction in the project site's ability to retain stormwater. The
35 Proposed Action/Alternative 1 solar PV system and transmission line would not be susceptible to
36 landslides due to the relatively level topography in the project area. Maintenance operations would not
37 require any alterations to topography. Project facilities would be decommissioned and removed and the
38 site would be restored to pre-construction conditions. Therefore, there would be less than significant
39 impacts to topography with implementation of the Proposed Action/Alternative 1.

1 Geology

2 The Proposed Action/Alternative 1 would not substantially alter the geology of the project area and would
3 not result in the loss of availability of a known mineral resource or fossils. Therefore, the Proposed
4 Action/Alternative 1 would have less than significant impacts to geology.

5 Soils

6 The Proposed Action/Alternative 1 transmission line would cross Calcio-Edalph-Calcio, Urban land-
7 Cajon complex, and Cajon loamy sand soils; and the proposed solar PV system would be located in
8 Urban land-Cajon complex and typic haplosalids (playa) soils (Figure 3-4). The soils along the
9 transmission line alignment have slight erosion hazard and low shrink-swell potential (USDA 2014). The
10 flat topography further lessens these modest risks. The soils of the Mesquite Dry Lake bed have poor
11 drainage and high shrink-swell potential (USDA 2014). However, before final design of facilities, a
12 geotechnical study would be performed by professional civil or geotechnical engineers or engineering
13 geologists licensed in the State of California and would provide design and construction
14 recommendations, as appropriate, to reduce potential impacts from these soil conditions. The project
15 would incorporate the recommendations identified by the geotechnical study and the proposed facilities
16 associated with the PV site would be designed to accommodate for the poor drainage and high shrink-
17 swell potential of these soils. There are no prime farmland soils in the project area (USDA 2014).

18 Construction activities at the Combat Center are not subject to the California General Construction Permit
19 (refer to Section 3.3, *Water Resources*, for details). However, all construction activities are required to
20 populate the Combat Center's SWPPP and adhere to the Combat Center's requirements related to storm
21 water pollution prevention and stormwater controls. The standard erosion control measures as identified
22 in the Combat Center's SWPPP would reduce potential impacts to soils resulting from erosion during
23 grading and construction activities.

24 Therefore, through design of the facilities to accommodate poor drainage and high shrink-swell in
25 Mesquite Dry Lake soils and compliance with the Combat Center's SWPPP, the Proposed
26 Action/Alternative 1 would have less than significant impacts to soils.

27 Geologic Hazards

28 The project area is located in a seismically active region with known active faults within and immediately
29 adjacent to the project footprint (Figure 3-3). If a seismic event were to occur along one of the fault
30 zones, the site would experience seismic movement. However, before final design of facilities, the
31 geotechnical study identified under soils would identify site-specific geologic conditions and potential
32 geologic hazards. The project would incorporate the recommendations identified by the geotechnical
33 study. Other project elements would be designed and constructed in accordance with the appropriate
34 industry standards, including established engineering and construction practices and methods. With
35 proper construction design, the potential for seismicity-related impacts is considered negligible. In
36 addition, no inhabited buildings are proposed as part of the solar PV system.

37 Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have
38 less than significant impacts to geological resources.

39 3.2.4.2 Alternative 2

40 Impacts under Alternative 2 would be similar to those described under the Proposed Action/Alternative 1,
41 with the exception of impacts associated with the portion of the proposed Alternative 2 transmission line
42 alignment that would be located along Mesquite Dry Lake. The project would incorporate the

1 recommendations identified by the geotechnical study (as described under the Proposed
2 Action/Alternative 1) and the portion of the transmission line alignment within this area would be
3 designed to accommodate for the poor drainage and high shrink-swell potential of soils in Mesquite Dry
4 Lake (Figure 3-4). Therefore, with implementation of the proposed SCMs, Alternative 2 would have less
5 than significant impacts to geological resources.

6 3.2.4.3 Alternative 3

7 Impacts under Alternative 3 would be similar to those described under Alternative 2. The project would
8 incorporate the recommendations identified by the geotechnical study (as described under the Proposed
9 Action/Alternative 1) and the portion of the transmission line alignment within the playa would be
10 designed to accommodate for the poor drainage and high shrink-swell potential of soils in Mesquite Dry
11 Lake (Figure 3-4). In addition, the transmission line alignment located outside of the Combat Center
12 (along Berkeley Avenue) would be required to comply with the California General Construction Permit,
13 including preparation of separate SWPPP for this portion, as necessary. Therefore, with implementation
14 of the proposed SCMs, Alternative 3 would have less than significant impacts to geological resources.

15 3.2.4.4 No Action Alternative

16 Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to
17 construct and operate a solar PV system at the Combat Center and construction activities would not occur.
18 Baseline geological conditions, as described in Section 3.2.3, would remain unchanged. No impacts to
19 geological resources would occur as a result of implementation of the No Action Alternative.

20 3.3 WATER RESOURCES

21 3.3.1 Definition of Resource

22 The water resources analysis incorporates the discussion of both surface water and groundwater. Surface
23 water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or
24 watershed. Surface water also includes floodplains, which are relatively flat areas adjacent to rivers,
25 streams, watercourses, bays, or other bodies of water subject to inundations during flood events. A 100-
26 year floodplain is an area that is subject to a 1 percent chance of flooding in any particular year, or, on
27 average, once every 100 years. Groundwater resides in aquifers, areas of mostly high porosity rock
28 substrate where water can be stored within pore spaces. Groundwater basins are recharged by rainstorms
29 recharging the alluvial fans that extend out to the desert floor and by runoff collecting in dry lake beds.

30 3.3.2 Regulatory Framework

31 Waters of the U.S. are regulated resources and are subject to federal authority under Section 404 of the
32 Clean Water Act (CWA). Waters of the U.S. include navigable waters, tributary streams, wetlands, and
33 various other water bodies that are deemed to have a significant nexus to a navigable water. Areas
34 meeting the waters of the U.S. definition are under the jurisdiction of the U.S. Army Corps of Engineers
35 (USACE).

36 Section 401 of the CWA requires any applicant for a federal license or permit that may result in a
37 discharge of a pollutant into waters of the U.S. to obtain a certification from the state in which the
38 discharge originates or would originate. In California, the State Water Resources Control Board
39 (SWRCB) and Regional Water Quality Control Boards (RWQCBs) are responsible for establishing the
40 water quality standards (objectives) required by the CWA, and regulating discharges to ensure dischargers
41 meet water quality objectives.

1 As required by EO 11988, *Floodplain Management*, as amended on 30 January 2015, federal agencies
2 must take action to reduce the risk of flood loss and restore and preserve the values of floodplains. To
3 minimize the risk of damage associated with these areas, EO 11988, as amended, was issued to avoid, to
4 the extent possible, the long- and short-term adverse impacts associated with the occupancy and
5 modification of floodplains and to avoid direct or indirect support of floodplain development wherever
6 there is a practical alternative. EO 11988, as amended, outlines different requirements for federal projects
7 located in 100-year and 500-year floodplains (i.e., that area which has a 1 percent or greater chance or 0.2
8 percent or greater chance, respectively, of flooding in any given year). The 30 January 2015 amendment
9 EO 11988 requires building above the floodplain elevation. Because the proposed action would not
10 qualify as a “critical activity” under EO 11988, compliance with EO 11988, as amended, for construction
11 in a 500-year floodplain will not be required.

12 **3.3.3 Affected Environment**

13 3.3.3.1 Surface Water

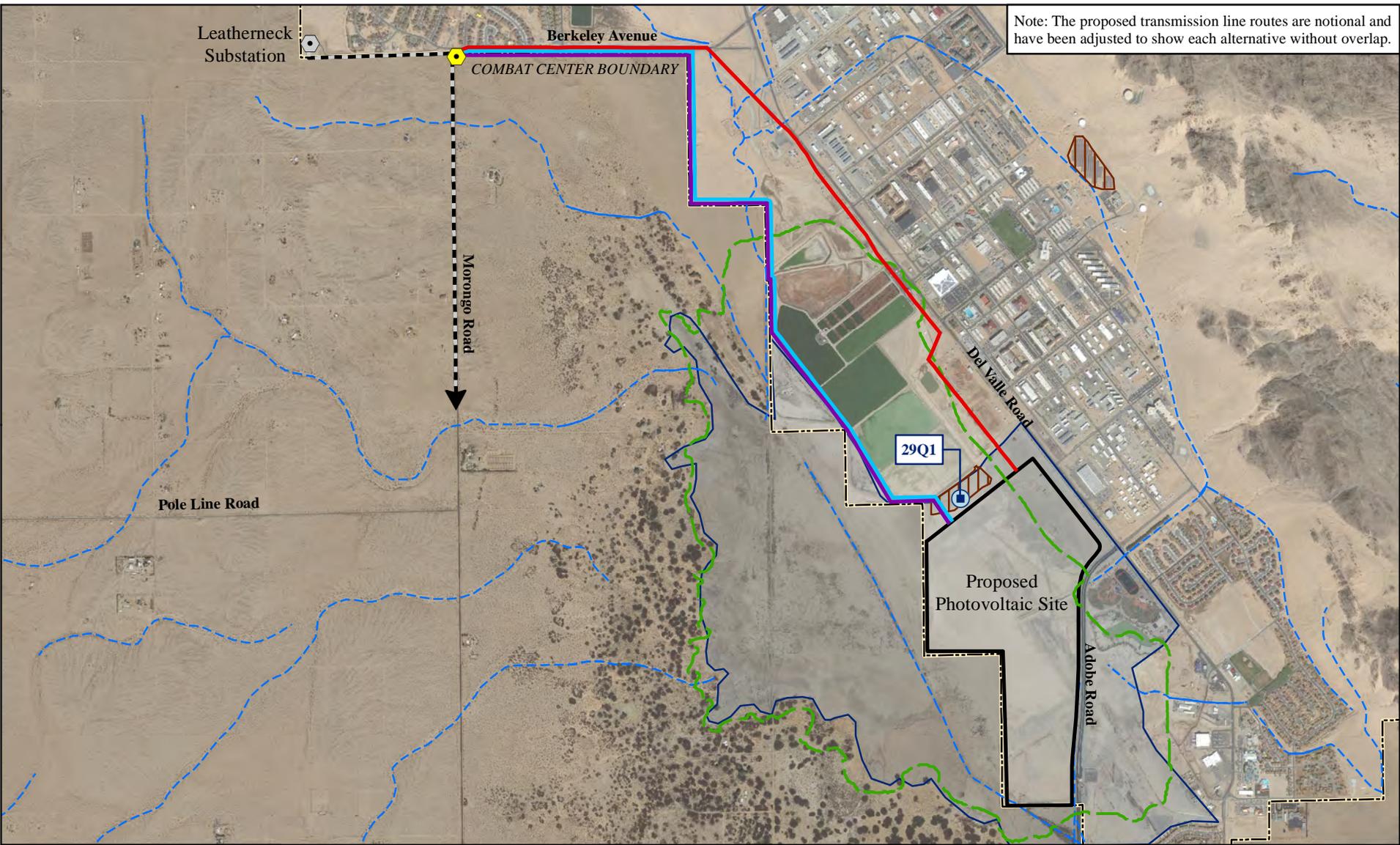
14 The project area is located within the Southern Mojave Watershed, which is part of the Colorado River
15 Basin Region. The Colorado River Basin covers approximately 20,312 square miles (52,609 square km),
16 including all of Imperial County and portions of San Bernardino and Riverside counties. Surface water is
17 minimal and normally limited to ephemeral flow. Average annual precipitation in the Combat Center
18 area is 4.5 inches (11.3 centimeter), with 0.9 inches (2.3 centimeter) coming in the form of snow (Western
19 Regional Climate Center 2014). The proposed project area does not contain any permanent water courses
20 or bodies of water, but the proposed solar PV site is located within the Mesquite Dry Lake bed. Mesquite
21 Dry Lake is a desert playa that is an isolated, intrastate, non-navigable body of water that only has water
22 in it after storm events; therefore, it is not considered a water of the U.S. under the jurisdiction of the
23 USACE (USMC Western Area Counsel Office 2011).

24 Surface water from the project area located outside of Mesquite Dry Lake would flow into a combination
25 of lined and unlined channels that head south toward Mesquite Dry Lake (Figure 3-5). Portions of the
26 project area are located within the 100-year flood zone of Mesquite Dry Lake (Figure 3-5). The 100-year,
27 24-hour ponding elevation is estimated to be 1,764.23 ft (537.73 m) (NAVFAC Southwest 2014).

28 3.3.3.2 Groundwater

29 The Twentynine Palms Valley Groundwater Basin encompasses 97.5 square miles (252 square km) and is
30 the groundwater source beneath the project area. Groundwater is the primary source of potable water for
31 the region; presently, the sole source of potable water at the Combat Center is from the Surprise Spring
32 Groundwater Sub-basin located approximately 11 miles northwest of the project area (NAVFAC
33 Southwest 2009).

34 Groundwater in the project area flows generally from north to south toward Mesquite Dry Lake and is
35 part of the Mainside Sub-basin. Water level depths vary widely from 200 ft (60 m) to more than 400 ft
36 (120 m) below ground surface. One groundwater monitoring well is located just outside of and to the
37 north of the proposed solar PV site (see Figure 3-5). The aquifer below the project area and Mesquite Dry
38 Lake is not used for providing drinking water and is primarily sodium sulfate in character of relatively
39 poor quality, containing high concentrations of total dissolved solids ranging up to 5,000 ppm. A perched
40 water table of 3 to 10 ft (1 to 3 m) in thickness is present in the playa and eastern slope of the Mesquite
41 Dry Lake playa. All groundwater samples collected to date from the regional and perched water zones in
42 the Mainside Sub-basin have shown water quality parameters exceeding the U.S. Environmental
43



3-21



Legend

Alternative 1 Transmission Line	Mesquite Dry Lake	Leatherneck Substation
Alternative 2 Transmission Line	100-year 24-Hour Ponding Limit (Elevation 1764.23 ft)	Existing 115-kV Transmission Line
Alternative 3 Transmission Line	Surface Water Course	Previously Approved Solar Energy Development
Switching/Metering Station	Monitoring Well	Combat Center Boundary
Photovoltaic Site		

**Figure 3-5
 Water Resources in the Vicinity
 of the Proposed Photovoltaic
 Site and Associated
 Transmission Lines at Mainside**

July 2015

0 0.25 0.5 Miles
 0 0.25 0.5 Kilometers

Sources: NAVFAC Southwest 2014, MCAGCC 2015a

1 Protection Agency’s (USEPA) primary and secondary drinking water standards. Groundwater production
 2 is limited in the Mainside Sub-basin for usage as a non-potable water source for equipment washing.
 3 Nearby water districts (Twentynine Palms Water District, Joshua Tree Water District, and/or the Hi-
 4 Desert Water District) utilize groundwater resources to provide potable water to their customers. The
 5 source and anticipated current and future supply for each district is provided in Table 3-2.

6 **Table 3-2. Water Demand for Nearby Water Districts**

Water District	Source of Groundwater	Current/Projected Demand (ac-ft per year)			Distance to Project (miles)
		2015	2025	2035	
Twentynine Palms Water District	Mesquite Lake Subbasin, Indian Cove Subbasin, Fortynine Palms Subbasin, and Eastern Subbasin	3,801	4,425	5,119	7
Joshua Tree Water District	Copper Mountain Basin and Joshua Tree Basin	1,877	2,022	2,177	22
Hi-Desert Water District (Yucca Valley)	Warren Valley Basin and Reche/Ames/Means Valley Basin	3,483	3,727	4,049	29

Sources: Hi-Desert Water District 2011, Joshua Tree Water District 2011, Twentynine Palms Water District 2014.

7 **3.3.4 Environmental Consequences**

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

11 3.3.4.1 Proposed Action/Alternative 1

12 Surface Water

13 Construction activities at the Combat Center are not subject to the California General Construction Permit
 14 because the Combat Center has been granted a Jurisdictional Determination by the USACE that no waters
 15 are present at the Combat Center. As a result of a Jurisdictional Determination, the Combat Center filed
 16 and was granted a Notice of Termination for all storm water permitting by the Colorado River Basin
 17 RWQCB. As described under geological resources (Section 3.2.3), all construction activities are required
 18 to populate the Combat Center’s SWPPP and adhere to the Combat Center’s requirements related to
 19 stormwater pollution prevention and stormwater controls. Grading activities associated with construction
 20 would temporarily (until construction is completed and the site is stabilized) increase the potential for
 21 localized erosion. However, the standard erosion control measures as identified in the Combat Center’s
 22 SWPPP would reduce potential impacts resulting from erosion during grading and construction activities.

23 Areas that would be built up to ensure the PV system’s substation, inverters, and associated transformers
 24 remain at least 2 feet above the flood zone would be compacted and stabilized (potentially with rock rip-
 25 rap) to minimize slope failure. Soil used for this purpose would be collected from the project area, and
 26 soil and topography would be managed in a manner that would ensure there is no net reduction in the
 27 project site’s ability to retain stormwater.

28 The proposed transmission line would cross surface water channels (Figure 3-5). Replacement of existing
 29 power poles and installing new steel poles would avoid drainages to the greatest extent feasible.
 30 However, not all drainages may be avoidable and some existing poles to be removed could be located in
 31 drainages. Removal or installation of poles would have very minor and localized, if any, effects on flows

1 or substrate within drainages. Subsequent to possible minor alterations of streambeds, restoration to
2 approximate pre-project conditions would occur, such that there would be no substantial alteration to the
3 bed, banks, or natural functions of these surface water features.

4 Portions of the Proposed Action/Alternative 1 transmission line and the proposed solar PV site are located
5 in the 100-year flood zone associated with Mesquite Dry Lake (Figure 3-5) and the project would be
6 required to comply with EO 11988, as amended. As required by EO 11988, as amended, the Combat
7 Center would give public notice that a PV farm would be partially constructed within the 100-year flood
8 zone of Mesquite Dry Lake. EO 11988, as amended, provides that if a federal government agency
9 proposes to conduct an activity in a floodplain, it will consider alternatives to the action located outside
10 the floodplain. The Office of the Secretary of Defense memo *Floodplain Management on Department of*
11 *Defense Installations* from 11 Feb 2014 also requires the services to minimize construction within
12 designated 100-year floodplains. As discussed in Section 2.4, other alternatives located outside of the
13 100-year flood zone of Mesquite Dry Lake were considered but were found to not be feasible. To
14 minimize impacts within the floodplain, all excess soils and construction debris would be removed from
15 the floodplain and all federal, state, county, local, DoD, DoN, USMC, and Combat Center environmental
16 regulatory requirements would be followed for the life-expectancy of the proposed solar PV site. To
17 avoid damage to the solar PV system, the solar PV panels would be mounted on poles at a height
18 sufficient to prevent damage during a 100-year flood event at the Mesquite Dry Lake. The depth of the
19 lake bed from the 100-year flood boundary to the lowest area of topography varies from 0 ft to
20 approximately 9 ft (3 m). Project facilities would be decommissioned and removed and the 100-year
21 flood zone would be restored to pre-construction conditions.

22 Therefore, implementation of the Proposed Action/Alternative 1 would have less than significant impacts
23 to surface water resources.

24 Groundwater

25 The potential to encounter groundwater is greatest during drilling activities associated with installation of
26 transmission line poles. Construction and operation activities associated with the Proposed
27 Action/Alternative 1, however, are unlikely to reach depths that could affect groundwater resources
28 because groundwater depths are greater than 200 feet (60 meters) throughout most of the project area. In
29 any case, transmission line poles and PV site posts would be designed such that they would not affect, nor
30 would they be affected by, groundwater.

31 It is expected that the proposed project could require as much as 179 ac-ft of water for dust control during
32 construction. Over the 2-year construction period this requirement is assumed to be 89.5 ac-ft per year.
33 This water would likely be obtained from one or more of the three nearby water districts (Twentynine
34 Palms Water District, Joshua Tree Water District, and/or the Hi-Desert Water District) which utilize their
35 local groundwater basins for water supply. In comparing the annual construction requirement (i.e., 89.5
36 ac-ft per year) to the 2015 annual demand for each district (Table 3-2), this would represent 2.3 percent of
37 Twentynine Palms Water District's, 4.8 percent of Joshua Tree Water District's, and 2.6 percent of Hi-
38 Desert Water District's annual demand. The private partner would be responsible for identifying and
39 contracting with one or more water districts to purchase the water required for construction. Through this
40 process, it is assumed that (1) water provided by the water district(s) can support the project's demand,
41 (2) the individual water district(s) would only provide water within their capability, and (3) the individual
42 water district(s) would not allow available water resources within their control to be significantly
43 impacted. In addition, the following SCM would be implemented during construction: to reduce impacts

1 to groundwater, reclaimed water would be used, as much as possible, for dust control needs. However,
2 the Combat Center is the only potential source of reclaimed water in the project vicinity.

