

---

# Draft Environmental Assessment

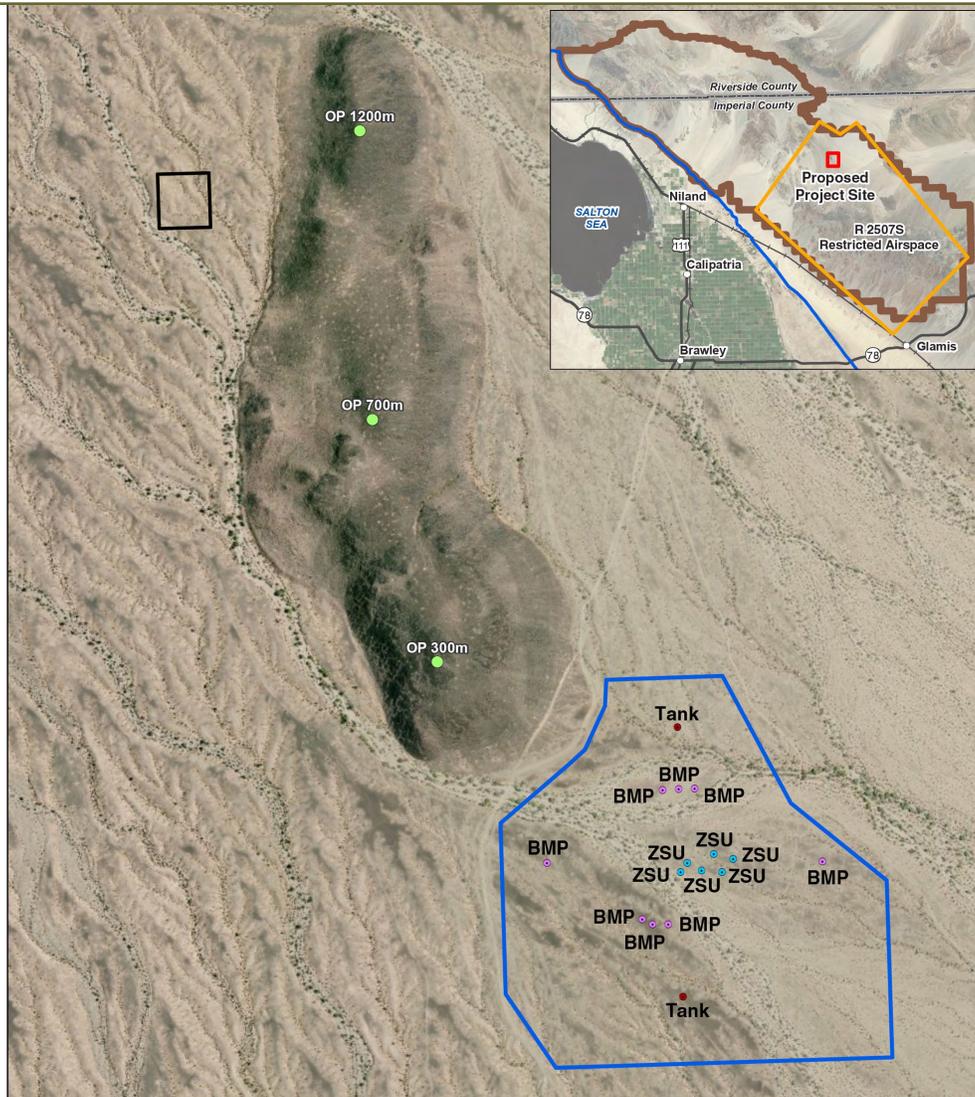
---

## Target Complex Invader

---

### Chocolate Mountain Aerial Gunnery Range

---



**Marine Corps Air Station  
Yuma**

---

**April 2015**

---



---

**Draft Environmental Assessment**

---

**Target Complex Invader**

---

**Chocolate Mountain Aerial Gunnery Range**

---



**Marine Corps Air Station  
Yuma**

---

**April 2015**

---

**This page intentionally left blank.**

1 **Draft**

2 **Environmental Assessment for Target Complex Invader,**  
3 **Chocolate Mountain Aerial Gunnery Range**

4 **Lead Agency for the EA:** United States Marine Corps  
5 **Title of Proposed Action:** Target Complex Invader, Chocolate Mountain Aerial Gunnery Range  
6 **Location of the Proposed Action:** State of California, Imperial County  
7 **Document Type:** Environmental Assessment

8 **Abstract**

9 The United States Marine Corps has prepared this Environmental Assessment in accordance with  
10 the National Environmental Policy Act (NEPA) of 1969, 42 United States Code §§ 4321–4370h, as  
11 implemented by the Council on Environmental Quality regulations, 40 Code of Federal Regulations  
12 Parts 1500–1508, and Marine Corps Order P5090.2A, Change 3, Chapter 12, dated 26 August 2013,  
13 *Environmental Compliance and Protection Manual*, which establishes procedures for implementing  
14 NEPA. The proposed action includes the proposed establishment and operation of a target complex that  
15 includes a 99-acre target area and associated 2.4-acre Landing Zone, and three Observation Posts within  
16 restricted airspace R-2507S at the Chocolate Mountain Aerial Gunnery Range in Imperial County. This  
17 Environmental Assessment describes the potential environmental consequences resulting from one action  
18 alternative (Alternative 1) and the No-Action Alternative on the following resource areas: airspace, air  
19 quality, biological resources, cultural resources, hazardous materials and waste, geological resources,  
20 public health and safety, and water resources.

21 **Prepared By:** United States Marine Corps  
22 **Point of Contact:** Naval Facilities Engineering Command Southwest  
23 Mr. Jesse Martinez  
24 1220 Pacific Highway  
25 Central Integrated Product Team, Building 1  
26 San Diego, California 92132-5190

27 **March 2015**

**This page intentionally left blank.**

# Table of Contents

1	Abstract	
2	Acronyms	v
3	Executive Summary	ES-1
4	1 Purpose and Need	1-1
5	1.1 Introduction	1-1
6	1.2 Background	1-1
7	1.3 Project Location	1-4
8	1.4 Training Functions of the CMAGR	1-4
9	1.4.1 CMAGR Operating Area	1-4
10	1.4.2 Varied Terrain at the CMAGR	1-4
11	1.4.3 Training with Live Ordnance at the CMAGR	1-7
12	1.5 Need and Purpose for the Proposed Action	1-7
13	1.6 Applicable Regulatory Requirements	1-8
14	1.7 Organization of the Document	1-8
15	2 Alternatives Including the Proposed Action	2-1
16	2.1 Alternative 1	2-2
17	2.1.1 Project Components	2-2
18	2.1.1.1 Target Area	2-2
19	2.1.1.2 Landing Zone	2-8
20	2.1.1.3 Observation Posts	2-9
21	2.1.2 Access	2-9
22	2.1.3 Military Use Airspace and Transit Routes	2-10
23	2.1.3.1 Military Use Airspace	2-10
24	2.2 Preferred Alternative	2-13
25	2.3 No-Action Alternative	2-13
26	2.4 Alternatives Considered But Eliminated	2-13
27	2.4.1 Alternative Locations within the Chocolate Mountain Aerial	
28	Gunnery Range	2-13
29	2.4.2 Alternative Design Configurations	2-14
30	2.5 Resource Areas Eliminated From Detailed Consideration	2-14
31	2.6 Anticipated Permits and Approvals	2-15
32	2.7 Minimization and Mitigation Measures	2-15
33	2.8 Summary of Impacts	2-15
34	3 Affected Environment and Environmental Consequences	3-1
35	3.1 Airspace	3-1
36	3.1.1 Affected Environment	3-1
37	3.1.1.1 Military Airspace Use	3-1
38	3.1.1.2 Civilian Airspace Use	3-2
39	3.1.2 Environmental Consequences	3-2
40	3.1.2.1 Alternative 1	3-2
41	3.1.2.2 No-Action Alternative	3-2
42	3.2 Air Quality	3-3
43	3.2.1 Affected Environment	3-4
44	3.2.1.1 Existing Air Quality	3-4
45	3.2.1.2 Regulatory Framework	3-5
46		

1	3.2.2	Environmental Consequences .....	3-7
2	3.2.2.1	Alternative 1 .....	3-7
3	3.2.2.2	No-Action Alternative .....	3-8
4	3.3	Biological Resources.....	3-9
5	3.3.1	Affected Environment.....	3-9
6	3.3.1.1	Data Sources .....	3-10
7	3.3.1.2	Vegetation.....	3-10
8	3.3.1.3	Non-Native Plant Species .....	3-14
9	3.3.1.4	General Wildlife .....	3-14
10	3.3.1.5	Special Status Species.....	3-14
11	3.3.1.6	Wetlands and Other Waters of the U.S.....	3-21
12	3.3.2	Environmental Consequences .....	3-25
13	3.3.2.1	Alternative 1 .....	3-25
14	3.3.2.2	No-Action Alternative .....	3-32
15	3.4	Cultural Resources .....	3-33
16	3.4.1	Affected Environment.....	3-33
17	3.4.1.1	Prehistoric and Historic Setting .....	3-34
18	3.4.1.2	Cultural Resources within the Affected Environment .....	3-35
19	3.4.2	Environmental Consequences .....	3-36
20	3.4.2.1	Alternative 1 .....	3-36
21	3.4.2.2	No-Action Alternative .....	3-36
22	3.5	Hazardous Materials and Waste.....	3-37
23	3.5.1	Affected Environment.....	3-37
24	3.5.1.1	Installation Restoration Program Sites .....	3-37
25	3.5.1.2	Management of Hazardous Materials and Wastes and Petroleum, Oil, and Lubricants .....	3-37
26	3.5.1.3	Toxic Chemical Reporting.....	3-38
27	3.5.1.4	Range Environmental Vulnerability Assessment .....	3-38
28	3.5.2	Environmental Consequences .....	3-39
29	3.5.2.1	Alternative 1 .....	3-39
30	3.5.2.2	No-Action Alternative .....	3-40
31	3.6	Geological Resources.....	3-41
32	3.6.1	Affected Environment.....	3-41
33	3.6.2	Environmental Consequences .....	3-41
34	3.6.2.1	Alternative 1 .....	3-41
35	3.6.2.2	No-Action Alternative .....	3-42
36	3.7	Public Health and Safety .....	3-43
37	3.7.1	Affected Environment.....	3-43
38	3.7.1.1	Aviation Safety .....	3-43
39	3.7.1.2	Ground Safety .....	3-43
40	3.7.2	Environmental Consequences .....	3-44
41	3.7.2.1	Alternative 1 .....	3-44
42	3.7.2.2	No-Action Alternative .....	3-45
43	3.8	Water Resources .....	3-47
44	3.8.1	Affected Environment.....	3-47
45	3.8.1.1	Surface Water .....	3-47
46	3.8.1.2	Groundwater .....	3-47
47	3.8.1.3	Water Quality.....	3-48
48	3.8.1.4	Floodplains/Flooding.....	3-48
49	3.8.2	Environmental Consequences .....	3-48
50			

1		3.8.2.1	Alternative 1 .....	3-48
2		3.8.2.2	No-Action Alternative .....	3-49
3	4		Cumulative Impacts.....	4-1
4		4.1	Introduction.....	4-1
5		4.2	Past, Present, and Reasonably Foreseeable Future Projects Considered in the Cumulative Analysis .....	4-1
6				
7		4.3	Methodology .....	4-7
8		4.3.1	Geographic Scope of the Cumulative Effects .....	4-7
9		4.3.2	Time Frame of the Cumulative Effects Analysis.....	4-7
10		4.4	Potential Cumulative Impacts by Environmental Resource Area.....	4-7
11		4.4.1	Air Quality .....	4-8
12		4.4.1.1	Criteria Pollutants .....	4-8
13		4.4.1.2	Greenhouse Gases.....	4-8
14		4.4.2	Biological Resources.....	4-9
15		4.4.3	Water Resources .....	4-9
16	5		Other NEPA Considerations.....	5-1
17		5.1	Energy Requirements and Conservation Potential of Alternatives Including the Proposed Action and All Mitigation Measures Being Considered .....	5-1
18				
19		5.2	Irreversible or Irrecoverable Commitment of Natural or Depletable Resources .....	5-1
20				
21		5.3	Relationship Between Local Short-Term Use of the Human Environment and Maintenance and Enhancement of Long-Term Biological Productivity.....	5-1
22				
23		5.4	Any Probable Adverse Environmental Effects that Cannot be Avoided and are Not Amenable to Mitigation .....	5-2
24				
25	6		List of Preparers .....	6-1
26	7		References .....	7-1

## Appendices

27	A	Applicable Federal Regulations, Instructions, and Public Law
28	B	Mitigation, Monitoring, and Reporting Record (MMMR) Tracking Sheet
29	C	1996 and 2003 Biological Opinions for the Military Use of the Chocolate Mountain Aerial Gunnery Range
30		
31	D	Agency Consultation

## List of Tables

1	Table 2.1-1. Ammunition Expenditures within R-2507S at the Chocolate Mountain Aerial	
2	Gunnery Range .....	2-5
3	Table 2.1-2. Annual Sorties within R-2507S at the Chocolate Mountain Aerial Gunnery Range .....	2-11
4	Table 2.1-3. Military Training Routes that Provide Entry to the Chocolate Mountain Aerial	
5	Gunnery Range .....	2-13
6	Table 2.6-1. Anticipated Permits and Concurrence/Determinations .....	2-15
7	Table 2.8-1. Summary of Impacts .....	2-16
8		
9	Table 3.2-1. California and National Ambient Air Quality Standards .....	3-3
10	Table 3.3-1. Landforms, Vegetation, and Associated Acreages in the Survey Area for Target	
11	Complex Invader .....	3-11
12	Table 3.3-2. Federally Listed Threatened and Endangered Plant and Animal Species Known to	
13	Occur or Potentially Occurring in the Project Vicinity .....	3-15
14	Table 3.3-3. Desert Tortoise Sign Key .....	3-18
15	Table 3.3-4. Desert Tortoise Survey Results for CMAGR Target Complex Invader .....	3-18
16	Table 3.3-5. Special Status Plant and Animal Species Known to Occur or Potentially Occurring	
17	in the Project Vicinity .....	3-20
18	Table 3.3-6. Avian Species of Concern under the MBTA Known to Occur or Potentially	
19	Occurring in the Project Vicinity .....	3-21
20	Table 3.3-7. Vegetation Communities Potentially Disturbed under Alternative 1 .....	3-25
21		
22	Table 4.2-1. Cumulative Project and Associated Anticipated Impacts .....	4-2

## List of Figures

23	1.1-1. Regional Map .....	1-2
24	1.4-1. Military Ranges, Air Installations, and Bases in the CMAGR Operating Area .....	1-5
25	1.4-2. Training Support Facilities at CMAGR .....	1-6
26	2.1-1. Target Complex Invader Conceptual Layout .....	2-3
27	2.1-2. Photos of the Proposed Targets within Target Complex Invader .....	2-4
28	3.3-1. Vegetation Known to Occur in the Project Vicinity .....	3-12
29	3.3-2. Survey Area within Desert Tortoise Critical Habitat on Chocolate Mountain Aerial	
30	Gunnery Range .....	3-16
31	3.3-3. Potential Waters of the U.S. in the Project Vicinity .....	3-24
32	4.2-1. General Location of Cumulative Projects in the Project Vicinity .....	4-6

## Acronyms

1	°C	degrees Celsius
2	°F	degrees Fahrenheit
3	µg/m <sup>3</sup>	micrograms per cubic meter
4	AB	Assembly Bill
5	AD	Anno Domini
6	AGL	above ground level
7	APE	Area of Potential Effects
8	ARB	(California) Air Resources Board
9	ARTCC	Air Route Traffic Control Center
10	ATC	air traffic control
11	ATCAA	Air Traffic Control Assigned Airspace
12	ATV	All-Terrain Vehicles
13	BC	Before Christ
14	BLM	Bureau of Land Management
15	BMGR	Barry M. Goldwater Range
16	BMP	Boyevaya Mashina Pekhotys
17	BO	Biological Opinion
18	BSTRC	Bob Stump Training Range Complex
19	CAA	Federal Clean Air Act
20	CAAQS	California Ambient Air Quality Standards
21	CCAA	California Clean Air Act
22	CDFW	California Department of Fish and Wildlife
23	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
24	CEQ	Council on Environmental Quality
25	CFR	Code of Federal Regulations
26	CH <sub>4</sub>	methane
27	CMAGR	Chocolate Mountain Aerial Gunnery Range
28	CNDDDB	California Natural Diversity Database
29	CNPS	California Native Plant Society
30	CO	carbon monoxide
31	CO <sub>2</sub>	carbon dioxide
32	CO <sub>2</sub> e	carbon dioxide equivalent
33	CWA	Clean Water Act
34	DAS	Deep Air Support
35	DoD	Department of Defense
36	DoN	Department of the Navy
37	EA	Environmental Assessment
38	EO	Executive Order
39	EOD	Explosive Ordnance Disposal
40	EPA	United States Environmental Protection Agency
41	EPCRA	Emergency Planning and Community Right-to-Know Act
42	ESA	Endangered Species Act

## *Acronyms*

---

1	FAA	Federal Aviation Administration
2	FEMA	Federal Emergency Management Agency
3	FY	fiscal year
4	GHG	greenhouse gas
5	GPS	global positioning system
6	GWP	global warming potential
7	ICAPCD	Imperial County Air Pollution Control District
8	ICRMP	Integrated Cultural Resources Management Plan
9	IFR	Instrument Flight Rules
10	INRMP	Integrated Natural Resources Management Plan
11	IR	Instrument Route
12	IRP	Installation Restoration Program
13	IVPA	Imperial Valley Planning Area
14	JSF	Joint Strike Fighter
15	LZ	Landing Zone
16	MAGTF	Marine Air Ground Task Force
17	MAGTFTC	Marine Air Ground Task Force Training Command
18	Marine Corps	United States Marine Corps
19	MAWTS-1	Marine Aviation Weapons and Tactics Squadron One
20	MBTA	Migratory Bird Treaty Act
21	MCAGCC	Marine Corps Air Ground Combat Center
22	MCAS	Marine Corps Air Station
23	MCB	Marine Corps Base
24	MCO	Marine Corps Order
25	mg/l	milligrams per liter
26	MMRR	Mitigation, Monitoring, and Reporting Record
27	MOA	Military Operations Area
28	MOU	Memorandum of Understanding
29	MSL	mean sea level
30	MTR	Military Training Route
31	N <sub>2</sub> O	nitrous oxide
32	NAAQS	National Ambient Air Quality Standards
33	NAF	Naval Air Facility
34	NAS	Naval Air Station
35	NATOPS	Naval Air Training and Operating Procedures Standardization
36	NAVSEA	Naval Sea Systems Command
37	NEPA	National Environmental Policy Act
38	NHPA	National Historic Preservation Act
39	NM	nautical mile
40	NO <sub>x</sub>	nitrogen oxides
41	NO <sub>2</sub>	nitrogen dioxide
42	NOA	Notice of Availability
43	NOTAM	Notice to Airmen
44	NRHP	National Register of Historic Places

1	NWI	National Wetlands Inventory
2	O <sub>3</sub>	ozone
3	OHP	Office of Historic Preservation
4	OHWM	ordinary high water mark
5	OP	Observation Post
6	OPNAVINST	Chief of Naval Operations Instruction
7	PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
8	PM <sub>10</sub>	particulate matter less than 10 microns in diameter
9	POL	petroleum, oils, and lubricants
10	ppm	parts per million
11	Protocol	2010 Field Season Pre-project Field Survey Protocol for Potential Desert Tortoise
12		Habitats
13	PSD	Prevention of Significant Deterioration
14	RCRA	Resource Conservation and Recovery Act
15	REVA	Range Environmental Vulnerability Assessment
16	ROI	region of influence
17	RPRS	Rare Plant Ranking System
18	RWQCB	Regional Water Quality Control Board
19	SHPO	State Historic Preservation Office
20	SIP	State Implementation Plan
21	SPCC	Spill Prevention, Control, and Countermeasures
22	SSAB	Salton Sea Air Basin
23	SUA	special use airspace
24	SWAT	Special Warfare Training Area
25	TDS	total dissolved solids
26	TNW	traditional navigable waters
27	TRI	Toxic Release Inventory
28	U.S.	United States
29	USACE	United States Army Corps of Engineers
30	USC	United States Code
31	USFWS	United States Fish and Wildlife Service
32	USGS	United States Geological Survey
33	UXO	unexploded ordnance
34	VFR	Visual Flight Rules
35	VOC	volatile organic compound
36	VR	Visual Route
37	WDZ	Weapons Danger Zone
38	WTI	Weapons and Tactics Instructor
39	YPG	Yuma Proving Ground
40	ZSU	Zenitnaya Samokhodnaya Ustanovka

**This page intentionally left blank.**

## Executive Summary

1 The United States Marine Corps (Marine Corps) has prepared this Environmental Assessment (EA) in  
2 accordance with the National Environmental Policy Act (NEPA) of 1969, 42 United States  
3 Code §§ 4321–4370h, as implemented by the Council on Environmental Quality regulations, 40 Code of  
4 Federal Regulations Parts 1500–1508, and Marine Corps Order P5090.2A, Change 3, Chapter 12,  
5 dated 26 August 2013, *Environmental Compliance and Protection Manual*, which establishes procedures  
6 for implementing NEPA. This EA describes the potential environmental consequences resulting from a  
7 proposal for a new target complex at the Chocolate Mountain Aerial Gunnery Range (CMAGR) to  
8 provide continuity between Weapons and Tactics Instructor (WTI) training evolutions conducted in  
9 Restricted Areas R-2507N and R-2507S, allowing for more dynamic and realistic training scenarios. The  
10 proposed action would be located on approximately 102 acres and includes establishment and operation  
11 of a 99-acre target area and associated 2.4-acre Landing Zone for both rotary-wing and tilt-rotor aircraft,  
12 and three Observation Posts within R-2507S (Figure 1.1-1). The training operations addressed under this  
13 proposed action would primarily be conducted by Marine Aviation Weapons and Tactics Squadron One  
14 (MAWTS-1), which is the training and aviation command of the Marine Air Ground Task Force Training  
15 Command at Marine Corps Air Station (MCAS) Yuma. The proposed action would not result in new  
16 training. Rather, existing WTI training, which is conducted twice per year (April and September to  
17 coordinate with Military Occupational Specialty School, graduation, and deployment cycles.), would be  
18 redistributed to a new location within the CMAGR. As such, there would be no consequential change in  
19 the level of operational activities and number of personnel associated with the proposed action.

20 The proposed action is needed to provide WTI with the most realistic and tactically challenging course  
21 available and to enhance the complexity of conditions and scenarios for the mandated training activities  
22 for the type, model, and series of aircraft that operate at CMAGR to meet the Deep Air Support (DAS)<sup>1</sup>  
23 training mission. Some aspects of the WTI Course academic syllabus are conducted notionally  
24 (i.e., conceptually) because a target complex simulating the enemy scheme of maneuver for a given  
25 evolution does not exist. In addition, most of the existing target complexes that support WTI and other  
26 training complexes are either geographically too close to each other to allow for a true DAS mission  
27 training, or do not allow upgraded sensor suites (i.e., electronic systems and instrumentation including  
28 radar, communication, navigation, and targeting capabilities) for fixed-wing and rotary-wing aircraft to be  
29 utilized to their fullest potential.

30 The proposed action would provide enhanced DAS training at the CMAGR for aircrews participating in  
31 the WTI Course. Specifically, the new target complex would allow AH-1W helicopter pilots to engage  
32 enemy formations well forward of Blue Mountain (Figure 1.1-1) and the close-in target sets during  
33 training evolutions, greatly enhancing the realism associated with DAS training. In addition, the new  
34 target complex would simulate enemy formations and allow WTI trainees to locate and use ordnance  
35 against a realistic target formation rather than notionally as is currently done. Finally, the addition of the  
36 new target complex would allow WTI trainees the opportunity to locate and engage targets at a more  
37 tactically sound distance of 6 to 12 miles rather than the current distance of 2 to 4 miles.

---

<sup>1</sup> DAS missions are planned against enemy targets at such a distance from allied forces that detailed integration of each mission with fire and movement of allied forces is not required. DAS missions include Air Interdiction, Armed Reconnaissance, and Strike Coordination and Reconnaissance. DAS missions are typically used as part of an air action against enemy targets and are used primarily to shape the battlespace. Shaping activities aim to render the enemy vulnerable to attack or facilitate maneuver of allied forces. DAS can be employed to determine enemy operational intentions, delay enemy resupply and reinforcements, degrade critical enemy functions or capabilities, and manipulate enemy perceptions.

1 The purpose of the proposed action is to provide a realistic target representation that satisfies  
2 requirements for numerous training events in accordance with Training and Doctrine Command  
3 Regulation, and other training policies and procedures. Primarily the proposed action would better enable  
4 MAWTS-1 to meet the specific aspects of conducting DAS, provide the geographic challenges within the  
5 planning phase, and provide combat realism for execution.

6 The new target complex must be located within R-2507S to allow for the use of high-explosive ordnance  
7 and provide a realistic target representation that satisfies requirements for numerous events in accordance  
8 with Training and Doctrine Command Regulations and current tactics, techniques, and procedures. Other  
9 locations considered within the CMAGR would not provide WTI trainees with a realistic training scenario  
10 during the fully integrated combined arms exercises. Therefore, the Marine Corps has developed one  
11 action alternative to implement the proposed action (Alternative 1). The following resource areas were  
12 evaluated for potential environmental consequences: airspace, air quality, biological resources, cultural  
13 resources, hazardous materials and waste, geological resources, public health and safety, and water  
14 resources. The potential environmental consequences associated with implementation of Alternative 1 and  
15 the No-Action Alternative are summarized in Table ES-1. As shown in Table ES-1, no significant impacts  
16 to any resource area would occur with implementation of the proposed action with the inclusion of  
17 minimization, mitigation, monitoring, and reporting measures (Appendix B). Based on the analysis  
18 presented in this EA, the Marine Corps has identified Alternative 1 as the Preferred Alternative.