3 As identified in Section 2.2.1.3, the proposed project is expected to annually require approximately 5.4
4 ac-ft per year of water for washing, dust control, and personnel use. In comparing the annual operations
5 and maintenance requirements to annual demand for each district (Table 3-2), this would represent
6 approximately 0.1 percent of Twentynine Palms Water District's, 0.3 percent of Joshua Tree Water
7 District's, and 0.1 percent of Hi-Desert Water District's 2025 and 2035 annual demand. It is expected
8 that the water districts could support this demand with minimal impacts to groundwater resources in their
9 respective districts due to the relatively small percentage of the annual water demands. The private
10 partner would be responsible for identifying and contracting with one or more water districts to purchase
11 the water required for annual operations and maintenance. As noted in the Joshua Tree Water District
12 2010 Urban Water Management Plan (Joshua Tree Water District 2011), the district anticipated it would
13 provide 2 ac-ft per year of water to meet operational needs for the nearby Cascade Solar Plant, located
14 approximately 4 miles (3 km) from Joshua Tree. This suggests that the Joshua Tree Water District is both
15 capable and willing to provide water for local solar PV projects. In addition, the following SCMs would
16 be implemented during operations and maintenance: (1) to reduce water requirements for dust control, it
17 is expected that environmentally-friendly, biodegradable polymeric stabilizers and/or rock rip-rap would
18 be used to stabilize unpaved roads; and (2) to reduce impacts to groundwater, reclaimed water would be
19 used, as much as possible, for dust control needs.

20 It is expected that as much as 15 ac-ft of water could be used during decommissioning from the same off-
21 installation sources as identified for construction. The private partner would be responsible for
22 identifying and contracting with one or more water districts to purchase the water required for
23 decommissioning and impacts would be similar as described for construction. In addition, the following
24 SCM would be implemented during decommissioning: to reduce impacts to groundwater, reclaimed water
25 would be used, as much as possible, for dust control needs.

26 Therefore, through the private partner developer contracting with local water districts to identify sources
27 of water and with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have
28 less than significant impacts to groundwater resources.

29 3.3.4.2 Alternative 2

30 Impacts under Alternative 2 would be similar to those described under the Proposed Action/Alternative 1.
31 Therefore, through the private partner developer contracting with local water districts to identify sources
32 of water and with implementation of the proposed SCMs, Alternative 2 would have less than significant
33 impacts to water resources.

34 3.3.4.3 Alternative 3

35 Impacts under Alternative 3 would be similar to those described under the Proposed Action/Alternative 1.
36 In addition, the transmission line alignment located outside of the Combat Center (along Berkeley
37 Avenue) would be required to comply with the California General Construction Permit, including
38 preparation of separate SWPPP for this portion, as necessary. Therefore, through the private partner
39 developer contracting with local water districts to identify sources of water and with implementation of
40 the proposed SCMs, Alternative 3 would have less than significant impacts to water resources.

1 3.3.4.4 No Action Alternative

2 Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to
3 construct and operate a solar PV system at the Combat Center and construction activities would not occur.
4 Baseline conditions of water resources, as described in Section 3.3.3, would remain unchanged. No
5 impacts to water resources would occur as a result of implementation of the No Action Alternative.

6 **3.4 CULTURAL RESOURCES**

7 **3.4.1 Definition of Resource**

8 Cultural resources include buildings, structures, sites, districts, and objects eligible for or included in the
9 National Register of Historic Places (NRHP), cultural items, Indian sacred sites, archaeological artifact
10 collections, and archaeological resources (SECNAV Instruction 4000.35A, *Department of the Navy*
11 *Cultural Resources Program*). Cultural resources can be divided into three major categories:
12 archaeological resources, architectural resources, and traditional cultural resources.

- 13 • *Archaeological resources* are material remains of past human life that are capable of contributing
14 to scientific or humanistic understanding of past human behavior, cultural adaptation, and related
15 topics through the application of scientific or scholarly techniques. Archaeological resources can
16 include village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, rock
17 art (both petroglyphs and pictographs), rock features, and burials.
- 18 • *Architectural resources* include real properties, sites, buildings, structures, works of engineering,
19 industrial facilities, fortifications, and landscapes.
- 20 • *Traditional cultural resources* are tangible places or objects that are important in maintaining the
21 cultural identity of a community or group and can include archaeological sites, buildings,
22 neighborhoods, prominent topographic features, habitats, plants, animals, and minerals.

23 **3.4.2 Regulatory Framework**

24 Federal regulations define historic properties to include prehistoric and historic sites, buildings, structures,
25 districts, or objects on or eligible for inclusion on the NRHP, as well as artifacts, records, and remains
26 related to such properties (NHPA, as amended [16 USC 470 *et seq.*]). Additionally, cultural resources are
27 protected under the Archaeological Resource Protection Act (16 USC 470aa-470mm; Public Law 96-95 and
28 amendments), the Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 USC
29 3001-3013), and the American Indian Religious Freedom Act (Public Law 95-341; 42 USC 1996 and
30 1996a). Compliance with Section 106 of the NHPA, which directs federal agencies to take into account the
31 effect of a federal undertaking on a historic property, is outlined in the Advisory Council of Historic
32 Preservation's regulation, *Protection of Historic Properties* (36 CFR § 800). The NHPA and associated
33 Section 106 compliance also includes guidance for American Indian consultation regarding cultural
34 significance of potential religious and sacred artifacts (16 USC 470a [a][6][A] and [B]). In addition,
35 coordination with federally recognized American Indian tribes must occur in accordance with EO 13175,
36 *Consultation and Coordination with Indian Tribal Governments*.

37 Seven federally recognized Native American groups maintain a cultural affinity with the land on which
38 the Combat Center lies. These groups include the Chemehuevi Indian Tribe, Colorado River Indian
39 Tribes, Fort Mohave Indian Tribe, Morongo Band of Mission Indians, Aqua Caliente Band of Cahuilla
40 Indians, Twentynine Palms Band of Mission Indians, and the San Manuel Band of Mission Indians
41 (Federal Register 2014). Consultation with the Native American Tribes began in 1995 and one of the
42 issues discussed is the presence of traditional cultural resources. Although none of the tribes specifically

1 identified traditional cultural resources, they all expressed a desire to be consulted regarding any
2 prehistoric or Native American site located on the Combat Center.

3 **3.4.3 Affected Environment**

4 3.4.3.1 Cultural Setting

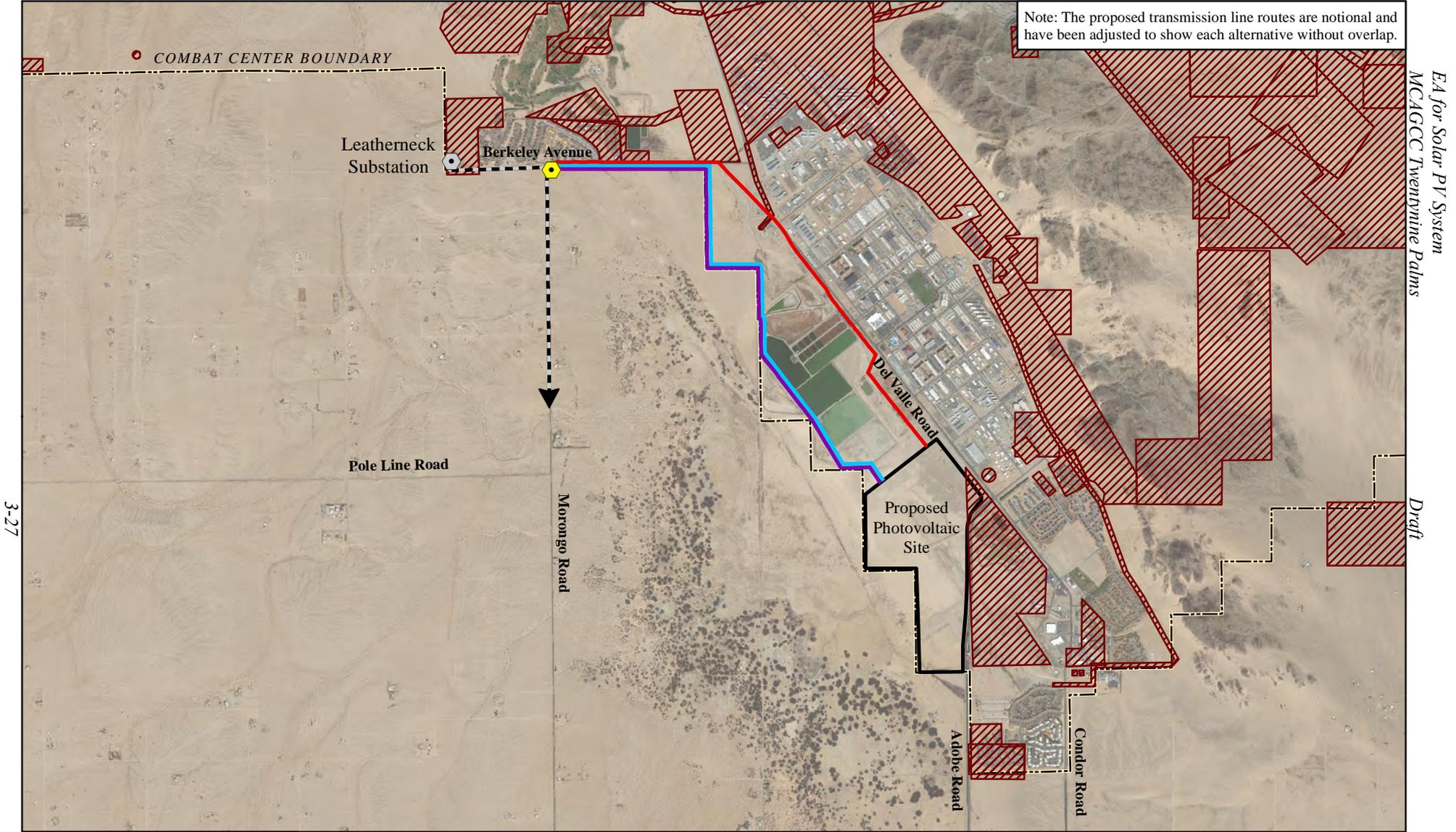
5 The prehistory of the Mojave Desert, from the earliest known human occupations through the proto-
6 historic period, is characterized by a consistent pattern of small, highly mobile and adaptable groups that
7 engaged in seasonal migration to effectively exploit the sparse desert resources. The groups followed
8 seasonal migration routes between the lower, drier elevations during winter and milder months, where
9 they would have concentrated at reliable water sources, and the higher elevations in the mountains to
10 escape the summer heat and to exploit seasonal food resources. The archeological record shows a
11 generally increased adaptation to the desert environment through time, and increasing interregional trade,
12 particularly between the groups clustered along the Mojave River and coastal groups. Though the toolkit
13 varied slightly, including the introduction of the bow and arrow and pottery around 500 A.D., the basic
14 subsistence strategies and lifeways remained relatively unchanged until Euroamerican influences began to
15 disrupt traditional patterns (MCAGCC 2015b).

16 At the time of contact, the Twentynine Palms area was occupied by two linguistically related Native
17 American groups, the Chemehuevi and the Serrano. During the early contact period, the Serrano were
18 known to live in the Twentynine Palms area for the winter months and migrate to Bear Valley during the
19 hot summer months. The Chemehuevi historically lived along the Colorado River and foraged as far west
20 as Twentynine Palms for food and materials. In 1867, conflict occurred between the Chemehuevi and the
21 Mojave, who also inhabited the Colorado River area. Being outnumbered, the Chemehuevi left this area
22 and a small band eventually reached the Oasis of Mara. At this time, the Serrano had temporarily
23 abandoned the Oasis due to an outbreak of smallpox. When the Serrano returned, they peacefully co-
24 existed with the Chemehuevi. Native Americans abandoned the Twentynine Palms area during the early
25 1910s (MCAGCC 2015b).

26 Following the 1849 California Gold Rush and into the 1930s, the Twentynine Palms area attracted miners
27 in search of gold and silver. During the 1920s, the area became popular with returning World War I
28 veterans after recognition that the climate of the region was excellent for recovery of lung injuries
29 resulting from gas attacks during the war. In the 1940s, the military entered the region and established
30 facilities at Twentynine Palms. The military has had a constant presence in the area from 1942 to the
31 present (MCAGCC 2015b).

32 3.4.3.2 Proposed Project Area

33 A review of records maintained at the Cultural Resources Section of the NREA showed that portions of
34 the Proposed Action had not been surveyed for cultural resources and that no cultural resources sites are
35 known within the project boundaries. A total of ten cultural resource surveys have been conducted within
36 0.25 mile (400 m) of the project area in support of various projects. Generally, these surveys were small-
37 scale surveys for pipelines, building construction, and Section 110 compliance (Figure 3-6). All of the
38 previously surveyed areas contained evidence of substantial ground disturbance through the presence of
39 graded and bulldozed surfaces, construction of training facilities, and natural erosion. No archaeological
40 sites were recorded during any of these surveys (MCAGCC 2015b).



EA for Solar PV System
MCAGCC Twenty-nine Palms

Draft

3-27



Proposed Features

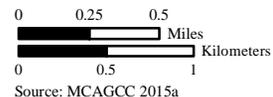
- Alternative 1 Transmission Line
- Alternative 2 Transmission Line
- Alternative 3 Transmission Line
- Switching/Metering Station
- Photovoltaic Site

Legend

- Existing 115-kV Transmission Line
- Leatherneck Substation
- Previous Archaeological Survey Area
- Combat Center Boundary

Note: The proposed transmission line routes are notional and have been adjusted to show each alternative without overlap.

Figure 3-6
Previous Archaeological
Surveys at Mainside



Source: MCAGCC 2015a

July 2015

1 The portion of the Area of Potential Effect for the proposed photovoltaic field was historically part of the
2 runway established by the Army Air Force in 1942. Under contract to the Army Air Force, the
3 Twentynine Palms Air Academy established Condor Field on the Mesquite Dry Lake playa, where it
4 conducted both combat glider and powered flight schools. Following the completion of the Army Air
5 Force contracts in 1943, the US Navy took over the field, renaming it the Naval Auxiliary Air Station
6 Twentynine Palms. Following the Navy's departure in 1945, the field and its infrastructure reverted to
7 the County of San Bernardino until 1952, when the land was transferred to the DoN for the establishment
8 of the Marine Corps Training Center, Twentynine Palms. The runway was improved several times during
9 the 10 years since the Army Air Force had established the field, including grading at various times and
10 the installation of perforated steel planking to provide a stable surface for landing and launching aircraft.
11 During the years the perforated steel planking was in place, it was regularly removed, the surface re-
12 graded, and the perforated steel planking re-laid, repairing and replacing panels in the process. In the
13 early 1980s, the perforated steel planking was removed. Since then, the area has been used for various
14 military activities, many of which have included ground disturbance. Flood control measures, a running
15 track, and static displays of military armored and tracked vehicles have been installed. As a result, the
16 entire area for the proposed photovoltaic field has been extensively graded and re-graded throughout the
17 years (MCAGCC 2015b).

18 In support of the Proposed Action, the proposed solar PV site and the proposed transmission line routes
19 were recently surveyed for archaeological resources; none were found (MCAGCC 2015b).

20 Much of Mainside is composed of impervious surfaces or buildings. In 2002, all extant buildings and
21 structures on the Combat Center of the Cold War-era (1946 to 1989) were inventoried and evaluated for
22 eligibility to the NRHP. The earliest buildings at Mainside were constructed in 1953. Because of the
23 relatively recent age of the installation, the standard form of design, and the functions of the buildings and
24 structures, none of the architectural resources were deemed eligible to the NRHP (Mellon 2002). As
25 such, no architectural resources have been identified within the project area.

26 Based on the available records, there are no NRHP-eligible traditional cultural resources within the
27 proposed project area.

28 **3.4.4 Environmental Consequences**

29 Analysis of potential impacts to cultural resources considers both direct and indirect impacts to a cultural
30 feature. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a
31 resource, altering characteristics of the surrounding environment that contribute to the importance of the
32 resource, introducing visual or audible elements that are out of character for the period the resource
33 represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is
34 destroyed. Direct impacts can be assessed by identifying the type and location of a proposed action and
35 by determining the exact locations of cultural resources that could be affected. Indirect impacts are those
36 that may result from a change in activity levels or other occurrence that is a byproduct of a proposed
37 action, such as the effect of increased vehicular or pedestrian traffic in the vicinity of the resource.

38 **3.4.4.1 Proposed Action/Alternative 1**

39 No NRHP-eligible architectural or traditional cultural resources have been identified in the area of
40 potential effect. The private partner would be responsible for preparing and implementing a Monitoring
41 and Discovery Plan prior to construction, and archaeological monitoring would be required during all
42 ground disturbing activities. Archaeological monitoring could also be required along the transmission
43 line route depending on survey results. This monitoring would be conducted solely by an archaeologist;

1 monitoring by a tribal representative would not be required. A monitoring summary report would be
2 completed at the end of the monitoring. If cultural resources are found during ground-disturbing activities
3 associated with this project, federal and state laws require work to stop and the NREA Cultural Resources
4 Manager be contacted immediately to evaluate the significance of such finds. If the project boundaries
5 change for any reason, further archaeological work may be required and the NREA Cultural Resources
6 Manager must be consulted. Therefore, with implementation of the proposed monitoring requirements,
7 and having received concurrence from the SHPO (refer to Appendix D), implementation of the Proposed
8 Action/Alternative 1 would not affect cultural resources and impacts would be less than significant.

9 3.4.4.2 Alternative 2

10 Impacts to cultural resources under Alternative 2 would be similar to those described above for the
11 Proposed Action/Alternative 1. Therefore, with implementation of the proposed monitoring requirements
12 described for the Proposed Action/Alternative 1, and having received concurrence from the SHPO (refer
13 to Appendix D), implementation of Alternative 2 would not affect cultural resources and impacts would
14 be less than significant.

15 3.4.4.3 Alternative 3

16 Impacts to cultural resources under Alternative 3 would be similar to those described above for the
17 Proposed Action/Alternative 1. Therefore, with implementation of the proposed monitoring requirements
18 described for the Proposed Action/Alternative 1, and having received concurrence from the SHPO (refer
19 to Appendix D), implementation of Alternative 3 would not affect cultural resources and impacts would
20 be less than significant.

21 3.4.4.4 No Action Alternative

22 Under the No Action Alternative, the proposed PV, transmission line, and associated infrastructure would
23 not be constructed, and existing conditions as described in Section 3.4.3, *Affected Environment*, would
24 remain unchanged. Therefore, there would be no impacts to cultural resources with implementation of
25 the No Action Alternative.

26 3.5 AIR QUALITY

27 3.5.1 Definition of Resource

28 3.5.1.1 Criteria Pollutants

29 Existing air quality at a given location can be described by the concentrations of various pollutants in the
30 atmosphere. The main pollutants of concern considered in this air quality analysis include volatile
31 organic compounds (VOCs), ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide
32 (SO₂) particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter (PM₁₀),
33 and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}). Although VOCs or NO_x
34 (other than nitrogen dioxide [NO₂]) have no established ambient air quality standards, they are important
35 as precursors to O₃ formation.

36 3.5.1.2 Greenhouse Gases

37 GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes and
38 human activities. The most significant of the human activities emitting GHGs is the burning of fossil
39 fuels. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Scientific
40 evidence indicates a trend of increasing global temperature over the past century correlating with an
41 increase in GHG emissions from human activities.

1 The most common GHGs emitted from natural processes and human activities include carbon dioxide
 2 (CO₂), methane (CH₄), and nitrous oxide (N₂O). Examples of GHGs created and emitted primarily
 3 through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur
 4 hexafluoride. Each GHG is assigned a global warming potential, which is the ability of a gas or aerosol
 5 to trap heat in the atmosphere. The global warming potential scale is standardized to CO₂, which has a
 6 value of one. For example, CH₄ has a global warming potential of 21, which means that it has a global
 7 warming effect 21 times greater than CO₂ on an equal-mass basis. CO₂ is the dominant gas in terms of
 8 quantities of total GHG emissions, although other GHGs have a higher global warming potential than
 9 CO₂. Total GHG emissions from a source are often reported as a CO₂ equivalent (CO₂e). The CO₂e
 10 is calculated by multiplying the emissions of each GHG by its global warming potential and adding the
 11 results together to produce a single, combined emission rate representing all GHGs.

12 **3.5.2 Regulatory Framework**

13 3.5.2.1 Criteria Pollutants

14 Criteria pollutants have national and/or state ambient air quality standards. The USEPA establishes the
 15 National Ambient Air Quality Standards (NAAQS), while the California Air Resources Board (CARB)
 16 establishes the state standards, termed the California Ambient Air Quality Standards (CAAQS) (CARB
 17 2015a). The Mojave Desert Air Quality Management District (MDAQMD) has been delegated the
 18 authority to enforce the federal and state standards in the project area. Table 3-3 provides the NAAQS
 19 and CAAQS as of 2015.

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

Pollutant	Averaging Time	California Standards	National Standards ¹	
			Primary ^{2, 3}	Secondary ^{3,4}
O ₃	1-hour	0.09 ppm (180 µg/m ³)	—	Same as primary
	8-hour	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	Same as primary
CO	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	—
	8-hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	—
NO ₂	1-hour	0.18 ppm (339 µg/m ³)	0.10 ppm (188 µg/m ³)	—
	Annual	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as primary
SO ₂	1-hour	0.25 ppm (655 µg/m ³)	0.075 ppm (105 µg/m ³)	—
	3-hour	—	—	0.5 ppm (1,300 µg/m ³)
PM ₁₀	24-hour	50 µg/m ³	150 µg/m ³	Same as primary
	Annual	20 µg/m ³	—	Same as primary
PM _{2.5}	24-hour	—	35 µg/m ³	Same as primary
	Annual	12 µg/m ³	15 µg/m ³	Same as primary
Lead	30-day average	1.5 µg/m ³	—	—
	Rolling 3-month average	—	0.15 µg/m ³	Same as primary
	Calendar Quarter	—	1.5 µg/m ³	Same as primary
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	No National Standards	
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m ³)	No National Standards	

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

Pollutant	Averaging Time	California Standards	National Standards ¹	
			Primary ^{2, 3}	Secondary ^{3,4}
Visibility Reducing Particles	8-hour	In sufficient amount to produce an extinction coefficient of 0.23 per km when the relative humidity is less than 70 percent. Measurement in accordance with CARB Method V.	No National Standards	

Notes: ¹ Standards other than 1-hour O₃, 24-hour PM₁₀, 24-hour PM_{2.5}, and those based on annual averages cannot be exceeded more than once a year.

² Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

³ Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

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

µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; ppm = parts per million.

Source: CARB 2015a.

1 Section 176(c) of the Clean Air Act (CAA), as articulated in the USEPA General Conformity Rule, states
2 that a federal agency cannot issue a permit or support an activity unless the agency determines that the
3 action would conform to the most recent USEPA-approved State Implementation Plan (SIP). This means
4 that projects using federal funds or requiring federal approval in nonattainment or maintenance areas must
5 not: (1) cause or contribute to any new violation of a NAAQS; (2) increase the frequency or severity of
6 any existing violation; or (3) delay the timely attainment of any standard, interim emission reduction, or
7 other milestone. Certain actions are exempt from conformity determinations if the projected emission
8 rates would be less than specified emission rate thresholds, known as *de minimis* thresholds. The
9 applicable *de minimis* levels for the project area are listed in Table 3-4.

Table 3-4. Applicable Criteria Pollutant *de minimis* Levels (tons/year)

VOCs ¹	NO _x ¹	CO	SO ₂	PM ₁₀ ¹	PM _{2.5}
25	25	N/A	N/A	100	N/A

Notes: ¹ The Mojave Desert Air Basin (MDAB) is a severe nonattainment area for the 8-hour O₃ NAAQS (VOCs and NO_x are precursors to the formation of O₃) and is a moderate nonattainment area for the PM₁₀ NAAQS.

N/A = not applicable because the MDAB is currently in attainment of the NAAQS for these criteria pollutants.

Source: USEPA 2015a.

10 Presently, the Mojave Desert Air Basin (MDAB) attains the NAAQS for all criteria pollutants except O₃
11 and PM₁₀. The portions of the MDAB that encompass the project area are rated as “severe” O₃ and
12 “moderate” PM₁₀ nonattainment areas (USEPA 2015a). The southwestern portion of San Bernardino
13 County located within the South Coast Air Basin (in the Los Angeles and San Bernardino urban areas) is
14 an “extreme” O₃ nonattainment area. Per 42 USC § 7511d, if an area in extreme or severe ozone
15 nonattainment fails to attain the NAAQS by the planned attainment date, then each major stationary
16 source of VOCs located within the area shall pay a fee to the state for each calendar year until the area is
17 redesignated as an attainment area for ozone. CARB also designates areas of the state that are in
18 attainment or nonattainment of the CAAQS. An area is in nonattainment for a pollutant if its CAAQS have
19 been exceeded more than once in three years. Presently, the MDAB attains the CAAQS for all criteria
20 pollutants except O₃, PM₁₀, and PM_{2.5} (CARB 2015b).

1 3.5.2.2 Greenhouse Gases

2 Federal agencies are addressing emissions of GHGs by mandating GHG reductions in federal laws and
3 EOs, most recently in EO 13693 (*Planning for Federal Sustainability in the Next Decade*) (EO 13693
4 superseded EO 13423 [*Strengthening Federal Environment, Energy, and Transportation Management*]
5 and EO 13514 [*Energy Efficient Standby Power Devices*]). In 2009 the USEPA signed GHG
6 Endangerment Findings under Section 202(a) of the CAA, stating that six “key” GHGs are a threat to
7 public health and welfare (CO₂, CH₄, N₂O, hydrofluorocarbons, perfluorocarbons, and sulfur
8 hexafluoride). Since then, the USEPA has been creating standards and regulations for controlling GHG
9 emissions from passenger vehicles. Additionally, since 2012 the USEPA has issued proposals and
10 updated regulations to reduce carbon emissions from new and existing power plants, landfills, and oil and
11 natural gas facilities. Despite these efforts, there are no promulgated federal regulations to date limiting
12 GHG emissions. In December of 2014 the CEQ issued revised draft guidance for Federal agencies, to
13 provide guidance on when and how to consider the effects of GHG emissions and climate change in their
14 projects (CEQ 2014).

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

21 In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of
22 renewable energy resources in accordance with goals set by EO 13693 and the Energy Policy Act of
23 2005, the DoN has implemented a number of renewable energy projects. The types of projects currently
24 in operation within military installations include thermal and PV solar energy systems, geothermal power
25 plants, and wind energy generators.

26 The potential effects of GHG emissions are by nature global and cumulative, and it is impractical to
27 attribute climate change to individual projects. Therefore, the impact of GHG emissions associated with
28 this project is discussed in the context of cumulative impacts in Section 4.2.5 of this EA.

29 **3.5.3 Affected Environment**

30 In partnership with the MDAQMD, the Natural Resources Environmental Affairs at the Combat Center
31 has operated an air monitoring program at the Combat Center since 1996. Currently, two stations sample
32 for PM₁₀ within the southern region of the Combat Center. The Mainside area of the Combat Center also
33 samples for gaseous pollutants. The purpose of the program is to characterize air quality trends and to
34 address state and regional air monitoring initiatives. Table 3-5 summarizes the 2003-2009 maximum
35 ambient pollutant data monitored at the Mainside monitoring station, the years for which data is available
36 and is considered to be an appropriate representation of ambient air quality (MCAGCC 2014b). The
37 PM_{2.5} data was obtained from the MDAQMD Victorville station for the same years. These data show that
38 other than O₃ and PM₁₀, the ambient air quality concentrations at this location are well below CAAQS
39 and NAAQS values.

Table 3-5. Maximum Pollutant Concentrations Measured at the Mainside Monitoring Station

Pollutant	Averaging Period	National Standard	State Standard	Highest Monitored Concentration*				
				2003	2004	2005	2008	2009
O ₃ (ppm)	1-hour	N/A	0.09	0.111	0.095	0.106	0.093	0.087
	8-hour	0.075	0.07	0.076	0.080	0.081	0.077	0.073
CO (ppm)	1-hour	35	20	1.0	0.7	0.7	1.2	3.6
	8-hour	9	9	0.8	0.3	0.6	1.0	2.4
NO ₂ (ppm)	1-hour	0.10	0.18	0.028	0.058	0.025	0.025	0.03
	Annual	0.053	0.03	0.005	0.004	0.004	0.003	0.004
SO ₂ (ppm)	1-hour	0.075	0.25	0.020	0.005	0.006	0.010	0.011
	24-hour	N/A	0.04	0.003	0.002	0.002	0.009	0.007
	Annual	N/A	N/A	0.001	0.000	0.001	0.002	0.002
PM ₁₀ (µg/m ³)	24-hour	150	50	N/A	N/A	N/A	118	TBD
	Annual	N/A	20	22	18	17	25	TBD
PM _{2.5} (µg/m ³)	24-hour	35	N/A	28	34	27	17	20
	Annual	15	12		11	10	N/A	9

Notes: *Exceedances of the standards are **bolded**. Data for calendar year 2008 inclusive to 30 September 2008.
 N/A = not applicable; TBD = to be determined.

Source: Naval Facilities Engineering Service Center (2009), except PM_{2.5} data collected by the MDAQMD at the Victorville station (MCAGCC2014b).

1 **3.5.4 Environmental Consequences**

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

7 Approach to Analysis

8 The air quality analysis estimated the magnitude of emissions that would occur from proposed
 9 construction and decommissioning activities. Construction related activities would include clearing
 10 vegetation, grading to prepare the site, trenching for utilities, pole mounting and/or concrete footing for
 11 the PV system installation, and construction/installation of the substations, switching/metering stations,
 12 transmission poles, and solar PV panels. Although manufacturing of solar PV cells or panels is not part
 13 of this proposed action and would occur off-installation, manufacturing of solar PV cells requires
 14 potentially toxic heavy metals such as lead, mercury, and cadmium. It even produces GHGs, such as
 15 CO₂, that contribute to global climate change. However, existing research suggests that solar PV systems
 16 compared with conventional fossil fuel-burning power plants significantly reduces air pollution
 17 (Intergovernmental Panel on Climate Change 2012).

18 Operational emissions from maintenance activities, as described in Section 2.2.1.3, would be minor and
 19 infrequent. Emissions would be generated from operational activities such as the use of vehicles and
 20 equipment with combustive engines, including water tank trucks to deliver water to the site, and
 21 generation of fugitive dust when driving vehicles on unpaved surfaces within and around the solar PV
 22 installation to perform periodic washing of panels and vegetation removal.

23 Emissions Evaluation Methodology

24 Air quality impacts from construction activities proposed under each action alternative would primarily
 25 occur from combustive emissions due to the use of fossil fuel-powered equipment and fugitive dust

1 emissions (PM₁₀ and PM_{2.5}) from the operation of equipment on exposed soil. Air emissions were
2 estimated using the California Emissions Estimator Model (CalEEMod), which is the current
3 comprehensive tool for quantifying air quality impacts from land use projects throughout California. The
4 model was developed in collaboration with the air districts of California and includes default data (e.g.,
5 emission factors, trip lengths, meteorology, source inventory, etc.) that have been provided by the various
6 California air districts to account for local requirements and conditions (California Air Pollution Control
7 Officers Association 2015). For this analysis, default data was overridden in the model by project-
8 specific data (as provided in Chapter 2) when available. Assumptions were made regarding the total
9 number of days each piece of equipment would be used and the number of hours per day each type of
10 equipment would be used. Assumptions and model inputs are located within the modeling calculations in
11 Appendix B, *Record of Non-Applicability and Air Quality Calculations*.

12 For the purposes of this air quality analysis, and for air pollutants designated as nonattainment with the
13 NAAQS (and therefore subject to CAA General Conformity requirements), if the estimated total of direct
14 and indirect emissions caused by a project alternative exceeds a conformity *de minimis* threshold
15 requiring a conformity determination in the MDAB project region (25 tons per year of VOCs or NO_x or
16 100 tons per year of PM₁₀), further analysis and a formal CAA Conformity Determination would be
17 conducted to determine whether impacts were significant. In such cases, if emissions conform to the
18 approved SIP, then proposed impacts would be determined to be less than significant. For those air
19 pollutants in the MDAB that are in attainment of the NAAQS (so the General Conformity requirements
20 and thresholds do not apply), estimated emissions were compared to the New Source Review thresholds
21 of 250 tons per year.

22 3.5.4.1 Proposed Action/Alternative 1

23 Construction, Operation, and Decommissioning Activities

24 Implementation of the Proposed Action/Alternative 1 would result in the construction of an up to 57 MW
25 solar PV system on flat or sloped grades. Soil disturbance would include multiple augured holes for pole
26 mounting and/or concrete footings. In addition, soil could be built up, compacted, and stabilized
27 (potentially with rock rip-rap) in a relatively small area to ensure the PV system's substation, inverters,
28 and associated transformers remain at least two feet above the flood zone.

29 For modeling purposes, it was assumed that the entire 241-ac site would be disturbed and prepared for
30 placement of the solar PV system and associated equipment. Grading would be required to level the site
31 where needed and for activities such as trench digging and foundation footing placement, but any cut and
32 fill would remain on site. Additionally, construction activities include of installation of a new 2.6-mile
33 (4.2-km) transmission line, requiring replacement of every other existing power pole with an 80-ft tall
34 steel pole with a concrete base. Construction activities were assumed to take approximately 2 years to
35 complete (2016-2017). Decommissioning activities are expected to occur over the course of two months
36 and were assumed to occur in 2053.

37 Operational air emissions refer to air emissions that may occur after the solar panels have been installed.
38 Air emissions would primarily result from the use of employee vehicles traveling to the project site for
39 maintenance and repair activities, water tank trucks being driven to and from the site for water deliveries
40 (assumed to be 60 miles round-trip), and from travel on unpaved roads and surfaces. Routine
41 maintenance and inspections would typically require one to two vehicles per event and would generate
42 very minor emissions. Dust suppression methods would continue to be employed as necessary.

43 Table 3-6 presents a summary of the annual emissions associated with construction, operation, and

1 decommissioning activities at the Combat Center under the Proposed Action/Alternative 1. Emission
 2 calculations are provided in Appendix B, *Record of Non-Applicability and Air Quality Calculations*.
 3 Since the potential emissions are from construction and decommissioning activities in differing years,
 4 they are not additive. The yearly emissions estimated to be produced during the operational phase of the
 5 project are a conservative, or high, estimate due to the limitations of the model for estimating emissions
 6 from a utility land use.

7 As shown in Table 3-6, annual project emissions would be below *de minimis* thresholds and New Source
 8 Review thresholds of 250 tons per year, and would not trigger a formal Conformity Determination under
 9 the CAA General Conformity Rule.

10 **Table 3-6. Proposed Action/Alternative 1 – Annual Construction, Operation, and Decommissioning**
 11 **Emissions at the Combat Center with Evaluation of Conformity**

Emission Source	Emissions (tons/year)					
	VOCs	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Proposed Action/Alternative 1 - Construction						
Year - 2016	0.26	1.58	7.89	0.02	0.72	0.29
Year - 2017	0.30	1.72	9.53	0.02	0.37	0.13
Proposed Action/Alternative 1 - Operation						
Yearly Emissions	0.31	0.10	0.22	0.0006	0.02	0.009
Proposed Action/Alternative 1 - Decommissioning						
Year – 2053	0.006	0.03	0.32	0.0006	0.02	0.005
Conformity <i>de minimis</i> Limits	25	25	N/A	N/A	100	N/A
Exceeds Conformity <i>de minimis</i> Limits?	No	No	No	No	No	No

Note: N/A = Not applicable.

12 Ground disturbance during construction could result in the release of dust, which may carry spores from
 13 *Coccidioides immitis*, the fungus that causes coccidioidomycosis (also known as Valley Fever). The
 14 number of documented cases in the United States has been steadily increasing over the past few years.
 15 There were over 20,000 reported cases in 2011, and the Center for Disease Control estimates that an
 16 additional 150,000 cases go undiagnosed each year. About 25% of all cases occur in California (Center
 17 for Disease Control 2012). In 2011, there were 75 cases of Valley Fever in San Bernardino County, an
 18 incidence rate of 3.4 cases per 100,000 people (San Bernardino County Department of Public Health
 19 2013). The Proposed Action would implement dust control measures and the preparation of a Dust
 20 Abatement Plan. These dust control measures would minimize the amount of spore-laden soil eroded
 21 and/or carried offsite, limiting the potential effect on public health. Dust suppression methods include (1)
 22 wetting the soil during work; (2) the use of biodegradable polymeric stabilizers and/or rock rip-rap to
 23 stabilize soil and unpaved roads; and (3) stopping soil disturbing activities during conditions that prevent
 24 adequate dust control.

25 In addition to the dust control measures discussed above, best management practices would be followed
 26 during the construction, operation, and decommissioning activities to reduce air emissions from
 27 combustive engines. Proper and routine maintenance of all vehicles and other construction equipment
 28 would be implemented to ensure that emissions are within the design standards of all construction
 29 equipment. Construction vehicle engines (non-road diesel engines) would conform to USEPA Tier 4
 30 emission standards, when applicable. Hazardous Air Pollutants

31 The USEPA has listed 188 substances that are regulated under Section 112 of the CAA, and the state of
 32 California has identified additional substances that are regulated under state and local air toxics rule.
 33 Emission factors for most Hazardous Air Pollutants (HAPs) from combustion sources are roughly three or

1 more orders of magnitude lower than emission factors for criteria pollutants. Trace amounts of HAPs
2 may be emitted from sources during the construction/decommissioning and operation of the proposed
3 solar PV project; however, the amounts that would be emitted would be small in comparison with the
4 emissions of criteria pollutants. Emissions of HAPs would also be subject to dispersion due to wind
5 mixing and other dissipation factors; therefore, no significant impacts would occur.

6 General Conformity Applicability Analysis

7 The estimated emissions associated with the Proposed Action would be below the *de minimis* threshold
8 levels for General Conformity Rule requirements. Therefore, the Proposed Action would conform to the
9 MDAB SIP and would not trigger a formal Conformity Determination under Section 176(c) of the CAA.
10 The USMC has prepared a Record of Non-Applicability (Appendix B) in accordance with the CAA
11 General Conformity Rule.

12 On a region-wide scale, the use of solar PV panels would have beneficial air quality impacts because
13 fossil fuels would not be used for the necessary electricity generation, resulting in fewer GHG and
14 particulate matter emissions. Providing solar energy to the Combat Center and the region would have
15 long-term direct and indirect benefits to air quality in the MDAB. These potential long-term beneficial
16 impacts would off-set the minor air quality emissions generated as a result of construction, operation, and
17 decommissioning of the solar PV system. From an air quality perspective, the proposed solar PV site
18 benefits would off-set and exceed any temporary impacts to air quality within the region.

19 Therefore, with implementation of the proposed SCMs, the Proposed Action/Alternative 1 would have
20 less than significant impacts to air quality.

21 3.5.4.2 Alternative 2

22 Alternative 2 consists of all of the actions proposed under the Proposed Action/Alternative 1 with the
23 exception of the location for the new transmission line. The new transmission line portion of Alternative
24 2 is 2.9 miles (4.7 km) long, compared to 2.6 miles (4.2 km) under the Proposed Action/Alternative 1. For
25 air quality modeling purposes, this nominal difference in the proposed transmission line length would not
26 cause an appreciable difference in air quality emissions. Implementation of Alternative 2 would result in
27 similar, albeit only slightly larger, air quality emissions as described under the Proposed
28 Action/Alternative 1. Therefore, with implementation of the proposed SCMs, Alternative 2 would have
29 less than significant impacts to air quality.

30 3.5.4.3 Alternative 3

31 Alternative 3 consists of all of the actions proposed under the Proposed Action/Alternative 1 with the
32 exception of the location for the new transmission line. The new transmission line portion of Alternative
33 3 is 2.9 miles (4.7 km) long, compared to 2.6 miles (4.2 km) under the Proposed Action/Alternative 1. For
34 air quality modeling purposes this nominal difference in the proposed transmission line length would not
35 cause an appreciable difference in air quality emissions. Implementation of Alternative 3 would result in
36 similar, albeit only slightly larger, air quality emissions as described under the Proposed
37 Action/Alternative 1. Therefore, with implementation of the proposed SCMs, Alternative 3 would have
38 less than significant impacts to air quality.

39 3.5.4.4 No Action Alternative

40 Under the No Action Alternative, the DoN would not enter into an agreement with a private partner to
41 construct and operate a solar PV system at the Combat Center. The No Action Alternative represents the
42 status quo. Under the No Action Alternative, the emissions levels would remain constant for those

1 emission sources that are not affected by other federal, state, county, local, DoD, DoN, USMC, or
2 Combat Center requirements to reduce air emissions. As a result, no net emission increases would result
3 from implementation of the No Action Alternative. With no net emission increases proposed, the No
4 Action Alternative is exempt from the General Conformity Rule. There would be no impacts to air
5 quality.

6 **3.6 UTILITIES**

7 **3.6.1 Definition of Resource**

8 This section focuses on utilities within the vicinity of the project site, including stormwater drainage,
9 electricity, natural gas, wastewater, and potable and non-potable water.

10 **3.6.2 Existing Utility Framework**

11 3.6.2.1 Stormwater Drainage

12 Although rainfall is infrequent, danger of flash flooding exists as rain events are typically of high
13 intensity over short durations. Currently, stormwater runoff at the Combat Center is conveyed in open
14 drainage swales. Runoff flows westward via a combination of lined and unlined drainage channels
15 toward retention basins at Mesquite Dry Lake (MCAGCC 2009).