Table ES-1. Summary of Potential Environmental Consequences

<i>Resource</i>	<i>Proposed Action (Alternative 1)</i>	<i>No-Action Alternative</i>
<b>Airspace</b>	Alternative 1 would not require changes or additions to the existing airspace structure. In addition, no changes would be required to those procedures that have been implemented by Marine Corps Air Station (MCAS) Yuma per the Federal Aviation Administration for scheduling and managing use of this airspace environment. Aircraft operations associated with Alternative 1 would be within the range of those currently conducted within R-2507S and the overlying or adjacent restricted airspace, Military Operations Areas/Air Traffic Control Assigned Airspace, and Military Training Routes used in conjunction with this restricted area. Therefore, no impacts to airspace would occur.	For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts on airspace would occur.
<b>Air Quality</b>	Emissions generated by Alternative 1 would be below the conformity <i>de minimis</i> levels or the United States Environmental Protection Agency Prevention of Significant Deterioration threshold. Therefore, significant impacts to air quality would not occur.	For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts on air quality would occur.
<b>Biological Resources</b>	Alternative 1 has the potential to result in direct and indirect impacts to the desert tortoise and designated critical habitat for this species. Direct impacts to this species resulting from Alternative 1 include direct mortality due to ordnance delivery or collision with vehicles. These activities would not be expected to jeopardize the continued existence of the desert tortoise, nor would they be likely to result in the significant destruction or adverse modification of critical habitat for the desert tortoise. The proposed action would not result in significant impacts to jurisdictional waters of the U.S.	For the No-Action Alternative, the proposed action would not occur. There would be no change in existing conditions, and the potential disturbance to biological resources would be avoided. The CMAGR would continue to operate under the existing 1996 Biological Opinion (BO), which provides for an annual take of 11 tortoises injured/killed and 112 harassed. No impacts on biological resources would occur.
<b>Cultural Resources</b>	Alternative 1 would not result in impacts to cultural resources (i.e., properties that are eligible for or listed on the National Register of Historic Places). In the event that previously unrecorded or unevaluated cultural resources are encountered during ground-disturbing activities, MCAS Yuma would manage these resources in accordance with the National Historic Preservation Act and other federal and state laws, Marine Corps and Department of Defense (DoD) regulations and instructions, and DoD American and Alaska Native Policy. Therefore, significant impacts to cultural resources would not occur.	For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts on cultural resources would occur.

**Table ES-1. Summary of Potential Environmental Consequences**

<i>Resource</i>	<i>Proposed Action (Alternative 1)</i>	<i>No-Action Alternative</i>
<p><b>Hazardous Materials and Waste</b></p>	<p>Alternative 1 could result in the potential for spills or leaks of petroleum, oils, and lubricants as result of the use of military vehicles during target maintenance and operational range clearance. The existing Spill Prevention, Control, and Countermeasures Plan for CMAGR would be updated to include activities at Target Complex Invader. Therefore, significant impacts related to hazardous materials and waste would not occur.</p> <p>Alternative 1 has the potential to result in the potential for toxic chemical usage as a result of air-to-ground delivery of conventional high-explosive ordnance. Based on the CMAGR Range Evaluation and Vulnerability Assessment (REVA) completed for other target areas, surface water in the washes draining from the CMAGR is not used as a potable water source, as an irrigation water source, or for any contact activity, either on-range or off-range; therefore, no human or ecological receptors are present. Since no complete exposure pathway was identified, it was assumed that there was no potential risk to human health and the environment (DoN 2013). Operational range clearance would be conducted every one to two years to remove and destroy military munitions, including unexploded ordnance (UXO) and munitions debris, which would minimize the potential for munitions contaminants to migrate off-range. In addition, range activities would be included in the annual CMAGR Toxic Release Inventory Report in accordance with Emergency Planning and Community Right-to-Know to inform the public of munitions-related hazardous materials use on the range. Therefore, significant impacts related to hazardous materials and waste would not occur.</p>	<p>For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts related to hazardous materials and waste would occur.</p>

**Table ES-1. Summary of Potential Environmental Consequences**

<i>Resource</i>	<i>Proposed Action (Alternative 1)</i>	<i>No-Action Alternative</i>
<b>Geological Resources</b>	<p>Alternative 1 has the potential to result in direct impacts to soils as a result of disturbance of soils and loss of soil crusts (i.e., desert pavement) during military surface use. In addition, Alternative 1 has the potential to result in indirect impacts to soils from wind and water erosion, increased runoff and sediment loads, and downstream sedimentation along ephemeral drainages. However, the potential for erosion would be slightly increased over existing conditions and it is unlikely that significant water quality impacts associated with erosion-induced sedimentation has the potential to result from the proposed operations. However, all proposed aircraft operations would adhere to measures set forth within the CMAGR Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan related to soil conservation. Therefore, significant impacts to geological resources would not occur.</p>	<p>For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts on geological resources would occur.</p>
<b>Public Health and Safety</b>	<p>Alternative 1 would not result in new aircraft training activities; existing WTI training within the CMAGR would be redistributed to the project site. Similar to existing operations, air safety rules would continue to contain and segregate activities that would be hazardous to non-participating aircraft within the CMAGR and adjacent and associated operating ranges. Therefore, significant impacts to aviation safety would not occur.</p> <p>The public is not authorized to enter the project site for safety reasons, and no change in this policy would occur under Alternative 1. Potential risks associated with unauthorized entry are controlled by military protocols that restrict access, facilitate the routine clearance of ranges to destroy and remove munitions that may pose potential risks to and/or attract scrappers and other trespassers and procedures to abort live-fire exercises when range trespassers are detected. Therefore, significant impact to ground safety would not occur.</p>	<p>For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts on public health and safety would occur.</p>

**Table ES-1. Summary of Potential Environmental Consequences**

<i>Resource</i>	<i>Proposed Action (Alternative 1)</i>	<i>No-Action Alternative</i>
<b>Water Resources</b>	<p>Alternative 1 has the potential to result in direct and indirect impacts to water quality in ephemeral drainages within the project site due to erosion-induced sediment load, sedimentation, and suspended sediment and due to the presence of metals and explosive fillers used in ordnance. However, little if any sedimentation would be expected to be transported off site and increased sediment load would be unlikely to reach natural off-range receiving waters such as the Colorado River. In addition, the toxicity thresholds for humans and other biological receptors are several magnitudes above the estimated munitions constituent concentrations reaching the range boundary (USMC 2008b). Alternative 1 could also result in impacts to groundwater quality as residual metal concentrations in surface waters could percolate into underlying solids and groundwater. Groundwater resources are not currently used for military operations at the CMAGR and Alternative 1 would not involve the use of ground water for consumptive or other purposes. Operational range clearance would be conducted every one to two years to destroy and remove military munitions, including UXO and munitions debris, which would minimize the potential for munitions contaminants to impact water resources or to migrate off-range. Therefore, significant impacts to water quality would not occur.</p> <p>No impacts to floodplains/flooding would occur.</p>	<p>For the No-Action Alternative, the proposed action would not occur, and there would be no change in existing conditions. No impacts on water resources would occur.</p>

# 1 Purpose and Need

## 1.1 Introduction

This Environmental Assessment (EA) has been prepared by the United States Marine Corps (Marine Corps) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §§ 4321–4370h, as amended), the Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of NEPA* (40 Code of Federal Regulations [CFR] Parts 1500–1508), and Marine Corps Order (MCO) P5090.2A, Change 3, Chapter 12, dated 26 August 2013, *Environmental Compliance and Protection Manual*. NEPA encourages public involvement in the environmental review process. The development of this EA includes the publication of a Notice of Availability (NOA), informing interested parties or agencies of the existence of the report.

This EA describes the potential environmental consequences resulting from a proposal for a new target complex at the Chocolate Mountain Aerial Gunnery Range (CMAGR) to provide continuity between Weapons and Tactics Instructor (WTI) training conducted in Restricted Areas R-2507N and R-2507S, allowing for more dynamic and realistic training scenarios (Figure 1.1-1). The proposed action would be located on approximately 102 acres and includes establishment and operation of a 99-acre target area and associated 2.4-acre<sup>2</sup> Landing Zone (LZ), and three Observation Posts (OPs) within R-2507S (Figure 1.1-1). The new target complex must be located within R-2507S to allow for the use of high-explosive ordnance. Other locations considered within the CMAGR would not provide WTI trainees with a realistic training scenario during the combined arms exercises. The proposed action would not result in new training. Rather, existing WTI training, which occurs twice per year (April and September), would be redistributed to a new location within the CMAGR. As such, there would be no consequential change in the level of operational activities and number of personnel associated with the proposed action.

## 1.2 Background

As directed by law (10 USC § 5063), the Marine Corps must be able to field, on virtually immediate notice, a self-sufficient, combined arms combat force that can operate in three dimensions (land, air, and sea) under a single command. The Marine Corps organizes its ground combat divisions and air wings into Marine Air Ground Task Forces (MAGTFs). This forms the fundamental cornerstones of modern Marine Corps combat doctrine and is one of the first front-line combat forces that the nation turns to in times of crisis. The training operations addressed under this proposed action would primarily be conducted by Marine Aviation Weapons and Tactics Squadron One (MAWTS-1), which is the training and aviation command of the Marine Air Ground Task Force Training Command (MAGTFTC). The MAWTS-1 mission is to provide standardized advanced tactical training and certification of unit instructor qualifications that support Marine Aviation training and readiness and to provide assistance in the development and employment of aviation weapons and tactics. MAWTS-1 was commissioned in June 1978 to conduct a consolidated graduate level WTI Course at Marine Corps Air Station (MCAS) Yuma. MAWTS-1 is stationed at MCAS Yuma. The WTI Course is designed for highly experienced and fully qualified officers from all aviation communities, as well as ground combat, combat support, and combat service support.

---

<sup>2</sup> Note that English units of measurements are utilized throughout the document except where metric units or other native formats are the standard.

1 Purpose and Need

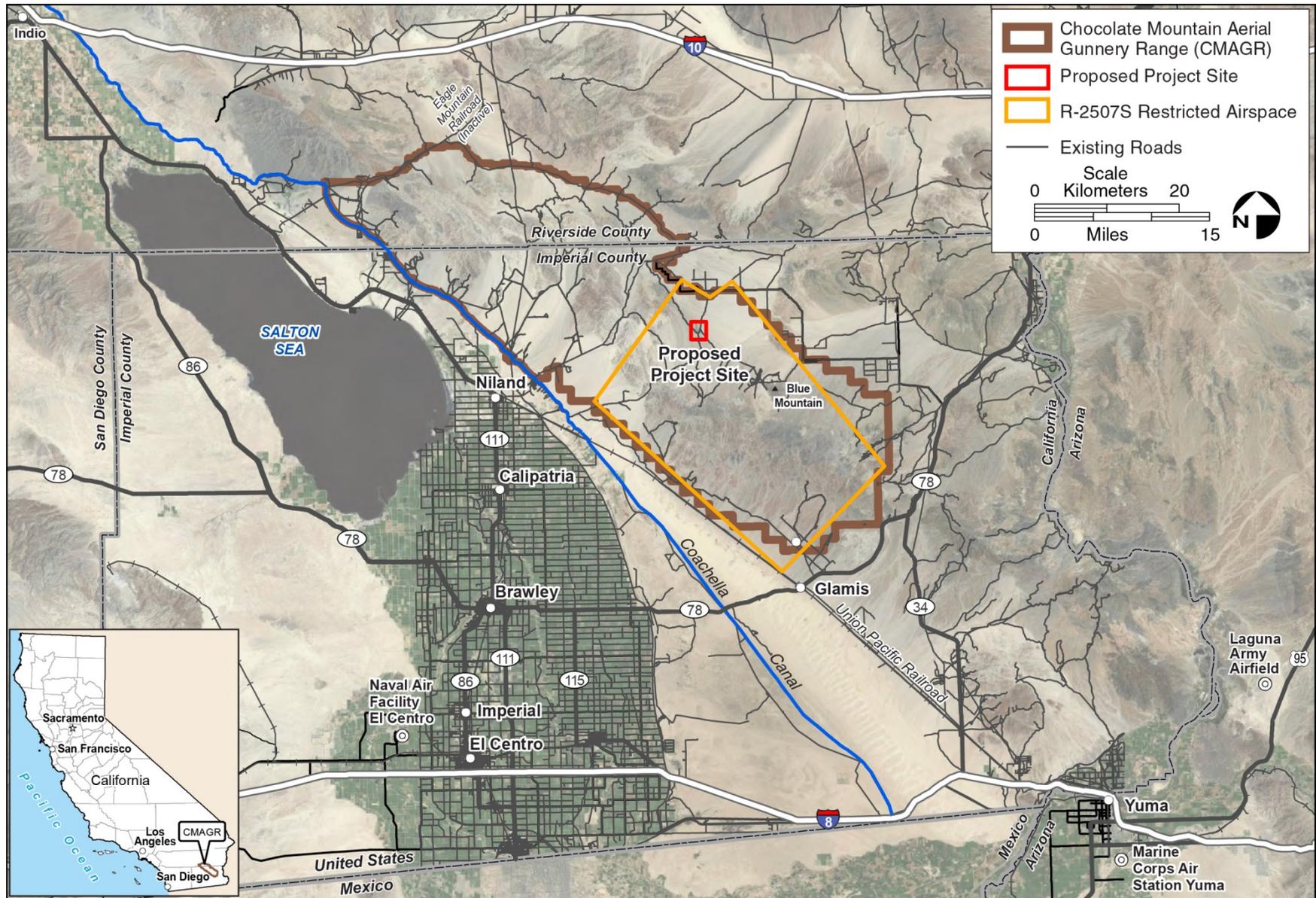


Figure 1.1-1. Regional Map

1 The course objective is to graduate flight officers who: 1) are fully qualified in their warfare specialty;  
2 2) can plan and execute missions that integrate both air and ground support; and 3) have the experience  
3 and knowledge necessary to conduct an effective and comprehensive aircrew training program for their  
4 respective squadrons. Only the best qualified aircrews from operational squadrons are accepted to the  
5 WTI Course.

6 The Marine Corps uses the course to enhance its capabilities in advanced aviation weapons and tactics by  
7 providing each Marine Corps squadron annually with a qualified WTI. To keep the WTI Course at the  
8 cutting edge, its contents are updated before each semiannual session to ensure that WTI graduates are  
9 prepared to defeat the capabilities and tactics of potential, contemporary adversaries. The WTI Course is  
10 characterized by a demanding academic program and complex flight training exercises that realistically  
11 simulate real world combat scenarios. The course culminates in a fully integrated combined arms exercise  
12 encompassing all functions of Marine Corps aviation in support of MAGTF.

13 Since its commissioning, MAWTS-1 has conducted two WTI courses per year (April and September),  
14 now producing over 300 WTI graduates each year. MAWTS-1 currently conducts the WTI Course  
15 training of fixed-wing, rotary-wing, and tilt-rotor aircraft<sup>3</sup> at training ranges within the CMAGR and  
16 associated airspace, including R-2507N and R-2507S. The existing ranges feature a wide array of realistic  
17 target complexes and individual sites that simulate enemy airfields, air defenses, vehicle depots, truck  
18 convoys, troop and armor positions, power stations, and command and communication sites among other  
19 types of facilities and positions. In addition, squadrons from other aircraft wings and allied forces  
20 currently utilize the CMAGR for training.

21 All spectrums of Marine Corps aviation must be utilized to include Deep Air Support (DAS)<sup>4</sup> to provide  
22 the most realistic and challenging course available. Most of the existing target complexes that support  
23 WTI and other training complexes are either geographically too close to allow for a true DAS mission  
24 training or are not modernized to allow fixed-wing and rotary-wing aircraft to be utilized to their fullest  
25 potential (i.e., utilize current electronic systems and instrumentation, including radar, communication,  
26 navigation, and targeting capabilities). In addition, some aspects of the WTI Course academic syllabus are  
27 conducted 'notionally' (i.e., conceptually) because a target complex simulating a particular combat  
28 scenario does not currently exist. Installation and operation of a new target complex would provide  
29 enhanced DAS training at the CMAGR for aircrews participating in the WTI Course.

---

<sup>3</sup> Fixed-wing aircraft have conventional airframes in which wings provide lift and support aircraft directional control surfaces, and engines provide thrust through a propeller or jet turbine. Rotary-wing aircraft, or helicopters, are propelled by an engine driven rotary wing that provides lift, thrust, and directional control. Tilt-rotor aircraft combine capabilities of both fixed-wing and rotary-wing aircraft; the MV-22 is currently the only U.S. military example. The MV-22 can fly like a conventional aircraft or its engines, which are positioned at the end of its wings, can be rotated vertically to allow its propellers to function like rotors and give the aircraft the ability to operate like a helicopter.

<sup>4</sup> DAS missions are planned against enemy targets at such a distance from allied forces that detailed integration of each mission with fire and movement of allied forces is not required. DAS missions include Air Interdiction, Armed Reconnaissance, and Strike Coordination and Reconnaissance. DAS missions are typically used as part of an air action against enemy targets and are used primarily to shape the battlespace. Shaping activities aim to render the enemy vulnerable to attack or facilitate maneuver of allied forces. DAS can be employed to determine enemy operational intentions, delay enemy resupply and reinforcements, degrade critical enemy functions or capabilities, and manipulate enemy perceptions.

1 **1.3 Project Location**

2 The proposed action would be implemented at the CMAGR, located in Imperial County, California  
3 (Figure 1.1-1). The CMAGR is bound on the west by the Salton Sea Basin; and on the east, by the  
4 Chuckwalla and Palo Verde mountains. The northern border is separated from the Orocopia Mountains by  
5 Salt Creek and includes part of the Chuckwalla Bench. The CMAGR extends south to Highway 78 near  
6 Glamis. The project site is located approximately 9 miles northwest of Blue Mountain and underlies  
7 special use airspace (SUA) (R-2507S) (Figures 1.1-1 and 2.1-1).

8 **1.4 Training Functions of the CMAGR**

9 MAGTF and other air combat training needs occur at three successively larger geographic and operational  
10 scales: the CMAGR operating area, the Bob Stump Training Range Complex (BSTRC), and the regional  
11 range complex operating area (Figure 1.4-1). The CMAGR operating area includes one tactical range  
12 (the CMAGR) and overlying and contiguous SUA that supports military flight activities at that range. The  
13 BSTRC includes two tactical ranges (the CMAGR and Barry M. Goldwater Range [BMGR] West in  
14 Arizona), SUA that either overlies or is contiguous to these ranges, and other blocks of nearby SUA—  
15 including that overlying the Yuma Proving Ground (YPG) in Arizona and the Navy Air Facility (NAF)  
16 El Centro ranges, which include the two basic bulls-eye ranges underlying R-2510 and R-2512 in  
17 California. The regional range complex operating area includes the BSTRC, El Centro ranges, Marine  
18 Corps Air Ground Combat Center (MCAGCC) at Twentynine Palms in California, Marine Corps Base  
19 (MCB) Camp Pendleton in California, YPG in Arizona, and the SUA associated with each of these  
20 three complexes.

21 **1.4.1 CMAGR Operating Area**

22 As an individual range, the CMAGR serves multiple training purposes (Figure 1.4-2). Its land and  
23 airspace, however, have been configured principally for live-fire training with aircraft weapons in an  
24 environment that realistically simulates a tactically diverse and complex air-ground battlefield. Though  
25 the CMAGR is used primarily by the Marine Corps, it is also used by aircrews from the Navy and other  
26 branches of the Armed Services. The premiere function of the range is training Marine Corps aircrews to  
27 survive and fight decisively in performing their MAGTF missions. Training in fixed-wing, rotary-wing,  
28 and tilt-rotor aircraft is supported. Toward these ends, the range features a wide array of realistic target  
29 complexes and individual sites that simulate enemy airfields, air defenses, vehicle depots, truck convoys,  
30 troop and armor positions, power stations, and command and communications sites among other types of  
31 facilities and positions. Many of the targets on the CMAGR are authorized for training with live  
32 ordnance, which includes devices that are equipped with high explosives, pyrotechnics, or smoke charges.  
33 Targets throughout the range have been positioned to utilize terrain features and reflect tactics that  
34 adversaries might use to their advantage. In every way possible, the range is configured to expose training  
35 aircrews to conditions that are realistic relative to those to be encountered in combat.

36 **1.4.2 Varied Terrain at the CMAGR**

37 The CMAGR provides some highly varied terrain that is well suited to its use for tactical aviation  
38 training. The Chocolate Mountains form a rugged, northwest-to-southeast spine roughly down the center  
39 of the CMAGR that is bisected along its length by several passes. The ragged margins of the mountains  
40 blend into broad alluvial slopes and valley plains. The effect is a landscape that provides a diverse setting  
41 for air-ground combat training. Simulated targets, such as airfields or vehicle convoys, are typically  
42 located on the alluvial slopes or plains. The avenues of aerial attack available to aircrews, however, are  
43 often delineated by intervening mountains.

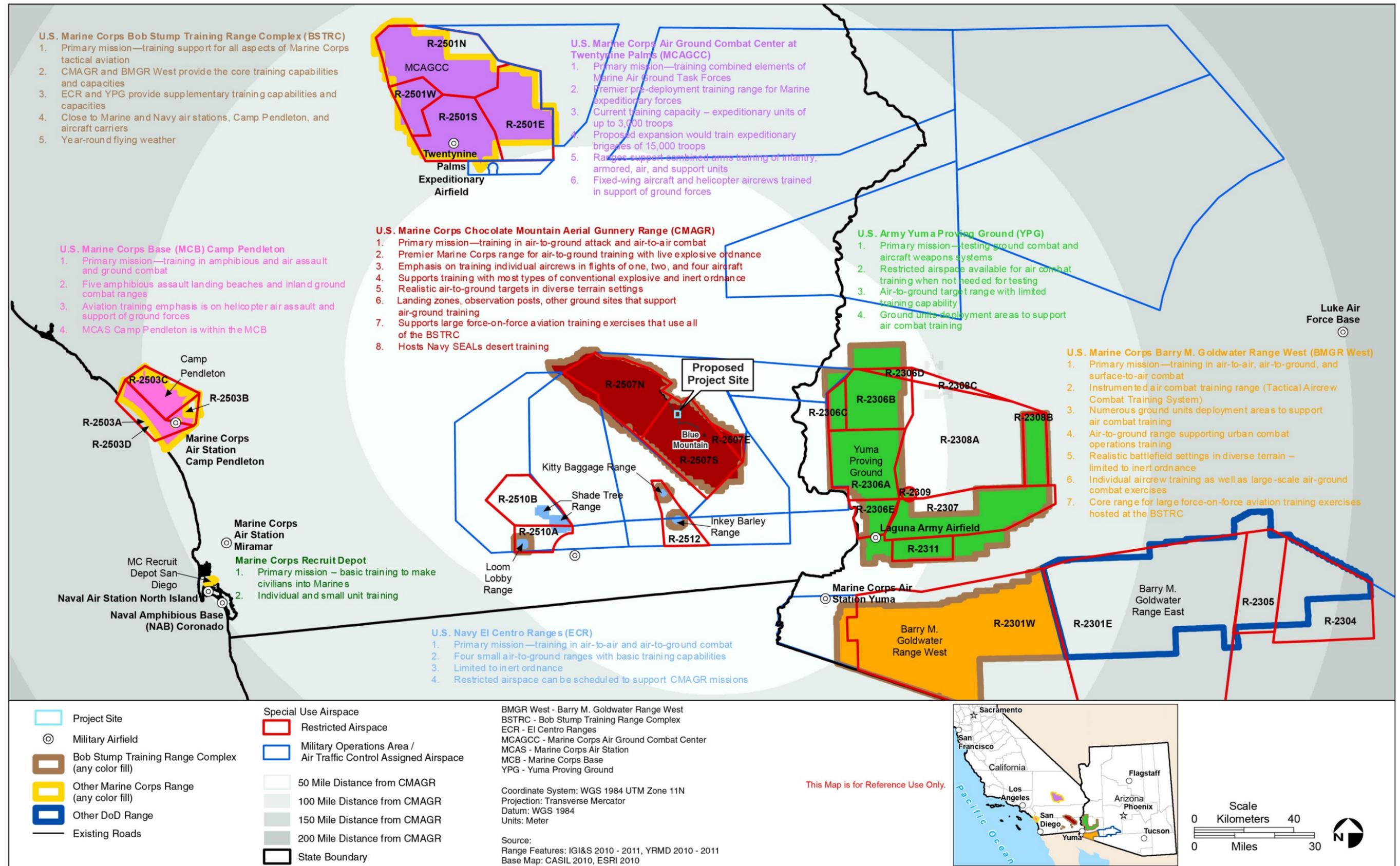


Figure 1.4-1. Military Ranges, Air Installations, and Bases in the CMAGR Operating Area

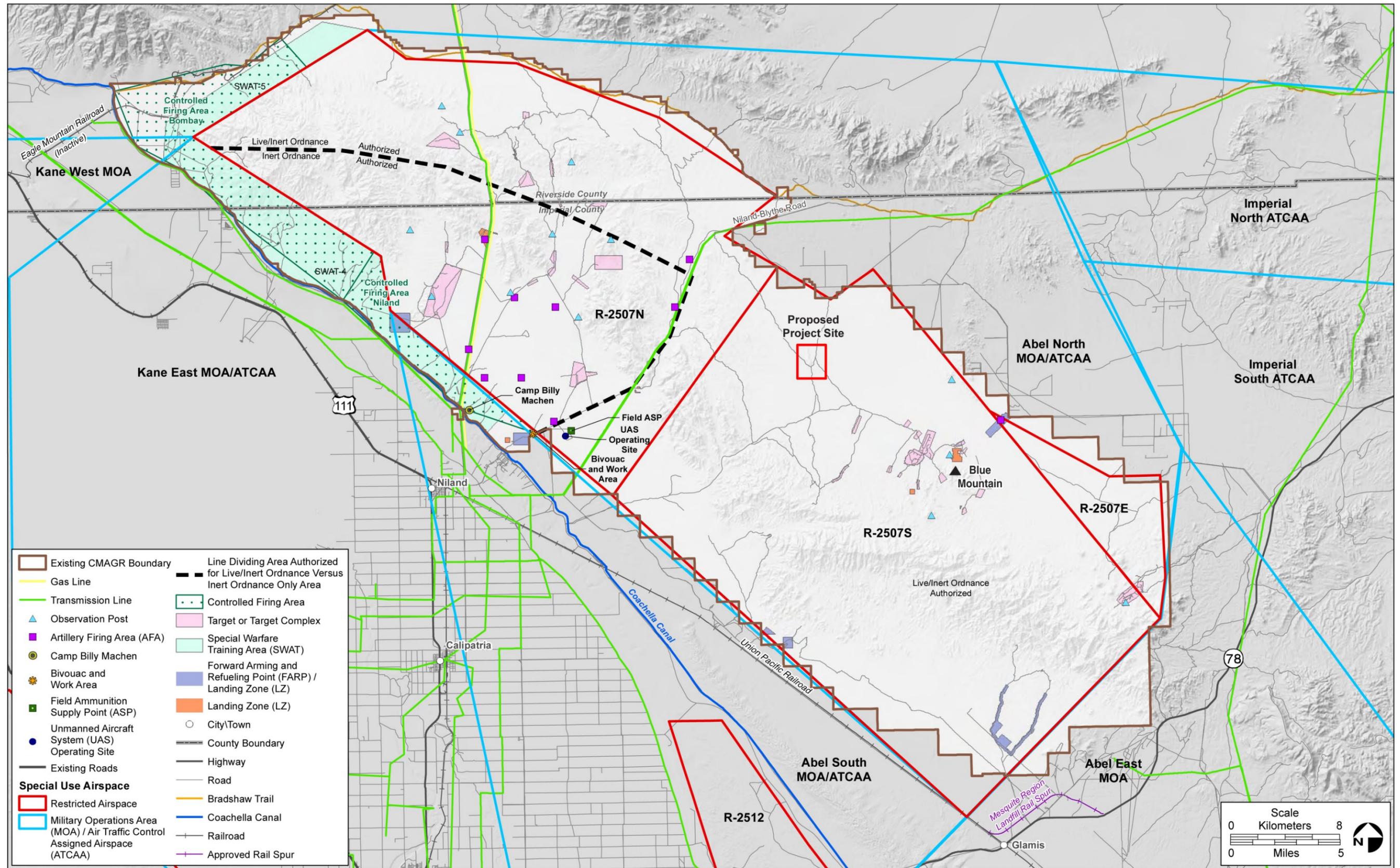


Figure 1.4-2. Training Support Facilities at CMAGR

1 There are many iterations of this basic target setting throughout the range, each with a different set of  
2 tactical circumstances created by the placement of simulated enemy facilities, equipment, and forces  
3 within the terrain. Aircrews must learn to quickly recognize, understand, and solve the tactical challenges  
4 presented by each of these target settings. Because of the targeting diversity made possible by the terrain,  
5 aircrews find each training sortie to be instructional and not repetitious. The cumulative experience  
6 aircrews gain by facing the tactical diversity of the CMAGR is essential for preparing them for combat.