16 3.6.2.2 Electricity

17 In 2003, a 7.2-MW cogeneration power plant was installed at the Combat Center. This natural-gas fired
18 turbine generates 71 percent of the electricity needs of the Combat Center. In addition to the cogeneration
19 plant, 2.6 MW of solar PV power has been installed on the Combat Center, consisting of a 1.1-MW PV
20 array plus 1.5 MW installed on the rooftops of vehicle shade structures. To increase on-site power
21 generation, the Combat Center recently constructed a second cogeneration power plant consisting of two
22 4.6-MW gas-fired turbines. Combined, these power sources provide the vast majority of electricity used
23 by the Combat Center.

24 3.6.2.3 Natural Gas

25 Natural gas is delivered to the Combat Center at the main meter/regulator station at Del Valle Road and
26 Cottontail Road. The delivery source is a high-pressure main owned and operated by Southern California
27 Gas Company. Natural gas is then distributed throughout Mainside. The existing natural gas system has
28 adequate capacity to effectively serve existing base facilities (MCAGCC 2009).

29 3.6.2.4 Wastewater

30 Mainside is serviced by one wastewater treatment plant that is located west of Del Valle Road at Seventh
31 Street. The treatment plant headworks has a maximum capacity of 7.5 million gallons (28 million liters)
32 per day, with an average flow rate of 1.0 million gallons (3.8 million liters) per day. The Mainside plant
33 consists of the enclosed headworks building which is negatively pressurized so odors from untreated
34 influent can be treated using a soil bio-filter. The headworks building is equipped with a bar screen auger
35 system. Influent flow is measured in a 9-inch (23-centimeter) Plastifab parshall flume located just outside
36 and downstream of the headworks building (USMC 2013b).

37 From the headworks, the influent is channeled to an integrated pond system with a solids digestion
38 section (fermentation pit) that is constructed within the eastern footprint of Pond 1. The balance of the
39 integrated pond system aerated pond, outside the fermentation pit footprint, begins secondary biological
40 treatment processes (USMC 2013b).

1 The Secondary Treatment Facilities include inter-pond piping, flow controls and flow pattern, two
2 parallel wetlands built within the footprint of existing Ponds 2 and 3, and a dedicated secondary treated
3 effluent pump station and disinfection system (USMC 2013b).

4 Secondary treated reclaimed water is pumped to Ocotillo Pond to be reused at the golf course (USMC
5 2013b).

6 3.6.2.5 Potable Water

7 All potable water consumed at the Combat Center is produced by an existing groundwater well field
8 drawn from the Surprise Spring Aquifer. The installation has a total of 11 production wells that have a
9 peak day supply of 7 million gallons (27 million liters); the current daily potable water consumption at the
10 installation is approximately 1.8 million gallons (7.9 million liters) per day. After disinfection in the
11 equalizer tanks, the water is allowed to continue flowing by gravity to the Camp Wilson reservoir and to
12 the above-ground steel storage reservoirs at Mainside (approximate elevation of 1,955 ft [596 m]) (USMC
13 2013b).

14 **3.6.3 Affected Environment**

15 3.6.3.1 Stormwater Drainage

16 A stormwater line is located under a portion of the Alternative 1 transmission line route, southwest of
17 Tenth Street.

18 3.6.3.2 Electricity

19 Existing electrical infrastructure, generally consisting of a 34.5-kV distribution line and a 12.47-kV
20 distribution line on 55-ft (17-m) tall wooden poles, is located within the northeast portion of the proposed
21 solar PV site and along the entirety of the proposed transmission line under Alternative 1. A second
22 transmission line is also located along a portion of the Combat Center's southern boundary, including the
23 entirety of Berkeley Avenue. East of Westside Road, the second line is on the north side of Berkeley
24 Avenue; west of Westside Road, the second line is on the south side of Berkeley Avenue. A portion of
25 these two transmission lines along Berkeley Avenue are located underground.

26 A third, off-installation transmission line is also located along the portion of Berkeley Avenue and the
27 Combat Center's boundary that is west of Morongo Road. This transmission line is owned by SCE.

28 3.6.3.3 Natural Gas

29 A natural gas line is located along the entirety of Del Valle Drive, Berkeley Avenue, and a portion of the
30 proposed transmission line would run parallel to the gas line. The precise location would be confirmed
31 before construction. This gas line also connects to the wastewater treatment plant along Del Valle Drive.

32 3.6.3.4 Wastewater

33 The Alternative 1 transmission line would follow existing electricity lines and therefore would pass over a
34 portion of the wastewater treatment plant and associated main wastewater treatment lines. The
35 wastewater treatment lines nearest to the proposed PV area are two main lines that parallel Del Valle
36 Drive, approximately 180 ft (55 m) from the northwest edge of the proposed PV area. A main wastewater
37 line also runs along the proposed transmission lines parallel to Berkeley Avenue. East of Mesquite
38 Springs Road, this main is south of the Berkeley Avenue; west of the Mesquite Springs Road, this main is
39 underneath Berkeley Avenue. Two other wastewater mains also connect to, or cross underneath, the
40 Berkeley Avenue main at Morongo Road and west of Mesquite Springs Road. A wastewater pump is
41 located south of Berkeley Avenue at Westside Road.

1 3.6.3.5 Potable Water

2 Main water lines run parallel and adjacent to Adobe Road and are also located within the PV area,
3 generally running parallel to Del Valle Drive, located approximately 450 ft (137 m) southwest of the
4 proposed northeastern PV boundary. This line turns northeast and connects with other lines adjacent and
5 parallel to Del Valle Drive at First Street. Water main lines are also located adjacent to several portions
6 of the Alternative 1 transmission line along or near Del Valle Road, including the southwest side of the
7 track field and baseball diamonds near Third Street, the wastewater treatment plant, and infrastructure
8 near Tenth Street. The water main also runs along and crosses underneath the existing and proposed
9 transmission lines for most of the length of Berkeley Avenue.

10 **3.6.4 Environmental Consequences**

11 This section evaluates the potential impacts to utilities associated with implementation of the action
12 alternatives. Impacts to utilities would occur if implementation of an action alternative would result in
13 the use of a substantial proportion of the remaining utility system capacity, reach or exceed the current
14 capacity of the utility system, or require development of facilities and utility sources beyond those
15 existing or currently planned.

16 3.6.4.1 Proposed Action/Alternative 1

17 The Proposed Action would be sited within a reasonable proximity to interconnection facilities, and the
18 energy generated by the Proposed Action would contribute to the SECNAV's initiative to generate power
19 that would go into the civilian grid under Model 2 (refer to Section 1.1.1, *Secretary of the Navy*
20 *Renewable Energy Goals and Strategies*), a beneficial impact to utilities.

21 To avoid design and construction conflicts with the Combat Center's internal utility network, a utility
22 investigation would be conducted to obtain the exact depth and location of underground utilities (i.e.,
23 natural gas lines, wastewater lines, potable and non-potable water lines). As described in Section 2.2.1,
24 *Proposed Action/Alternative 1*, the implementation of Alternative 1 would require replacing every other
25 existing, wooden power pole with a taller pole. Areas at the front of the wastewater detention ponds,
26 parallel to Del Valle Road, would require special consideration to avoid undermining the detention pond
27 berms during any pole replacement activities. This would not be a concern during decommissioning,
28 since the poles would be cut above the existing transmission lines and would not require additional
29 ground disturbance. Similarly, construction activities would also require special consideration of the
30 existing overhead line at the proposed solar PV site, and appropriately low construction equipment and
31 safety measures would be utilized as needed. To avoid interrupting Combat Center operations, work
32 along the entire transmission line would be completed while the existing transmission lines are
33 operational, or "hot."

34 As described in Section 2.2.1, Proposed Action/Alternative 1, the private partner would be responsible for
35 obtaining the necessary water. It is expected that this water would come from one or more of the three
36 nearby water districts (Twentynine Palms Water District, Joshua Tree Water District, and/or the Hi-
37 Desert Water District); the private partner would also be responsible for shipping the water to the project
38 site via truck. As such, the Proposed Action/Alternative 1 would have no impact on the Combat Center's
39 water utilities, and it is assumed that the nearby water districts would only provide water if it were
40 available for use without causing a significant impact. For additional information on the nearby water
41 districts, refer to Section 3.3, *Water Resources*.

42 Because solar energy presents a variable or intermittent load beyond the control of its producer, it must be
43 managed and coordinated on the civilian grid according to its availability. Interconnections to the civilian

1 grid are handled by the CALISO for the major California utilities including SCE (the local electrical
2 utility). The conditions for application established by CALISO, SCE, Federal Energy Regulatory
3 Commission, and other entities serve to maintain grid stability and public safety. The private partner
4 would be responsible for adhering to these established processes, which include an application for
5 interconnection, a systems impact study, and a facility study. Additionally, upgrades to off-installation
6 utility facilities could require permitting by the California Public Utility Commission and could require
7 review under the California Environmental Quality Act (CEQA). Off-installation utility upgrades
8 required by the local utility for carrying the PV power would be determined through the interconnection
9 studies, which would be the responsibility of the private partner in coordination with SCE or CALISO.

10 Therefore, for the reasons described above, and with the proposed avoidance and impact minimization
11 measures, implementation of the Proposed Action would have a beneficial impact to renewable energy
12 generation and would not result in the use of a substantial proportion of the remaining utility system
13 capacity, reach or exceed the current capacity of the utility system, or require development of facilities
14 and utility sources beyond those existing or currently planned. Therefore, with implementation of the
15 proposed SCMs, the Proposed Action/Alternative 1 would have less than significant impacts to utilities.

16 3.6.4.2 Alternative 2

17 Impacts to utilities under Alternative 2 would be similar but less than those described for the Proposed
18 Action/Alternative 1, since the proposed transmission line under Alternative 2 would be located away
19 from existing utilities (i.e., natural gas lines, wastewater lines, and potable and non-potable water lines)
20 for the majority of the proposed transmission route. This would also reduce the amount of construction
21 work involving operational, or “hot,” power transmission lines. Therefore, with implementation of the
22 proposed SCMs, Alternative 3 would have less than significant impacts to utilities.

23 3.6.4.3 Alternative 3

24 Impacts to utilities under Alternative 3 would be similar but less than those described for the Proposed
25 Action/Alternative 1, since the proposed transmission line under Alternative 3 would be located away
26 from existing utilities (i.e., natural gas lines, wastewater lines, and potable and non-potable water lines)
27 for the majority of the proposed transmission route. Alternative 3 would also eliminate the need for
28 construction work involving operational, or “hot,” power transmission lines. Therefore, with
29 implementation of the proposed SCMs, Alternative 3 would have less than significant impacts to utilities.

30 3.6.4.4 No Action Alternative

31 Under the No Action Alternative, the proposed PV, transmission line, and associated infrastructure would
32 not be constructed, and existing conditions as described in Section 3.6.3, *Affected Environment*, would
33 remain unchanged. Therefore, there would be no impacts to utilities with implementation of the No
34 Action Alternative.

1 CHAPTER 4 2 CUMULATIVE IMPACT ANALYSIS

3 The analysis of cumulative impacts (or cumulative effects) follows the objectives of NEPA and CEQ
4 regulations (40 CFR Parts 1500-1508) that provide the implementing procedures for NEPA. The CEQ
5 regulations define cumulative impacts as:

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

11 The CEQ also provides guidance on cumulative impacts analysis in Considering Cumulative Effects
12 under NEPA (CEQ 1997). Noting that environmental impacts result from a diversity of sources and
13 processes, the CEQ guidance observes that “no universally accepted framework for cumulative effects
14 analysis exists,” while noting that certain general principles have gained acceptance. One such principle
15 provides that “cumulative effects analysis should be conducted within the context of resource, ecosystem,
16 and community thresholds—levels of stress beyond which the desired condition degrades.” Thus, “each
17 resource, ecosystem, and human community must be analyzed in terms of its ability to accommodate
18 additional effects, based on its own time and space parameters.” Therefore, cumulative effects analysis
19 normally would encompass geographic boundaries beyond the immediate area of the Proposed Action,
20 and a time frame including past actions and foreseeable actions, to capture these additional effects.
21 Bounding the cumulative effects analysis is a complex undertaking, appropriately limited by practical
22 considerations. Thus, CEQ guidelines observe, “[i]t is not practical to analyze cumulative effects of an
23 action on the universe; the list of environmental effects must focus on those that are truly meaningful.”

24 Boundaries, or the region of interest (ROI), for analyses of cumulative impacts in this EA vary.
25 Delineation of the ROI is based upon proximity to the proposed action and which resources are affected.
26 For example, for air quality, the potentially affected air basin is the appropriate boundary for assessment
27 of cumulative impacts from releases of pollutants into the atmosphere. The cumulative impacts analysis
28 focuses on projects that directly overlap with the proposed alternatives (i.e., occur in similar locations and
29 potentially impact similar resources).

30 4.1 PAST, PRESENT, AND REASONABLY FORESEEABLE PROJECTS

31 Identifiable effects of other past, present, and reasonably foreseeable future actions are analyzed and
32 evaluated to the extent they may be additive to impacts of the Proposed Action. As part of the evaluation
33 of cumulative impacts, a review of other projects in the vicinity of the action alternatives was conducted.
34 Projects that were older than 5 years have been considered within the baseline of this analysis (refer to
35 Chapter 3) and are not considered below. Projects that are considered reasonably foreseeable future
36 actions are projects that would occur by or in 2020. Projects that would occur after 2020 are highly
37 uncertain and thus do not meet the criteria of being reasonably foreseeable. Other testing and training
38 activities at the Combat Center that do not have the potential to interact cumulatively with the Proposed
39 Action are not addressed in this EA.

4.1.1 Past Projects

4.1.1.1 Permanent Facilities Bed-Down of Increased End-Strength

An EA was completed in September 2009 to evaluate the environmental impacts associated with construction of permanent facilities and infrastructure at the Combat Center to support the USMC's Grow the Force Initiative (USMC 2009). The development footprint for this project is located within the Mainside area of the Combat Center, and would consist of 43 Military Construction (MILCON) projects. Notable examples of the Grow the Force MILCON projects include:

- P-924 MAGTF/TC Simulation Training Facility
- P-182 Battalion Operations Center
- P-990 Range Control Facility
- P-954 MAGTF/TC Operations Center
- P-923 Electrical and Communications Maintenance Storage
- P-109 Tactical Vehicle Wash Platform
- P-156 Construction Maintenance and Storage Hangar (Marine Unmanned Aerial Vehicle Squadron)
- P-168 Strategic Expeditionary Landing Field (SELF) Utilities Installation
- P-155 Squadron Headquarters and Maintenance Complex (Marine Unmanned Aerial Vehicle Squadron)
- P-160 Expeditionary Training Support
- P-504 Consolidated Community Support Facility

Based on the results of the analysis, it was determined that there would be no significant impacts to the environment with implementation of the proposed action. A FONSI was signed for the Permanent Facilities Beddown of Increased End-Strength on 29 September 2009.

4.1.1.2 Proposed Changes to the Permanent Facilities Bed-down and Infrastructure Project

A Supplemental EA was completed in August 2014 to evaluate the environmental impacts associated with changes to the footprint and scope of some of the projects within the 2009 EA (P-221, P-504, and P-159) as well as the addition of two new projects (P-930 and P-558). The proposed action would occur primarily in two areas of the Combat Center: Mainside and the Camp Wilson/SELF. Based on the results of the analysis, it was determined that there would be no significant impacts to the environment with implementation of the proposed action (USMC 2014a). A FONSI was signed for the Proposed Changes to the Permanent Facilities Bed-down and Infrastructure Project on 22 August 2014 (USMC 2014b).

4.1.1.3 Aerial Maneuver Zones (AMZs) for MV-22 and Rotary-Wing Training

An EA was prepared to evaluate the potential environmental impacts associated with the use of AMZs by MV-22 Osprey tilt-rotor (MV-22) aircraft and rotary-wing aircraft at the Combat Center (USMC 2010b). Specifically, the proposed action would use five different types of AMZs to integrate the MV-22 airframe into the existing rotary-wing tactical and ground training exercises. The EA identifies the environmental consequences of establishing 48 AMZs (Alternative 1) and 73 AMZs (Alternative 2) at various locations within the Combat Center. These AMZs are distributed throughout the Combat Center and are located to the north of the proposed PV site. Based on the results of the analysis, it was determined that there would be no significant impacts to the environment with implementation of the proposed action. A FONSI was signed for the AMZs for MV-22 and Rotary-Wing Training on 21 May 2010 (USMC 2010b).

1 4.1.1.4 West Coast Basing of the F-35B

2 An EIS was prepared to analyze the potential impacts from the west coast basing of the F-35B aircraft.
3 The F-35B would replace legacy F/A-18A/B/C/D Hornet and AV-8B Harrier aircraft in the Third and
4 Fourth Marine Air Wings. The proposed action addressed in the EIS includes:

- 5 • basing of 11 operational F-35B Joint Strike Fighter squadrons (176 aircraft), and 1 F-35B
6 Operational Test and Evaluation squadron (8 aircraft) on the West Coast of the U.S.;
- 7 • construction and/or renovation of airfield facilities and infrastructure necessary to accommodate
8 and maintain the F-35B squadrons;
- 9 • changes to personnel to accommodate squadron staffing; and
- 10 • conducting F-35B readiness and training operations to attain and maintain proficiency in the
11 operational employment of the F-35B and special exercise operations.

12 This EIS addresses six basing alternatives, none of which are at the Combat Center. However, the
13 proposed action includes occasional use of airspace overlaying the Combat Center: Restricted Area 2501
14 North, South, East, and West; Bristol Air Traffic Controlled Assigned Airspace and Military Operations
15 Area; and Sundance Military Operations Area. The frequency of airspace use would be equivalent to or
16 less than current use by the aircraft that the F-35B is replacing. A Record of Decision for the West Coast
17 Basing of the F-35B was signed on 9 December 2010 (DoN 2010).

18 4.1.1.5 Ocotillo Marine Mart

19 In March 2012, NAVFAC Southwest prepared an EA to evaluate the environmental consequences
20 associated with construction of a new location exchange, gas station, and ancillary improvements (DoN
21 and USMC 2012). The development footprint for this project is located within the Ocotillo Heights area
22 of Mainside and does not overlap the ROI of the Proposed Action. Based on the results of the analysis, it
23 was determined that there would be no significant impacts to the environment with implementation of the
24 proposed action. A FONSI for the Ocotillo Marine Mart was signed on 19 March 2012 (DoN and USMC
25 2012).

26 4.1.1.6 P-128 Electrical Infrastructure Upgrades, 34.5kV to 115kV

27 An EA was prepared to evaluate the potential environmental impacts associated with P-128, Electrical
28 Infrastructure Upgrades, which would construct and extend utilities to the new substation constructed by
29 P-127 in support of planned facilities in the North Mainside build-out area. The project would construct
30 the Leatherneck substation and upgrades to the Hi-Desert and Carodean substations off installation.

31 The new transmission substation would be constructed with three regulated transmission substation
32 transformers (115kV & 34.5kV). Also, 115-kV and 38-kV switching and protective devices would be
33 constructed at Building 3083J in the vicinity of the existing Ocotillo switching station. Existing
34 substation upgrades include upgrading the existing SCE dedicated 34.5-kV medium voltage distribution
35 system to a 115-kV high voltage transmission system and adding a new 115-kV high voltage transmission
36 loop. In addition, a new 3-phase, 3-wire, 34.5kV medium voltage distribution line on 60-ft (18-m) class I
37 poles would be extended. Supporting facilities include utility easements for the new utility corridor off-
38 installation.

39 Based on the results of the analysis, it was determined that there would be no significant impacts to the
40 environment with implementation of the proposed action. A FONSI for the P-128 Electrical
41 Infrastructure Upgrades was signed on 24 March 2011.

1 4.1.1.7 Adult Medical Care Clinic Replacement

2 An EA was prepared to evaluate the potential environmental impacts associated with the proposed
3 construction and operation of a replacement Adult Medical Care Clinic at the Combat Center. The
4 proposed action involved the construction and operation of a replacement Adult Medical Care Clinic after
5 the demolition of the existing Adult Medical Care Clinic buildings as well as the relocation of all
6 personnel associated with the Adult Medical Care Clinic. Based on the results of the analysis, it was
7 determined that there would be no significant impacts to the environment with implementation of the
8 proposed action. A FONSI was signed for the Adult Medical Care Clinic Replacement on 22 February
9 2013 (USMC 2013b).

10 4.1.1.8 1.1 MW PV Project at the Combat Center

11 In 2011, a 6.5-ac the Morongo Basin Municipal Advisory Council (2.6-ha), 1.1 MW solar PV project was
12 constructed along the northeastern side of Truax Drive, near 4th Street, at Mainside (see Photo 3 in
13 Section 1.1.2, *Solar PV Systems*). This single-axis tracking project is shown on Figure 4-1 and was
14 expected to provide approximately 2.5 percent of the Combat Center's annual electrical needs
15 (DoD 2012).

16 4.1.1.9 1.0 MW PV Project at the Combat Center

17 A Categorical Exclusion was prepared on 24 August 2011 for a 10-ac (4.0-ha), 1.0 MW solar PV project
18 located directly northwest of the proposed PV site and immediately southeast of the water retention ponds
19 (Figure 4-1). The Categorical Exclusion decision was revalidated on 27 February 2012 and again on
20 2 June 2014 (USMC 2014c).

21 4.1.1.10 Cascade Solar Farm

22 The Cascade Solar Farm was developed and held by Cascade Solar, LLC a subsidiary of Axio Power
23 Holdings, LLC. The project application was submitted mid-2011 and began construction early 2013.
24 The 19 MW project was built on approximately 150 acres using PV technology and is located in the
25 unincorporated community of Joshua Tree approximately 11.5 miles southwest of Mainside. In addition,
26 the project is located on Cascade Road north of Highway 62, less than one mile east of the proposed
27 Joshua Tree Solar Farm. The project was completed and placed into operation in April 2014.

28 4.1.1.11 Lone Valley Solar Project

29 The Lone Valley Solar Project consists of two separate permitted projects known as Agincourt Solar
30 project and Marathon Solar project. The project is located south of State Route 247 on Camp Rock Road
31 approximately 48 miles northwest from Mainside. EDP Renewables purchased the shovel-ready
32 properties in February 2014. Construction on the 30MW PV project began in March 2014 on
33 approximately 230 acres (combined). The project was completed in January 2015.

34 4.1.1.12 Highland Solar I Project (SEPV8)

35 Solar Electric Solutions submitted an application early 2011 to develop a 12-MW, 100-acre project
36 originally named "SEPV8." The project is located approximately 6.5 miles from Mainside on Lear
37 Avenue, north of Highway 62. Solar Electric Solutions started construction in mid-2011 and later sold
38 the project to SolarWorld in May 2012. The project was completed and placed into operation in
39 December 2012. In early 2013, the project was sold to Duke Energy and renamed to Highland Solar I.

1 **4.1.2 Present Projects**

2 4.1.2.1 Landfill No. 2 Expansion and Proposed Material Recovery and Recycling Facility

3 An EA was completed in December of 2006 to evaluate the environmental impacts associated with
4 expanding the life of Landfill No. 2 to provide solid waste disposal capacity for the Combat Center for at
5 least 30 years. The implementation timeframe for the expansion was flexible, depending on permitting
6 requirements and availability of funds. The project, also referred to as P-617, would construct a material
7 recovery facility complex, consisting of five separate buildings: a general waste sorting facility; recycled
8 material sorting and bailing facility; recycled material storage building; vehicle holding shed; and a multi-
9 story administrative support facility for the NREA that includes the Sections of Administrative,
10 Compliance, Pollution Prevention, Hazardous Waste, Natural & Cultural Resources, Total Waste
11 Management, and Range Residue Processing. The project would allow for complete management of solid
12 waste through a material recovery facility complex to remove all recyclables prior to disposal in the
13 expanded sanitary landfill, thus allowing the Combat Center to meet its regulatory requirements by
14 extending the life of the landfill. P-617 would also demolish Building 1451 and eight re-locatable
15 administrative trailers.

16 The proposed action included a vertical expansion, which would not change the approximately 30-ac
17 (12 ha) landfill footprint, but would result in steepening of the side slope areas; a lateral expansion to the
18 south of approximately 8.8 ac (3 ha); and a new landfill cell of approximately 33 ac (13 ha) east of the
19 exiting landfill. A FONSI for the Landfill No. 2 Expansion and Proposed Material Recovery and
20 Recycling Facility was signed on 31 January 2007 (USMC 2006).

21 4.1.2.2 West Coast Basing of the MV-22

22 An EIS was prepared to assess the potential impacts of the West Coast Basing of the MV-22 and
23 associated construction components for expanded apron space and hangar upgrades, similar to the West
24 Coast Basing of the F-35B (DoN 2009a). MV-22 aircraft from Marine Corps Air Station (MCAS)
25 Miramar and MCAS Pendleton would utilize MCAS Yuma as transients during training operations. This
26 project would involve improvements at the SELF, located to the northwest of the Proposed Action. The
27 Marine Corps estimates these MV-22s would fly about 3,900 operations annually at the Combat Center
28 SELF and in the associated airspaces, replacing transient helicopter traffic. The Record of Decision for
29 the West Coast Basing of MV-22 was signed on 18 November 2009 (DoN 2009b). Transition from the
30 helicopters to the MV-22 is scheduled to occur between 2010 and 2020.

31 4.1.2.3 Land Acquisition/Airspace Establishment to Support Large-Scale Marine Air Ground Task
32 Force Live-Fire and Maneuver Training

33 An EIS was prepared to analyze the impacts from the proposed extension of existing installation
34 operating areas through acquisition of additional training lands, modification and establishment of
35 military special use airspace, and implementation of Marine Expeditionary Brigade-level sustained,
36 combined-arms, live-fire, and maneuver training exercises within current and proposed operating areas at
37 the Combat Center (USMC 2012). Proposed training activities would occur within existing training areas
38 (located to the north and west of the proposed PV site), and within proposed land acquisition areas located
39 along the border of the Combat Center. The expansion areas are located to the west, south, and east of the
40 Combat Center. Major resource areas of concern include biological resources, cultural resources, air
41 quality, socioeconomics, recreation, land use, public health and safety, and airspace management. A
42 Final EIS was published in July 2012. The Record of Decision concluded that there would be a
43 significant impact to the desert tortoise; however, it would not result in jeopardy of the species. Within

1 the Biological Opinion, USFWS concluded that take would occur due to military operations and
2 concentrated Off-Highway Vehicle usage in the Johnson Valley area (USMC 2012, 2013a).

3 4.1.2.4 Ongoing Training

4 An EA is being prepared to evaluate the potential environmental impacts associated with the proposed
5 updates to ongoing training activities. At present, training at the Combat Center is covered by the 2003
6 Ongoing and Proposed Training Activities Programmatic EA (USMC 2003). This EA is near the end of
7 its life cycle and is restrictive in the types of training allowed. The new Ongoing Training EA is needed
8 to enable operators to quickly determine the type of training that can be performed as well as where (i.e.,
9 in which zones/areas) the training can be performed within the installation. The new Ongoing Training
10 EA will also analyze impacts associated with the use of current and future technologies, tactics, and
11 equipment.

12 **4.1.3 Reasonably Foreseeable Projects**

13 4.1.3.1 Military Construction Projects

14 The remaining cumulative effects projects listed in Table 4-1 and Figure 4-1 are MILCON-funded
15 construction projects that have occurred, or would occur, in the Mainside area and training areas of the
16 Combat Center. Only those MILCON-funded projects having the potential to interact directly or
17 indirectly with the Proposed Action alternatives and that have not undergone evaluation under NEPA are
18 included in Table 4-1. Unless otherwise noted, Figure 4-1 shows the location of the projects listed in
19 Table 4-1 as well as the two other PV projects described above. Other testing and training activities at the
20 Combat Center that do not have the potential to interact cumulatively with the Proposed Action are not
21 addressed in this EA, as discussed at the beginning of Section 4.1. Many of these projects are not well
22 defined at this time, and very little information is available to characterize the potential effects of each
23 project; NEPA documentation has not yet been initiated for these planned future projects. NEPA
24 documentation would be completed for each of these projects as they approach their respective planning
25 stages. Therefore, the specific environmental consequences of these actions relative to the resources
26 described in Section 4.2 would be analyzed in detail and disclosed to the public in accordance with
27 NEPA. Appendix C, *Cumulative MILCON Projects*, provides additional details about each MILCON
28 project, including the proposed size of each structure or infrastructure footprint and any project-specific
29 site improvements or design features.

1

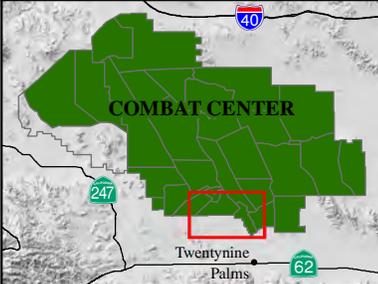
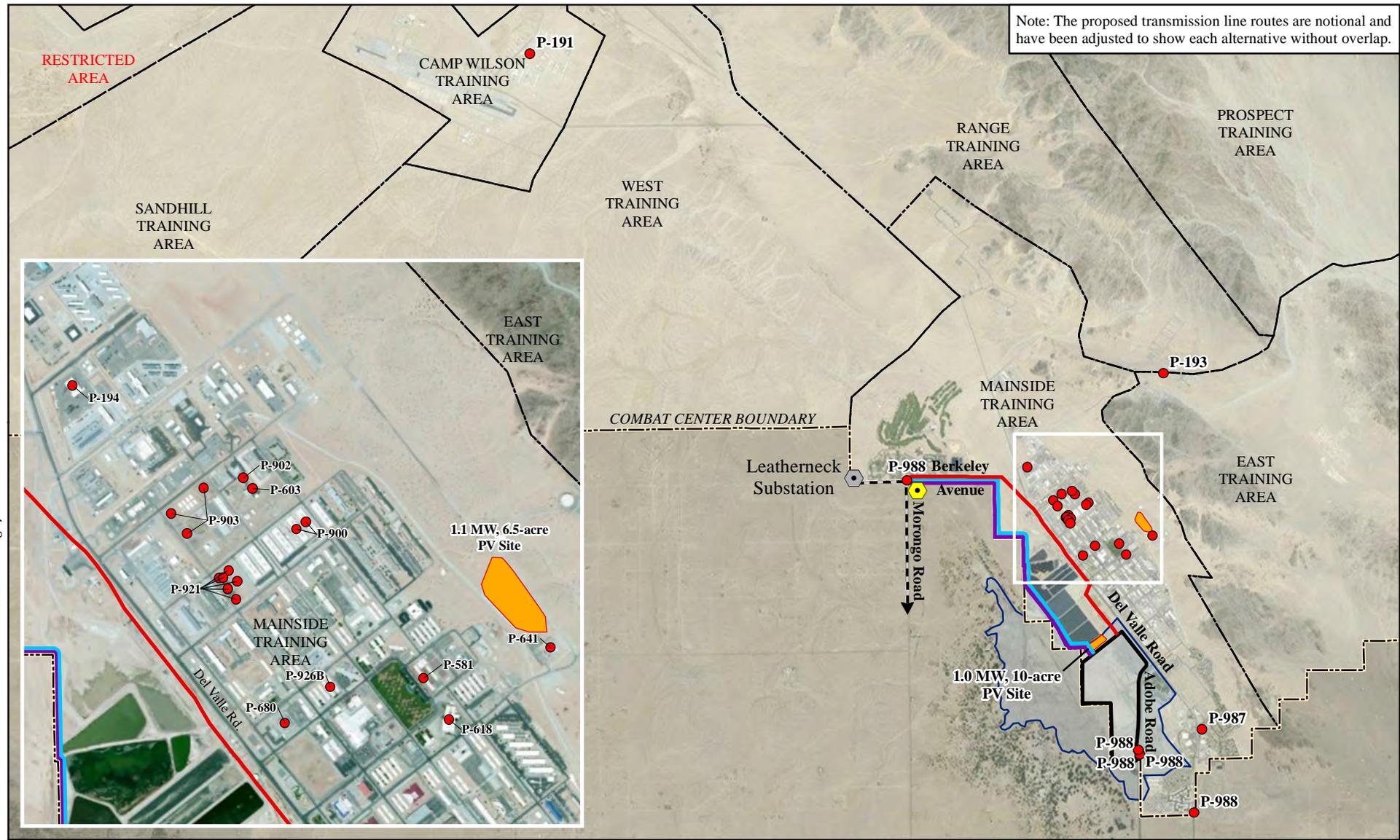
Table 4-1. Cumulative MILCON Projects

<i>Project Number</i>	<i>Project Title</i>	<i>Size (ft²)</i>
P-191	Addition to Camp Wilson Gym (Building 5411)	3,208
P-193	Marksmanship Training Unit Multi-purpose Classroom	11,916
P-194	Convert Building 2025 to Wheeled Vehicle Maintenance Facility	22,680
P-581	MCAGCC Headquarters Building	22,270
P-602	Training Integration Center (*)	41,635
P-603	Vehicle Training and Equipment Facility	27,706
P-618	Multi-Purpose Administration Building	29,084
P-641	Addition East Gym (Building 1588)	19,999
P-662	Expeditionary Fighting Vehicle Maintenance Facility (*)	67,371
P-680	West Gym Addition	19,999
P-900	Marine Corps Communication and Electronic School (MCCES) Classroom	91,762
P-902	MCCES Bulk Supply Warehouse	12,109
P-903	MCCES Consolidated Radar Classroom	32,292
P-921	Electronic/Communications Maintenance & Storage Facility	34,853
P-926B	Library/Lifelong Learning Center, Phase II	21,000
P-987	Addition to Temporary Lodging Facility	8,860
P-988	Gate Reconfiguration, AT/FP Upgrades	2,497
P-989	Perimeter Fencing (North of Mainside) (*)	NA

Notes: *Not shown on Figure 4-1. NA = not applicable.

Sources: USMC 2013b, 2014a.

Note: The proposed transmission line routes are notional and have been adjusted to show each alternative without overlap.



Proposed Features		Cumulative Projects		Legend	
	Alternative 1 Transmission Line		MILCON Project		Existing 115-kV Transmission Line
	Alternative 2 Transmission Line		Solar PV Project		Leatherneck Substation
	Alternative 3 Transmission Line				Mesquite Dry Lake
	Switching/Metering Station				Training Area
	Photovoltaic Site				Combat Center Boundary

Figure 4-1
Location of Cumulative MILCON and Solar PV Projects

Sources: USMC 2013b, 2014a; MCAGCC 2015a

4-8

1 **4.2 CUMULATIVE IMPACTS**

2 **4.2.1 Biological Resources**

3 The ROI for cumulative impact analysis for biological resources is the project area and lands having
4 similar habitats and species in the region. As solar projects, urbanization, and military training pressures
5 increase within the region, impacts to biological resources within the region are increasing on a
6 cumulative level. When the Proposed Action/Alternative 1, or other action alternatives, are considered
7 with other past, present, and probable future projects listed in Section 4.1, loss of habitat, habitat
8 fragmentation, and other direct impacts to species, including federally-listed species, would contribute to
9 the cumulative impacts to biological resources.

10 Like the Proposed Action/Alternative 1, the projects described in Section 4.1, however, have all
11 committed to a number of mitigation measures, including but not limited to restoration plans, revegetation
12 plans, and weed control efforts. Therefore, implementation of the Proposed Action/Alternative 1 or the
13 other action alternatives, in conjunction with other projects listed in Section 4.1, would not result in
14 significant cumulative impacts to biological resources.

15 **4.2.2 Geological Resources**

16 Implementation of the Proposed Action/Alternative 1 or either action alternative would result in less than
17 significant impacts on geological resources. Cumulatively, the construction projects described in Section
18 4.1 would have minimal or no effects on topography and geology and only very minor, temporary, and
19 localized effects on soils in the immediate vicinity of each project. Any potential impacts resulting from
20 erosion during any construction activities on the installation would be controlled through adherence to the
21 Combat Center's SWPPP and the use of standard erosion control measures such as sandbags, silt fencing,
22 earthen berms, or temporary sedimentation basins. Potential large-scale training exercises proposed
23 within an expanded Combat Center (to either the west or east of the current USMC property and a small
24 area to the east of Mainside) would require new designated target areas for weapons delivery, which
25 would result in localized ground disturbance and increased dust. These areas are too far removed from
26 the Proposed Action/Alternative 1 and the other action alternatives to have any cumulative effect. The
27 Proposed Action/Alternative 1 or the other action alternatives would not expose new persons or a
28 substantial number of structures to potential geological hazards, such as seismic-related ground failure,
29 thereby adding to the overall regional risks associated with geological hazards. The incremental effects of
30 the Proposed Action/Alternative 1 or the other action alternatives would not add appreciably to any
31 existing or future erosion associated with other anthropogenic activities. Therefore, implementation of
32 the Proposed Action/Alternative 1 or the other action alternatives, in conjunction with other projects listed
33 in Section 4.1, would not result in significant cumulative impacts to geological resources.

34 **4.2.3 Water Resources**

35 Implementation of the Proposed Action/Alternative 1 or the action alternatives would result in less than
36 significant impacts to water resources. The private partner would be responsible for identifying and
37 contracting with one or more local water districts to purchase the water required for the Proposed
38 Action/Alternative 1 or the action alternatives. The Proposed Action/Alternative 1 or the action
39 alternatives would not significantly impact local, regional, or statewide water sources, including
40 groundwater and surface water. Cumulatively, the construction projects described in Section 4.1 would
41 not have any appreciable cumulative impact to water resources in terms of quality and availability. The
42 Grow the Force personnel increase and the extension of operating area for large-scale MEB training
43 exercises would increase the demand for potable water at the Combat Center, but would not exceed

1 available supplies. Therefore, implementation of the Proposed Action/Alternative 1 or the other action
2 alternatives, in conjunction with other projects listed in Section 4.1, would not result in significant
3 cumulative impacts to water resources.

4 **4.2.4 Cultural Resources**

5 The ROI for cumulative impact analysis for cultural resources is the project area and adjacent land. This
6 ROI was defined because it encompasses the area within which the alternatives could contribute toward
7 cumulative effects on archaeological resources, architectural resources, and/or traditional cultural
8 resources. Subject to the final results of the ongoing archaeological surveys, no cultural resources occur
9 within the area of potential effect. Therefore, with implementation of the proposed monitoring
10 requirements, and with concurrence from the SHPO (Appendix D), implementation of any of the
11 Proposed Action/Alternative 1 or the action alternatives would not affect cultural resources (refer to
12 Section 3.4.4, *Environmental Consequences*). Furthermore, the past, present, and reasonably foreseeable
13 projects described in Section 4.1 are either not located within the ROI for the Proposed Action or would
14 affect cultural resources within the ROI. As such, they would not contribute toward a cumulative impact
15 relative to cultural resources. Therefore, implementation of the Proposed Action/Alternative 1 or the
16 other action alternatives, in conjunction with other projects listed in Section 4.1, would not result in
17 significant cumulative impacts to cultural resources.

18 **4.2.5 Air Quality**

19 4.2.5.1 Criteria Pollutants Cumulative Effects Analysis

20 The ROI in this air quality cumulative effects analysis includes the MDAB. The minor impacts to air
21 quality from the Proposed Action/Alternative 1 or action alternatives that could contribute to potential
22 cumulative impacts would be from the short-term air emissions from trucks and vehicles used during the
23 construction of the project. Operational air emissions would be negligible compared to the existing
24 condition and would not result in significant long-term increases in air emissions. The listed cumulative
25 projects would also be required to conform to CAA General Conformity Rule requirements and the
26 MDAB SIP, and would not produce significant amounts of air emissions.

27 Nominal cumulative impacts would result from implementation of the Proposed Action/Alternative 1 or
28 action alternatives, in conjunction with impacts from other potentially cumulative projects listed in
29 Section 4.1. For all projects, construction and operation activities would be expected to produce air
30 emissions that would be below applicable CAA conformity significance thresholds. The combined air
31 emissions of the Proposed Action/Alternative 1 or action alternatives and potentially cumulative projects
32 would not contribute to an exceedance of an ambient air quality standard. As a result, proposed
33 construction and operational activities would produce less than cumulatively considerable air quality
34 impacts. Therefore, implementation of the Proposed Action/Alternative 1 or the other action alternatives,
35 in conjunction with other projects listed in Section 4.1, would not result in significant cumulative impacts
36 to air quality.

37 4.2.5.2 Greenhouse Gases Cumulative Effects Analysis

38 The potential effects of GHG emissions are by nature global and cumulative and it is impractical to
39 attribute climate change to individual activities. Therefore, an appreciable impact to global climate
40 change would only occur when GHG emissions associated with the Proposed Action/Alternative 1 or
41 action alternatives are combined cumulatively with GHG emissions from other human-made activities on
42 a global scale.

1 In December of 2014 the CEQ issued revised draft guidance for federal agencies, to guide them on when
 2 and how to consider the effects of GHG emissions and climate change in their projects (CEQ 2014). In
 3 the analysis of the direct effects of a Proposed Action, the CEQ proposes that it would be appropriate to
 4 1) quantify cumulative emissions over the life of the project; 2) discuss measures to reduce GHG
 5 emissions, including consideration of reasonable alternatives; and 3) qualitatively discuss the link
 6 between such GHG emissions and climate change. Therefore, formulating significance criteria for GHG
 7 emissions is problematic, as it is difficult to determine what level of proposed emissions would
 8 substantially contribute to global climate change. The CEQ recommends that 25,000 metric tons of CO₂e
 9 or more being produce by a Proposed Action be considered the threshold warranting a more substantial
 10 evaluation of—but not necessarily a determination of—significance of climate change impact
 11 (CEQ 2014).

12 Table 4-2 summarizes the annual GHG emissions that would occur with implementation of the Proposed
 13 Action or action alternatives.