### 7 **1.4.3 Training with Live Ordnance at the CMAGR**

8 The authorization for aircrews to deliver live ordnance on tactically realistic targets at the CMAGR is a  
9 central component of the overall value of this range to the readiness of Marine Corps aviation. The unique  
10 benefit of live-fire training is that it provides aircrews with the chance to apply the general skills learned  
11 in simulators and other types of training in a realistic operational environment. Live-fire training helps  
12 aircrews span the gaps between subject matter learned in the classroom, physical and mental skills learned  
13 in the safe and controlled environment of a simulator, and the stressful and dangerous environments into  
14 which aircrews will have to deploy their weapons during actual combat. Basic live-fire training in the  
15 delivery of air-to-ground ordnance occurs in the BSTRC at bulls-eye targets at the El Centro ranges or at  
16 BMGR West; however, bulls-eye target ranges are only approved for training with inert practice  
17 ordnance. The capstone step in the evolution of aircrew air-to-ground attack skills occurs at the CMAGR,  
18 which provides the facility needed to hone these skills through diverse and tactically realistic, live-fire  
19 training. This training is further distinguished by the fact that most of the target sets at the CMAGR are  
20 approved for live-ordnance deliveries, which provides aircrews with the experience of fully employing  
21 their aircrafts' weapons.

22 Three other ranges in the local region have live ordnance delivery capabilities including BMGR East and  
23 YPG in Arizona and MCAGCC in California. BMGR East, which is operated by Luke Air Force Base,  
24 provides three targets that are authorized for fixed-wing aircraft deliveries of live general purpose bombs  
25 of up to 2,000 pounds net explosive weight. Each of these targets, however, is marked only by a small hill  
26 and offers no tactical diversity or challenge. YPG, a major United States (U.S.) Army test range, is an air-  
27 to-ground range approved for live ordnance. However, because YPG is designed and instrumented for  
28 testing, it cannot provide the quality tactical training that can be achieved at the CMAGR. In addition, test  
29 missions rather than training activities are assigned priority at YPG. The MCAGCC offers live-ordnance  
30 training capabilities that are tactically realistic; however, scheduling priority at the MCAGCC for training  
31 MAGTF integration renders these ranges unavailable for live-ordnance training for aircrews.

32 The CMAGR is an ideal setting for the WTI Course because it can fully support the complexity and  
33 realism needed to make the flight portion of the training effective. The CMAGR provides the course  
34 instructors and students to propose and develop tactics, techniques, and procedures for air-to-ground  
35 attacks that are appropriate and effective for the types of combat challenges that Marine Corps aircrews  
36 face in the contemporary world.

## 37 **1.5 Need and Purpose for the Proposed Action**

38 The proposed action is needed to provide WTI with the most realistic and tactically challenging course  
39 available and to enhance the complexity of conditions and scenarios for the mandated training activities  
40 for the type, model, and series of aircraft that operate at the CMAGR to meet the DAS training mission.  
41 As described in Section 1.2, some aspects of the WTI Course academic syllabus are conducted notionally  
42 because a target complex simulating a particular combat scenario does not exist. In addition, most of the  
43 existing target complexes that support WTI and other training complexes are either geographically too  
44 close to each other to allow for a true DAS mission training, or are not modernized to allow fixed-wing  
45 and rotary-wing aircraft to be utilized to their fullest potential.

1 The proposed action would provide enhanced DAS training at the CMAGR for aircrews participating in  
2 the WTI Course. Specifically, the new target complex (target area, LZ, and OPs) would allow AH-1W  
3 helicopter pilots to engage enemy formations northwest of Blue Mountain (Figures 1.1-1 and 1.4-2) and  
4 the close-in target sets during training evolutions, greatly enhancing the realism associated with DAS  
5 training. In addition, the new target complex would simulate enemy formations and allow WTI trainees to  
6 locate and use ordnance against a realistic target formation rather than notionally as is currently done.  
7 Finally, the addition of the new target complex would allow WTI trainees the opportunity to locate and  
8 engage targets at a more tactically sound distance of 6 to 12 miles rather than the current distance of  
9 2 to 4 miles.

10 The new target complex must include a target area, LZ, and Ops, and be located within R-2507S to allow  
11 for the use of high-explosive ordnance and northwest of Blue Mountain to provide geographic challenges  
12 within the training planning phase and combat realism for execution. In addition, this location would  
13 provide continuity between WTI training evolutions conducted in R-2507N and R-2507S, allowing for  
14 more dynamic and realistic training scenarios. Other locations within the CMAGR would not provide  
15 WTI trainees with a realistic training scenario during the fully integrated combined arms exercises.

16 The purpose of the proposed action is to provide a realistic target representation that satisfies  
17 requirements for numerous training events in accordance with Training and Doctrine Command  
18 Regulation, and other training policies and procedures. Primarily the proposed action would better enable  
19 MAWTS-1 to meet the specific aspects of conducting DAS, provide the geographic challenges within the  
20 planning phase, and provide combat realism for execution. The proposed target complex would include a  
21 new target area, an LZ for both rotary-wing and tilt-rotor aircraft, and three OPs. Together, these facilities  
22 are termed Target Complex Invader.

## 23 **1.6 Applicable Regulatory Requirements**

24 This EA discusses reasonable alternatives for meeting the purpose and need for the proposed action;  
25 existing environmental conditions in the vicinity of the proposed action; direct, indirect, and cumulative  
26 impacts that might result from the proposed action; and measures to avoid, minimize, or mitigate potential  
27 adverse impacts. Important considerations for identification and analysis of alternatives were the  
28 avoidance or minimization of environmental impacts. The decision to be made by the MCAS Yuma  
29 Commanding Officer relates to which alternative best fulfills the purpose and need for the proposed  
30 action while avoiding and/or minimizing potential adverse environmental impacts.

31 This EA has been prepared in accordance with applicable federal regulations, instructions, and public  
32 laws, including but not limited to, those identified in Appendix A.

33 NEPA requires consideration of potential impacts to the environment in the decision-making process for  
34 federal actions. CEQ regulations represent the “action forcing” provisions of NEPA to ensure that federal  
35 agencies comply with the letter and spirit of NEPA. MCO P5090.2A provides specific guidance for the  
36 Marine Corps in preparing environmental documentation for proposed actions subject to NEPA.

## 37 **1.7 Organization of the Document**

38 This EA is organized as follows: Chapter 1 defines the purpose of and need for the proposed action.  
39 Chapter 2 describes the alternatives for accomplishing the proposed action, including the No-Action  
40 Alternative, and other alternatives not carried forward for NEPA analysis. Chapter 3 describes the  
41 affected environment and analyzes the environmental consequences associated with each alternative.  
42 Chapter 4 examines the cumulative impacts of the proposed action and other projects in the area.  
43 Chapter 5 addresses various other considerations required by NEPA. This is followed by chapters on  
44 references, persons and agencies contacted, and a list of preparers and their qualifications.

## 2 Alternatives Including the Proposed Action

1 The proposed action addressed in this EA is the establishment and operation of a target complex that  
2 includes a 99-acre target area and associated 2.4-acre LZ, and three OPs within R-2507S at the CMAGR.  
3 Together, these target range components are termed Target Complex Invader.

4 This chapter describes the reasonable alternatives for accomplishing the proposed action. The CEQ, in its  
5 *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR Parts 1500–1508), establishes  
6 a number of policies for federal agencies, including “using the NEPA process to identify and assess  
7 reasonable alternatives to the proposed action that would avoid or minimize adverse effects of these  
8 actions on the quality of the human environment” (40 CFR §1500.2 (e)). Therefore, this EA only  
9 addresses those alternatives that could reasonably meet the purpose and need for the proposed action.

10 The Marine Corps identified several selection criteria to assist them in developing reasonable alternatives  
11 that meet the purpose and need for the proposed action. These criteria include:

- 12 • A target complex (including target area, LZ, and OPs) that satisfies the requirements for  
13 numerous training events in accordance with Training and Doctrine Command Regulation 350-70  
14 and other training policies and procedures;
- 15 • A location that simulates real world conditions and situations (e.g., terrain, location, and enemy)  
16 for how troops select and conduct a combat mission from forward reconnaissance (i.e., use of LZ  
17 and OPs by forward air controllers) through direct fire (i.e., delivery of ordnance to target area  
18 by aircraft);
- 19 • A location that allows the use of high-explosive ordnance in compliance with MCAS Yuma  
20 Station Order 3710.6;
- 21 • A location northwest of Blue Mountain that provides the geographic challenges within the  
22 training planning phase and provides combat realism for execution;
- 23 • A location that is not limited by existing training restrictions and does not negatively impact  
24 existing training activities;
- 25 • Sufficient ground and airspace to establish the required Weapons Danger Zone (WDZ)<sup>5</sup>;
- 26 • A location that is accessible from existing roads and avoids and/or minimizes impacts to natural  
27 and cultural resources to the maximum extent practicable by eliminating the need for any new  
28 roads and related support facilities.

29 Based on a review of available sites in the CMAGR and the need for a new training area to provide a  
30 realistic target complex that satisfies requirements for numerous events in accordance with Training and  
31 Doctrine Command Regulations and current tactics, techniques, and procedures, the Marine Corps  
32 determined that the proposed location within R-2507S at the CMAGR represents the only reasonable  
33 location for the proposed action that would satisfy the purpose and need. Therefore, one action alternative  
34 (Alternative 1) is carried forward as the NEPA alternative for evaluation because it would meet the  
35 purpose and need for the proposed action. Alternatives considered but eliminated because they would not  
36 meet the purpose of and need for the proposed action are discussed in Section 2.4.

---

<sup>5</sup> A WDZ defines the ground and airspace needed to laterally and vertically contain projectiles, fragments, debris, and components resulting from the firing, launching, and/or detonation of aircraft-delivered ordnance. Three-dimensional WDZs must be prepared for each type of aircraft, weapon, method of weapon delivery, and target terrain. A composite WDZ, which is the summation of all acceptable individual WDZs for a particular range, is prepared to determine the minimum area needed to contain approved ordnance delivered from aircraft at that range. Land uses that are not a participating part of the training mission of the range and consistent with personnel safety are not allowed within the range composite WDZ (MCO 3550.11).

## 2.1 Alternative 1

Alternative 1 would be located on approximately 102 acres (Figure 2.1-1). The project components associated with this alternative include the following:

- Target area (99 acres);
- LZ (2.4 acres); and
- Three OPs (located 300 meters<sup>6</sup>, 700 meters, and 1,200 meters from the target area).

Aircraft operations associated with Alternative 1 would be within the tempo of current operations in R-2507S. In addition, no new Military Training Routes (MTRs) (i.e., aerial routes that provide for high-speed military flights below 10,000 feet) would be required to support training activities at Target Complex Invader, and the use of MTRs by aircraft supporting Alternative 1 would be the same as current operations at the CMAGR.

### 2.1.1 Project Components

#### 2.1.1.1 Target Area

Target Complex Invader would provide MAWTS-1 and other users with a new area to conduct standardized advanced tactical training including the WTI Course, which occurs two times per year in April and September, and other approved training use. The training area would be located on a total of 99 acres and would result in ground disturbance due to ordnance delivery in an area of the CMAGR not currently disturbed by training activities. Approximately 16 steel target replicas of enemy combat vehicles manufactured from recyclable ballistic steel would be located within the target area simulating tanks, self-propelled anti-aircraft guns, and armored personnel carriers (Boyevaya Mashina Pekhotys [BMPs]) and anti-aircraft guns (Zenitnaya Samokhodnaya Ustanovkas [ZSUs]) (Figure 2.1-1 and Figure 2.1-2). The targets would be positioned in accordance with the Air Order of Battle<sup>7</sup> to expose training aircrews to conditions that are most like what they could expect to see in combat.

The targets will be placed near existing roads and placed using a 7-ton flatbed truck and 4x4 forklift. Before the placement of the targets, a baseline Operational Range Clearance will be conducted to ensure that the area is clear of any range debris or errant munitions debris. This would establish the baseline level of contamination and ensure the safety of the target crews. Once the survey is complete, the truck would utilize established roads adjacent to the target emplacement area. A 4x4 forklift would off-load the targets from the flatbed of the truck and drive a short distance on a new unimproved service road to emplace the target at the established target grid/points. No grading or clearing would occur. Access to and within the target area is described in detail in Section 2.1.2.

Any of the fixed-wing, rotary-wing, and tilt-rotor aircraft that currently operate within the CMAGR (including but not limited to the Joint Strike Fighter [JSF]<sup>8</sup>, F/A-18C/D, AV-8B, AH-1W, MV-22) could utilize the training area for air-to-ground delivery with conventional live high-explosive ordnance, including precision-guided (i.e., global positioning system-[GPS]-guided) ordnance. Precision-guided weapons have become the mainstays of U.S. air combat tactics because of the significant advantages that they offer in combat effectiveness and reduced collateral damage over conventional unguided munitions. The GPS-guided munitions are listed as the GBU-29, GBU-30, GBU-31, and GBU-38 in Table 2.1-1.

---

<sup>6</sup> The convention for measuring distance on target ranges is metric units.

<sup>7</sup> Air Order of Battle is used by Marines participating in military operations to show the hierarchical organization, command structure, strength, disposition of personnel, and equipment of units and formations. As combat operations develop during an event, orders of battle may be revised and altered in response to military needs and challenges.

<sup>8</sup> JSF does not currently employ the use of live ordnance during training activities within the CMAGR. However, the future use of live ordnance within training ranges at the CMAGR will occur on approved attack/delivery profiles similar to other fixed-wing aircraft currently operating within the CMAGR. This use was approved as part of a separate NEPA action.

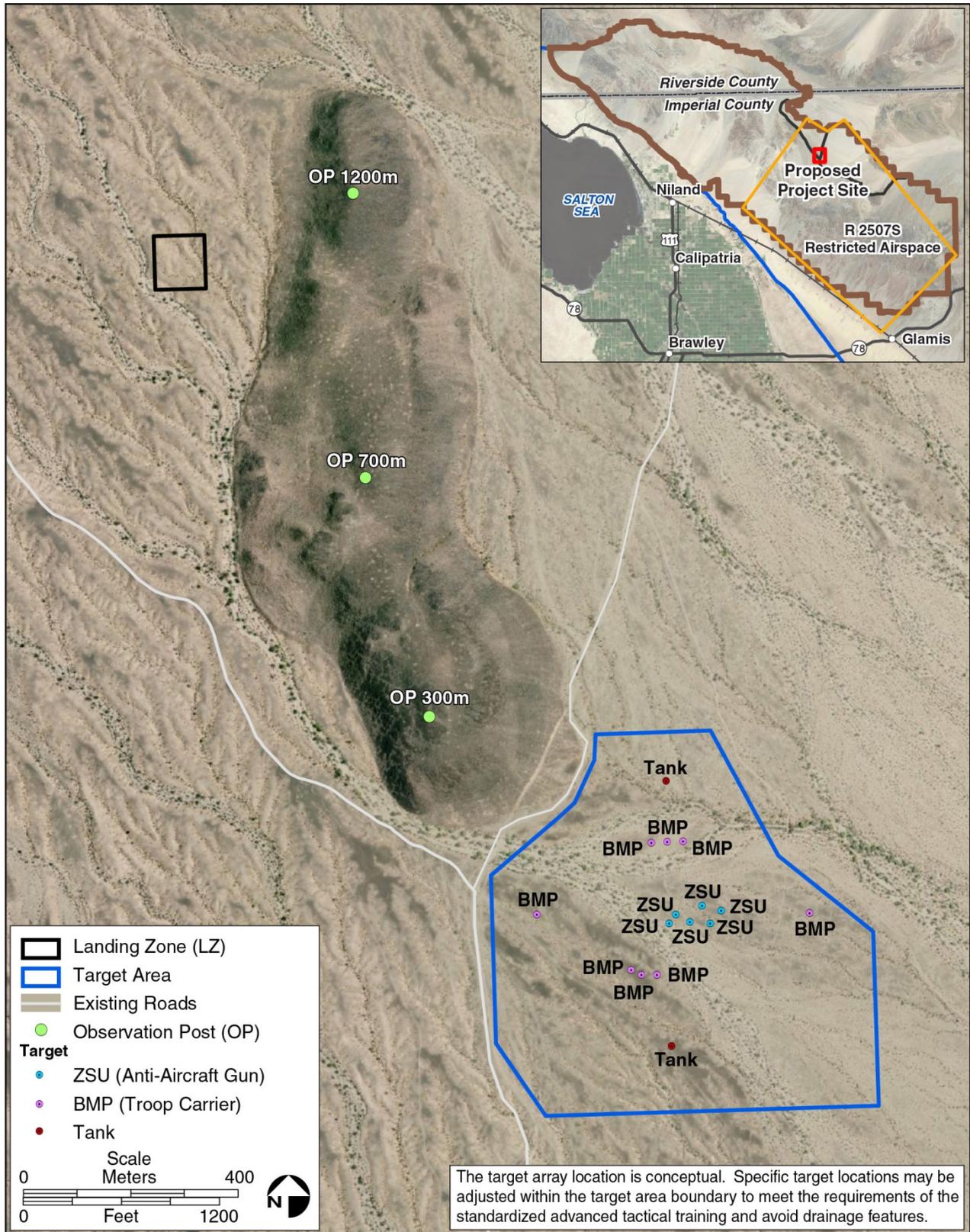


Figure 2.1-1. Target Complex Invader Conceptual Layout

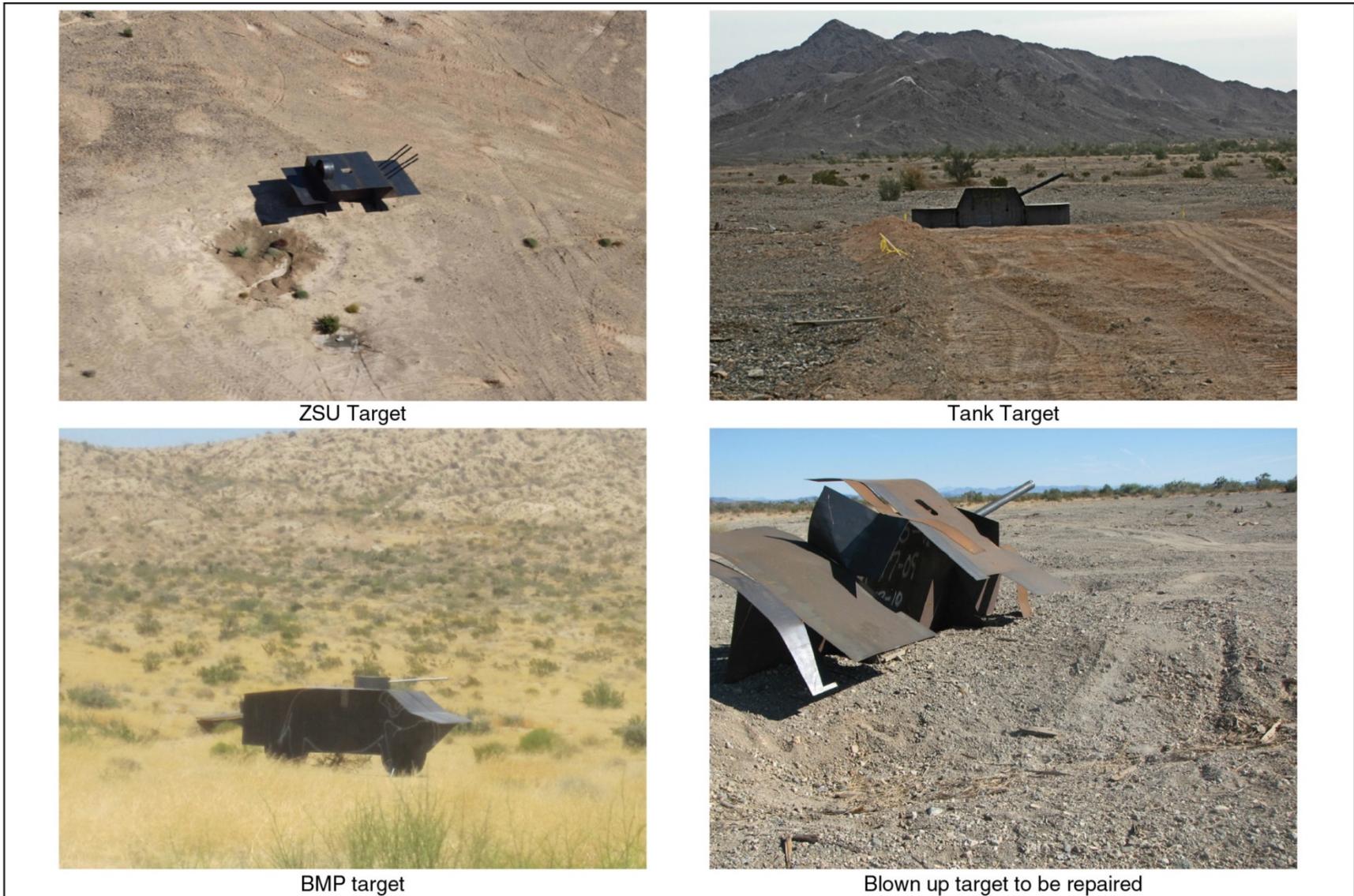


Figure 2.1-2. Photos of the Proposed Targets within Target Complex Invader

**Table 2.1-1. Ammunition Expenditures within R-2507S at the Chocolate Mountain Aerial Gunnery Range**

Ammunition	Fiscal Year				
	2010	2011	2012	2013	2014 (Oct – March)
MK-83	57	-		-	-
*CTG .50CAL LINKED	-	2,000		-	-
*CTG .50CAL LINKED, 4+1	-	12,200		-	830
2.75 INCH HE	-	-		502	1,067
2.75 INCH INERT	-	-		164	-
30MM TP PGU-15/B	-	-		400	-
5.00 INCH HE	-	-		30	2
5.00 INCH INERT	-	-		4	36
7.62 BALL LNKD	3,000	-		-	-
81MM HE M43AL W/FUZE	25	-		-	-
AGM GRIFFIN	-	-		11	-
AGM-114, HELLFIRE	41	38	94	100	1
AIM-9 SIDEWINDER	-	-		3	-
APKWS HE/INERT F/2.75 IN RCKT	-	-		-	2
BDU-33	86	-	8	-	-
BDU-45	389	105	238	265	89
BDU-48	-	2	77	132	24
BGM-71, TOW	32	24	44	64	-
BLU-111	43	45	48	75	53
BOMB GP 500LB MK82 INERT	-	-		16	8
BOMB PRAC MK 76	-	-		30	51
BOMB, GP 1000 LB MK83 MOD 5A	-	-		-	8
BOMB, GP 1000 LB MK83 MOD O/2/3	-	-		15	6
BOMB, GP 500 LB MK82 MOD 1	-	-		61	115
BOMB, LDGP, 1000 LB, MK83-5A, INERT LD (GBU-16I)	-	-			2
BOMB, LDGP, 1000LB, MK83-5, INERT LD	-	-		4	15
BOMB, LDGP, 500 LB, MK82-1, INERT LD (GBU-12I)	-	-		4	-
BOMB, PRAC 25 LB BDU-33 80/PL	-	-		2	-
CHAFF, RADAR EVASION	2,520	-	900	-	-
CTG .30CAL TRCR M1 LNKD	1,900	-		-	-
CTG .50CAL 4 BALL 1 TR F/M85	1,800	-		-	-
CTG .50CAL 4 BALL 1 TRCE W	400	-		-	-
CTG .50CAL BALL	8,800	-	13,300	-	-
CTG 20MM 4 HEI 1 TP-T M220 LINKED M14 SERIES	400	-		37,750	3,350
CGT 20MM HEI	2,750	-		-	-
CTG 20MM TP BALL M55A2	2	-		-	-
CTG 20MM TP M55A2 LKD	500	-		-	-
CGT 20MM TP-T (Vulcan)	2,550	-		9,250	9,400
CTG 20MM TP-T UNLINKED	-	-		3,600	8,800