Table 4-2. Estimated Annual GHG Emissions under the Proposed Action/Alternative 1 or Action Alternatives

Scenario/Activity	Metric tons per year			
	CO ₂	CH ₄	N ₂ O	CO ₂ e ¹
Construction				
Year 1 - 2016	607.027	0.168	0.000	610.556
Year 2 - 2017	787.603	0.211	0.000	792.038
Operation				
Yearly Emissions	313.04	1.3	0.01	344.49
Decommissioning				
Year 2053	87.343	0.003	0.000	87.405

Note: ¹CO₂e = CO₂ + (21 * CH₄) + (310 * N₂O).

14 As an indication of the nominal relative magnitude of these emissions, total annual CO₂e emissions in the
 15 U.S. were approximately 5.5 billion metric tons (USEPA 2014). The annual GHG emissions during the
 16 lifespan of this proposed solar PV project would be less than 0.00004% of the total annual emissions of
 17 the entire U.S. The annual emissions GHG would also be well below the 25,000 metric tons of CO₂e
 18 threshold proposed by CEQ.

19 Potentially cumulative projects in the vicinity of the Proposed Action/Alternative 1 (listed in Section 4.1)
 20 could also release a nominal amount of GHGs from construction and operation activities when compared
 21 to the total annual CO₂e emissions in the U.S. Also, in response to DoD directives such as EO 13221
 22 *Energy Efficient Standby Power Devices* and EO 13693 *Planning for Federal Sustainability in the Next*
 23 *Decade*, the DoN has taken a number of steps to reduce GHG emissions from their activities. These
 24 actions include developing energy efficient technologies and weapons systems, improving military and
 25 civilian vehicles fuel efficiency, utilizing alternative fuel vehicles and electric vehicles, improving energy
 26 efficiency at DoN facilities, and installing solar and other renewable energy sources at DoN facilities.

27 Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due
 28 to the benefits of contributing to the energy/power grid through alternative energy development and
 29 reducing GHG. The Proposed Action/Alternative 1 or action alternatives in conjunction with the other
 30 past, present, and future solar energy projects would have a beneficial impact to the MDAB as a whole
 31 due to the potential reduction in GHG as compared to burning fossil fuels for electricity generation.
 32 Therefore, implementation of the Proposed Action/Alternative 1 or the other action alternatives, in

1 conjunction with other projects listed in Section 4.1, would not result in significant cumulative impacts to
2 global climate change.

3 **4.2.6 Utilities**

4 The ROI for cumulative impact analysis for utilities includes utilities serving the three action alternatives
5 and surrounding areas as this area encompasses all utilities directly serving the action alternatives. The
6 Grow the Force initiative has upgraded, or plans to upgrade, communication, electrical, potable water,
7 wastewater, and natural gas utility systems resulting in vastly increased capacity for future projects at the
8 Combat Center. The implication of past projects is evident in the existing conditions discussion in
9 Section 3.6.2, *Existing Utility Framework*, and 3.6.3, *Affected Environment*. Section 3.6.4,
10 *Environmental Consequences*, indicates that the Proposed Action/Alternative 1, or the other action
11 alternatives, would have a negligible impact to utilities and would provide some beneficial impacts as
12 well. Other present and reasonably foreseeable future projects would be required to evaluate their
13 impacts on utilities and to provide necessary upgrades. Therefore, implementation of the Proposed
14 Action/Alternative 1 or the other action alternatives, in conjunction with other projects listed in
15 Section 4.1, would not result in significant cumulative impacts to utilities.

16 **4.3 CUMULATIVE IMPACTS CONCLUSION**

17 Cumulative impacts to the environmental resource areas evaluated herein from the action alternatives, in
18 conjunction with other past, present, and reasonably foreseeable actions, would not be significant.

1 **CHAPTER 5**
2 **LIST OF AGENCIES AND PERSONS CONTACTED**

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1 CHAPTER 7

2 REFERENCES

- 3 AES Solar. 2011. Imperial Valley Solar Project Plan of Development. June 20. Available online at:
4 <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/2010/eis/ivsolar.Par.35931.File.dat>
5 [/IVS%20POD%20Final.pdf](#).
- 6 APLIC. 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006.
7 Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and
8 Sacramento, CA.
- 9 APLIC. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison
10 Electric Institute and APLIC. Washington, D.C.
- 11 Basin Energy Assessment Team. 2013. Basin Energy Assessment Team Renewable Energy Analysis.
12 October. Available online at: http://www.drecr.com/526190_final_BEAT_REPORT_10_1_13.pdf.
- 13 BizEE Energy Lens. 2014. kW and kWh Explained. Available online at:
14 <http://www.energylens.com/articles/kw-and-kwh>. Accessed on 5 February 2015.
- 15 BLM. 2014. First Quarter Report for Biological Resources Monitoring, First Solar Desert Sunlight Solar
16 Project, Riverside County. Prepared by Ironwood Consulting, Inc. 1 January – 31 March.
- 17 Brightstar Solar. 2014. Common Sizes of Solar Panels. 12 February. Available online at:
18 <http://brightstarsolar.net/2014/02/common-sizes-of-solar-panels/> Accessed on 3 February 2015.
- 19 California Air Pollution Control Officers Association. 2015. California Emissions Estimator ModelTM.
20 <http://www.aqmd.gov/caleemod/>. Accessed on 2 February 2015.
- 21 California Geological Survey. 2005. Digital Database of Quaternary and Younger Faults from the Fault
22 Activity Map of California, version 2.0: California Geological Survey Web Page. Compiled by W.
23 A. Bryant. Available online at:
24 http://www.consrv.ca.gov/cgs/information/publications/Pages/quaternaryfaults_ver2.aspx.
- 25 California Native Plant Society. 2015. Inventory of Rare, Threatened, and Endangered Plants of
26 California. Available online at: <http://www.rareplants.cnps.org/>. Accessed on 13 February.
- 27 CaliforniaHerps.com. 2014. California Herps. Available online at: <http://www.californiaherps.com/>.
28 Accessed on 21 October.
- 29 California Seismic Safety Commission. 2005. Homeowner's Guide to Earthquake Safety. Available at:
30 http://www.seismic.ca.gov/pub/CSSC_2005-01_HOG.pdf. Accessed on 20 October 2014.
- 31 CARB. 2014. California Greenhouse Gas Emission Inventory, 2000-2012. May.
- 32 CARB. 2015a. Ambient Air Quality Standards. <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>.
33 Accessed on 9 February 2015.
- 34 CARB. 2015b. Area Designations Maps/ State and National.
35 <http://www.arb.ca.gov/desig/adm/adm.htm>. Accessed on 9 February 2015.
- 36 CARB. 2015c. Climate Change Programs. <http://www.arb.ca.gov/cc/cc.htm>. Accessed on 02 February
37 2015.

- 1 CDFW. 2014a. California Natural Diversity Database GIS Query. 20 October.
- 2 CDFW. 2014b. California Natural Diversity Database Special Animals List. September.
- 3 CEQ. 1997. Environmental Justice Guidance Under the National Environmental Policy Act.
4 10 December.
- 5 CEQ. 2014. Memorandum For Heads of Federal Departments and Agencies. Revised Draft NEPA
6 Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.
7 December.
- 8 Center for Disease Control. 2012. Fungal pneumonia: a silent epidemic - Coccidioidomycosis (valley
9 fever). Fact Sheet. December 2012. Available online at: [http://www.cdc.gov/fungal/pdf/cocci-fact-](http://www.cdc.gov/fungal/pdf/cocci-fact-sheet-california-final-508c.pdf)
10 [sheet-california-final-508c.pdf](http://www.cdc.gov/fungal/pdf/cocci-fact-sheet-california-final-508c.pdf).
- 11 City of Palms Twentynine. 2012. General Plan Update. Available online at: [http://www.ci.twentynine-](http://www.ci.twentynine-palms.ca.us/Mission_Statement.46.0.html)
12 [palms.ca.us/Mission_Statement.46.0.html](http://www.ci.twentynine-palms.ca.us/Mission_Statement.46.0.html).
- 13 DoD. 2012. Strategic Sustainability Performance Plan: FY 2012. 20 September. Available online at:
14 [http://www.acq.osd.mil/ie/download/green_energy/dod_sustainability/2012/DoD%20SSPP%20FY12](http://www.acq.osd.mil/ie/download/green_energy/dod_sustainability/2012/DoD%20SSPP%20FY12-FINAL.PDF)
15 [-FINAL.PDF](http://www.acq.osd.mil/ie/download/green_energy/dod_sustainability/2012/DoD%20SSPP%20FY12-FINAL.PDF).
- 16 Desert Renewable Energy Conservation Plan Independent Science Advisors. 2010. Recommendations of
17 Independent Science Advisors for The California Desert Renewable Energy Conservation Plan
18 (DRECP). Available at: [http://www.energy.ca.gov/2010publications/DRECP-1000-2010-](http://www.energy.ca.gov/2010publications/DRECP-1000-2010-008/DRECP-1000-2010-008-F.PDF)
19 [008/DRECP-1000-2010-008-F.PDF](http://www.energy.ca.gov/2010publications/DRECP-1000-2010-008/DRECP-1000-2010-008-F.PDF).
- 20 DoD ESTCP. 2012. Solar Energy Development on Department of Defense Installations in the Mojave
21 and Colorado Deserts. Final. January. Available online at:
22 [http://www.acq.osd.mil/ie/download/Solar_Energy_Development_on_DoD_Installations_in_the_Moj](http://www.acq.osd.mil/ie/download/Solar_Energy_Development_on_DoD_Installations_in_the_Mojave_and_Colorado_Deserts.pdf)
23 [ave_and_Colorado_Deserts.pdf](http://www.acq.osd.mil/ie/download/Solar_Energy_Development_on_DoD_Installations_in_the_Mojave_and_Colorado_Deserts.pdf)
- 24 DoN. 2009a. Final Environmental Impact Statement for the West Coast Basing of the MV-22. October.
- 25 DoN. 2009b. Record of Decision for the West Coast Basing of the MV-22. 18 November. Available
26 online at: [http://www.29palms.marines.mil/Portals/56/Docs/G4/NREA/MV-](http://www.29palms.marines.mil/Portals/56/Docs/G4/NREA/MV-22%20ROD%20Signed%2018Nov09.pdf)
27 [22%20ROD%20Signed%2018Nov09.pdf](http://www.29palms.marines.mil/Portals/56/Docs/G4/NREA/MV-22%20ROD%20Signed%2018Nov09.pdf).
- 28 DoN. 2010. Record of Decision for the U.S. Marine Corps West Coast Basing of the F-35B Aircraft. 9
29 December 2010.
- 30 DoN. 2012. Department of the Navy Strategy for Renewable Energy. 1 Gigawatt Task Force. October.
31 Available online at:
32 http://www.secnav.navy.mil/eie/ASN%20EIE%20Policy/DASN_EnergyStratPlan_Finalv3.pdf.
- 33 DoN. 2015. Energy. Available online at: <http://greenfleet.dodlive.mil/energy/>. Accessed on 3 February
34 2015.
- 35 DoN and USMC. 2012. Environmental Assessment and Finding of No Significant Impact for Ocotillo
36 Marine Mart and Gas Station, Marine Corps Air Ground Combat Center, Twentynine Palms, CA.
37 March.
- 38 DoN and USMC. 2015. Feasibility Study for Construction and Operation of a Solar Photovoltaic System
39 at Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center,
40 Twentynine Palms, California. Final. January.

- 1 Federal Register. 2014. Department of the Interior, Bureau of Indian Affairs: Indian Entities Recognized
2 and Eligible to Receive Services from the United States Bureau of Indian Affairs. Vol. 79, No. 19.
3 29 January. Available online at: <http://www.bia.gov/cs/groups/public/documents/text/idc006989.pdf>.
- 4 Hollingsworth, B.D. and K.R. Beaman. 1998. Mojave Fringe-Toed Lizard. Available online at:
5 http://www.blm.gov/ca/pdfs/cdd_pdfs/fringe1.PDF. Accessed on 12 February 2015.
- 6 Horvath, G., Blaho, M., Egri, A., Kriska, G., Seres, I., and B. Robertson. 2010. Reducing the
7 Maladaptive Attractiveness of Solar Panels to Polarotactic Insects. *Conservation Biology*.
8 24(6):1644-53.
- 9 Intergovernmental Panel on Climate Change. 2012. Renewable Energy Sources and Climate Change
10 Mitigation: Special Report of the Intergovernmental Panel on Climate Change. [http://srren.ipcc-](http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf)
11 [wg3.de/report/IPCC_SRREN_Full_Report.pdf](http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf). Accessed on 06 February 2015.
- 12 Jones, Lawrence L. C. and R. E. Lovich. 2009. Lizards of the American Southwest.
- 13 Joshua Basin Water District. 2011. 2010 Urban Water Management Plan. Prepared by Kennedy/Jenks
14 Consultants. June.
- 15 Hi-Desert Water District. 2011. 2010 Urban Water Management Plan. Prepared by Kennedy/Jenks
16 Consultants. June.
- 17 Kagan, R.A., Viner, T.C., Trail, P.W. and E.O. Espinoza. 2014. Avian Mortality at Solar Energy
18 Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics
19 Laboratory. 23 April.
- 20 Mellon, K. 2002. Letter to B.W. Soderberg regarding the Inventory and Evaluation for National
21 Register of Historic Places Eligibility for Cold War-Era Buildings and Structures for the Marine Air
22 Ground Combat Center, Twentynine Palms, San Bernardino County. 30 August.
- 23 MCAGCC. 2009. Master Plan Update, Final Report. June.
- 24 MCAGCC. 2012a. Integrated Natural Resource Management Plan. Fiscal Years 2012-2016. Marine
25 Air Ground Task Force Training Command, Twentynine Palms, California. January.
- 26 MCAGCC. 2012b. Fault Surface Rupture Hazard Investigation: Proposed Medical Clinic Replacement.
27 July.
- 28 MCAGCC. 2012c. Fault Rupture Study: Proposed Quality of Life MILCON Projects P-5114, P-116, P-
29 163, and P-170. February.
- 30 MCAGCC. 2014a. Personal communication during interview with Dr. Brian Henen, NREA MCAGCC
31 29 Palms, Mr. Doug Billings, Cardno Program Manager, Ms. Stella Acuna, Cardno Project Manager,
32 and Mr. Chris Noddings, Cardno Deputy Project Manager. 2 October.
- 33 MCAGCC. 2014b. Personal communications via email with Erin Adams, G5 MAGTFTC, MCAGCC,
34 Resource Management Group, Community Plans and Encroachment. 16 October 2014.
- 35 MCAGCC. 2015a. GIS Data.
- 36 MCAGCC. 2015b. Archeological Resources Survey Report: Archeological Survey of 396 Acres for
37 Proposed Photovoltaic Array on the Mesquite Dry Lake Playa in the Mainside Area. ABR125.
38 Marine Corps Air Ground Combat Center, Twentynine Palms, San Bernardino County, California

- 1 National Renewable Energy Laboratory (NREL). 2012. Funding Solar Projects at Federal Agencies:
2 Mechanisms and Selection Criteria. 4 September. Available online at:
3 <https://financere.nrel.gov/finance/content/funding-solar-projects-federal-agencies-power-purchase->
4 [agreements-energy-service-contracts-utility-enhanced-use-leases](https://financere.nrel.gov/finance/content/funding-solar-projects-federal-agencies-power-purchase-agreements-energy-service-contracts-utility-enhanced-use-leases). Accessed on 3 February 2015.
- 5 NAVFAC Engineering Service Center. 2009. Results of Ambient Air Sampling During Calendar Year
6 2008 at Marine Corps Air Ground Combat Center Twentynine Palms, California.
- 7 NAVFAC Southwest. 2011. MCAGCC Twentynine Palms Master Plan Addendum: Old Camp
8 Redevelopment. Contract Number N62473-08-D-8603. Post Final. January.
- 9 NAVFAC Southwest. 2014. Grading and Drainage Plan for Sun Edison MCAGCC 29 Palms
10 Photovoltaic Array. 26 June.
- 11 Office of Energy Efficiency and Renewable Energy. 2013a. Flat-Plate Photovoltaic Module Basics. 20
12 August. Available online at: <http://energy.gov/eere/energybasics/articles/flat-plate-photovoltaic->
13 [module-basics](http://energy.gov/eere/energybasics/articles/flat-plate-photovoltaic-module-basics). Accessed on 3 February 2015.
- 14 Office of Energy Efficiency and Renewable Energy. 2013b. Flat-Plate Photovoltaic System Basics. 20
15 August. Available online at: <http://energy.gov/eere/energybasics/articles/flat-plate-photovoltaic->
16 [system-basics](http://energy.gov/eere/energybasics/articles/flat-plate-photovoltaic-system-basics). Accessed on 3 February 2015.
- 17 San Bernardino County Department of Public Health. 2013. County of San Bernardino Department of
18 Public Health Fact Sheet: Coccidioidomycosis. August. Available online at:
19 <http://www.sbcounty.gov/uploads/dph/dehs/Depts/EnvironmentalHealth/EHSDocuments/Coccidioido>
20 [mycosis.pdf](http://www.sbcounty.gov/uploads/dph/dehs/Depts/EnvironmentalHealth/EHSDocuments/Coccidioidomycosis.pdf).
- 21 Twentynine Palms Water District. 2014. Groundwater Management Plan - 2014 Update. Prepared by
22 Kennedy/Jenks Consultants. May 28.
- 23 Upton, John. 2014. Solar Farms Threaten Birds. Scientific American. Published online at:
24 <http://www.scientificamerican.com/article/solar-farms-threaten-birds/>. 27 August.
- 25 USDA. 2014. Custom Soil Resource Report for Marine Corps Air Ground Combat Center at
26 Twentynine Palms, California; and Mojave Desert Area, West Central Part, California. Available at:
27 <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Accessed on 20 October.
- 28 USDA. 2015. Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>.
29 Accessed on 20 April.
- 30 U.S. Energy Information Administration. 2014. Frequently Asked Questions: How much electricity does
31 an American home use? 10 January. Available online at:
32 <http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>. Accessed on 5 February 2015.
- 33 USEPA. 2014. 2012 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012.
34 <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. Accessed on 04 August 2014.
- 35 USEPA. 2015a. The Green Book Nonattainment Areas for Criteria Pollutants.
36 <http://www.epa.gov/oar/oaqps/greenbk/>. Accessed on 02 February 2015.
- 37 USEPA. 2015b. General Conformity *De Minimis* Levels.
38 <http://www.epa.gov/oar/genconform/deminimis.html>. Accessed on 30 January 2015.

- 1 U.S. Marine Corps (USMC). 2003. Programmatic Environmental Assessment for Ongoing and Proposed
2 Training Activities at the Marine Corps Air Ground Combat Center Twentynine Palms, California.
3 May.
- 4 USMC. 2006. Environmental Assessment and Finding of No Significant Impact for the Landfill No. 2
5 Expansion and Proposed Material Recovery and Recycling Facility. Marine Corps Air Ground
6 Combat Center, San Bernardino County, CA. 21 December.
- 7 USMC. 2009. Final Environmental Assessment for Permanent Facilities Bed-Down of Increased End-
8 Strength at Marine Corps Air Ground Combat Center Twentynine Palms, CA. September.
- 9 USMC. 2010a. Revised Draft Environmental Assessment Construction of Electrical System Upgrade at
10 MCAGCC. Twentynine Palms, CA. December.
- 11 USMC. 2010b. Environmental Assessment and Finding of No Significant Impact for Aerial Maneuver
12 Zones for MV-22 and Rotary-Wing Training at the Marine Air Ground Task Force Training
13 Command, Marine Corps Air Ground Combat Center, Twentynine Palms, California. May.
- 14 USMC. 2012. Final Environmental Impact Statement for Land Acquisition and Airspace Establishment
15 to Support Large-Scale Marine Air Ground Task Force Live Fire and Maneuver Training. Marine
16 Corps Air Ground Combat Center Twentynine Palms. July.
- 17 USMC. 2013a. Record of Decision for Land Acquisition and Airspace Establishment to Support Large-
18 Scale Marine Air Ground Task Force Live-Fire and Maneuver Training at the Marine Corps Air
19 Ground Combat Center, Twentynine Palms, CA. 11 February. Available online at:
20 <http://www.29palms.marines.mil/Portals/56/Docs/G4/LAS/ROD%2029%20Palms%20CA.pdf>.
- 21 USMC. 2013b. Final Environmental Assessment for the Adult Medical Care Clinic Replacement,
22 Marine Corps Air Ground Combat Center, Twentynine Palms, California. February.
- 23 USMC. 2014a. Supplemental Environmental Assessment for Proposed Changes to the Permanent
24 Facilities Bed-Down and Infrastructure Project at Marine Corps Air Ground Combat Center,
25 Twentynine Palms, CA. August.
- 26 USMC. 2014b. Finding of No Significant Impact (FONSI) and Record Of Non-Applicability (RONA)
27 for Clean Air Act Conformity. 22 August.
- 28 USMC. 2014c. Revalidation of Memorandum of Decision for Categorical Exclusion (CATEX). 2 June.
- 29 USMC Western Area Counsel Office. 2011. Executive Order 11988, Floodplain Management
30 Applicability to Photo-Voltaic Solar Project at Marine Corps Air Ground Combat Center, Twentynine
31 Palms, California. 23 December.
- 32 Western Regional Climate Center. 2014. Twentynine Palms, California Period of Record Monthly
33 Climate Summary. Period of Record: 7/1/1948 to 12/31/2005. [http://www.wrcc.dri.edu/cgi-](http://www.wrcc.dri.edu/cgi-bin/climain.pl?catwen)
34 [bin/climain.pl?catwen](http://www.wrcc.dri.edu/cgi-bin/climain.pl?catwen). Accessed on 20 October.

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Appendix A

Public Involvement Process

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1

OUTLINE OF THE PUBLIC INVOLVEMENT PROCESS

2 **Introduction**

3 The United States (U.S.) Marine Corps (USMC) will conduct a public participation process to provide the
4 public the opportunity to participate in the project by submitting comments on the adequacy and accuracy
5 of the Draft Environmental Assessment (EA). The purpose of the public involvement program is to
6 notify and inform interested and potentially affected stakeholders and the general public about the
7 Proposed Action and solicit their input on the environmental analysis. The National Environmental
8 Policy Act (NEPA), and regulations for implementing NEPA as set forth by the Council on
9 Environmental Quality (CEQ), requires federal agencies to make diligent efforts to involve stakeholders
10 and tribes in the development of environmental documents and stipulates public involvement during
11 various stages of the environmental review process (42 U.S. Code § 4321, as amended; CEQ Regulations
12 for Implementing NEPA, 40 Code of Federal Regulations Part 1500, as amended).

13 **Public Involvement Overview**

14 The public participation process will commence with publication of a Notice of Availability (NOA) of the
15 Draft EA in two local newspapers (the *Hi-Desert Star* and the *Desert Trail*); the NOA of the Draft EA
16 will be published once per week per newspaper for two weeks for a total of four publications and will not
17 be published during a holiday. The Draft EA will also be made available at two local libraries (the
18 Twentynine Palms Branch Library and the Yucca Valley Branch Library) and online, on a Marine Corps
19 Air Ground Combat Center (MCAGCC) website. No public meetings will be held. A 30-day public
20 comment period will be provided on the Draft EA; written comments may be sent via mail to:

21 Ryan Maynard, Twentynine Palms Solar PV System EA Project Manager
22 NAVFAC Southwest
23 Central IPT, Building 1, 3rd Floor
24 937 North Harbor Drive
25 San Diego, California 92132

26 The Final EA will incorporate comments received on the Draft EA, and the public participation process
27 will conclude with publication of a NOA of the Final EA. Publication of the NOA of the Final EA will
28 follow the same methods as described above for the Draft EA (i.e., two local newspapers for a total of
29 four publications). Pending the results of this analysis, the decision document could be a Finding of No
30 Significant Impact (FONSI). The Final EA and potential FONSI (if appropriate) will be made available
31 to the public for review in the Twentynine Palms Branch and the Yucca Valley Branch Libraries and
32 online, on a MCAGCC website.

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Appendix B

Record of Non-Applicability and Air Quality Calculations

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1 **RECORD OF NON-APPLICABILITY (RONA) FOR CLEAN AIR ACT CONFORMITY**

2 **Environmental Assessment for**
3 **Construction and Operation of a Solar Photovoltaic System at Marine Corps Air Ground Combat**
4 **Center, Twentynine Palms, California**

5 **INTRODUCTION**

6 The U.S. Environmental Protection Agency (USEPA) published Determining Conformity of General
7 Federal Actions to State or Federal Implementation Plans; Final Rule, in the 30 November 1993 Federal
8 Register (40 CFR Parts 6, 51, and 93). The U.S. Navy (DoN) published Interim Guidance on Compliance
9 with the Clean Air Act (CAA) General Conformity Rule in the Marine Corps Order (MCO) P5090.2A,
10 Change 3, dated 26 August 2013. These publications provide implementing guidance to document CAA
11 conformity determination requirements.

12 Federal regulations state that no department, agency, or instrumentality of the federal government shall
13 engage in, support in any way or provide financial assistance for, license to permit, or approve any
14 activity that does not conform to an applicable implementation plan. It is the responsibility of the federal
15 agency to determine whether a federal action conforms to the applicable implementation plan, before the
16 action is taken (40 CFR Part 1 51.850[a]).

17 The General Conformity Rule applies to Federal actions proposed within areas which are designated as
18 either nonattainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for
19 any of the criteria pollutants (i.e., carbon monoxide [CO], ozone [O₃], sulfur dioxide [SO₂] nitrogen
20 oxides [NO_x], suspended particulate matter between 2.5 and ten microns in diameter [PM₁₀] and less than
21 2.5 microns in diameter [PM_{2.5}], and lead [Pb]). Former nonattainment areas that have attained a NAAQS
22 are designated as maintenance areas. Emissions of pollutants for which an area is in attainment are
23 exempt from conformity analyses.

24 The Proposed Action would occur within the Mojave Desert Air Basin (MDAB) portion of San
25 Bernardino County, and is in a severe-17 O₃ nonattainment area and a moderate PM₁₀ nonattainment area.
26 The MDAB attains the NAAQS for all other criteria pollutants. Therefore, only project emissions of O₃
27 (or its precursors, volatile organic compounds [VOCs] and NO_x), and PM₁₀ are analyzed for conformity
28 rule applicability.

29 The annual *de minimis* levels for this region are listed in Table B-1. Federal actions may be exempt from
30 conformity determinations if they do not exceed designated *de minimis* levels (40 CFR Part 1,
31 § 51.853[b]).

Table B-1. *De minimis* Levels for Criteria Pollutants in the Mojave Desert Air Basin

Criteria Pollutant	<i>de minimis</i> Level (tons/year)
VOCs	25
NO _x	25
PM ₁₀	100

32 **PROPOSED ACTION**

33 **Action Proponent:** Marine Corps Installations Command (MCICOM)

34 **Location:** Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California

35 **Proposed Action Name:** Environmental Assessment for Construction, Operation, and Decommissioning
36 of a Solar Photovoltaic System at MCAGCC Twentynine Palms, California

1 **Proposed Action Summary:** This Environmental Assessment has been prepared to evaluate the potential
 2 environmental impacts resulting from the construction, operation, and decommissioning of a solar
 3 photovoltaic (PV) system at MCAGCC, Twentynine Palms, California. Under the Proposed Action, the
 4 DoN and a private partner would enter into an agreement to allow the private partner to use DoN land to
 5 construct, operate, and own the proposed solar PV system. The partner would sell the generated power to
 6 regional customers. The private partner would be responsible for maintenance, operation, and the
 7 eventual decommissioning of the solar PV system.

8 **Air Emissions Summary:** It has been estimated that all construction activities would be completed over
 9 the course of 2 years and would begin in fiscal year (FY) 2016. Operational air emissions refer to air
 10 emissions that may occur after the solar panels have been installed. Air emissions would primarily result
 11 from the use of employee vehicles traveling to the project site for maintenance and repair activities, water
 12 tank trucks being driven to and from the site for water deliveries (assumed to be 60 miles round-trip), and
 13 from travel on unpaved roads and surfaces. Routine maintenance and inspections would typically require
 14 one to two vehicles per event and would generate very minor emissions. Dust suppression methods
 15 would continue to be employed as necessary. Decommissioning activities are expected to occur over the
 16 course of two months and were assumed to occur in 2053.

17 Estimated emissions due to implementation of the Proposed Action are shown in Table B-2. The data
 18 presented in Table B-2 represent the estimated emissions with implementation of Alternatives 1, 2, or 3
 19 since the construction footprint for Alternatives 2 or 3 are only marginally different than Alternative 1 and
 20 would not represent an appreciable change in estimated emissions. Based on the air quality analysis, the
 21 maximum estimated emissions would be below conformity *de minimis* threshold levels for the MDAB.
 22 On a region-wide scale, the use of solar PV panels would have beneficial air quality impacts because
 23 fossil fuels would not be used for the necessary electricity generation, resulting in fewer GHG and
 24 particulate matter emissions. For these reasons, no significant impact to air quality would occur.

**Table B-2. Proposed Action Annual Construction and Decommissioning Emissions
 at the Combat Center with Evaluation of Conformity**

Emission Source	Emissions (tons/year)					
	VOCs	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Proposed Action/Alternative 1 - Construction						
Year – 2016	0.26	1.58	7.89	0.02	0.72	0.29
Year – 2017	0.30	1.72	9.53	0.02	0.37	0.13
Proposed Action/Alternative 1 - Operation						
Yearly Emissions	0.31	0.10	0.22	0.0006	0.02	0.009
Proposed Action/Alternative 1 - Decommissioning						
Year – 2053	0.006	0.03	0.32	0.0006	0.02	0.004
Conformity <i>de minimis</i> Limits	25	25	NA	NA	100	NA
Exceeds Conformity <i>de minimis</i> Limits?	No	No	No	No	No	No

Note: NA = Not applicable.

25 **Affected Air Basin:** Mojave Desert Air Basin

26 **Date RONA Prepared:** 30 June 2015

27 **RONA Prepared By:** MCAGCC Twentynine Palms with direct support from Cardno

1 **ATTAINMENT AREA STATUS AND EMISSIONS EVALUATION CONCLUSION**

2 The MDAB is a severe-17 nonattainment area for the 8-hour O₃ NAAQS; VOCs and NO_x are precursors
3 to the formation of O₃. The MDAB is also considered in moderate nonattainment for the PM₁₀ NAAQS.
4 Emissions associated with construction and operational activities for the Proposed Action were calculated
5 using the California Emissions Estimation Model, which is the current air quality model for land use
6 projects in California. Emissions were then compared with *de minimis* thresholds for the MDAB.

7 The USMC concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded
8 as a result of implementation of the Proposed Action. The emissions data supporting that conclusion are
9 shown in Table B-2, which is a summary of the calculations, methodology, and data attached to this
10 RONA. Therefore, the USMC concludes that further formal conformity determination procedures are not
11 required.

12 **RONA APPROVAL**

13 To the best of my knowledge, the information presented in this RONA is correct and accurate, and I
14 concur in the finding that the Proposed Action does not require a formal CAA conformity determination.

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L.A. CRAPAROTTA
Major General, United States Marine Corps

Date

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Combat Center Solar PV System – Construction and Operation Mojave Desert Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	57.46	1000sqft	1.32	57,456.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	31
Climate Zone	3	Operational Year		2016	
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	630.89	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	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, so "general light industry" was chosen as the closest appropriate option. Conservatively estimates 30,000 sqft of construction for a 57MW PV system (substation, switching station, metering station, transmission poles; assumes that PV panels are built offsite) + 27,456 sqft for transmission line (2.6 miles length x 2 ft buffer width).

Construction Phase - No demolition, paving, or architectural coating phases. Total construction is estimated to last two years. Assumed 4 months of site prep (1/1/2016 - 4/29/2016), 4 months of grading (5/2/2016 - 7/29/2016), 16 months of construction (8/2/2016 - 12/30/2017).

Off-road Equipment - Off-road equipment -Assumed 6 hrs per day per equipment type. Off-highway truck = water truck, Other construction equipment = pile drivers.

Grading - Conservatively assumes that the full project footprint would be graded & prepped (241 ac for PV footprint + 0.63 ac for transmission line corridor = 241.63 ac total). All cut/fill would remain onsite.

Operational Vehicle Trips - Reduced operational trip rate since the land use type of the Proposed Action is a utility project, not light industrial.

Combat Center Solar PV System – Construction and Operation
Mojave Desert Air Basin, Annual

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					
2016	1.3352	13.4833	10.1830	0.0151	1.1924	0.6769	1.8693	0.4714	0.6259	1.0973	0.0000	1,367.9255	1,367.9255	0.2967	0.0000	1,374.1571
2017	1.5870	15.3051	12.2445	0.0183	0.3235	0.7928	1.1163	0.0874	0.7360	0.8234	0.0000	1,614.6930	1,614.6930	0.3474	0.0000	1,621.9891
Total	2.9222	28.7884	22.4275	0.0334	1.5159	1.4697	2.9856	0.5588	1.3619	1.9207	0.0000	2,982.6185	2,982.6185	0.6442	0.0000	2,996.1462

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	0.2639	1.5762	7.8946	0.0151	0.6761	0.0404	0.7165	0.2500	0.0385	0.2885	0.0000	1,367.9243	1,367.9243	0.2967	0.0000	1,374.1559
2017	0.2981	1.7208	9.5279	0.0183	0.3235	0.0417	0.3652	0.0874	0.0400	0.1273	0.0000	1,614.6916	1,614.6916	0.3474	0.0000	1,621.9877
Total	0.5620	3.2970	17.4224	0.0334	0.9997	0.0820	1.0817	0.3373	0.0784	0.4158	0.0000	2,982.6159	2,982.6159	0.6442	0.0000	2,996.1436

	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
Percent Reduction	80.77	88.55	22.32	0.00	34.06	94.42	63.77	39.63	94.24	78.35	0.00	0.00	0.00	0.00	0.00	0.00

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2.2 Overall Operational

Unmitigated Operational

	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
Category	tons/yr										MT/yr					
Area	0.2910	1.0000e-005	5.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0300e-003	1.0300e-003	0.0000	0.0000	1.0900e-003
Energy	6.7400e-003	0.0613	0.0515	3.7000e-004		4.6600e-003	4.6600e-003		4.6600e-003	4.6600e-003	0.0000	225.5475	225.5475	8.5800e-003	2.7300e-003	226.5751
Mobile	0.0122	0.0422	0.1707	2.3000e-004	0.0151	6.3000e-004	0.0157	4.0300e-003	5.8000e-004	4.6100e-003	0.0000	19.3039	19.3039	8.8000e-004	0.0000	19.3223
Waste						0.0000	0.0000		0.0000	0.0000	14.4631	0.0000	14.4631	0.8548	0.0000	32.4128
Water						0.0000	0.0000		0.0000	0.0000	4.2156	49.5121	53.7276	0.4353	0.0107	66.1832
Total	0.3100	0.1035	0.2227	6.0000e-004	0.0151	5.2900e-003	0.0204	4.0300e-003	5.2400e-003	9.2700e-003	18.6787	294.3645	313.0432	1.2995	0.0134	344.4945

Mitigated Operational

	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
Category	tons/yr										MT/yr					
Area	0.2910	1.0000e-005	5.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0300e-003	1.0300e-003	0.0000	0.0000	1.0900e-003
Energy	6.7400e-003	0.0613	0.0515	3.7000e-004		4.6600e-003	4.6600e-003		4.6600e-003	4.6600e-003	0.0000	225.5475	225.5475	8.5800e-003	2.7300e-003	226.5751
Mobile	0.0122	0.0422	0.1707	2.3000e-004	0.0151	6.3000e-004	0.0157	4.0300e-003	5.8000e-004	4.6100e-003	0.0000	19.3039	19.3039	8.8000e-004	0.0000	19.3223
Waste						0.0000	0.0000		0.0000	0.0000	14.4631	0.0000	14.4631	0.8548	0.0000	32.4128
Water						0.0000	0.0000		0.0000	0.0000	4.2156	49.5121	53.7276	0.4352	0.0107	66.1765
Total	0.3100	0.1035	0.2227	6.0000e-004	0.0151	5.2900e-003	0.0204	4.0300e-003	5.2400e-003	9.2700e-003	18.6787	294.3645	313.0432	1.2994	0.0134	344.4877

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.07	0.00

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EA for Solar PV System
 MCAGCC Twentynine Palms

Draft

July 2015

Combat Center Solar PV System – Construction and Operation
Mojave Desert Air Basin, Annual

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	7/31/2016	5	65	
3	Building Construction	Building Construction	8/1/2016	12/30/2017	5	370	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	2	6.00	174	0.41
Site Preparation	Off-Highway Trucks	2	6.00	400	0.38
Site Preparation	Rubber Tired Dozers	2	6.00	255	0.40
Site Preparation	Scrapers	2	6.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	5	6.00	97	0.37
Grading	Graders	2	6.00	174	0.41
Grading	Off-Highway Trucks	2	6.00	400	0.38
Grading	Rubber Tired Dozers	2	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	5	6.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	2	6.00	84	0.74
Building Construction	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Other Construction Equipment	2	6.00	171	0.42
Building Construction	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	5	6.00	97	0.37
Building Construction	Trenchers	2	6.00	80	0.50
Building Construction	Welders	2	6.00	46	0.45

Combat Center Solar PV System – Construction and Operation
Mojave Desert Air Basin, Annual

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	13	75.00	23.00	0.00	16.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	75.00	23.00	0.00	16.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	23	150.00	23.00	0.00	16.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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
Category	tons/yr										MT/yr					
Mitigated	0.0122	0.0422	0.1707	2.3000e-004	0.0151	6.3000e-004	0.0157	4.0300e-003	5.8000e-004	4.6100e-003	0.0000	19.3039	19.3039	8.8000e-004	0.0000	19.3223
Unmitigated	0.0122	0.0422	0.1707	2.3000e-004	0.0151	6.3000e-004	0.0157	4.0300e-003	5.8000e-004	4.6100e-003	0.0000	19.3039	19.3039	8.8000e-004	0.0000	19.3223

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	14.37	0.00	0.00	39,642	39,642
Total	14.37	0.00	0.00	39,642	39,642

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

Combat Center Solar PV System – Decommissioning Mojave Desert Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	1.32	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	31
Climate Zone	3	Operational Year	2035		
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	630.89	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - The proposed decommissioning would occur in the year 2053 but the model will not accept an operational year past 2035, so for modeling purposes the year 2035 was selected.

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 - Demolition only. Assumed 2 months of demolition activity, assumed to be Year 2053.

Off-road Equipment - Off-highway truck = water truck.

Construction Off-road Equipment Mitigation - Mitigation measures / BMPs: water exposed area 2x daily during decommissioning activities; use construction vehicles that meet the USEPA Tier 4 emissions standards; and replace ground cover of disturbed area.

Trips and VMT - Added 16 trips/day to the model's estimated number of daily worker trips, to account for the delivery of water to the site during the decommissioning process.

Combat Center Solar PV System – Decommissioning
Mojave Desert Air Basin, Annual

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	0.0244	0.1221	0.2755	5.7000e-004	0.0400	2.0700e-003	0.0421	7.1300e-003	2.0700e-003	9.2000e-003	0.0000	52.5490	52.5490	1.9300e-003	0.0000	52.5896
Total	0.0244	0.1221	0.2755	5.7000e-004	0.0400	2.0700e-003	0.0421	7.1300e-003	2.0700e-003	9.2000e-003	0.0000	52.5490	52.5490	1.9300e-003	0.0000	52.5896

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	6.1200e-003	0.0265	0.3191	5.7000e-004	0.0179	8.2000e-004	0.0187	3.7700e-003	8.2000e-004	4.5900e-003	0.0000	52.5490	52.5490	1.9300e-003	0.0000	52.5895
Total	6.1200e-003	0.0265	0.3191	5.7000e-004	0.0179	8.2000e-004	0.0187	3.7700e-003	8.2000e-004	4.5900e-003	0.0000	52.5490	52.5490	1.9300e-003	0.0000	52.5895

	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
Percent Reduction	74.89	78.30	-15.84	0.00	55.42	60.39	55.68	47.12	60.39	50.11	0.00	0.00	0.00	0.00	0.00	0.00

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	

Combat Center Solar PV System – Decommissioning
Mojave Desert Air Basin, Annual

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	3	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	5	13.00	16.00	261.00	16.80	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

- Use Cleaner Engines for Construction Equipment
- Replace Ground Cover
- Water Exposed Area
- Clean Paved Roads

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Appendix C

Cumulative MILCON Projects

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1 **PRESENT AND REASONABLY FORESEEABLE MILCON PROJECTS AT THE COMBAT CENTER**

2 The following paragraphs summarize present and reasonably foreseeable MILCON projects that are
3 planned at the Combat Center. These MILCON projects are considered in the analysis of cumulative
4 impacts summarized in Chapter 4 of the EA. Project-specific site improvements or design features, as
5 well as the proposed size of each structure or infrastructure footprint for each of the projects, are
6 described below.

7 **P-191: Addition to Camp Wilson Gym (Building 5411)**

8 P-191 consists of a pre-engineered building (3,208 square ft) as an addition to the existing Camp Wilson
9 Gym (Building 5411). The addition is needed to achieve required machine spacing and meet safety
10 requirements of 36 inches between equipment and for pathways. The building would be built adjacent to
11 the southwest wall of Building 5411. The buildings would be accessible through the existing main
12 entrance into Building 5411 and by two 12-ft openings that would be cut into the adjacent walls. The
13 addition would include two unisex bathrooms, each with only a sink and a toilet. White lights would be
14 used to light the building and rubber matting would be used for flooring.

15 Supporting facilities would include electrical utilities, water utilities, sanitary sewer utilities, gas utilities,
16 steam, and controls. Paving and Site Improvements would include paved roads and parking, curbs and
17 gutters, specialty walks/pavers, sidewalks, pedestrian and bicycle features, stormwater drainage
18 improvements, and fencing and gates.