**Table 2.1-1. Ammunition Expenditures within R-2507S at the  
Chocolate Mountain Aerial Gunnery Range (continued)**

Ammunition	Fiscal Year				
	2010	2011	2012	2013	2014 (Oct – March)
CTG 25MM HEIT M792	-	-		200	1,500
CTG 25MM TP-T M793	-	-		-	600
CTG 7.62 NATO LKD BALL	600	-		-	-
CTG 7.62MM BALL M80 CTN	7,600	-		-	-
CTG 7.62MM BLANK M82 LINKED GRADE MG	-	-		-	-
CTG 7.62MM LINKED 4 BALL M80 1 TR M62	-	4,000		-	-
CTG 7.62MM LINKED 4 BALL M80 1 TR M62 F/MG M60 M73	8,900	-		-	-
CTG CAL.50 BALL	7,000	22,700		-	-
CTG CAL.50 LINKED 4 API M8 1 API-T M20 AND 4 API M	-	-		3,200	-
CTG CAL.50 LINKED BALL M2 OR M33	-	-	1,150	1,000	-
CTG CAL.50 LINKED BALL M2 OR M33 1 TR OR M17	4,000	-		-	-
CTG, 20MM 7 HEI M56 SER/1 HEI-T M242 SER	-	-		18,508	23,700
CTG, 20MM HEI M56 SERIES SNGL RD	-	-		3,200	6,400
CTG, 20MM TP M55A2 SNGL RD	-	-		-	3,100
FLARES, IR DECOY	3,836	700	186	-	-
GBU-10	-	15	32	-	-
GBU-12	200	172	156	132	90
GBU-12I, INERT	-	-		13	11
GBU-16	191	55	129	93	8
GBU-16I, INERT	-	-		8	24
GBU-29, JDAM-GPS, MK-81	5	-		-	-
GBU-30, JDAM-GPS, MK-82	-	4		-	-
GBU-31 INERT	-	5		-	-
GBU-31, JDAM-GPS, MK-84	15	6	4	-	-
GBU-32	67	87	143	80	26
GBU-32 INERT	24	30	25	-	-
GBU-38	81	4	105	116	22
GBU-38, JDAM 500LB	-	-		17	13
GBU-38, JDAM-GPS, MK-82	73	87	8	-	-
GBU-54	-	-		6	2
GM, ATM-114B INERT WHD HELLFIRE	-	-		1	10
GM, I-A AIM9M-1 SIDEWINDER	-	-		8	-
GM, SURF ATTACK AGM-114P HELLFIRE	-	-		2	7
GM, SURF ATTACK AGM-114P-2A HELLFIRE	-	-		2	-
GUIDED MISSILE, SURF ATTACK AGM- 114B (HELLFIRE-NAVY)	-	-		-	1

**Table 2.1-1. Ammunition Expenditures within R-2507S at the Chocolate Mountain Aerial Gunnery Range (continued)**

<i>Ammunition</i>	<i>Fiscal Year</i>				
	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014 (Oct – March)</i>
GUN, 20MM	95,800	87,100	117,355	119,181	13,878
GUN, 25MM	13,000	9,950	12,725	6,681	-
GUN, 27MM	-	-	500	-	-
GUN, 30MM	6,000	-	1,530	300	-
GUN, 50CAL	173,142	249,700	465,098	513,466	236,200
GUN, 7.62MM	227,551	209,170	513,435	743,124	407,400
LGTR	1,654	565	289	311	11
LGTR, BDU-59A/B	-	-	-	27	55
LUU-2	36	7	10	2	-
MK 81, GP 250 LB BOMB	-	-	-	-	2
MK-76	3,235	1,201	1,725	1,666	751
MK-81, 250LB GP BOMB INERT	8	4	-	-	-
MK-82	1,115	391	805	518	86
MK-83	247	138	189	202	16
MK83 INERT BOMB	29	-	-	14	-
MK-84	-	15	18	10	-
RKT 2.75 HE	28	-	-	112	-
RKT 2.75 HE M151 W/F (PR)	42	-	-	-	-
ROCKET 2.75 INCH HE MPSM M261	42	-	-	-	-
ROCKET 2.75INCH WP M264 MK66-4	21	-	-	-	-
ROCKET, 2.75"	3,498	2,734	4,908	5,450	1,092
ROCKET, 5"	262	191	418	249	26
WARHEAD, 2.75 IN ROCKET, FLARE	-	-	-	44	8
WARHEAD, HE M151 F/2.75 IN RCKT	-	-	-	660	613
WARHEAD, HE MK24 MOD 0 F/5 IN RCKT	-	-	-	119	2
WARHEAD, SMK WP M156 F/2.75 IN RCKT (04)	-	-	-	54	6
<b>Total</b>	<b>1,750,529</b>	<b>606,245</b>	<b>1,135,652</b>	<b>1,471,260</b>	<b>719,517</b>

1 The use of ordnance would be consistent with range standard operating procedures that describe the type  
2 of ordnance that may be utilized on a given target area. Ordnance operations would be coordinated with  
3 the Range Scheduling Officer at MCAS Yuma. High-explosive ordnance deliveries throughout the  
4 CMAGR are currently limited to the hours of 6:00 a.m. to 10:00 p.m. for off-range noise abatement  
5 purposes (MCAS Yuma Station Order 3710.6).<sup>9</sup> Combat tactics may lead an aircrew to attack a target  
6 with either a single bomb or with multiple bombs in a single pass. Training for multiple-bomb attacks is  
7 supported at the CMAGR, but limits have been established for drops of live high-explosive ordnance. A  
8 list of ammunition expenditures within R-2507S between fiscal year (FY) 2010 (i.e., October 2009 –  
9 September 2010) and March 2014 are provided in Table 2.1-1.

<sup>9</sup> Note that the time of use for R-2507S begins at 7:00 a.m. seven days a week.

1 Overall, the data for R-2507S indicate that in recent years, annual ammunition expenditures at the  
2 CMAGR have been between 606,245 and 1,750,529. Aircraft operations supporting the WTI and other  
3 training activities within R-2507S would be within the tempo of current operations.

4 A WDW would be established around the target area for each type of aircraft, weapon, and method of  
5 weapon delivery utilizing the target area including the target area terrain considerations. A WDW defines  
6 the ground and airspace needed to laterally and vertically contain projectiles, fragments, debris, and  
7 components resulting from the firing, launching, and or detonation of aircraft-delivered ordnance. The  
8 Department of Defense (DoD) standard for risk acceptance on all ranges is a 99.9999 percent level of  
9 containment, which means that the probability of a hazardous fragment escaping the containment area is  
10 one in a million.

11 MCAS Yuma Station Order 3710.6 defines the procedures and regulations for Commands using the  
12 CMAGR and specifies individual responsibilities; gives descriptions of available training ranges;  
13 provides instructions on how to schedule training activities; and defines safety regulations for all live fire,  
14 maneuver, and air operations within the CMAGR. Training activities associated with the Target Complex  
15 Invader would be conducted in accordance with Station Order 3710.6.

16 Target repair would be conducted a minimum of two times per year with scheduled range closures  
17 occurring prior to WTI training in April and September. Marine Corps explosive ordnance disposal  
18 (EOD) teams would conduct a surface sweep before target repair activities to identify any potential  
19 hazards from unexploded ordnance (UXO) to equipment or personnel. The location of the target corners  
20 would be recorded so that the targets would be placed in the same location during target repair. In  
21 addition, operational range clearance would occur every one to two years for roughly 15-20 days in  
22 accordance with the CMAGR's existing operational range clearance program and MCO 3550.12. The  
23 purpose of the program is to destroy and remove military munitions, including UXO and munitions  
24 debris, and other range-related debris from range targets. This is done to maintain or enhance operational  
25 range safety and prevent the accumulation of such material from impairing or preventing continued  
26 operational range use. The level of operational clearance needed would be based on the amount of use and  
27 the estimated amount of UXO, and could involve both surface and sub-surface removal. The surface  
28 clearance of UXO would involve teams of UXO technicians using a magnetometer (metal detector) and  
29 soft tired All-Terrain Vehicles (ATVs). The UXO technician teams would establish a 100 foot x 100 foot  
30 grid system of the area to be cleared. Team members would be spaced no more than five feet apart and  
31 travel in north/south direction within each grid, collecting target scrap and munitions debris from the  
32 surface of the range. Small debris would be consolidated into 5 gallon buckets. A backhoe would be used  
33 to consolidate larger items. Debris would be separated based on the specific type, processed accordingly,  
34 and transported off Range for disposal. Both target repair and operational range clearance would require  
35 up to four vehicles per day.

36 Existing roads in the CMAGR would be used to access the target area for initial target placement and  
37 maintenance activities (target repair and operational range clearance). An unimproved service road  
38 stemming from the existing road would be developed within the target area to allow for target placement  
39 and maintenance and operational range clearance activities. Access to and within the target area is  
40 described in detail in Section 2.1.2.

#### 41 **2.1.1.2 Landing Zone**

42 The LZ would provide MAWTS-1 and other users, upon request, with an approved site for insert and  
43 extraction of personnel by rotary-wing and tilt-rotor aircraft in direct support of the mission. The  
44 proposed LZ would be 2.4 acres in size (Figure 2.1-1). The LZ would not be modified (i.e., graded or  
45 cleared of vegetation) because it currently meets the criteria of a tactical LZ in that it is relatively free of

1 vertical obstructions, relatively flat, and able to support the weight of an aircraft without it sinking into  
2 the substrate (i.e., soil or snow). The aircraft operation may land anywhere within the LZ except within  
3 surface drainages.

4 The purpose of the proposed LZ would be to provide tactical insertion and extraction of ground troops to  
5 the OPs. Typical landing and takeoff operations consist of a low-level approach to the LZ to allow a pilot  
6 to visually inspect the area and select a specific landing site that is free of all obstacles (e.g., uneven  
7 terrain). The pilot lands the aircraft only when the area is determined safe. This type of training enables  
8 pilots and flight crews to identify a LZ, transition into an appropriate approach, land, insert ground troops,  
9 and then subsequently take off in a variety of weather conditions (i.e., rain, lightning, cloud cover, etc.)  
10 and in different types of terrain. Rotary-wing and tilt-rotor aircraft that currently operate within the  
11 CMAGR in support of the WTI Course and other training activities would utilize the LZ.

### 12 **2.1.1.3 Observation Posts**

13 The proposed OPs would be located at 300 meters, 700 meters, and 1,200 meters from the target area. The  
14 OPs would be approved for the operation of ground-based lasers for designating targets for aircraft in  
15 accordance with MCAS Yuma Station Order 3710.6. Each OP is considered to be a point within a 2-acre  
16 buffer.

17 The OPs would provide MAWTS-1 and other users with pre-designated locations from which  
18 ground-based forward air controllers could coordinate a strike on the enemy. Ground-based forward air  
19 controllers and tactical air control parties play an essential role in combat to the benefit of both allied  
20 forces ground troops and aircrews by ensuring that close air support can be effectively brought to bear on  
21 an enemy. The main role of the ground-based forward air controller is to arrange air support missions,  
22 direct and control aircraft, direct ordnance deliveries, and communicate battlefield intelligence such as  
23 enemy locations, strength, and activities to their command. Because of their frequent placement on or  
24 behind enemy lines, they must operate covertly and independently for long periods of time and with  
25 minimal support. Typically, the OP would be utilized by a team tactically inserted and extracted from the  
26 LZ in the same day. However, occasionally during WTI training, a team of up to four forward air  
27 controllers could be stationed at the OPs for up to two days to coordinate a strike on the enemy at Target  
28 Complex Invader. The inserted troops would remain at the OPs until extracted from the LZ following the  
29 training exercise. Given the covert nature of their task, minimal equipment is utilized by the ground-based  
30 forward air controllers and no trace or evidence of their activities would be left behind. All equipment  
31 would be packed in within a single Marine's battle gear and packed out on foot. All human waste would  
32 be placed into plastic bags and packed out of the field when extracted from the LZ.

### 33 **2.1.2 Access**

34 Access to the training area would be provided via existing roads in the CMAGR (Figure 2.1-1). The  
35 conditions of the existing roads vary from graded dirt surfaces to four-wheel drive tracks; none are paved.  
36 Public access to the CMAGR and its road network is prohibited at all times because of the hazards  
37 presented by the use of live ordnance and to prevent interruption of military training. A new unimproved  
38 service road stemming from the existing road would be developed within the target area to allow for  
39 authorized access for target placement, target maintenance, and operational range clearance activities. The  
40 specific location of the unimproved service road would be determined following the initial range  
41 clearance with consideration toward personnel safety, most direct routing, long-term logistical  
42 requirements, and minimization of impacts to natural and cultural resources, but would generally be a  
43 direct line from the existing road to the target points. This would be the only route that a vehicle would be  
44 allowed to drive off road. A MCAS Yuma biologist would accompany the target crew for the initial  
45 service road route selection for desert tortoise avoidance and/or other flora/fauna conflicts. The service

1 road would be swept by Operational Range Clearance or EOD personnel before each use. Once the  
2 service road is deemed clear before the initial target emplacement, it would be marked by a series of small  
3 wooden stakes. The new service road would not be graded or maintained and would not be used more  
4 than twice per year during target maintenance and operational range clearance activities. Due to the  
5 highly restrictive access nature of the CMAGR and intended use of the Target Complex Invader, the  
6 service road would be used only by the Maintenance Teams and EOD personnel. The target delivery  
7 vehicles would use standard rubber tires and must use routes that are obstruction/plant free.

## 8 **2.1.3 Military Use Airspace and Transit Routes**

### 9 **2.1.3.1 Military Use Airspace**

10 Aircraft operations associated with the use of Target Complex Invader would occur within the CMAGR's  
11 existing airspace complex. All airspace in the CMAGR operating region is part of the National Airspace  
12 System, which is managed by the Federal Aviation Administration (FAA) to support the requirements of  
13 three major airspace user groups – general aviation, commercial air carriers, and DoD. The existing  
14 R-2507S is SUA that overlies a portion of the CMAGR, including the project site. This airspace provides  
15 for exclusive-use for military aircraft operations and serves to contain and segregate training and other  
16 military activities that could be hazardous to non-participating aircraft. The published altitude within  
17 R-2507S is surface to 40,000 feet above mean sea level (MSL). Times of use are between 7:00 a.m. and  
18 11:00 p.m. seven days per week. However, the airspace may be active at other times as announced by  
19 Notice to Airmen (NOTAM). No new airspace associated with training activities at Target Complex  
20 Invader would be required.

21 Two specialized terms are often used to describe flight activities: sortie and operation. A *sortie* consists of  
22 a single military aircraft flight from takeoff through landing. For example, an aircraft entering a specific  
23 area, conducting its mission in the airspace, and then exiting the airspace has its activity counted as one  
24 sortie. An *operation* represents a single movement or individual flight, such as one takeoff, arrival, or  
25 touch-down. For example, one aircraft departing and returning would represent two airfield flight  
26 operations. Therefore, a single sortie generates two or more operations. The following quantified flight  
27 information is based on sortie counts, unless otherwise stated.

28 Utilization of the restricted airspace at the CMAGR is reported annually to the FAA in accordance with  
29 FAA Joint Order 7400.2H. Data from these reports show the number of sorties ranged from  
30 approximately 3,600 to 4,800 annually between FY 2010 and FY 2013 (Table 2.1-2). Such variations in  
31 year-to-year utilization rates are common. Aircraft currently conduct an estimated 4,000 to 5,000 annual  
32 sorties within R-2507S (Table 2.1-2). Overall, the data for R-2507S indicate that in recent years the  
33 CMAGR has been used for more than 3,000 training sorties annually but use has not eclipsed  
34 5,000 sorties. Aircraft operations supporting the WTI and other training activities within R-2507S would  
35 be within the tempo of current operations.

36 Flight activities are conducted in conformance with FAA-mandated restrictions and Naval Air Training  
37 and Operating Procedures Standardization (NATOPS) flight instructions (e.g., Chief of Naval Operations  
38 Instruction [OPNAVINST] 3710.7U). All aircraft also operate in accordance with their corresponding  
39 NATOPS training manuals, which identify measures and limitations on how a particular aircraft is flown.

**Table 2.1-2. Annual Sorties within R-2507S at the Chocolate Mountain Aerial Gunnery Range**

Aircraft	Fiscal Year				
	2010	2011	2012	2013	2014 (Oct - March)
<b>Rotary-Wing Aircraft</b>					
AH-10	24	21	28	22	
AH-1	273	320	460	582	214
BELL-407			2		
CH-46	72	89	29	51	16
CH-53	127	179	167	222	78
CH-146 Griffon					1
Civilian Rotary Wing				47	1
EH-60A					2
EH-101				3	9
H-46					4
H-47		3			
H-60	1	9	14	16	6
HH-1N (SAR)			1		
LYNX		14			
MH-60R	175			3	4
MI-24	5	2	6	11	5
OH-58			5		58
SH-60	5	23	24	27	6
UH-1	125	160	306	325	124
UH-60				15	4
<b>Tilt-Rotor Aircraft</b>					
MV-22			42	125	27
V-22	31	110	42		
<b>Fixed-Wing Aircraft</b>					
AV-8B	1,325	1,452	1,337	1,624	824
B-52	3		1		
C-12	-	2	1		
C-130	22	15	40		
C-141	2				
Civilian Fixed Wing		1	21	16	6
E2-C	1				1
EA-6B	2	18	14	9	3
EA-18				1	2
F/A-18	1,565	1,119	1,668	1,409	504
F-15 <sup>1</sup>		2			
F-16	10	14	5	55	61

**Table 2.1-2. Annual Sorties within R-2507S at the Chocolate Mountain Aerial Gunnery Range (continued)**

Aircraft	Fiscal Year				
	2010	2011	2012	2013	2014 (Oct – March)
F-35 Joint Strike Fighter <sup>1</sup>				37	144
F-5	54	27	41	42	45
GR-4			4	5	
KC-10	1	3	1		
KC-130				32	19
KC-135			1		
P-3 ORION			4	15	2
T-34	48	16	31	62	20
T-45	9	9	6	21	
UC-12					1
<i>Unmanned Aerial Vehicle</i>					
RQ-7 SHADOW			7	1	2
RQ-7B		6			
UAS	9	17	8	20	12
<b>Total</b>	<b>3,889</b>	<b>3,631</b>	<b>4,316</b>	<b>4,798</b>	<b>2,205</b>
Source: MCAS Yuma 2014					
Notes:					
1. The JSF began training at CMAGR in FY 2013. JSF sorties will increase and F/A-18 sorties will decrease in future years due to the phasing out and eventual replacement of the F/A-18.					

1 **Transit Routes**

2 Consistent with current use within R-2507S, the majority of aircraft utilizing Target Complex Invader  
 3 would originate from MCAS Yuma or MCAS Miramar. Other regionally based squadrons that regularly  
 4 use R-2507S are stationed at MCAS Camp Pendleton, NAF El Centro, and Naval Air Station (NAS)  
 5 North Island in California and Luke Air Force Base in Arizona. Aircraft that originate from their Marine  
 6 and Naval air stations and Air Force bases or that are launched from Department of the Navy (DoN)  
 7 aircraft carriers in the Pacific Ocean are also frequently flown in training missions at R-2507S.

8 Thirteen MTRs are currently located within five nautical miles (NMs) of the CMAGR. Three of these  
 9 MTRs (Instrument Route [IR]-216, IR-217, and Visual Route [VR]-1266) can be used to provide entry to  
 10 the CMAGR and, in direct conjunction with training missions conducted at the CMAGR, would be  
 11 utilized for training activities at Target Complex Invader (Table 2.1-3). Therefore, no new MTRs would  
 12 be required to support training activities at Target Complex Invader.

13 The use of MTRs by aircraft supporting the WTI and other training activities within R-2507 would be  
 14 the same as current operations. Aircraft would fly along normal departure routes from an airfield  
 15 and then along established routes to reach the target complex. While transitioning to the training  
 16 area from an airfield, rotary-wing aircraft usually would fly between 1,000 to 2,000 feet above ground  
 17 level (AGL), while the tilt-rotor aircraft usually would fly similar to a turboprop airplane between  
 18 8,000 to 12,000 feet AGL.

**Table 2.1-3. Military Training Routes that Provide Entry to the Chocolate Mountain Aerial Gunnery Range**

<i>Instrument Route (IR)<sup>1</sup> or Visual Route (VR)<sup>2</sup></i>	<i>Scheduling Agency</i>	<i>Hours of Use</i>	<i>Route Segment Widths</i>	<i>Entry to the CMAGR</i>
IR-216	3d MAW, MCAS Miramar	Even numbered days, daylight	6 NM	200 AGL 7,000 MSL
IR-217	3d MAW, MCAS Miramar	Continuous	10 NM	200 to 1,500 AGL 6,000 to 7,000 MSL
VR-1266	Commanding Officer, MCAS Yuma	0700 to 1800 local	3 to 6 NM	200 AGL 1,500 AGL

*Notes:*  
<sup>1</sup> IR (Instrument Route): IRs must be flown under Instrument Flight Rules (IFR) regardless of weather conditions.  
<sup>2</sup> VR (Visual Route): VRs are flown under Visual Flight Rules (VFR), which means that aircrews are responsible for seeing and avoiding other aircraft. VFR minimums for MTR operations are at least 5 miles of flight visibility and a cloud ceiling of no less than 3,000 feet AGL.  
 AGL = above ground level; CMAGR = Chocolate Mountain Aerial Gunnery Range;  
 MAW = Marine Aircraft Wing; MCAS = Marine Corps Air Station; MSL = mean sea level; NM = nautical mile

**2.2 Preferred Alternative**

Alternative 1 is the Preferred Alternative because it fulfills the purpose and need for the proposed action while minimizing environmental impacts.

**2.3 No-Action Alternative**

Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and three OPs, would not be constructed. Under the No-Action Alternative, training would continue under current conditions.

As discussed in Chapter 1, without establishment and operation of Target Complex Invader, MAWTS-1 would not enhance training facilities for mandated training activities to support the DAS training mission.

The No-Action Alternative is not considered a reasonable alternative because it does not meet the purpose and need for the proposed action. However, it does provide a measure of the baseline conditions against which the impacts of the proposed action can be compared. In this EA, the No-Action Alternative represents the baseline conditions described in Chapter 3, Affected Environment and Environmental Consequences.

**2.4 Alternatives Considered But Eliminated**

As part of the Marine Corps’ decision-making process, two alternatives were considered but eliminated as infeasible, as described below.

**2.4.1 Alternative Locations within the Chocolate Mountain Aerial Gunnery Range**

Installing the Target Complex Invader at different locations within the CMAGR was evaluated as a potential alternative. The new target complex must be located within R-2507S to allow for the use of high-explosive ordnance. In addition, the target complex must be located northwest of Blue Mountain to

1 provide the geographic challenges within the training planning phase and combat realism for execution.  
2 Other locations underlying R-2507S are either limited by existing training restrictions, would not provide  
3 a location that simulates real world conditions and situations (e.g., terrain, location, and enemy) for how  
4 troops select and conduct a combat mission from forward reconnaissance through to direct fire; do not  
5 have sufficient ground to establish WDZs; or would require grading of new access roads. Therefore, this  
6 alternative would not meet the selection criteria for the proposed action and was eliminated from further  
7 consideration.

#### 8 **2.4.2 Alternative Design Configurations**

9 Constructing the Target Complex Invader in different configurations was evaluated as a potential  
10 alternative. Specifically, a smaller LZ located to the west of the target area was considered. However, this  
11 location would not be optimal for the tactical insertion and extraction of ground troops to the OPs and  
12 would not provide the realistic training environment as required by DAS given the terrain, location, and  
13 enemy position. Therefore, this alternative would not meet the selection criteria for the proposed action  
14 and was eliminated from further analysis.

### 15 **2.5 Resource Areas Eliminated From Detailed Consideration**

16 Several resource areas have not been carried forward for detailed analysis in this EA because potential  
17 impacts were determined to be non-existent or negligible. Resources not addressed further in this EA  
18 include aesthetics; ground traffic and transportation; infrastructure and utilities; land use; noise; public  
19 services; socioeconomics; and environmental justice.

20 *Aesthetics:* The proposed action would not affect a site that is visible to the public, or impact areas or  
21 viewsheds visible to the public. Therefore, no impacts would occur.

22 *Ground Traffic and Transportation:* The proposed action would include minimal use of existing public  
23 roads to access the CMAGR during target replacement and maintenance activities that would occur  
24 approximately two times per year. On the CMAGR, these vehicles would be confined to existing unpaved  
25 roads. No new construction or improvements are proposed within the CMAGR so there would be no  
26 construction-related traffic. Therefore, there would be no transportation-related impacts, or impacts to the  
27 public roadway system.

28 *Infrastructure and Utilities:* The proposed action would not include new construction or improvements  
29 within the CMAGR and, therefore, there would be no change in any existing infrastructure or utilities.  
30 Additionally, the proposed target complex would not add any new utility demands at any military  
31 installation. Therefore, existing conditions would remain unchanged, and no impacts to infrastructure and  
32 utilities would occur.

33 *Land Use:* The proposed action would be consistent with existing land uses within the CMAGR and  
34 associated SUA and would be consistent with established land use development guidelines addressing  
35 safety, functionality, and environmental protection zones. Therefore, the proposed action would be  
36 compatible with existing and planned land uses in the project vicinity and no impacts on land use would  
37 occur.

38 *Noise:* The proposed action would occur within the existing military environment at the CMAGR. The  
39 change in noise exposure at the project site would not cause a significant noise impact because noise  
40 exposure would be representative of a noise associated with military training activities in the project  
41 vicinity. In addition, there are no sensitive human receptors or residential communities in the project

1 vicinity. Therefore, no significant noise impacts would occur. Noise impacts on biological resources are  
 2 evaluated in the biological resources section of this EA.

3 *Public Services:* There would be no additional military, government/civilian, or contractor support  
 4 personnel stationed at MCAS Yuma as a result of the proposed action. Consequently, the proposed action  
 5 would not result in an increase in public services. Therefore, no impacts on public services would occur.

6 *Socioeconomics:* There would be no additional military, government/civilian, and/or contractor support  
 7 personnel stationed at MCAS Yuma with the implementation of the proposed action. Therefore, no  
 8 socioeconomic impacts would occur.

9 *Environmental Justice:* The proposed action is located on a closed military range and would not result in  
 10 disproportionate impacts to minority and low-income populations. Additionally, the proposed action  
 11 would not result in environmental health or safety risks to children.