19 **P-193: Marksmanship Training Unit Multi-purpose Classroom**

20 P-193 would construct an 11,916-square ft classroom to the north of the Mainside area.

21 **P-194: Convert Building 2025 to Wheeled Vehicle Maintenance Facility**

22 P-194 would renovate and repair Building 2025, a 22,680-square ft facility constructed of pre-cast, tilt-up
23 concrete in 1986. Building 2025 is used to maintain heavy equipment and Humvees. The south side of
24 the building is used for field utility equipment (lights, generators, etc.) and a tire shop. A portion of the
25 building is used for tire storage, and there is a sunshade adjacent to Building 2025 where maintenance is
26 currently being conducted when there is not enough space to complete work in the maintenance bays.
27 Building 2025 is in fair condition, but is a large, poorly designed space.

28 P-194 would convert the existing warehouse space into 12 wheeled vehicle maintenance bays, while the
29 existing office space would be relocated adjacent to the existing toilets. The existing metal stud walls,
30 doors, ceilings and flooring would be demolished and replaced with new 20 gauge metal stud walls
31 finished with abuse-resistive drywall. Four openings would be saw-cut in the exterior walls on the
32 western and eastern sides of the facility to accommodate new electric roll-up doors. Ramps would be
33 added to the west side of the building, leading to the existing loading dock, to provide access to the new
34 service bays. A new, self-supporting metal canopy would be erected on the west side of the facility,
35 adjacent to the existing tire shop, to provide tire storage. The storage area would be secured with a chain-
36 link fence and gate. Upgrades/improvements would also be made to toilet rooms, mechanical systems,
37 power distribution equipment, heating systems, ventilation systems, interior (air handling unit) and
38 exterior (remote condensing unit) air conditioning units, lighting,

39 Site improvements would include storm water drainage improvements. Electrical systems would include
40 communications, electrical distribution, exterior lighting, and a 500 kilovolt-ampere pad-mounted
41 transformer. Special construction includes a separate hazardous materials containment area, with

1 provisions for proper ventilation, expansion of the vehicle exhaust system, and a crane center to
2 accommodate two 20-25,000 pound top running cranes, lube systems, and compressed air systems.

3 **P-581: Marine Corps Air Ground Combat Center Headquarters Building**

4 P-581 would involve the demolition of Buildings 1554, 1555, and 1559 to make way for a new 22,270-
5 square ft headquarters building.

6 **P-602: Training Integration Center**

7 P-602 would construct a 41,635-square ft, multi-story Training Integration Center to provide a
8 consolidated, efficiently configured, processing center and adequate temporary billeting for newly
9 arriving junior enlisted students. The first level of the facility would contain a single primary entrance,
10 duty room/control point with linen issue and storage, administrative processing areas, 250 occupant multi-
11 purpose space, recreation/television viewing areas, multi-media classroom, library and study areas, public
12 restrooms, and equipment storage lockers/rooms. The upper levels would consist of open bay barrack
13 spaces for temporary billeting with central laundry, janitorial and vending spaces. There would be four
14 squad bays per floor; each squad bay would hold 20 students for a total sleeping capacity of 240 students.
15 Each bay would have direct access to its own shower/restroom facilities. Student barracks would
16 comprise 33,583 square ft of the facility, while 8,051 square ft would comprise the processing center.
17 Community and service core areas would consist of laundry facilities, TV lounge, administrative offices,
18 housekeeping areas and public restrooms.

19 Site improvements would include sidewalks, outdoor recreation facilities/courts, bus drop off lane,
20 earthwork/grading, storm water management, and water efficient landscaping. Electrical systems would
21 include fire alarms, energy saving electronic monitoring and control system, and information systems.
22 Mechanical systems would include plumbing, fire protection systems, heating ventilation, and air
23 conditioning. Built-in equipment would include one service elevator. Connections to the high
24 temperature hot water lines with secondary distribution loops would also be constructed.

25 **P-603: Vehicle Training and Equipment Facility**

26 P-603 would include alterations and additions to Building 1855 (27,706 square ft) to provide the required
27 vehicle maintenance space for the assigned communications vehicles of the Marine Corps
28 Communications Electronics School. P-603 would construct classroom and covered exterior instruction
29 space for drivers of tactical vehicles and communications equipment operators. Permanent facilities
30 would be constructed of concrete and masonry construction, steel roof framing, decking, and 5-ply built-
31 up roofing. The project would include the construction insulated and air conditioned classroom space, a
32 vehicle hoist in the maintenance facility, bathrooms for male and female students, and covered parking
33 space for communications vehicles.

34 **P-618: Multi-Purpose Administration Building**

35 P-618 would provide an administration building (29,084 square ft) to house the general administration
36 functions that support the Combat Center and replace the six, old, single story buildings that are safety
37 hazards and energy consuming structures. Building 1551 (old hospital) would also be demolished. A
38 three story, permanent facility would be constructed of reinforced steel, concrete framing, and masonry
39 block infill. The project would provide sidewalks, landscaping, irrigation, paved parking, curbs and
40 gutters, exterior lighting and 40 tons of air conditioning.

41 Supporting facilities include electrical, water, sanitary sewer and gas utilities. Paving and site
42 improvements include signage, landscaping and irrigation, roads, and sidewalks.

1 **P-641: Addition East Gym 1588**

2 P-641 would construct a 19,999-square ft multi-story addition including renovation to the existing east
3 gymnasium (Building 1588) at the Combat Center. The addition would be constructed of reinforced
4 concrete slab-on-grade with perimeter footing and spread beam foundation, reinforced concrete masonry
5 exterior walls, and a standing seam metal roof. Special construction features include sound attenuation
6 and upgrades to the building's existing electrical distribution system to handle the increased load.

7 Site preparation would include excavation, grading, structural fill and site cleanup. Site improvements
8 would include sidewalks and an additional 160 surface parking spaces. Electrical systems would include
9 communications, fiber optic, electrical distribution, and a 300 kilovolt-ampere transformer to replace the
10 existing 225 kilovolt-ampere transformer. Mechanical systems would include potable water utilities, fire
11 hydrants, mechanical utilities, sanitary sewer utilities, and an Energy Management Control System.

12 P-641 would also include miscellaneous demolition to permit the expansion of the existing facility,
13 including removal of a store front system, concrete sidewalk, steps, and railing.

14 **P-662: Expeditionary Fighting Vehicle Maintenance Facility**

15 This project would construct a new Expeditionary Fighting Vehicle (EFV) Maintenance Facility (67,371
16 square ft) to accommodate 58 EFV tracked and non-tracked vehicles for the 3rd Amphibious Assault
17 Battalion. The primary facility would consist of a 10,514-square ft amphibian vehicle maintenance shop
18 and a 3,868-square ft automotive organizational shop. The facilities would be constructed with reinforced
19 concrete masonry block walls, concrete foundation, concrete slab, and a standing seam metal roof over
20 steel trusses. The maintenance facilities would include six maintenance bays to perform maintenance on
21 Expeditionary Fighting Vehicles.

22 This project would also construct a 39,310-square ft vehicle holding shed to protect wheeled and tracked
23 armored vehicles from accelerated deterioration due to extreme environmental conditions and a 9,054-
24 square ft Closed Loop Tactical Vehicle Wash Platform with six washracks, including a crane to remove
25 engines to allow for secondary hull cleaning. This project would construct 4,628 square ft of office space.
26 Paving and site improvements would include paved privately-owned vehicle parking, sidewalks, roadway
27 access, earthwork, grading and landscaping. Anti-terrorism/force protection features include fencing,
28 barriers and gates.

29 **P-680: West Gym Addition**

30 P-680 would involve a 19,999-square ft expansion of the West Gym.

31 **P-900: Marine Corps Communication and Electronic Classroom**

32 P-900 would construct a 91,762-square ft three-story academic and applied instruction facility for the
33 training mission at the Combat Center in direct support of the Marine Corps Communications and
34 Electronic School. Community and service core areas would consist of instructor administrative spaces,
35 multipurpose rooms, housekeeping areas and public restrooms. Special building design would include
36 built-in equipment for two freight elevators, one-hour construction walls for computer areas, and raised
37 flooring in all classroom and laboratory areas.

38 Site improvements would include paved parking, sidewalks, outdoor furniture, lighting, roadway access,
39 earthwork, grading and landscaping. Electrical systems would include fire alarms, energy saving
40 electronic monitoring and control system, and information systems. Mechanical systems include

1 plumbing, fire protection systems, heating ventilation and air conditioning, and connections to a central
2 chilled water plant and relocation of high temperature hot water lines with secondary distribution loops.

3 P-900 would also demolish two existing classrooms, Buildings 1757 and 1758 (each 30,160 square ft).

4 **P-902: MCCES Bulk Supply Warehouse**

5 P-902 would provide a new, permanent, single-story, concrete warehouse building (12,109 square ft) in
6 direct support of the Marine Corps Communications and Electronic School. The building would consist
7 of concrete foundation, concrete floor slab reinforcement run continuously through both faces of the slab
8 and into beams and columns, tilt-up concrete walls, and sloped standing seam metal roofing. The
9 building would have open web steel joist roof support. Community and service core areas would consist
10 of administrative offices, housekeeping areas and public restrooms.

11 Supporting facilities work would include site and building utility connections (water, sanitary sewers,
12 electrical, telephone, local area network and cable television). Electrical systems would include fire
13 alarms, energy saving electronic monitoring and control system, and information systems. Mechanical
14 systems would include plumbing, fire protection systems, heating ventilation and air conditioning.
15 Paving and site improvements would include loading docks, sidewalks, roadway access, earthwork,
16 grading and landscaping.

17 **P-903: MCCES Consolidated Radar Classroom**

18 P-903 would consolidate radar training that is currently located in three obsolete buildings constructed in
19 1967. This project would construct an approximately 32,292-square ft consolidated radar classroom. The
20 project would also construct five external radar sites adjacent to new facility. Buildings 1826, 1828, and
21 1839 would be demolished as a part of this project.

22 **P-921: Electronic/Communications Maintenance & Storage Facility**

23 P-921 would construct a consolidated electronic and communications maintenance shop (10,204 square
24 ft) and unit storage facility (24,649 square ft). Community and service core areas would consist of
25 administrative offices, maintenance shops, public restrooms, and storage areas.

26 Site improvements would include a loading dock, concrete pavement for the loading area, sidewalks with
27 curbs and gutters, new roadway access to the west side of the new building, earthwork, grading,
28 landscaping, shaded vehicle yards surrounded with security fences and gates, repair of storm drainage,
29 and repair of existing roadway access. Electrical systems would include fire alarms, energy saving
30 electronic monitoring and control system, and information systems including public address system and
31 security monitoring system. Mechanical systems would include plumbing, fire protection systems,
32 compressed air system and heating ventilation and air conditioning system and repair of existing high
33 temperature hot water lines.

34 P-921 would demolish Buildings 1721, 1723, 1724, 1725, 1726 and 1727 (totaling 24,113 square ft),
35 including necessary asbestos and lead base paint removal and clearing of existing underground utilities.

36 **P-926B: Library/Lifelong Learning Center, Phase II**

37 P-926B is Phase II of a two-phase project that constructs a three-story facility to support the library
38 functions at the Combat Center. Phase I of the project is to construct an adjoining three-story Life Long
39 Learning Center (Education Center). P-926B, Phase II, would construct a 21,000-square ft library to be
40 used as the Command Reference Center and support the increase of personnel at the Combat Center. The

1 project would construct library spaces to include large areas for office space, classrooms, book racks,
2 computer rooms, reading rooms, and supporting areas.

3 Site improvements would include excavation, grading, excess material removal, curbs and gutters,
4 parking and an access road, sidewalks, desert landscaping with irrigation, stormwater control features,
5 pedestrian and bicycle features, and a pedestrian bridge to connect the Library/Lifeling Learning Center.
6 Special construction would include a fire pump, four stop personnel elevator, and basement excavation
7 and shoring for an elevator maintenance room. Electrical systems would include fire alarms, energy
8 saving electronic monitoring and control system, electrical connection to the grid, exterior lighting and
9 information system connections. The mechanical system would include fire protection systems, high
10 temperature hot water and chilled water systems, and water and sewer connections.

11 **P-987: Addition to Temporary Lodging Facility**

12 P-987 would construct a two-story, 20-room, 8,860-square ft, detached addition, to the existing facility
13 and a 6,050-square ft macadam parking lot to accommodate the additional occupancy. Other project
14 components include paving and site improvements including parking, sidewalks, earthwork, grading, and
15 landscaping. The temporary lodging facility is required to provide lodging to military members and their
16 families assigned to the Combat Center, while they await assignment to government quarters or locate
17 housing in the local community.

18 **P-988: Gate Reconfiguration, AT/FP Upgrades**

19 P-988 would construct a new gate house facility (2,497 square ft) including vehicle inspection lanes,
20 sentry inspection houses (194 square ft), and related supporting facilities at the Main Gate and two
21 auxiliary gates.

22 Supporting facilities would include a special foundation of borrow and fill of entrance areas, electrical
23 requirements of transformer, electrical distribution, overhead lighting, interior communications and
24 telephone; mechanical utilities includes connection to water, sewer, and natural gas. Site improvements
25 would include grading, asphalt and concrete pavements, concrete curbs, concrete dividers, traffic
26 medians, sidewalks, parking areas, overhead signs, road striping and traffic signs, flag poles, and
27 landscaping and irrigation.

28 P-988 would demolish existing gate facilities and related asphalt and concrete pavement, concrete curbs
29 and related supporting facilities. The project would also demolish five gate facilities totaling 1,456
30 square ft: Buildings 900, 901, and 904 (Main Gate), 1000 (Condor Gate), and 3334 (Ocotillo Gate).

31 **P-989: Perimeter Fencing (North of Mainside)**

32 P-989 would involve the construction of an AT/FP perimeter fence to the north of the Mainside area.

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Appendix D

Agency Correspondence

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UNITED STATES MARINE CORPS
MARINE AIR GROUND TASK FORCE TRAINING COMMAND
MARINE CORPS AIR GROUND COMBAT CENTER
BOX 788110
TWENTYNINE PALMS, CALIFORNIA 92278-8110

5750
4E/c-15-0094

APR 27 2015

Dr. Carol Roland-Nawi
State Historic Preservation Officer
Office of Historic Preservation
Department of Parks and Recreation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Subj: PROPOSED CONSTRUCTION OF A SOLAR PHOTOVOLTAIC SYSTEM IN THE MAINSIDE AREA, MARINE CORPS AIR GROUND COMBAT CENTER, TWENTYNINE PALMS, SAN BERNARDINO COUNTY, CALIFORNIA

In accordance with Section 106 of the National Historic Preservation Act and its implementing regulation, 36 CFR 800, the Marine Corps is providing for your review and concurrence, information regarding the proposed undertaking to construct a solar photovoltaic (PV) system in the Mainside Area aboard the Marine Corps Air Ground Combat Center (Combat Center). The solar PV system will include:

1. The construction of a solar PV array on the Mesquite Dry Lake playa between Adobe Road, Del Valle Road, and the Combat Center boundary.
2. The development of a power transmission line extending from the Mesquite Dry Lake playa west to connect to existing power transmission lines along Berkeley Road.

The completed solar PV array field would occupy approximately 241 acres (97 ha), and would consist of solar PV panels, steel tracking structures, inverters, combiner boxes, electrical switchgear, a substation, and associated electrical wiring, connections, and other hardware required for the solar PV system. In addition, three action alternatives for the route of the proposed power transmission line upgrades have been proposed in the Environmental Assessment (EA). Alternative 1 includes the upgrade of an existing power line, while Alternatives 2 and 3 include the establishment of a new power transmission line across a portion of the Mesquite Dry Lake playa to connect to an existing power line.

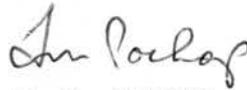
Today, full project packets, including project description and reports, are being provided to the following tribes: Agua Caliente Band of Cahuilla Indians, Chemehuevi Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Morongo Band of Mission Indians, San Manuel Band of Mission Indians, and the Twentynine Palms Band of Mission Indians. According to the Native American Heritage Commission and past consultation with the aforementioned tribes, there are no sacred sites in the proposed project area.

The Marine Corps believes the enclosed documentation satisfies requirements set forth in CFR 800.11(d). Based on our research, we have reached a finding of "no historic properties affected." The Marine Corps requests concurrence with this finding.

5750
4E/c-15-0094

Please feel free to contact the Combat Center Cultural Resources Manager, Ms. Leslie Glover, at 760-830-5369 (leslie.glover@usmc.mil), or Dr. John Hale at 760-830-7641 (john.p.hale@usmc.mil), with any questions or concerns.

Sincerely,



T. B. POCHOP
LtCol, USMC
Director, NREA

Enclosures: 1. Archeological Survey of 396 Acres for Proposed Photovoltaic Array on the Mesquite Dry Lake Playa in the Mainside Area

Copy to: AC/S G-4
NREA Files/Conservation
Mr. Brendon Greenaway, CA SHPO

May 20, 2015

Reply in Reference To: USMC_2015_0429_001

LtCol. T. B. Pochop, Director
Natural Resources and Environmental Affairs Division
Marine Corps Air Ground Combat Center
United States Marine Corps
Box 788110
Twentynine Palms, California 92278-8110

Re: Construction of a Solar Photovoltaic System in the Mainside Area, MCAGCC, Twentynine Palms, San Bernardino County, California (your letter 5750, 4E/c-15-0094 of April 27, 2015)

Dear Colonel Pochop:

Thank you for initiating consultation regarding the United States Marine Corps' efforts to comply with Section 106 of the *National Historic Preservation Act of 1966* (54 U.S.C. § 306108), as amended, and its implementing regulation found at 36 CFR Part 800. Marine Corps Air Ground Combat Center (MCAGCC) proposes to construct a solar photovoltaic (PV) array in the Mainside Area and an electrical transmission line to connect the solar array to an existing power line.

The proposed undertaking will consist of the following components:

- The solar PV array will consist of solar PV panels, steel tracking structures, inverters, combiner boxes, electrical switchgear, a substation, and associated electrical wiring, connections, and other hardware required for the solar PV system;
- Three alternative routes are being analyzed for the proposed transmission line;
- Alternative 1 involves the upgrading of an existing power line; and
- Alternatives 2 and 3 involve the establishment of a new power transmission line across a portion of the Mesquite Dry Lake playa to connect to an existing power line.

The area of potential effects (APE) has been identified as containing the components described above and encompassing approximately 260 acres (approximately 242 acres for the solar array and 16 to 18 acres for the proposed transmission line). Access to the APE will be via existing paved roads.

The APE is located in an area that was part of the original airfield that was constructed in 1942 for the Twentynine Palms Air Academy at Condor Field by the U. S. Army Air Force. The area was graded extensively during World War II and a perforated steel plank (PSP) runway and associated taxiway and aircraft parking areas were emplaced on the graded lakebed. The PSP was removed in the early 1980s and since then the area has been used for various military activities. Consequently, the APE has been graded and re-graded extensively since 1942.

As documentation for your finding of effect, you provided a report entitled: *Archeological Survey of 396 acres for proposed Photovoltaic Array on the Mesquite Dry Lake Playa in the Mainside Area*. The report was prepared by Dr. John P. Hale (USMC).

A records review was conducted at the Cultural Resources Section of the Natural Resources and Environmental Affairs (NREA) Division at MCAGCC. The records review revealed: (1) no cultural resources were identified as being located within the APE; and (2) ten cultural surveys had been conducted previously within an ¼-mile radius of the APE and none of those surveys identified any cultural resources as being located within an ¼-mile radius of the APE. A pedestrian survey of the APE was conducted by personnel from the NREA Division between November 6, 2014 and February 19, 2015 with negative results.

MCAGCC consulted with 7 tribal governments or groups and the Native American Heritage Commission (NAHC) in regards to the proposed undertaking. No responses were received from the tribal governments or groups.

Based on the records review, the pedestrian survey, and the tribal consultations, MCAGCC has concluded that no historic properties are located within the APE. Therefore, MCAGCC has concluded that a finding of No Historic Properties Affected is appropriate for this proposed undertaking.

After reviewing your letter of April 27, 2015, I have the following comments:

- (1) I have no objections to your identification and delineation of the APE, pursuant to 36 CFR Parts 800.4(a)(1) and 800.16(d); and
- (2) I concur that your finding of No Historic Properties Affected is appropriate for this proposed undertaking.

Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have additional future responsibilities for this proposed undertaking under 36 CFR Part 800. Should you encounter cultural artifacts during ground disturbing activities, please halt all work until a qualified archaeologist can be consulted on the nature and significance of such artifacts.

Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact either of the following members of my staff: Ed Carroll at (916) 445-7006 or at e-mail at Ed.Carroll@parks.ca.gov or Duane Marti at (916) 445-7030 or at email at Duane.Marti@parks.ca.gov.

Sincerely,



(for) Carol Roland-Nawi, PhD
State Historic Preservation Officer