12 **2.6 Anticipated Permits and Approvals**

13 Table 2.6-1 presents the anticipated agency permits, concurrence, and/or determinations needed before  
 14 implementation of the proposed action.

**Table 2.6-1. Anticipated Permits and Concurrence/Determinations**

<i>Regulatory Agency</i>	<i>Permit/Approval</i>	<i>Current Status</i>
USFWS	Section 7 of the ESA	Pending
SHPO	Section 106 of the NHPA	Complete
USFWS = United States Fish and Wildlife Service; SHPO = State Historic Preservation Officer; ESA = Federal Endangered Species Act; NHPA = National Historic Preservation Act		

15 **2.7 Minimization and Mitigation Measures**

16 Measures that would be incorporated into the action alternative (Alternative 1) to avoid, minimize, and  
 17 mitigate impacts are provided in the Mitigation, Monitoring, and Reporting Record (MMRR) tracking  
 18 sheet provided in Appendix B. These measures would be implemented during installation of the targets,  
 19 as well as during operations.

20 **2.8 Summary of Impacts**

21 Resource areas analyzed in this EA include the following: airspace, air quality, biological resources,  
 22 cultural resources, hazardous materials and waste, public health and safety, geological resources, and  
 23 water resources. The environmental consequences associated with implementation of Alternative 1 and  
 24 the No-Action Alternative are presented and compared in Table 2.8-1. A detailed description of the  
 25 affected environment and analysis of the environmental consequences is presented in Chapter 3.

**Table 2.8-1. Summary of Impacts**

<i>Resource Area</i>	<i>Alternative 1</i>	<i>No-Action Alternative</i>
Airspace	NI	NI
Air Quality	NSI	NSI
Biological Resources	NSI	NSI
Cultural Resources	NSI	NSI
Hazardous Materials and Waste	NSI	NSI
Geological Resources	NSI	NSI
Public Health and Safety	NSI	NSI
Water Resources	NSI	NSI
NI = No Impact; NSI = No Significant Impact		

## 3 Affected Environment and Environmental Consequences

### 3.1 Airspace

The structured airspace environment encompassing the CMAGR region of influence (ROI) is an important element to how military mission activities are accommodated in this range complex while being segregated from other non-participating military and civilian aircraft operations in this region. As noted in Section 2.1.3.1, this airspace is managed by the FAA and consists of SUA and other designated airspace that serve both military and civil aviation interests. Only those airspaces within the CMAGR and associated with the proposed action were examined relative to the potential consequences that projected flight activities could have on airspace uses in the ROI.

#### 3.1.1 Affected Environment

##### 3.1.1.1 Military Airspace Use

Airspace that has been designated to support military training activities within the CMAGR includes restricted areas, Military Operations Areas (MOAs), and MTRs, which are all depicted on aviation aeronautical charts. Restricted areas are established to contain hazardous flight and ground-based activities such as the air-to-air and air-to-ground aircraft ordnance deliveries, explosive detonations, and infantry weapons uses currently conducted in the CMAGR. Non-participating military and civilian aircraft cannot enter this airspace while activated for those hazardous activities. The eastern portion of the CMAGR consists of three restricted areas (R-2507N, R-2507S, and R-2507E); R-2507S is the proposed location for the Target Complex Invader. The Los Angeles Air Route Traffic Control Center (ARTCC) is the controlling FAA air traffic control (ATC) for this restricted airspace while MCAS Yuma is responsible for coordinating and scheduling its use. This restricted area and its representative annual use are described in Section 2.1.3.1 and Table 2.1-1, which indicate this use has generally ranged from 3,500 to 5,000 aircraft operations.

Several MOAs overlie the CMAGR, including the Abel North, Abel South, Abel East, Abel Bravo, and Kane East/West/South MOAs. MOAs can only be used for nonhazardous flight training maneuvers and are not restrictive to non-participating military and civilian aircraft. MOAs may be scheduled individually or in conjunction with restricted areas for those combat training missions that may involve both nonhazardous and hazardous activities. The Abel North MOA encompasses R-2507S where it extends from 7,000 feet above MSL up to, but not including, 18,000 feet above MSL, the FAA's defined upper limit for MOAs. Most MOAs with that upper limit, including the Abel North MOA, have Air Traffic Control Assigned Airspace (ATCAA) that extend this training airspace to the higher altitudes needed for conducting nonhazardous flight maneuvers. The published times of use for the Abel North MOA/ATCAA is 5:00 a.m. to 10:00 p.m. Monday through Friday (other times by NOTAM). The FAA Los Angeles ARTCC and MCAS Yuma control and manage, respectively, use of the CMAGR MOAs. Annual aircraft operations within the Abel North MOA/ATCAA range from 3,800 to 4,700, with a daily average of about 16 flights (DoN 2013).

Another training airspace that may be used at times in conjunction with CMAGR flight training activities is an MTR. MTRs are used to practice long-distance, low-level, terrain following, high-speed flights similar to how an aircraft may evade its adversary's detection in a combat environment. Thirteen MTRs transit throughout this region in relatively close proximity to the CMAGR; these MTRs may be used at times to access this range complex. The three MTRs include IR-216, IR-217, and VR-1266; their annual use is shown in Table 2.1-2.

1 As indicated above, the different restricted areas, MOAs/ATCAAs, and MTRs associated with the  
2 CMAGR are used individually or in combination with each other to accomplish various combat mission  
3 training requirements. They would be used in a similar fashion to access and conduct flight training  
4 missions at the proposed Target Complex Invader within R-2507S.

#### 5 **3.1.1.2 Civilian Airspace Use**

6 The airspace environment in this region includes several public and private airports and both Federal  
7 Airways (i.e., low-altitude airways for flight below approximately 18,000 feet above MSL) and Jet Routes  
8 (i.e., high-altitude airways for flight above 18,000 feet above MSL) used by ATC for transiting  
9 Instrument Flight Rules (IFR) air traffic throughout this region. Two airports are located beneath the  
10 Kane MOAs (Calipatria and Brawley) with two others in relatively close proximity of the CMAGR  
11 airspace boundaries (Imperial County and Holtville). The military maintains a safe operating distance  
12 from these airports through established avoidance areas, MOA altitude limits, and other procedural  
13 requirements, as appropriate. The Federal Airways (Victor Routes) and Jet Routes transiting this region  
14 circumvent the CMAGR airspace parameters with the exception of Victor Route V137, which crosses the  
15 Kane MOAs. The FAA provides separation between IFR airway traffic and any military operations being  
16 conducted in the Kane MOA. Aircraft operating under Visual Flight Rules (VFR) may fly through an  
17 active MOA where both VFR pilots and military aircrews must use “see and avoid” procedures to  
18 maintain a safe distance from each other.

19 Overall, the manner in which the military airspace is established and managed in this region relative to  
20 civilian aviation needs has provided for a safe, compatible operating environment for all concerned.

#### 21 **3.1.2 Environmental Consequences**

22 The airspace assessment considers if and to what extent a proposed action may affect all military and  
23 civilian airspace uses within the ROI. This includes examining any proposed changes or additions to the  
24 existing airspace structure, current versus projected aircraft operations, and other such factors that could  
25 adversely affect air traffic flow and flight safety in the region.

##### 26 **3.1.2.1 Alternative 1**

27 As described in Chapter 2, the proposed Target Complex Invader would be located within the R-2507S  
28 boundaries and would include training activities conducted by fixed-wing, rotary-wing, and tilt-wing  
29 aircraft. No changes or additions to the existing airspace structure would be required to accommodate this  
30 target complex. Likewise, no changes would be required to those procedures that have been implemented  
31 by MCAS Yuma and the FAA for scheduling and managing use of this airspace environment. Aircraft  
32 operations associated with Target Complex Invader would be within the range of those currently  
33 conducted within R-2507S and the overlying or adjacent restricted airspace, MOAs/ATCAAs, and MTRs  
34 used in conjunction with this restricted area. Therefore, Alternative 1 would not have any impacts on  
35 other airspace uses.

##### 36 **3.1.2.2 No-Action Alternative**

37 Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and  
38 three OPs, would not be constructed and training would continue under current conditions. Existing  
39 conditions would remain as described in Section 3.1.1. Therefore, no impacts to the manner in which the  
40 airspace environment is currently used and managed would occur under the No-Action Alternative.

## 3.2 Air Quality

Existing air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. Pollutants are defined as two general types: 1) criteria pollutants; and 2) toxic compounds. Criteria pollutants have national and/or state ambient air quality standards. The United States Environmental Protection Agency (EPA) establishes the National Ambient Air Quality Standards (NAAQS), while the California Air Resources Board (ARB) establishes the state standards, termed the California Ambient Air Quality Standards (CAAQS). The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded. The CAAQS represent state maximum acceptable pollutant concentrations that are not to be equaled or exceeded. The national and state ambient air quality standards are shown in Table 3.2-1.

**Table 3.2-1. California and National Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards	National Standards <sup>a</sup>	
			Primary <sup>b,c</sup>	Secondary <sup>b,d</sup>
O <sub>3</sub>	1-hour	0.09 ppm (180 µg/m <sup>3</sup> )	—	—
	8-hour	0.070 ppm (137 µg/m <sup>3</sup> )	0.075 ppm (147 µg/m <sup>3</sup> )	Same as primary
CO	8-hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	—
	1-hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	—
NO <sub>2</sub>	Annual	0.030 ppm (57 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	Same as primary
	1-hour	0.18 ppm (339 µg/m <sup>3</sup> )	0.10 ppm (188 µg/m <sup>3</sup> )	—
SO <sub>2</sub>	24-hour	0.04 ppm (105 µg/m <sup>3</sup> )	—	—
	3-hour	—	—	0.5 ppm (1,300 µg/m <sup>3</sup> )
	1-hour	0.25 ppm (655 µg/m <sup>3</sup> )	0.075 ppm (105 µg/m <sup>3</sup> )	—
PM <sub>10</sub>	Annual	20 µg/m <sup>3</sup>	—	—
	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Same as primary
PM <sub>2.5</sub>	Annual	12 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24-hour	—	35 µg/m <sup>3</sup>	—
Lead	Rolling 3-month average	—	0.15 µg/m <sup>3</sup>	Same as primary
	30-day average	1.5 µg/m <sup>3</sup>	—	—

**Notes:**

a. Standards other than the 8-hour O<sub>3</sub>, 24-hour PM<sub>10</sub>, 24-hour PM<sub>2.5</sub>, and those based on annual averages are not to be exceeded more than once a year.

b. Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parentheses.

c. Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

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

µg/m<sup>3</sup> = micrograms per cubic meter; mg/m<sup>3</sup> = milligrams per cubic meter; CO = carbon monoxide; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; PM<sub>10</sub> = particulate matter less than 10 microns in diameter; PM<sub>2.5</sub> = particulate matter less than 2.5 microns in diameter; SO<sub>2</sub> = sulfur dioxide.

Source: California ARB 2013a

1 Toxic air contaminants are compounds that have been determined to represent some level of acute or  
2 chronic health risk (cancer or non-cancer) to the general public. Units of concentration for these pollutants  
3 are generally expressed in parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

4 The main pollutants of concern considered in this air quality analysis include volatile organic compounds  
5 (VOCs), ozone ( $\text{O}_3$ ), carbon monoxide (CO), nitrogen oxides ( $\text{NO}_x$ ), particulate matter less than  
6 10 microns in diameter ( $\text{PM}_{10}$ ), and particulate matter less than 2.5 microns in diameter ( $\text{PM}_{2.5}$ ). Although  
7 VOCs or  $\text{NO}_x$  (other than nitrogen dioxide [ $\text{NO}_2$ ]) have no established ambient standards, they are  
8 important as precursors to  $\text{O}_3$  formation. The proposed action would generate nominal amounts of other  
9 pollutants. However, because the levels of these pollutants are low and do not have the potential to result  
10 in significant air quality impacts, they are not discussed further in this analysis.

### 11 **3.2.1 Affected Environment**

12 Air emissions produced from the proposed action would affect air quality within the immediate area of  
13 the proposed Target Complex Invader at the CMAGR. The analysis of proposed aircraft operations is  
14 limited to emissions that would occur within the lowest 3,000 feet of the atmosphere, as this is the typical  
15 depth of the atmospheric mixing layer where emissions released into this layer could affect ground-level  
16 pollutant concentrations. Emissions released above the mixing layer generally would not appreciably  
17 affect ground-level air quality.

18 Identifying the ROI for air quality requires knowledge of the pollutant type, source emission rates, the  
19 proximity of project emission sources to other emission sources, and local and regional meteorology. For  
20 inert pollutants (e.g., CO or dust particulates), the ROI is generally limited to a few miles downwind from  
21 a source. The ROI for reactive pollutants such as  $\text{O}_3$  may extend much farther downwind than for inert  
22 pollutants. Ozone is formed in the atmosphere by photochemical reactions of previously emitted  
23 pollutants called precursors. Ozone precursors are mainly  $\text{NO}_x$  and photochemically reactive organic  
24 compounds, or VOCs. In the presence of solar radiation, the maximum effect of precursor emissions on  
25  $\text{O}_3$  levels usually occurs several hours after they are emitted and many miles from their source.

#### 26 **3.2.1.1 Existing Air Quality**

27 The portion of the CMAGR that encompasses the project area occurs within the Salton Sea Air Basin  
28 (SSAB), which includes all of Imperial County and the southwest third of Riverside County. The arid  
29 conditions in the region produce low soil moisture and a high potential for fugitive dust ( $\text{PM}_{10}/\text{PM}_{2.5}$ )  
30 emissions, which is one of the main air pollution issues in the region.

31 Air emissions from current operations within the CMAGR mainly occur from: 1) the combustion of fossil  
32 fuels by aircraft and tactical vehicles/support equipment; 2) fugitive dust ( $\text{PM}_{10}/\text{PM}_{2.5}$ ) generated by the  
33 operation of tactical vehicles/support equipment on unpaved surfaces and rotary-wing and tilt-rotor  
34 aircraft downwash during pad landings; and 3) the use of ordnance (e.g., combustive and fugitive dust  
35 emissions).

36 The EPA designates all areas of the U.S. as having air quality better than (attainment) or worse than  
37 (nonattainment) the NAAQS (EPA 2013a). A nonattainment designation generally means that a primary  
38 NAAQS has been exceeded more than once per year in a given area. With respect to the NAAQS, all of  
39 Imperial County presently is classified as in marginal nonattainment for  $\text{O}_3$  and attainment for CO,  $\text{SO}_2$ ,  
40 and lead. The western two-thirds of Imperial County also are in serious nonattainment for  $\text{PM}_{10}$ . This  
41 nonattainment area is known as the Imperial Valley Planning Area (IVPA). The proposed action would  
42 place the Target Complex Invader just east of the IVPA boundary. Since it is probable that emissions  
43 from the activities proposed at the Target Complex Invader would affect air quality within the IVPA, it is

1 conservatively assumed that the proposed action would occur within this nonattainment area. Lastly, the  
2 region surrounding the CMAGR also attains the NAAQS for PM<sub>2.5</sub>. Based on these designations, the  
3 applicable annual conformity *de minimis* thresholds for the proposed action are: 1) 100 tons of VOCs and  
4 NO<sub>x</sub> and 2) 70 tons of PM<sub>10</sub>.

5 The ARB also designates areas of the state as either in attainment or nonattainment of the CAAQS  
6 (ARB 2013b). An area is in nonattainment for a pollutant if its CAAQS has been exceeded more than  
7 once in three years. With regard to the CAAQS, the SSAB attains the CAAQS for all criteria pollutants  
8 except O<sub>3</sub> and PM<sub>10</sub>.

### 9 **3.2.1.2 Regulatory Framework**

10 The Federal Clean Air Act of 1970 (CAA) and its subsequent amendments establish air quality  
11 regulations and the NAAQS and delegate the enforcement of these standards to the states. In California,  
12 the ARB is responsible for enforcing air pollution regulations. The ARB has in turn delegated the  
13 responsibility of regulating stationary emission sources to regional air agencies. The CAA establishes air  
14 quality planning processes and requires areas in nonattainment of a NAAQS to develop a State  
15 Implementation Plan (SIP) that details how the state will attain the standard within mandated time frames.  
16 The requirements and compliance dates for attainment are based on the severity of the nonattainment  
17 classification of the area. The following summarizes the air quality rules and regulations that apply to the  
18 proposed action.

19 Section 176(c) of the CAA, as articulated in the *EPA General Conformity Rule*, states that a federal  
20 agency cannot issue a permit or support an activity unless the agency determines that it will conform to  
21 the most recent EPA-approved SIP. This means that projects using federal funds or requiring federal  
22 approval in nonattainment or maintenance areas must not: 1) cause or contribute to any new violation of a  
23 NAAQS; 2) increase the frequency or severity of any existing violation; or 3) delay timely attainment of  
24 any standard, interim emission reduction, or other milestone. Conformity determinations are required  
25 when the annual direct and indirect emissions from a federal action exceed an applicable *de minimis*  
26 threshold. Applicable *de minimis* levels vary by pollutant and the severity of nonattainment conditions.  
27 Based on air quality designation of the project site, the annual conformity *de minimis* thresholds that  
28 pertain to the proposed action are 100 tons of VOCs and NO<sub>x</sub>.

29 The ARB is responsible for the coordination and administration of both federal and state air pollution  
30 control programs within California and implementation of the California Clean Air Act (CCAA). The  
31 CCAA required the ARB to establish the CAAQS (see Table 3.2-1). In general, the CAAQS are at least  
32 as stringent as the NAAQS. The CCAA requires local air districts in the state to achieve and maintain the  
33 CAAQS by the earliest practical date. The CCAA specifies that local air districts should focus particular  
34 attention on reducing emissions from transportation and area-wide emission sources, and it gives districts  
35 the authority to regulate indirect sources of emissions.

36 The project site is within the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD).  
37 The ICAPCD has developed air quality plans that are designed to bring the region into attainment of the  
38 national and state ambient air quality standards. Through this attainment planning process, the ICAPCD  
39 develops the *ICAPCD Rules and Regulations* to regulate stationary sources of air pollution in Imperial  
40 County (ICAPCD 2013).

1 Greenhouse Gases

2 Greenhouse gases (GHGs) are gases that trap heat in the atmosphere by absorbing infrared radiation.  
3 Without this natural greenhouse effect, the average surface temperature of the Earth would be about  
4 60 degrees Fahrenheit (°F) (33.3 degrees Celsius [°C]) colder (United States Global Change Research  
5 Program 2009). Scientific evidence indicates a trend of increasing global temperature over the past  
6 century due to an increase in GHG emissions from human activities. The climate change associated with  
7 this global warming is predicted to produce environmental, economic, and social consequences across  
8 the globe.

9 GHGs occur from natural processes and human activities. Water vapor is the most important and  
10 abundant GHG in the atmosphere. However, human activities produce only a very small amount of the  
11 total atmospheric water vapor. The most common GHGs emitted from natural processes and human  
12 activities include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). The main source of  
13 GHGs from human activities is the combustion of fossil fuels, such as crude oil and coal. Examples of  
14 GHGs created and emitted primarily through human activities include fluorinated gases  
15 (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. These six GHGs (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O,  
16 hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are regulated by the State of California.

17 Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to  
18 trap heat in the atmosphere. The GWP rating system is standardized to CO<sub>2</sub>, which has a value of one. For  
19 example, CH<sub>4</sub> has a GWP of 21, which means that it has a global warming effect 21 times greater than  
20 CO<sub>2</sub> on an equal-mass basis (IPCC 2013). To simplify GHG analyses, total GHG emissions from a source  
21 are often expressed as a CO<sub>2</sub> equivalent (CO<sub>2</sub>e). The CO<sub>2</sub>e is calculated by multiplying the emissions of  
22 each GHG by its GWP and adding the results together to produce a single, combined emission rate  
23 representing all GHGs. While CH<sub>4</sub> and N<sub>2</sub>O have much higher GWPs than CO<sub>2</sub>, CO<sub>2</sub> is emitted in such  
24 higher quantities that it is the overwhelming contributor to CO<sub>2</sub>e from both natural processes and  
25 human activities.

26 Recent observed changes due to global warming include shrinking glaciers, thawing permafrost,  
27 lengthened growing season, and shifts in plant and animal ranges (IPCC 2013; United States Global  
28 Change Research Program 2009; and California Energy Commission 2012). Predictions of long-term  
29 environmental impacts due to global warming include sea level rise; changing weather patterns with  
30 increases in the severity of storms and droughts; changes to local and regional ecosystems, including the  
31 potential loss of species; and a significant reduction in winter snowpack. In California, global warming  
32 effects are predicted to include exacerbation of air quality problems; a reduction in municipal water  
33 supply from the Sierra snowpack; a rise in sea level that would displace coastal businesses and residences;  
34 damage to marine and terrestrial ecosystems; and an increase in the incidence of infectious diseases,  
35 asthma, and other human health problems (California Energy Commission 2012).

36 Federal agencies on a national scale address emissions of GHGs by reporting and meeting reductions  
37 mandated in federal laws, Executive Orders (EOs), and agency policies. The most recent of these are  
38 EOs 13423 and 13514 and the *EPA Final Mandatory Reporting of Greenhouse Gases Rule*. Several states  
39 have promulgated laws as a means of reducing statewide levels of GHG emissions. In particular, the  
40 California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) directs the State of California  
41 to reduce statewide GHG emissions to 1990 levels by the year 2020. Groups of states also have formed  
42 regionally based collectives (e.g., the Western Climate Initiative) to jointly address GHG pollutants.

43 In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of  
44 renewable energy resources in accordance with the goals set by EOs and the Energy Policy Act of 2005,  
45 the Marine Corps and DoD have implemented a number of renewable energy projects (NAVFAC 2006).

1 The types of projects currently in operation within the southwest region include thermal and photovoltaic  
2 solar systems, geothermal power plants, and wind generators. The military also purchases one-half of the  
3 biodiesel fuel sold in California and continues to promote and install new renewable energy projects  
4 within the southwest region. In addition, the Marine Corps and DoN implement broad-based programs to  
5 reduce energy consumption and shift to renewable and alternative fuels, thereby reducing overall  
6 emissions of GHGs.

7 On 18 February 2010, the CEQ proposed for the first time draft guidance on how federal agencies should  
8 evaluate the effects of climate change and GHG emissions for NEPA documentation (CEQ 2010).  
9 The CEQ does not provide a reference point as an indicator of a level of GHG emissions that may  
10 significantly affect the quality of the human environment. In the analysis of the direct effects  
11 of a proposed action, the CEQ proposes that it would be appropriate to: 1) quantify cumulative  
12 emissions over the life of the project; 2) discuss measures to reduce GHG emissions, including  
13 consideration of reasonable alternatives; and 3) qualitatively discuss the link between such  
14 GHG emissions and climate change.

15 The potential effects of proposed GHG emissions are by nature global and cumulative impacts because  
16 individual sources of GHG emissions are not large enough to have an appreciable effect on climate  
17 change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context  
18 of cumulative impacts, as presented in Section 4.4.1 of this EA.

### 19 **3.2.2 Environmental Consequences**

20 Project air quality impacts were reviewed for significance compared to federal, state, and local air  
21 pollution standards and regulations. Equipment usages associated with proposed installation and  
22 maintenance activities are not known at this time. Therefore, this analysis used a qualitative approach to  
23 demonstrate that proposed emissions would be *de minimis*. For the purposes of the present analysis, if  
24 proposed emissions were projected not to exceed an applicable conformity *de minimis* threshold within  
25 the project region (100 tons per year of VOCs or NO<sub>x</sub>), then impacts would be less than significant. If  
26 proposed emissions were projected to exceed an applicable conformity *de minimis* threshold within a  
27 project region, further analysis would be needed to determine whether impacts were significant. In such  
28 cases, if emissions conform to the approved SIP, then impacts would be less than significant. In the case  
29 of a criteria pollutant for which a project region attains an NAAQS, the analysis used the EPA Prevention  
30 of Significant Deterioration (PSD) threshold for new major sources of 250 tons per year as an indicator of  
31 significance of projected air quality impacts. Although the PSD permitting program is not applicable to  
32 mobile sources, PSD thresholds are used as criteria to measure air quality impacts under NEPA.

#### 33 **3.2.2.1 Alternative 1**

34 Air quality impacts associated with the installation of the proposed Target Complex Invader would occur  
35 from: 1) combustive emissions due to the use of fossil fuel-powered construction equipment and trucks;  
36 and 2) fugitive dust emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) due to the operation of equipment on exposed soils. This  
37 activity would require a minimal amount of equipment usage and, therefore, would result in annual air  
38 emissions that would be substantially less than their applicable conformity *de minimis* or PSD threshold.

39 Air quality impacts produced from the bi-annual training activities proposed for the Target Complex  
40 Invader would occur from the same types of emission sources that occur in association with existing  
41 training activities: 1) combustion of fossil fuels by aircraft and tactical vehicles/support equipment;  
42 2) fugitive dust generated by the operation of tactical vehicles/support equipment on unpaved surfaces  
43 and rotary-wing and tilt-rotor aircraft downwash during pad landings; and 3) the use of ordnance  
44 (combustive and fugitive dust emissions). The proposed training activities would be relocations of

1 existing activities that otherwise would occur at the CMAGR. As a result, the proposed training activities  
2 would produce little to no net increases in emissions compared to existing training activities.

3 Maintenance of the proposed Target Complex Invader would require the following activities: 1) target  
4 repair at least two times per year; and 2) operational range clearance of ordnance every one to two years  
5 for roughly ten days. The nominal usage of equipment required for these activities would result in  
6 annual air emissions that would be substantially less than their applicable conformity *de minimis* or  
7 PSD threshold.

8 Since emissions from all of the activities proposed under Alternative 1 would not exceed any applicable  
9 conformity *de minimis* or PSD threshold, Alternative 1 would not result in significant air quality impacts.

10 The results of the air quality analysis indicate that emissions from the proposed action would not exceed  
11 applicable conformity *de minimis* thresholds.

### 12 **3.2.2.2 No-Action Alternative**

13 Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and three  
14 OPs, would not be constructed and training would continue under current conditions. Existing conditions  
15 would remain as described in Section 3.2.1. Therefore, no impacts on air quality would occur under the  
16 No-Action Alternative.

### 3.3 Biological Resources

The following section describes vegetation, general wildlife species, special status species, and waters of the U.S. within the project site and ROI and provides analyses of the potential effects on these resources from the proposed action. For the purpose of this EA, the area evaluated includes the project site (target area, LZ, and OPs) and associated survey buffers that comprised the survey area for vegetation and desert tortoise surveys conducted in March 2014. For the proposed target area, the survey buffer equates to the 99.9999 percent safety arc (i.e., WDZ). Although, reasonably, the effects would decrease with distance from the specific target arrays, all potential target area effects would occur within this buffer (including misses). The survey buffer for the LZ includes adjacent areas potentially subject to rotorwash and could be affected by noise, dust, and aircraft presence from training activities. The buffer area was determined by studies conducted on outwash distance created by the MV-22 (Bell Boeing 2008; DoN 1998). The prescribed buffer is solely for analysis purposes; touchdown and takeoff operations would only occur within the LZ boundary.

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

- *Vegetation* includes the most prominent vegetation and landforms encountered at the proposed project areas.
- *General wildlife* includes the characteristic animal species that occur in the project site and vicinity.
- *Special status species* include plants or animals that are federally listed as threatened or endangered, proposed for listing as threatened or endangered, or are candidates for such listing under the federal Endangered Species Act (ESA), most notably the desert tortoise. Also included in this category are species protected by the Bald and Golden Eagle Protection Act and the federal Migratory Bird Treaty Act (MBTA) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Other special status species include those considered sensitive by Bureau of Land Management (BLM), California Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS) and managed under the CMAGR Integrated Natural Resources Management Plan (INRMP). Sensitive habitats include those that support endangered, threatened, or sensitive species and, therefore, are important to the conservation of these species.
- *Wetlands*, as defined under Clean Water Act (CWA) regulations (33 CFR 328), were evaluated in the field in March 2014. Although the National Wetlands Inventory (NWI) identified the potential for wetlands based on remote sensing, based on the March 2014 field effort, no wetlands were identified within the survey area.
- *Waters of the U.S.* are defined as areas under the United States Army Corps of Engineers (USACE's) jurisdiction pursuant to Section 404 of the CWA and are generally defined by the ordinary high water mark (OHWM). The USACE's jurisdiction can extend beyond the OHWM to the limit of adjacent wetlands, when present. Wetlands also can occur within waters of the U.S. Ephemeral surface water drainages supporting OHWMs within the CMAGR are considered waters of the U.S. Outside the CMAGR, the Salton Sea is a traditional navigable water (TNW), and its tributaries (New River and Alamo River) are waters of the U.S.

#### 3.3.1 Affected Environment

The areas evaluated for biological resources include all areas wherein biological resources may be directly or indirectly affected due to ground disturbance during establishment of the target complex and future operations and maintenance activities. For the purposes of the proposed action, this includes the project site and immediately adjacent areas.

1 **3.3.1.1 Data Sources**

2 The following data sources were used for information to support the analysis present in this chapter:

- 3 • Biological Resources Survey Report (Leidos 2014a);
- 4 • Desert Tortoise Survey Report (Leidos 2014b);
- 5 • Desert tortoise survey data for CMAGR (MCAS Yuma GIS Data 2014);
- 6 • CMAGR INRMP (MCAS Yuma 2014);
- 7 • Final Legislative Environmental Impact Statement for the Renewal of the CMAGR Land
- 8 Withdrawal (DoN 2013);
- 9 • Revised Recovery Plan for the Mojave Desert Tortoise (USFWS 2011a);
- 10 • Biological Opinion for Military Use of CMAGR (1-6-95-F-40; USFWS 1996, 2003); and
- 11 • California Natural Diversity Database (CNDDB) and CNPS Rare Plant Ranking System (RPRS).

12 Due to the known occurrence of desert tortoise on the project site, a federally listed species, the Marine  
13 Corps will consult with the United States Fish and Wildlife Service (USFWS) under Section 7 of the  
14 ESA.

15 **3.3.1.2 Vegetation**

16 The vegetation communities and classifications described in this EA follow *Vegetation Mapping at the*  
17 *Barry M. Goldwater Range, Marine Corps Air Station, Arizona* (Malusa 2012). Scientific nomenclature  
18 for plants follows *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin  
19 *et al.* 2012). Vegetation within the CMAGR is typical for the Colorado desert region, which is widespread  
20 creosote desert scrub that has scattered ocotillo, a variety of cactus, and expansive dry desert washes.  
21 Accurate acreages of the native communities throughout the CMAGR are not available; the best available  
22 data are from GAP land cover data, which may underestimate or overestimate specific habitats  
23 (MCAS Yuma 2014).

24 Vegetation within the project site directly relates to the terrain or landforms present, which fall into three  
25 basic categories: 1) rocky slopes and ridges; 2) large washes; and 3) alluvial terraces with runnels (small  
26 channels) and minor washes. These landform categories differ in soil characteristics that are directly  
27 related to the amount of water available to plants and the degree of flash flooding, which together affect  
28 plant survival and the establishment of species. Five different vegetation communities or associations  
29 occur in the survey area. A detailed description of each vegetation association is provided in Malusa  
30 (2012) and a general description of each association by landform is provided in subsequent sections.  
31 Table 3.3-1 lists the three landform types found on site with vegetation associations and acreages for each  
32 survey area and Figure 3.3-1 depicts the vegetation identified within the survey area.

33 *Rocky Slopes and Ridges*

34 CREOSOTE, BRITTLEBUSH, FAGONIA ON STONY HILLS (113)<sup>10</sup>

35 The OPs are situated along a ridge of uplifted, highly weathered volcanic rock. Vegetation on the ridgetop  
36 where the OPs are located can be described according to Malusa (2012) as creosote, brittlebush, and  
37 fagonia on stony hills (113). In the survey area, vegetation in this association is sparse and is dominated  
38 by creosote bush (*Larrea tridentata*) and brittlebush (*Encelia farinosa*), with lesser amounts of fagonia  
39 (*Fagonia laevis*) and the occasional white bursage (*Ambrosia dumosa*). California barrel cacti  
40 (*Ferocactus cylindraeus* var. *cylindraeus*), ocotillo (*Fouquieria splendens*), and Munz's cholla  
41 (*Cylindropuntia munzii*) are also conspicuous in the landscape.

---

<sup>10</sup> The numbers after vegetation communities and classifications refer to the vegetation code provided in Malusa 2012.

**Table 3.3-1. Landforms, Vegetation, and Associated Acreages in the Survey Area for Target Complex Invader**

<i>Landform</i>	<i>Vegetation Code Association (Malusa 2012)</i>	<i>Target Area (acres)</i>	<i>Target Buffer Area (acres)</i>	<i>Target Survey Area<sup>1</sup> (acres)</i>	<i>Landing Zone (LZ) (acres)</i>	<i>LZ Buffer (acres)</i>	<i>LZ Survey Area<sup>2</sup> (acres)</i>	<i>Observation Post (OP) (acres)</i>	<i>Observation Post (OP) Survey Area (acres)</i>	<i>TOTAL Survey Area (acres)</i>
Rocky slopes and ridges	113: Creosote, brittlebush, fagonia on stony hills	0.0	0.0	0.0	0.0	0.0	0.0	<0.01	5.8	<b>5.8</b>
	661: Creosote, fagonia, brittlebush on treeless mountains	2.2	16.3	18.4	0.0	0.0	0.0	0.0	0.0	<b>18.4</b>
Large washes	810: Palo Verde, wolfberry, ironwood along washes with beds > 5 meters wide	16.2	16.9	33.2	0.1	1.8	1.9	0.0	0.0	<b>35.1</b>
Alluvial terraces with runnels and minor washes	171: Creosote on pavements with < 5% cover of palo verde and ironwood	58.6	76.4	135	0.8	10.3	11.1	0.0	0.0	<b>146.1</b>
	214: Bursage, creosote, wolfberry, ironwood along washes with beds < 5 meters wide	21.6	44.2	65.8	1.5	7.0	8.5	0.0	0.0	<b>74.3</b>
<b>TOTAL</b>		<b>98.6</b>	<b>153.8</b>	<b>252.5</b>	<b>2.4</b>	<b>19.1</b>	<b>21.5</b>	<b>&lt;0.01</b>	<b>5.8</b>	
<i>Notes:</i> <sup>1</sup> Target Survey Area = Target area + Target buffer area. <sup>2</sup> Landing Zone Survey Area = LZ + LZ buffer area.										

3.3 Biological Resources

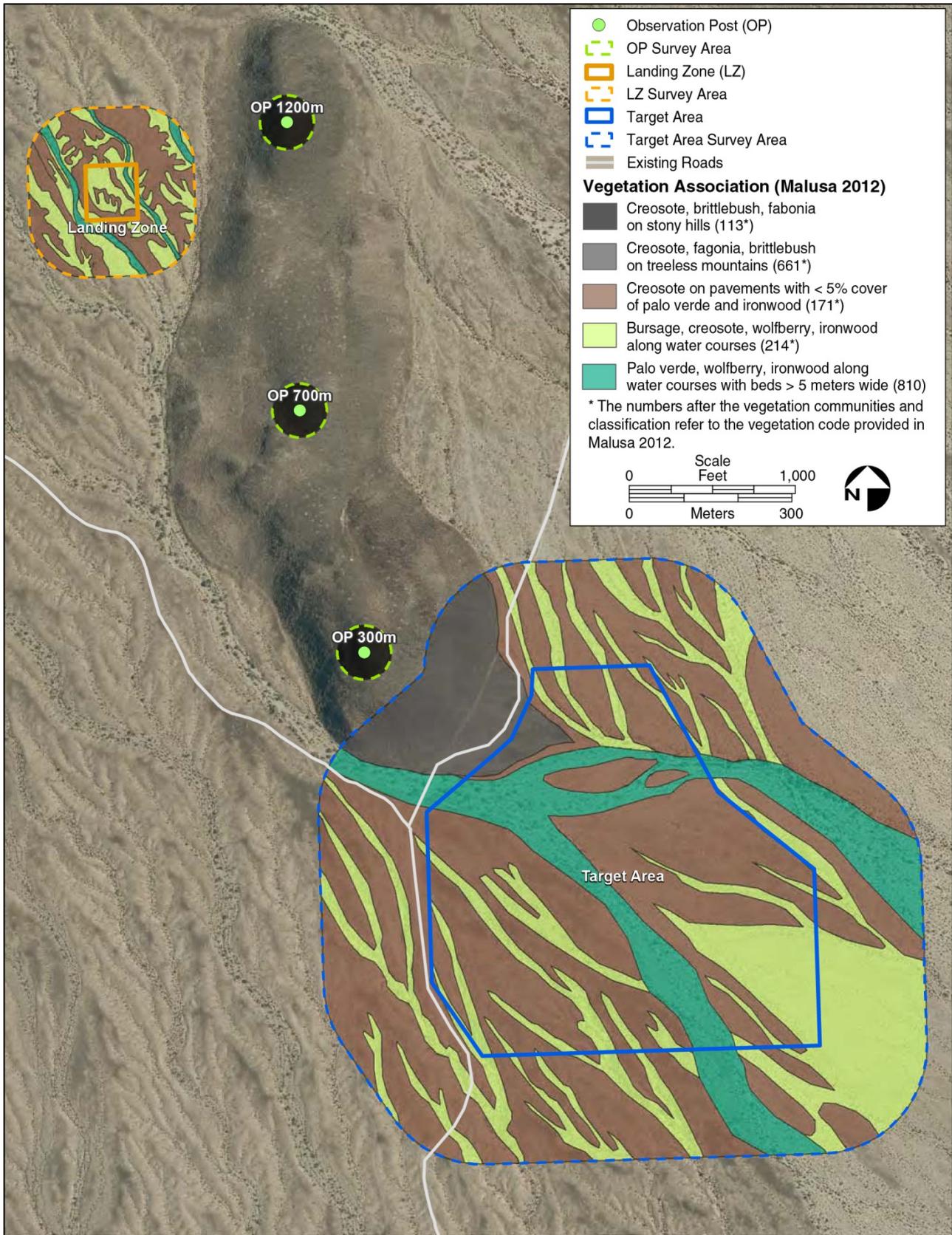


Figure 3.3-1. Vegetation Known to Occur in the Project Vicinity

1 CREOSOTE, FAGONIA, BRITTLEBUSH ON TREELESS MOUNTAINS (661)

2 This vegetation association occurs on the northwest end of the target area on rocky slopes (over  
3 20 percent). Vegetation composition is similar to the other rocky slope classification; however, ocotillo,  
4 California barrel cacti, and teddy bear cholla (*Cylindropuntia bigelovii*) are more frequent and a variety of  
5 other cacti are sparsely distributed amongst the large volcanic rocks.

6 *Large Washes*

7 PALO VERDE, WOLFBERRY, IRONWOOD ALONG WASHES WITH BEDS GREATER THAN FIVE METERS WIDE  
8 (810)

9 Large washes within the project site originate off site, flow through the project site, and continue off site  
10 as part of a regional drainage system. Vegetation associated with these large washes can be described  
11 according to Malusa (2012) as palo verde, wolfberry, or ironwood along washes with beds greater than  
12 five meters wide (810). These washes have wide sandy channels that typically lack vegetation with banks  
13 that have scattered trees and large shrubs. Widespread trees confined to these washes are desert ironwood  
14 (*Olneya tesota*), which frequently hosts mistletoe (*Phoradendron californicum*), and blue paloverde  
15 (*Parkinsonia florida*). Large shrubs along the washes include graythorn (*Ziziphus obtusifolia* var.  
16 *canescens*), wolfberry (*Lycium* sp.), and desert lavender (*Hyptis emoryi*).

17 *Alluvial Terraces with Runnels and Minor Washes*

18 Alluvial terraces with runnels and minor washes represent the most extensive cover within the survey  
19 area. The runnels and minor washes originate on the terraces near or within the project site. The terraces  
20 differ in the degree to which they have been subject to weathering. On very weathered surfaces, typically  
21 isolated from overflow, well-varnished desert pavement that consists of a covering of small, tightly  
22 packed stones has developed. This is especially prevalent in the western part of the target survey area. In  
23 the eastern part of the target survey area, the desert pavement is less well-varnished and in many cases the  
24 small stones are not tightly packed.

25 CREOSOTE ON PAVEMENTS WITH LESS THAN FIVE PERCENT COVER OF PALO VERDE AND IRONWOOD  
26 (171)

27 In this association, desert pavement occurs on the terraces (“interfluves”) between runnels with vegetation  
28 cover that ranges from nearly absent to very sparse and consists primarily of creosote bush with palo  
29 verde and ironwood infrequently. Most of the rainfall runs off of the terraces and drains through runnels  
30 and small washes, which, in contrast, support a diverse mixture of perennial species (see 214).

31 BURSAGE, CREOSOTE, WOLFBERRY, IRONWOOD ALONG WASHES WITH BEDS LESS THAN FIVE METERS  
32 (214)

33 Bursage, creosote, wolfberry, and ironwood along washes with beds less than five meters (214) typically  
34 occur in runnels and minor washes in the target and LZ survey areas. Characteristic species in runnels  
35 include a variety of small shrubs that are creosote bush, white bursage, trixis (*Trixis californica*), rhatany  
36 (*Krameria* spp.), desert-almond (*Prunus fasciculata*), jojoba (*Simmondsia chinensis*), wolfberry, ocotillo,  
37 big galleta grass (*Hilaria rigida*), and several cacti such as Munz’s cholla, diamond cholla  
38 (*Cylindropuntia ramossissima*), and California barrel cactus.

39 As the runnels join to become minor washes, larger shrubs and small trees become prevalent, such as  
40 wolfberry, graythorn, desert almond, Mojave yucca (*Yucca shidigera*), ocotillo, and small desert

1 ironwood trees. In these washes, there is typically a main channel up to one meter wide that is lined on  
2 both sides by big galleta grass. Munz's cholla has a distribution limited to portions of the Chocolate  
3 Mountains and nearby low ranges, is prevalent on the western portion of the target area in (214), and also  
4 occurs on the LZ but is less frequent. Teddy bear cholla is more prevalent on the eastern portion of the  
5 target survey area. The comparatively large number of perennial species in the runnels and small washes  
6 probably results from enhanced water supply related to runoff from the nearly impervious pavement  
7 surfaces, coupled with lack of flash flooding sufficiently powerful to wash away established shrubs.

#### 8 **3.3.1.3 Non-Native Plant Species**

9 No invasive, non-native plant species were observed in the survey area. The lack of such species as  
10 Sahara mustard (*Brassica tournefortii*) and split grass (*Schismus* sp.), which are nearly ubiquitous in  
11 southern California desert scrub habitats, was unusual and may reflect the project site's isolation from  
12 human activity, apparent lack of grazing by domestic livestock, and distance to seed sources (e.g., sides of  
13 heavily traveled roads).

#### 14 **3.3.1.4 General Wildlife**

15 As a consequence of the harsh climatic extremes, limited habitat resources, and regional geographic  
16 barriers in the Colorado Desert, the diversity and density of animal species in the CMAGR is typically  
17 low relative to other deserts such as the Sonoran and Mojave deserts (MCAS Yuma 2014). In addition,  
18 CMAGR lacks surface or open water sources for wildlife, with the exception of ephemeral pools that  
19 develop after seasonal storm events, artificial tanks or wildlife water sources (guzzlers),<sup>11</sup> and water that  
20 accumulates in tinajas (natural bedrock depressions).

21 The wildlife species observed at the project site during surveys conducted in March 2014 or species  
22 expected to occur at the project site based on suitable habitat include the great basin whiptail lizard  
23 (*Aspidoscelis tigris trigris*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard  
24 (*Phrynosoma platyrhinos*), common side blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus*  
25 *dorsalis*), sidewinder (*Crotalus cerastes*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus*  
26 *brunneicapillus*), black-chinned sparrow (*Spizella atrogularis*), common raven (*Corvus corax*),  
27 black-tailed gnatcatcher (*Polioptila melanura*), phainopepla (*Phainopepla nitens*), ash-throated flycatcher  
28 (*Myiarchus cinerascens*), loggerhead shrike, big brown bat (*Eptesicus fuscus*), kit fox (*Vulpes macrotis*),  
29 Merriam's kangaroo rat (*Dipodomys merriami*), white-tailed antelope ground squirrel  
30 (*Ammospermophilus leucurus*), and black-tailed jackrabbit (*Lepus californicus*) (Leidos 2014a; MCAS  
31 Yuma 2014). Local variations in substrate, topography, and cover account for site-specific differences in  
32 species composition.

#### 33 **3.3.1.5 Special Status Species**

34 For the purposes of this assessment, special status species are those that are federally listed as threatened  
35 or endangered, proposed for listing as threatened or endangered, or are candidates for such listing under  
36 the ESA. Also included in this category are species protected by the Bald and Golden Eagle Protection  
37 Act and the MBTA and EO 13186. Other special status species include those considered sensitive by  
38 BLM, CDFW, and CNPS and managed under the CMAGR INRMP. Sensitive habitats include those that  
39 support endangered, threatened, or sensitive species and, therefore, are important to the conservation of  
40 these species.

---

<sup>11</sup> CDFW manages 26 existing guzzlers within the CMAGR principally to provide supplemental water for desert bighorn sheep (*Ovis Canadensis nelsoni*) and mule deer (*Odocoileus hemionus*) in the Chocolate Mountains (BLM 2009).

1 **Federally Listed Species**

2 One species federally listed under the ESA as threatened or endangered, Agassiz’s desert tortoise  
 3 (*Gopherus agassizii*), is known to occur within the project site based on historical records, the presence of  
 4 suitable habitat, and the results of recent protocol-level surveys (Table 3.3-2). In addition, the project site  
 5 is located within designated critical habitat for this species.

**Table 3.3-2. Federally Listed Threatened and Endangered Plant and Animal Species Known to Occur or Potentially Occurring in the Project Vicinity**

Species	Status Federal/State	Habitat/Occurrence in Project Footprint
Agassiz’s desert tortoise ( <i>Gopherus agassizii</i> )	FT/ ST	Agassiz’s desert tortoise occurs on rocky slopes in desert scrub to semi-desert grassland, as well as along washes, and extending into creosote bush flats. This species generally occurs in areas where soil is friable (brittle) to dig burrows. Desert tortoise usually occurs in areas with gentle slopes but has been documented on rocky slopes of up to 40%. This species is known to occur throughout the CMAGR and is considered present; suitable habitat exists throughout the project site. The entire project site occurs within desert tortoise critical habitat. Protocol-level surveys for the proposed action documented three live desert tortoise and 29 signs (23 burrows, four scat, and two shell remains) of desert tortoise within the survey area.
<p><i>Status:</i>                  Federal Status (determined by USFWS):                      State Status (determined by CDFW):                  FT Federally Listed Threatened                                      ST California State-Listed Threatened</p>		

6 **AGASSIZ’S DESERT TORTOISE (GOPHERUS AGASSIZII)**

7 On 4 August 1989, the USFWS published an emergency ruling listing the Mojave population of the desert  
 8 tortoise as endangered (54 FR 42270), and on 2 April 1990, this population was listed as threatened  
 9 (55 FR 12178). On 8 February 1994, the USFWS designated approximately 6.45 million acres of critical  
 10 habitat for the Mojave population of the desert tortoise in portions of California, Nevada, Arizona, and  
 11 Utah (59 FR 5820–5846). For specific details on the desert tortoise listing, range, life history, and critical  
 12 habitat, see the USFWS *Federal Register* 55(63):12178–12191 (USFWS 1990), *Determination of Critical*  
 13 *Habitat for the Mojave Population of the Desert Tortoise* (USFWS 1994 [59 FR 5820]). Recently, on the  
 14 basis of DNA, geographic, and behavioral differences between desert tortoises east and west of the  
 15 Colorado River, it was decided that two species of desert tortoises exist: desert tortoises south and east of  
 16 the Colorado River are recognized as Morafka’s desert tortoise (*Gopherus morafkai*) and tortoises north  
 17 and west of the Colorado River, within the project site, are recognized as Agassiz’s desert tortoise  
 18 (*Gopherus agassizii*) (Murphy *et al.* 2011).

19 A Final Recovery Plan for the desert tortoise was published in June 1994 (USFWS 1994) and in 2011  
 20 a *Final Revised Recovery Plan for the Mojave Population of the Desert Tortoise* was published  
 21 (USFWS 2011a). The Plan identifies six recovery units and recommended the establishment 14 Desert  
 22 Wildlife Management Areas within the recovery units. The CMAGR is situated within the Colorado  
 23 Desert recovery unit for this species and is part of the Chuckwalla Desert Wildlife Management Area  
 24 based on the presence of critical habitat. Approximately 41 percent of the CMAGR is designated as desert  
 25 tortoise critical habitat within the Chuckwalla Desert Wildlife Management Area and about 30 percent of  
 26 the designated critical habitat on the Range is currently used for military activity (MCAS Yuma 2014).  
 27 The entire action area is located within designated critical habitat for desert tortoise (Figure 3.3-2).

3.3 Biological Resources

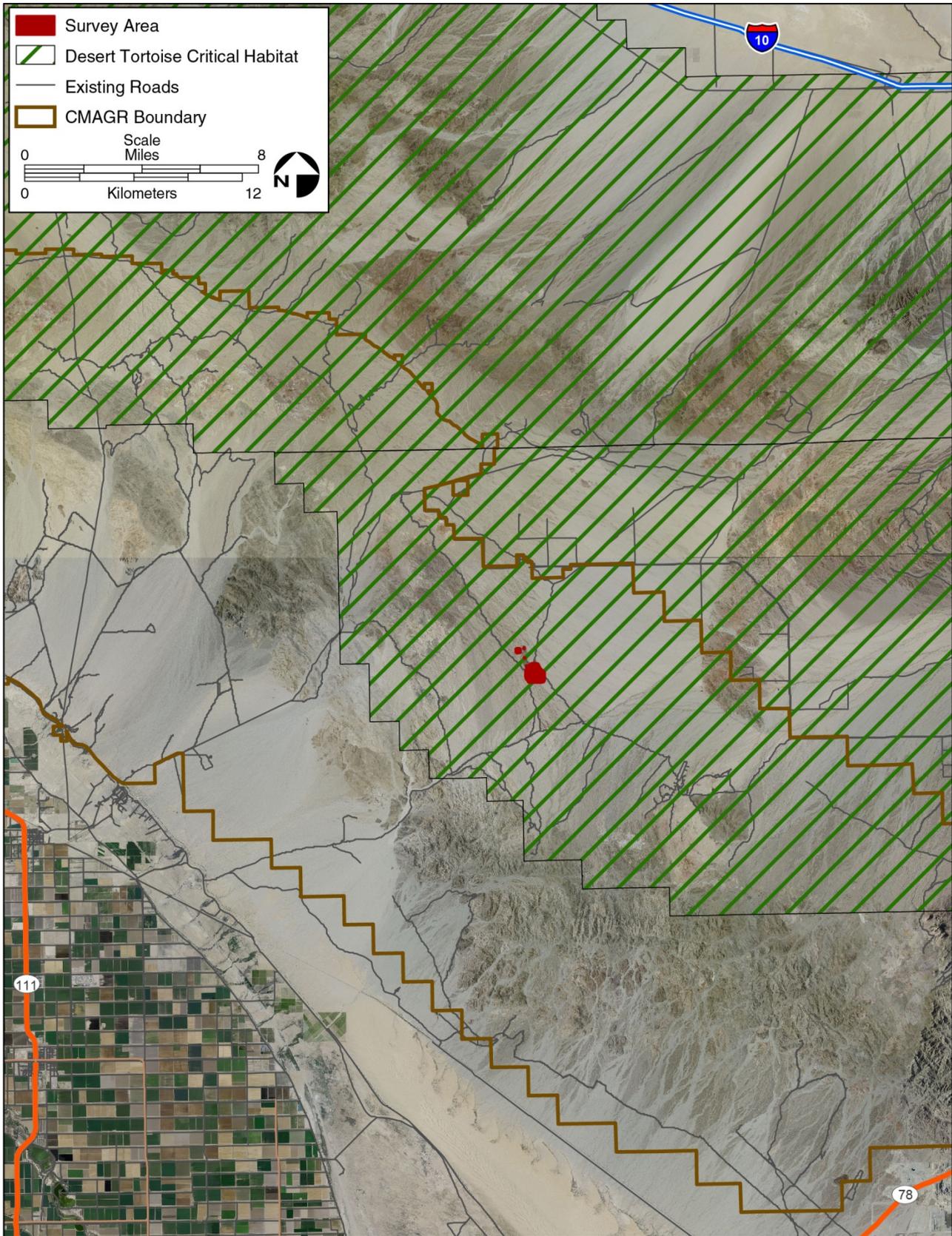


Figure 3.3-2. Survey Area within Desert Tortoise Critical Habitat on Chocolate Mountain Aerial Gunnery Range

1 Agassiz's desert tortoise primarily occurs in the bajadas, mountain foothills, and valleys of the Mojave  
 2 and Colorado deserts. This species usually occurs below 7,300 feet and occupies a wide variety of soil  
 3 types and substrates such as sandy dunes, rocky hillsides, and caliche caves in washes, sandy soils, and  
 4 desert pavements. Agassiz's desert tortoise is commonly found on gently sloping terrain in sand-gravel  
 5 soils with herbaceous species and a sparse cover of low-growing shrubs, though they have also been  
 6 reported on rocky slopes of up to 40 percent. Creosote bush, white bursage, yucca, big galleta grass, and  
 7 blackbrush (*Celeogyne ramosissima*) are indicator species of overall desert tortoise habitat (Brennan and  
 8 Holycross 2006; Nussear *et al.* 2009). The availability of adequate forage resources consisting of native  
 9 grasses, herbaceous perennials and annuals, cacti, as well as suitable substrates and terrain for digging  
 10 burrows are important for determining habitat suitability for the desert tortoise.

11 Agassiz's desert tortoises are known to occur throughout the CMAGR. The USFWS recovery program  
 12 for desert tortoises in the Mojave and Colorado deserts requires range-wide, long-term monitoring to  
 13 determine whether recovery goals are met. Ongoing studies are conducted across Recovery Units for  
 14 estimating range-wide desert tortoise density using distance sampling methods (USFWS 2012). The  
 15 CMAGR supports this program. In 2012, approximately 21 tortoises at a density of 6.1 per square  
 16 kilometer were documented on the Chocolate Mountains Recovery Unit stratum (USFWS 2012).<sup>12</sup>

17 Agassiz desert tortoise surveys were conducted from 2008 – 2013 within CMAGR critical habitat. These  
 18 surveys included a total of 167 transects and over the course of the years a total of 172 live tortoise and  
 19 118 carcasses were observed. The average number of live tortoises per transect ranged from a low of  
 20 approximately 0.5 in 2009 to a high of approximately 1.3 in 2013. There are numerous grid transects  
 21 located within the vicinity of the project site, and these are surveyed on an annual/biannual basis.  
 22 Transects surveyed between 2008 and 2013 have documented 18 live tortoise sightings within 5.1 square  
 23 kilometers of the project site (MCAS Yuma GIS Data 2014). The average number of live tortoises per  
 24 transect ranged from a low of approximately 0.4 in 2009 to a high of approximately 1.2 in 2010. Note that  
 25 the variability between annual estimates among all years is due in part to sampling of different transects  
 26 between years.

27 On 12–14 March 2014, protocol-level surveys for Agassiz's desert tortoise were conducted at the project  
 28 site and associated buffer areas (totaling approximately 279 acres) (Leidos 2014b). Surveys were  
 29 performed in accordance with the *2010 Field Season Pre-project Field Survey Protocol for Potential  
 30 Desert Tortoise Habitats (Protocol)* (USFWS 2010). The surveys were conducted to determine the  
 31 presence or absence of desert tortoises and their signs (e.g., burrows, scat, tracks, shell fragments,  
 32 carcasses or live tortoises).

33 Table 3.3-3 gives a summary of desert tortoise sign classification referenced in the following tables.

34 Tortoises were documented throughout the survey area. In the target survey area, 20 signs of desert  
 35 tortoises were observed, consisting of 14 burrows, one scat, and two shell remains (Tables 3.3-3  
 36 and 3.3-4). In addition, three live tortoises inside burrows were detected (Leidos 2014b). One female  
 37 tortoise was observed inside a burrow that was underneath a Mojave yucca. She had a yellow tag (that  
 38 was difficult to read but the end numbers appeared to be 1025) on her rear scute (plate on a tortoise shell),  
 39 indicating that this tortoise had previous been handled and/or studied. This individual appeared to be in  
 40 excellent health. In the LZ survey area, nine signs of desert tortoise were observed, including seven  
 41 burrows and two scat; in the OP survey area, three signs of desert tortoise were documented, including  
 42 one scat and two burrows (Table 3.3-3). Two of the sign occurrences (a burrow and a scat) identified in

<sup>12</sup> Over the first six years of range-wide monitoring (2001- 2005, and 2007) tortoises were least abundant in the Northeast Mojave Recovery Unit (1 to 3.7 tortoises per square kilometer), and the highest reported densities occurred in the Upper Virgin River Recovery Unit (15 to 27 tortoises per kilometer) (USFWS 2011a).

### 3.3 Biological Resources

1 Table 3.3-3 were located outside the survey area boundary. These were within “Zone of Influence”  
 2 transects for OP 1200m. Zone of influence transects are required by USFWS protocol (USFWS 2010)  
 3 when no sign is identified within a defined survey area.

4 Overall, a total of three live desert tortoises, (i.e., two shell remains, four scat, and 23 burrows) were  
 5 observed within the survey areas. There were no carcasses; signs of neonate (i.e., hatchlings), juvenile, or  
 6 sub-adult tortoises; or signs of reproduction (egg-shell fragments) documented during the surveys. All  
 7 live tortoises observed appeared to be healthy.

**Table 3.3-3. Desert Tortoise Sign Key**

<i>Sign Type</i>	<i>Class 1</i>	<i>Class 2</i>	<i>Class 3</i>	<i>Class 4</i>	<i>Class 5</i>
Burrow and Den	Currently active with tortoise or recent tortoise sign	Good condition, definitely tortoise but no evidence of recent use	Deteriorated condition but is definitely tortoise	Deteriorated condition, possibly tortoise (no other corroborating sign)	Good condition, possibly tortoise (no other corroborating sign)
Scat	Wet or moist but not from rain or dew or dried but with obvious odor	Dry, dark brown, has a glaze, and some odor	Dry, has no glaze or odor, is slightly bleached, is light brown, and plant fibers are tightly packed	Dry, has no glaze or odor, is somewhat bleached, is light brown to pale yellow, plant fibers are not tightly packed, and has a scaly appearance	Dry, has no glaze or odor, is bleached, is white, and consists only of plant fibers
Carcasses, Shell Remains, and Bone Fragments	Fresh or putrid	Fresh or putrid, is of normal color and the scutes adhere to the bone	Scutes are peeling from the bone	Shell bone is falling apart and the growth rings on the scutes are peeling	Disarticulated and scattered

Source: USFWS 2010

**Table 3.3-4. Desert Tortoise Survey Results for CMAGR Target Complex Invader**

#	<i>Tortoise Sign</i>	<i>Class</i>	<i>GPS Coordinates (Easting/Northing)</i>		<i>Survey Area</i>	<i>Comments</i>
<b>Target Survey Area</b>						
1	Burrow	2	666811.7	3687354.9	Target Area	-
2	Burrow	2	666620.2	3687309.3	Target Area	-
3	Burrow	2	666510.0	3687274.2	Target Area	-
4	Burrow	2	666457.0	3687191.6	Target Area	in wash under ratany ( <i>Krameria erecta</i> )
5	Burrow	2	666398.3	3687241.3	Target Area	under shrub at toe of slope
6	Burrow	2	666406.6	3687219.8	Target Area	at toe of slope
7	Burrow	1	666394.8	3687782.5	Target Area	occupied by desert tortoise in burrow
8	Burrow	5	666283.0	3687408.1	Target Area	under jojoba shrub near <i>Neotoma</i> midden
9	Burrow	2	666243.3	3687360.4	Target Area	at bottom of slope adjacent to wash, burrow is shallow
10	Burrow	4	666287.6	3687176.6	Target Area	-
11	Burrow	2	666112.4	3687308.2	Target Area	on side of wash in rocky substrate
12	Burrow	1	665966.0	3687348.2	Target Area	live desert tortoise in burrow
13	Burrow	1	665777.9	3687534.5	Target Area	live tortoise in burrow, burrow is shallow and underneath Mojave yucca

**Table 3.3-4. Desert Tortoise Survey Results for CMAGR Target Complex Invader (continued)**

#	Tortoise Sign	Class	GPS Coordinates (Easting/Northing)		Survey Area	Comments
<b>Target Survey Area (continued)</b>						
14	Burrow	2	666465.7	3687651.6	Target Area	
15	Scat	3	666682.3	3687296.8	Target Area	near creosote bush
16	Shell remains	5	666283.4	3687177.2	Target Area	may have washed down the wash
17	Shell remains	5	666183.4	3687783.7	Target Area	-
18	Desert Tortoise Live	Live	665966.2	3687348.1	Target Area	live tortoise in burrow, female
19	Desert Tortoise Live	Live	665777.9	3687534.5	Target Area	live tortoise in modified burrow, female
20	Desert Tortoise Live	Live	666394.8	3687782.5	Target Area	live tortoise in burrow, sex unknown
<b>Landing Zone Survey Area</b>						
1	Burrow	2	665542.1	3688832.9	Landing Zone	in sandy soils on side of wash
2	Burrow	5	665494.0	3689014.3	Landing Zone	on rocky slope underneath a creosote bush
3	Burrow	1	665530.1	3689011.7	Landing Zone	sandy loam soils on side of wash
4	Burrow	2	665432.5	3688795.7	Landing Zone	on bank
5	Burrow	3	665381.2	3688850.3	Landing Zone	small burrow on toe of slope at the edge of wash, soils sandy loam with a rocky surface
6	Burrow	2	665376.3	3688961.2	Landing Zone	under creosote bush on rocky sandy substrate
7	Burrow	2	665264.0	3688951.6	Landing Zone	on slope that has a rocky substrate
8	Scat	2	665530.0	3689010.7	Landing Zone	adjacent to burrow
9	Scat	3	665399.5	3689112.2	Landing Zone	-
<b>Observation Posts Survey Area</b>						
1	Burrow	2	665647.6	3688906.8	Observation Post	in rock (on zone of influence transect)
2	Burrow	2	665694.9	3857731	Observation Post	under rock shelter
3	Scat	3	665633.3	3688926.2	Observation Post	in clearing of flat area on rocky hillside (on zone of influence transect)

1 Overall, habitat suitability within the survey area ranged from good to excellent. The proposed target and  
2 LZ survey areas had excellent habitat, whereas the OPs had good habitat due to the extent of large rocks,  
3 which make traversing more difficult for a desert tortoise. There were few areas near the OPs that  
4 provided terrain suitable for a tortoise. Overall, there was minimal disturbance within the survey area with  
5 little human influence and no non-native plant species. Human impacts within the survey area were low  
6 but included evidence of military training activities with ammunition scattered around and some off-road  
7 vehicle tracks, trash and debris. Based on the USFWS Protocol calculations, eight tortoises (greater  
8 than 6.3 inches in size) are estimated to occupy the survey area (Leidos 2014b).

9 Based on project-specific survey data and calculated following USFWS protocol methods, an estimated  
10 total of eight adult tortoises (greater than 6.3 inches in size) occupy the total survey area. This equates to  
11 an estimated adult tortoise density of 18.4 tortoises per square mile (about 7.1 tortoises per square  
12 kilometer). The Draft Range-wide Monitoring of the Mojave (Agassiz's) Desert Tortoise (2012) estimates  
13 a comparable 6.1 tortoises per square kilometer within the Chocolate Mountain sub-unit of the Colorado  
14 Desert Recovery Unit.

1 **Other Special Status Species**

2 There are four special status plant species (Orocopia sage [*Salvia greatae*], Munz’s cholla, slender-  
 3 spined allthorn [*Koeberlinia spinosa* spp. *tenuispina*], and sand evening primrose [*Camissonia arenaria*])  
 4 and eight special status wildlife species (Couch’s spadefoot [*Scaphiopus couchi*], golden eagle  
 5 [*Aquila chrysaetos*], Cooper’s hawk [*Accipiter cooperii*], loggerhead shrike [*Lanius ludovicianus*],  
 6 burrowing owl [*Athene cunicularia*], Vaux’s swift [*Chaetura vauxi*], American badger [*Taxidea taxus*],  
 7 and desert bighorn sheep [*Ovis canadensis nelsoni*]) known to occur at the CMAGR (Leidos 2014a;  
 8 MCAS Yuma 2014). Raptors, such as Cooper’s hawks, may forage or fly over the project site and other  
 9 wildlife species, such as desert bighorn sheep, could traverse through the site when they move from  
 10 mountains through valleys to reach preferred habitats. However, the project site does not provide  
 11 preferred habitats for these and many other species listed above. Therefore, nine of the plant and wildlife  
 12 species were eliminated from further analysis in this EA because they are not considered to be present  
 13 within the project site and/or no suitable habitat occurs within the project vicinity. Three of the species  
 14 (Munz’s cholla, slender-spined allthorn, and loggerhead shrike) are known to or have the potential to  
 15 occur due to suitable habitat in the project vicinity and are carried forward for analysis in this EA. These  
 16 species are shown in Table 3.3-5.

**Table 3.3-5. Special Status Plant and Animal Species  
 Known to Occur or Potentially Occurring in the Project Vicinity**

<i>Species</i>	<i>Status Federal/State / CRPR/Other</i>	<i>Habitat/Occurrence in Project Footprint</i>
<i>Cylindropuntia munzii</i> Munz’s cholla	--/--/ 1B.3/BLM-S	Munz’s cholla is a perennial succulent that is shrub to tree-like and occurs in sandy or gravelly areas in desert scrub at elevations that range from 500 to 2,000 feet (30–885 meters). This species blooms during May and is vegetatively identifiable all year. Munz’s cholla was reported throughout the project site in the target, LZ, and OP survey areas. The highest concentrations of the plant occur in the target and LZ survey areas.
<i>Koeberlinia spinosa</i> spp. <i>tenuispina</i> Slender-spined allthorn	--/--/ 2.2/--	Slender-spined allthorn is a perennial deciduous shrub that occurs in riparian woodlands and desert scrub at elevations that range from 492 to 1,673 feet (150–510 meters). This species blooms May through July and has been reported approximately 1.2 miles (2 kilometers) from the project site. Slender-spined allthorn was not observed during the March 2014 surveys.
<i>Lanius ludovicianus</i> Loggerhead shrike	--/CSSC/ --/--	Loggerhead shrike occurs in grasslands and open habitat with scattered shrubs and trees. This species has been noted as being commonly encountered and detected in 24 places during surveys in April 2012 (MCAS Yuma 2014). Loggerhead shrikes were observed in the target and LZ survey area during the March 2014 surveys.
<p><i>Status:</i>                      Federal Status (determined by USFWS): FT Federally Listed Threatened                      State Status (determined by California Department of Fish and Wildlife): CSSC California species of special concern; ST California State-Listed Threatened                      California Rare Plant Rank (CRPR [California Native Plant Society [CNPS] / California Department of Fish and Wildlife [CDFW])  <i>Threat Ranks:</i>                      List 1B: Plants rare, threatened, or endangered in California and elsewhere. 0.3-Not very threatened in California                      List 2: Plants rare, threatened, or endangered in California but more common elsewhere. 0.2-Fairly threatened in California                      BLM-S: Bureau of Land Management (BLM) Sensitive</p>		

17 **Migratory Bird Treaty Act Species**

18 The MBTA is an international agreement among the United States, Canada, and Mexico that protects  
 19 designated species of birds. Specifically, the MBTA controls the taking of these birds, their nests, eggs,  
 20 parts, or products. Virtually all birds are protected under the MBTA, with only a few exceptions, such as the  
 21 California quail. A complete list of all species of all migratory birds protected by the MBTA is in the

1 *Federal Register* (50 CFR 10.13). EO 13186, *Responsibilities of Federal Agencies to Protect Migratory*  
 2 *Birds*, directs federal agencies to take actions to further implement the MBTA. A Memorandum of  
 3 Understanding (MOU) between the DoD and the USFWS was developed under EO 13186 to promote the  
 4 conservation of migratory birds. Fourteen bird species designated a Species of Management Concern under  
 5 the MBTA have the potential to occur in the project vicinity and are shown in Table 3.3-6 (USFWS 2011b).

**Table 3.3-6. Avian Species of Concern under the MBTA  
 Known to Occur or Potentially Occurring in the Project Vicinity**

<i>Common Name</i>	<i>Scientific Name</i>
<b>VULTURES, HAWKS, FALCONS</b>	
Peregrine falcon	<i>Falco peregrinus</i>
Golden eagle	<i>Aquila chrysaetos</i>
<b>PIGEONS</b>	
White-winged dove	<i>Zenaida asiatica</i>
Mourning dove	<i>Zenaida macroura</i>
<b>SWIFTS, HUMMINGBIRDS</b>	
Costa's hummingbird	<i>Calypte costae</i>
Allen's hummingbird	<i>Selasphorus sasin</i>
<b>WOODPECKERS</b>	
Gilded flicker	<i>Colaptes chrysoides</i>
Gila woodpecker	<i>Melanerpes uropygialis</i>
<b>SONGBIRDS</b>	
<b>SHRIKES, VIREOS</b>	
Loggerhead shrike	<i>Lanius ludovicianus</i>
<b>LARKS, WRENS, GNATCATCHERS</b>	
Verdin	<i>Auriparus flaviceps</i>
Cactus wren	<i>Campylorhynchus brunneicapillus</i>
<b>FLYCATCHERS</b>	
Phainopepla	<i>Phainopepla nitens</i>
<b>SPARROWS</b>	
Sage sparrow	<i>Amphispiza belli</i>
Black-chinned sparrow	<i>Spizella atrogularis</i>

### 6 **3.3.1.6 Wetlands and Other Waters of the U.S.**

7 Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the  
 8 Federal Water Pollution Control Act, more commonly referred to as the CWA  
 9 (33 USC 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to  
 10 regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of  
 11 the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in  
 12 interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter  
 13 approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology,  
 14 and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under  
 15 normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

16 Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill  
 17 material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic

### 3.3 Biological Resources

---

1 environment or if the nation's waters would be significantly degraded. The Section 404 permit program is  
2 run by the USACE with oversight by the EPA.

3 The Regional Water Quality Control Boards (RWQCBs) were established under the CWA to oversee  
4 water quality. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality  
5 certifications for activities that may result in a discharge to waters of the U.S. This is most frequently  
6 required in tandem with a Section 404 permit request.

#### 7 *Wetlands*

8 *Wetlands* are defined under CWA regulations (33 CFR 328) as:

9 "those areas that are inundated or saturated by surface or groundwater at a frequency and duration  
10 sufficient to support, and that under normal circumstances do support, a prevalence of vegetation  
11 typically adapted to life in saturated soil conditions. Wetlands generally include swamp, marshes,  
12 bogs, and similar areas."

13 Three parameters are used in the field to delineate jurisdictional wetlands: wetland hydrology (inundation  
14 or soil saturation during at least five percent of the growing season, which is 18 days in southern  
15 California), hydric soils (soils classified as hydric or that exhibit characteristics of a reducing  
16 environment), and hydrophytic vegetation (more than 50 percent of dominant plants are adapted to  
17 anaerobic soil conditions).

18 The NWI database, which identified potential wetlands in landscapes based on remote sensing methods,  
19 indicates that approximately 1,647 acres of potential wetlands occur in the CMAGR, including one acre  
20 of freshwater emergent wetland, eight acres of freshwater forested/shrub wetland, and 1,638 acres of  
21 riverine wetland (mostly wash woodlands). The NWI findings have not been validated by ground surveys  
22 and the NWI database overestimates the occurrences of wetlands within the CMAGR.

23 A jurisdictional determination survey of the project site was conducted on 12–14 March 2014.  
24 No potentially jurisdictional wetlands are located within the project site.

#### 25 *Waters of the U.S.*

#### 26 REGULATORY GUIDANCE

27 Waters of the U.S. refers to areas under the USACE's jurisdiction pursuant to Section 404 of the CWA,  
28 and are generally delineated in the field by the presence of an OHWM. However, guidance on the  
29 technical question of legal jurisdiction has changed recently, and will likely continue to change based on  
30 further regulatory instruction and/or new legal precedent. The current EPA guidance on defining the  
31 waters of the U.S. (EPA and USACE 2008) asserts jurisdiction over TNW, wetlands adjacent to TNW,  
32 non-navigable tributaries of TNW that are relatively permanent, and wetlands that directly abut such  
33 tributaries. Guidance further states that:

34 "the agencies will assert jurisdiction over non-navigable, not relatively permanent tributaries and  
35 their adjacent wetlands where such tributaries and wetlands have a significant nexus to traditional  
36 navigable water. A significant nexus analysis will assess the flow characteristics and functions of  
37 the tributary itself and the functions performed by any wetlands adjacent to the tributary to  
38 determine if they significantly affect the chemical, physical and biological integrity of  
39 downstream traditional navigable waters."

1 The new EPA/USACE draft proposed rule (EPA and USACE 2014) provides more clarity on the question  
2 of significant nexus. It proposes that:

3 “all waters that meet the proposed definition of tributary are ‘waters of the United States’ by rule,  
4 unless excluded under section (b), because tributaries and the ecological functions they provide,  
5 alone or in combination with other tributaries in the watershed, significantly affect the chemical,  
6 physical, and biological integrity of traditional navigable waters, interstate waters, and the  
7 territorial seas” (EPA and USACE 2014, pg. 54).

8 Therefore, any channel with OHWM that is a tributary to a TNW has a significant nexus. They further  
9 clarify that if there is a break in the tributary but the upstream areas have bed and banks with OHWM, it  
10 would still be considered a tributary.

11 Surface water drainages in the CMAGR are divided by the Chocolate Mountains. On the western slopes,  
12 runoff drains toward the Salton Sea. Runoff from the east slope of the northern Chocolate Mountains  
13 drains to Salt Creek Wash which, in turn, drains to the Salton Sea. Runoff from the west slope of the  
14 central portion of the Chocolate Mountains drains to the Salton Sea by way of several mountain  
15 passes, the largest of which is Iris Wash. Runoff from the eastern slope of the southern portion of the  
16 Chocolate Mountains drains northeast into Arroyo Seco and Milpitas washes and then southeast to the  
17 Colorado River, a TNW.

18 There are numerous unnamed ephemeral washes and gullies within the project site and in the project  
19 vicinity. A jurisdictional determination survey of the project site was conducted on 12–14 March 2014.  
20 Several ephemeral surface water drainages supporting OHWMs are located within the project site. During  
21 the survey, the floodplain and channels were walked throughout the survey area to develop an  
22 understanding of the site characteristics. Cross-sections were selected that were perpendicular to channels  
23 that represented overall site characteristics. The hydrogeomorphic surfaces for each transect were mapped  
24 and data were taken on the evidence of water flow, sediment texture, and vegetation. Using aerial  
25 photography and the field data collected for the OHWM, potential non-wetland waters of the U.S. were  
26 mapped within the survey area (Figure 3.3-3). Three drainages traversing the LZ have bed and bank and  
27 OHWM characteristics. These drainages converge south of the LZ, abutting an elongated ridge that  
28 emanates from the valley floor. The combined drainage then follows the perimeter of the ridge to the  
29 target area, located immediately southeast of the ridge. Within the target area, the drainage disperses into  
30 two separate ephemeral drainages that traverse the target area in east and southeast directions. These two  
31 drainages are delineated as blue-line streams on the United States Geological Survey (USGS) 7.5 Minute  
32 Pegleg Well topographic map and had clear bed and banks and OHWM when evaluated in the field.  
33 However, on the USGS maps the drainages terminate less than 0.5 mile southeast of the target area. In  
34 this area, these drainages would be classified as a distributary alluvial fan flow system (Lichvar and  
35 McColley 2008). Based on review of the aerial photography, while larger channels diverge into smaller,  
36 less-defined channels without clear bed and bank, the flow from the target area would still connect  
37 through these smaller, dispersed channels across the alluvial piedmont to the large east-northeast-trending  
38 wash, which connects downstream to Milipitas Wash and eventually the Colorado River. Potential  
39 non-wetland waters of the U.S. cover 2 acres (2,700 linear feet) in the LZ survey area and 23.7 acres  
40 (13,100 linear feet) in the target survey area.

41 Based on the stated guidance, ephemeral surface water drainages supporting OHWMs within the  
42 CMAGR are considered waters of the U.S. Outside the CMAGR, the Salton Sea is a TNW, and its  
43 tributaries (New River and Alamo River) are waters of the U.S. As noted above, final determinations  
44 regarding jurisdiction would be subject to verification and approval by the USACE.

3.3 Biological Resources

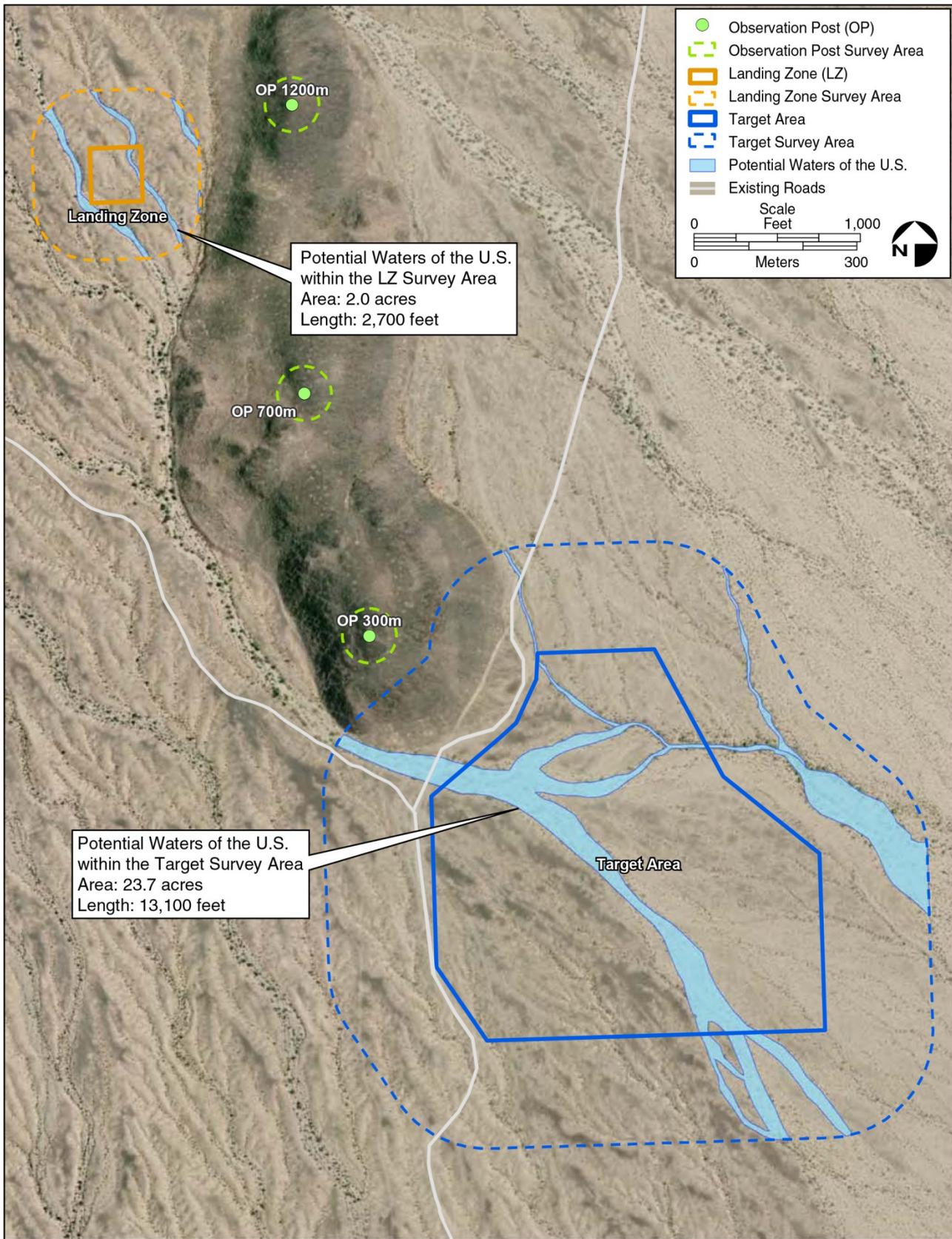


Figure 3.3-3. Potential Waters of the U.S. in the Project Vicinity

### 3.3.2 Environmental Consequences

Several types of impacts on biological resources could result from establishment of the proposed action, including permanent and temporary impacts, as well as direct and indirect impacts. The definitions of the four types of impacts to biological resources are described below.

- *Direct Impact.* Any alteration, disturbance, or destruction of biological resources (specifically through vegetation/habitat removal) that would result from project-related activities and occur at the same time and place as the action is considered a direct effect.
- *Indirect Impact.* As a result of project-related activities, biological resources may also be impacted in an indirect manner. Indirect impacts are defined as those impacts that are caused by, or would result from, a proposed project and are later in time, but are still reasonably certain to occur.
- *Temporary Impact.* Any impact to biological resources that is considered reversible can be viewed as temporary. Examples include the generation of fugitive dust during construction or the removal of plant communities for construction activities and subsequent revegetation of the affected area.
- *Permanent Impact.* Any impacts that result in the irreversible removal of biological resources are considered permanent. Examples include construction a building or permanent road on an area containing biological resources.

#### 3.3.2.1 Alternative 1

##### *Vegetation*

Alternative 1 would result in direct and indirect as well as temporary and permanent impacts to vegetation within the project site (Table 3.3-7). These impacts would be concentrated in and limited principally to the target area, LZ, and OPs. Within the target area, ordnance delivery would disturb existing vegetation communities and prevent vegetation from re-establishing and, over time, altering the community structure and function. Ordnance delivery would be directed at specific pre-positioned targets within the target area, consisting primarily of high-caliber artillery fire; however, other precision-guided weapons would also be employed. As a result, disturbance would likely be focused in specific areas within the target area. Over time, however, plant densities and diversity would be modified, resulting in permanent impacts to this area.

**Table 3.3-7. Vegetation Communities Potentially Disturbed under Alternative 1**

<i>Vegetation Community</i>	<i>Temporary Impact (acres)</i>	<i>Permanent Impact (acres)</i>		
	<i>Observation Post</i>	<i>Target Area</i>	<i>Landing Zone</i>	<i>Observation Post</i>
113: Creosote, brittlebush, fagonia on stony hills	5.8	0.0	0.0	<0.01
661: Creosote, fagonia, brittlebush on treeless mountains	0.0	2.2	0.0	0.0
810: Palo verde, wolfberry, ironwood along washes with beds greater than five meters wide	0.0	16.2	0.1	0.0
171: Creosote on pavements with less than five percent cover of palo verde and ironwood	0.0	58.6	0.8	0.0
214: Bursage, creosote, wolfberry, ironwood along washes with beds less than five meters wide	0.0	21.6	1.5	0.0

1 Use of the proposed LZ and OPs would result in moderate levels of disturbance to vegetation present  
2 within these areas of the project site. Training would result in the disturbance of loose surface debris and  
3 soil within the LZ caused by downdraft and outwash from moving rotors (collectively known as rotor  
4 wash) in the vicinity of takeoffs, landings, and near-surface hovering. Rotor wash would result in dust and  
5 debris being scattered and becoming airborne in the immediate vicinity of the aircraft, although the extent  
6 of this dust disturbance would depend on a variety of factors, including local soil characteristics,  
7 topography, presence of vegetation, and weather conditions. Dust deposits may affect essential plant  
8 processes, including photosynthesis, respiration, and transpiration; dust also may allow the penetration of  
9 phytotoxic gaseous pollutants to nearby vegetation and may cause increased incidence of plant pests and  
10 diseases (Farmer 1993). Indirect impacts would be localized to the existing disturbed and/or open areas of  
11 the LZ and, to a lesser extent, adjacent vegetation; any limited herbaceous vegetation (e.g., grasses and  
12 forbs) would be quick to recover. Moreover, any localized effect on the soil at the LZ may be obscured by  
13 blowing dust and sand associated with naturally occurring high winds (dust storms or sandstorms) that  
14 may occur numerous times per year. Training activity at the OP would not likely result in uprooting of  
15 plants or permanently affecting the distribution of plant communities or associated habitats. Vegetation in  
16 these areas is expected to persist, although likely in a somewhat diminished and disturbed state. Under  
17 Alternative 1, aircraft would only land within the designated LZ, which has sparse vegetation surrounded  
18 by desert pavement, and no landings would occur in undisturbed, undeveloped sites outside of the  
19 proposed LZ.

20 Alternative 1 would also result in direct and indirect impacts to existing vegetation communities through  
21 the potential introduction of invasive non-native plant species where ground surfaces are disturbed and  
22 existing native vegetation has been damaged or destroyed, providing suitable habitat for non-natives.

#### 23 *General Wildlife and Wildlife Habitat*

24 Alternative 1 would result in direct, permanent (e.g., ordnance delivery) and temporary (e.g., range  
25 maintenance activities) impacts to general wildlife species within the target area, including mortality of  
26 common, less-mobile wildlife species such as lizards and rodents; destruction of the burrows of small  
27 mammals and reptiles; and disturbance of existing vegetation within the project site that provides habitat for  
28 general wildlife species and prevent it from re-establishing. In addition, Alternative 1 would result in indirect,  
29 permanent (ordnance delivery, aircraft landings, use of OPs) and temporary (range maintenance activities)  
30 impacts to general wildlife species in the project vicinity due to increased noise, dust, and human activity.  
31 The noise associated with use of any aircraft within undeveloped areas has the potential to induce a startle  
32 response by wildlife, possibly causing injury from trampling or uncontrolled running or flight, increased  
33 expenditure of energy during critical periods, and decreased amount of time spent on life functions such as  
34 seeking food or mates. The aircraft noise could also temporarily mask auditory signals from other animals  
35 and/or otherwise reduce the protection and stability of young animals (Manci *et al.* 1988). Effects related to  
36 dust generation and wind velocities from rotor wash and effects from noise would diminish with distance  
37 from the aircraft. Wind velocities associated with rotor wash would diminish substantially beyond 100 feet  
38 from the aircraft (Bell Boeing 2008). However, the density of wildlife at LZs at any given time would be  
39 very low due to the lack of vegetation and vast exposed desert pavement areas.

40 Although Alternative 1 would result in direct and indirect impacts to general wildlife species, several  
41 factors mitigate these impacts. First, the area affected is localized and comprises only a small portion of  
42 the CMAGR. Second, the number of individuals that could be lost due to project activities would be  
43 inconsequential to the populations of general wildlife species present on the CMAGR. Third, the overall  
44 quality of wildlife habitat in the project vicinity is high and would provide habitat for mobile species to  
45 relocate to on a daily and/or seasonal basis to secure forage or pray, find water, locate cover, and/or  
46 complete various live cycle stages. Therefore, direct and indirect impacts to general wildlife species  
47 would not be significant.

## 1 *Special Status Species*

### 2 FEDERALLY LISTED SPECIES

3 For the purpose of this analysis, a significant impact would occur if consultation with the USFWS shows  
4 that the preferred alternative is likely to jeopardize the continued existence of a listed species.

5 There are no federally listed plant species known to occur on or in the immediate vicinity of the project  
6 site for Alternative 1 (Leidos 2014a). Therefore, no impacts on federally listed plant species would occur  
7 from implementation of Alternative 1.

8 Alternative 1 would result in direct and indirect impacts to the desert tortoise and designated critical  
9 habitat for this species. The proposed Target Complex Invader would primarily be used as part of the  
10 WTI training exercises, which occur twice per year in April and September; however, all training lands  
11 within the CMAGR could be used at any time. A 200-meter desert tortoise survey buffer was added to the  
12 proposed target area boundary, which equates to the 99.9999 percent safety arc (i.e., WDZ). All target  
13 effects would occur within this buffer (including misses), although reasonably the effects would decrease  
14 with distance from the specific target arrays. Typical impacts associated with use of the proposed target  
15 area, OPs, and LZ would be similar to those evaluated in the 1996 Biological Opinion (BO) for the  
16 military use of the CMAGR (1-6-95-F-40; USFWS 1996) (Appendix C), as described below, and all  
17 components of the action would occur within the existing boundary and training framework of  
18 the CMAGR.

19 Desert tortoises are typically underground during the hottest parts of summer to conserve water, and they  
20 brumate (go into a hibernation-like state during very cold weather) underground during most of the period  
21 between November and March. From March to October, desert tortoises emerge to forage in the morning  
22 and late afternoon, with most activity occurring in March and April (USGS 2004). Because of the limited  
23 period of activity above ground, operations during evening and nighttime hours and during the winter  
24 months would result in fewer direct losses or injuries to tortoises. The impacts are described below for the  
25 target area, LZ, and OPs.

26 For the purposes of this analysis, impacts are considered to be significant if the proposed action were  
27 likely to jeopardize the continued existence of the desert tortoise, or result in the adverse modification to  
28 critical habitat.

### 29 *Target Area*

30 Direct impacts to desert tortoise associated with the proposed target area include direct mortality and  
31 destruction of burrows (if present on site) resulting from ordnance delivery or injury or mortality from  
32 vehicles and habitat degradation. The potential for mortality or injury would be highest during training  
33 exercises that occur during the peak season for desert tortoise activity (i.e., when tortoises are most likely to  
34 be above-ground). Potential mortality or injury to tortoises from bombing is likely to be proportional to  
35 the densities of tortoises at and in the vicinity of the target area. Although ordnance delivery could occur  
36 anywhere within the safety arc (i.e., misses), the focus of the training and thus resulting disturbance  
37 potential would be at or near specific target locations, and the likelihood of direct impact from ordnance  
38 would decrease with distance from the targets.

39 In addition to ordnance use, vehicles that use existing maintenance roads or travel off-road to retrieve  
40 ordnance debris during operational range clearance and target maintenance activities may kill or injure  
41 tortoises; however, the level of use is not expected to substantially increase beyond currently authorized  
42 levels. Tortoises that are removed from harm's way in impact zones and off maintenance roads may be

### 3.3 Biological Resources

---

1 affected directly by physical stress of the relocation, and by associated stresses, such as lack of knowledge  
2 of cover sites, nest sites, foraging areas, and loss of bodily fluid.

3 Finally, proposed activities would over time degrade desert tortoise habitat within the target area. Impact  
4 craters and debris from bombs and other ordnance have the potential to damage individual native plants,  
5 disturb surface materials, and increase the potential for weed invasion. Further, removal of native plants  
6 increases exposure for individual tortoises, which could become more vulnerable to predation  
7 (particularly those species attracted to human activity such as common ravens or coyotes [*Canis latrans*])  
8 and thermal stress in the absence of shrub cover. In addition, an increase in weed establishment could  
9 permanently modify existing plant communities.

10 Indirect impacts to desert tortoise could occur through: degradation of foraging and burrow sites and  
11 dispersal areas; potential increased predation levels by ravens and other desert tortoise predators  
12 associated with increased human activity; and potential replacement of native vegetation by non-native  
13 plant species and increased wildfires. Desert tortoise may also be indirectly impacted from noise and  
14 ground disturbance generated from: 1) gunnery or explosive ordnance activities; and 2) low-level  
15 subsonic or supersonic aircraft flights. Ground disturbance could remove or affect growth of food plants  
16 or affect suitability for burrowing. Noise could elicit temporary behavioral responses by tortoises or could  
17 possibly affect hearing thresholds. Specific effects of increase noise levels on desert tortoise are not  
18 known. However, noise and vibration generated by off-highway vehicles have caused physical damage  
19 and behavioral modification in other desert species, such as the desert kangaroo rat (*Dipodomys deserti*),  
20 Mojave fringe-toed lizard (*Uma scoparia*), and Couch's spadefoot toad (*Scaphiopus couchi*) (Brattstrom  
21 and Bondoello 1983). It is likely that desert tortoises are also subjected to some physical damage and  
22 stress from these impacts.

23 Soil compaction from vehicle traffic and ordnance explosions could make it difficult or impossible to dig  
24 burrows within the target area and could also make it difficult for desert tortoises to practice geophagy, in  
25 which soils are eaten perhaps to augment the tortoise's calcium ingestion (Marlow and Tollestrup 1982).  
26 Dust generation due to ordnance delivery and use of the LZ would have a minor adverse impact on plant  
27 productivity and may result in a minor reduction in available forage and cover.

28 Although uncommon in desert areas, wildfires caused by ordnance may degrade or destroy desert tortoise  
29 habitat by removing food sources and may kill or injure individuals. Many of the dominant desert species  
30 are slow to recover from fire, and larger fires could fragment desert tortoise habitat, and recurrent fires  
31 may reduce the abundance and diversity of native forbs, which are the major food source of the desert  
32 tortoise. Proliferation of non-native plant species after an exceptional rainy season caused fires to spread  
33 through large areas of critical habitat in the Mojave Desert during 2005 but there was no burning recorded  
34 in the Colorado Desert during that time (USFWS 2008, Table 1), presumably because of the sparseness  
35 and small stature of weedy grasses between the shrubs in the Colorado Desert. Based on the type of  
36 training activities proposed and the low level of available fuel, the potential for fire is considered low.

37 According to 2014 USFWS protocol surveys and calculations, eight tortoises may occur in the 279.6-acre  
38 project area including buffers. Based on a ratio of areas, the 99-acre target area, where harassment, injury,  
39 or mortality from ordnance delivery would be most likely to occur, would contain approximately  
40 2.8 tortoises. The 153.5-acre target buffer area may contain an additional 4.4 tortoises. The target plus  
41 buffer area would contain greater than 99.9 percent of impacting ordnance (including misses). Tortoises  
42 in the buffer area would be much less likely to be affected by ordnance delivery than tortoises in the  
43 target area, which would sustain the majority of the ordnance hits, because almost all munitions impact  
44 within 30 meters of an individual target due to the precision munitions being employed, which equates to  
45 approximately 10 percent of the target area. Given that less than 10 percent of the target area would be  
46 directly disturbed by munitions, it is assumed that there could be a 10 percent chance of one tortoise being

1 injured during the year. Therefore, take in the form of injury, mortality, or harassment (such as tortoise  
2 being removed from the impact zones or roads and habitat disturbance that could significantly impair  
3 essential tortoise behavioral patterns) could amount to one per year.

4 Tortoises in the 153.5-acre target area buffer could be affected by vehicles and personnel accessing the  
5 target area twice annually for target repair and cleanup of debris and unexploded ordnance. The buffer  
6 area could also be affected very infrequently by ordnance (misses) giving a small potential for  
7 injury/mortality and incrementally reducing resources available. Of the 4.4 tortoises estimated to be in the  
8 target area buffer we assume that there is a one percent or less chance of injury or mortality to a tortoise  
9 in any given year. Therefore, take in the form of injury, mortality, or harassment from vehicles and  
10 personnel accessing the site is expected to be fewer than one per year in the buffer.

11 Existing tortoise management policies, programs, and stipulations currently implemented at the CMAGR  
12 would be applied to Alternative 1 as identified in Appendix B, including tortoise education program,  
13 reporting of take, off-road vehicle prohibitions, vehicle inspections, pet prohibitions, waste management,  
14 clearance surveys, annual tortoise surveys and reporting, monitoring during target placement, and UXO  
15 clearance activities. These measures, in addition to measures outlined in the BO issued by the USFWS  
16 (Appendix C), would be implemented to ensure that the take and direct and indirect impacts to the desert  
17 tortoise are minimized.

#### 18 *Landing Zone*

19 Direct impacts to desert tortoise could occur within the LZ due to mortality of individuals during aircraft  
20 landings if on site during training operations with the inability to escape or crushing of burrows. Although  
21 WTI would occur in April during the highest activity period, individual aircraft operations have a low  
22 probability of directly affecting tortoises given the sparse distribution of individual tortoises (estimated in  
23 2014 to be 18.4 individuals per square mile or 7.1 tortoises per square kilometer) and the small  
24 “footprint” of an aircraft LZ.

25 The proposed action would result in temporary increases in noise, which could induce a startle response,  
26 downdraft, dust, and visual presence of aircraft during landing, low-altitude hovering, and takeoff  
27 operations. Individual tortoises in the vicinity of landing or hovering aircraft may assume a protective  
28 posture by temporarily withdrawing their head and limbs into their shell and remaining still, much as they  
29 do when a human or predator approaches. This posture provides protection from physical injury and  
30 minimizes exposure to blowing dust and high-frequency sound. Water balance and energy balance would  
31 be unaffected. For effects to occur, an individual would need to be within 350 feet of a landing exercise at  
32 the time of touchdown or takeoff. Increased dust and disturbance, noise, and activity would be temporary  
33 and occur over a small scale, with the majority of use occurring twice per year (April and September)  
34 over individual two-week periods. The tortoise is expected to resume normal activities following  
35 departure of the aircraft from the immediate area of the tortoise. Any effects on desert tortoises from  
36 aircraft overflight and landings within the LZ would be low and not likely to result in a permanent change  
37 to the habitat for the species. Measures described above for the target area would also be implemented  
38 within the LZ as appropriate to ensure that the take and direct and indirect impacts to the desert tortoise  
39 are minimized.

40 In the LZ and buffer, survey data estimate that 0.78 (i.e., one) desert tortoise may occur in this area. The  
41 potential for direct injury or death also is expected to be low (probably a one percent or less chance of  
42 injury or mortality to a tortoise in any given year). In the LZ, take in the form of harassment may affect  
43 up to two tortoises in response to rotor wash or foot traffic, assuming that there would be up to eight  
44 landings/takeoffs per year (four in Spring WTI and four in Fall WTI).

1 *Observation Posts*

2 The use and resulting potential effects at proposed OPs would be low compared to other proposed project  
3 components. Marines would travel over land on foot to the OPs from the LZ and position themselves as  
4 part of the training exercises. Individual desert tortoises are unlikely to be affected; however, burrows  
5 could be crushed and limited ground disturbance would occur along the ingress and egress paths to the  
6 OPs, similar to any pedestrian activity in desert tortoise habitat. Given the small overall footprint  
7 associated with the OPs and buffer, the types of activities proposed and the potential for injury or  
8 mortality is low and the degradation of habitat would occur on a very small scale. It is unlikely that any  
9 takes would result from use of the OPs.

10 *Summary of Proposed Take*

11 Activities associated with Alternative 1 would be subject to consultation with the USFWS under  
12 Section 7 of the ESA. The annual incidental take of tortoises in the form of injury/mortality is estimated  
13 to be less than one (0.32) per year and up to six in the form of harassment. The BO (1-6-95-F-40; USFWS  
14 1996) exempts take of 11 tortoises injured/killed and 112 tortoises harassed annually, across the  
15 CMAGR. No take has been reported/identified in recent years at the CMAGR, and there is no evidence  
16 that the current take has exceeded the 1996 BO allowance. Thus, the small incremental amount of  
17 estimated take associated with the proposed project is not likely to increase the potential take within the  
18 CMAGR to a level which exceeds the take limits of the 1996 BO.

19 *Critical Habitat*

20 For the purpose of this analysis, a significant impact would occur if consultation with the USFWS shows  
21 that the preferred alternative is likely to result in the destruction or adverse modification of designated  
22 critical habitat for the desert tortoise.

23 Approximately 40 percent of the CMAGR currently overlaps with designated critical habitat for desert  
24 tortoise, including the project site. The approximate acreage of disturbed desert tortoise critical habitat  
25 from current activities at the CMAGR is less than 93,000 acres. This is a relatively small fraction  
26 (0.14 percent) of the overall acreage of critical habitat within the Chuckwalla Critical Habitat Unit. Of the  
27 187,046 acres of critical habitat on the CMAGR, an estimated 2,095 acres are occupied by target areas  
28 and an additional 161 acres are occupied by forward arming and refueling points (USFWS 2008).  
29 Therefore, even with implementation of the proposed action, which is localized within an area less than  
30 280 acres including buffers (0.1 percent of the critical habitat on CMAGR), sufficient space remains to  
31 support viable populations within the Chuckwalla Critical Habitat Unit and to provide for movement,  
32 dispersal, and gene flow.

33 The 1996 BO issued by the USFWS (Appendix C) for military activities at the CMAGR determined that  
34 these activities were not likely to result in the significant destruction or adverse modification of  
35 designated critical habitat for desert tortoise. In aggregate, military use within the CMAGR has caused  
36 only low to negligible levels of habitat disturbance. Restricted public access due to military training use  
37 can also provide important conservation benefits to desert tortoise compared to other land uses because of  
38 the restrictions on development and public use.

39 Local direct impacts to designated critical habitat from Alternative 1 would include physical disturbance  
40 to the ground surfaces and vegetation communities. The type of disturbance associated with military  
41 training is focused on a small area and is infrequent in nature, primarily coinciding with the biannual WTI  
42 in April and September. Although disturbance and human-caused mortality could occur, the scale of  
43 disturbance would be small and focused on a small area, and the net conservation of tortoise habitat

1 resulting from military land use designation remains. Therefore, even with implementation of Alternative  
2 1, sufficient habitat for desert tortoise within critical habitat at the CMAGR is protected from disturbance  
3 and human-caused mortality.

4 The establishment of the target area would not physically remove any habitat; however, some degradation  
5 would occur primarily from ordnance delivery, operational range clearance, and target maintenance  
6 activities and the associated disturbance of surface materials. Impact craters and debris from bombs and  
7 other ordnance have the potential to locally remove or alter the plant composition. However, consistent  
8 with similar military-type operations in the CMAGR and elsewhere, effects would be localized.  
9 Therefore, even with implementation of the proposed action, sufficient quality and quantity of forage  
10 species and the proper soil conditions to provide for the growth of the species occurs throughout the  
11 Chuckwalla Critical Habitat Unit. In addition, suitable substrates for the desert tortoise within the  
12 Chuckwalla Critical Habitat Unit would not be substantially altered as a result of the proposed action.

13 Alternative 1 would affect designated critical habitat. However, because project effects on habitat would  
14 be confined to a small and very localized area (less than 280 acres including safety/survey buffers), it  
15 would not appreciably diminish the value of critical habitat for both the survival and recovery of the  
16 desert tortoise and therefore would not result in the adverse modification of critical habitat (within the  
17 1,020,600-acre Chuckwalla Critical Habitat Unit). Therefore, Alternative 1 would not be likely to result in  
18 destruction or adverse modification of critical habitat.

#### 19 OTHER SPECIAL STATUS SPECIES

20 Impacts to other special status species (i.e., Munz's cholla, slender-spined allthorn, and loggerhead  
21 shrike) would be similar to those described above for general wildlife and for the desert tortoise.  
22 Implementation of the measures described for desert tortoises and provided in Appendix B would avoid  
23 and/or minimize impacts to other special status species. Therefore, no significant impacts to other special  
24 status would occur.

#### 25 MIGRATORY BIRD TREATY ACT SPECIES

26 The project site supports suitable habitat for migratory bird species, including 14 species designated as  
27 species of concern under MBTA. Alternative 1 would result in the permanent alteration of  
28 approximately 100 acres of vegetation as a result of the operation of Target Complex Invader. Due to the  
29 small amount of area (less than one percent of the total CMAGR) that would be disturbed and the large  
30 amount of suitable habitat in the project vicinity, MBTA species would be expected to utilize suitable  
31 habitat that lies adjacent to the project site. Therefore, no significant direct impacts to populations of  
32 migratory birds, including species of concern, listed under the MBTA would occur.

33 Permanent, direct impacts to MBTA species as a result of bird aircraft strikes have the potential to occur  
34 at the project site. However, this potential is very low, as only two documented strikes have occurred in  
35 the past 17 years (Sellars, personal communication). Low-level aircraft operations in the project area  
36 would be consistent with existing operations elsewhere in the CMAGR. Therefore, no significant direct  
37 impact to populations of migratory birds, including species of concern, listed under the MBTA would  
38 occur as a result of bird aircraft strikes.

39 Temporary, indirect impacts to MBTA species may occur within habitat adjacent to the project site due to  
40 an increase in dust, noise, or other disturbances related to operation of Target Complex Invader. Impacts  
41 to MBTA species would be similar to those described above for general bird species. The potential for use  
42 of Target Complex Invader to adversely modify behavior of MBTA species is unlikely, particularly

1 because of the close proximity to and the large amount of suitable habitat in the project vicinity.  
2 Therefore, Alternative 1 would not result in significant impacts to MBTA species.

3 *Wetlands and Other Waters of the U.S.*

4 No wetlands were recorded within the project site. Several drainages located within the project site (target  
5 area and LZ) are assumed to be waters of the U.S. However, final determinations regarding jurisdiction  
6 would be subject to verification and approval by the USACE. Within the target area, targets would be  
7 placed outside of waters of the U.S. In addition, the use of precision-guided (i.e., GPS-guided) ordnance  
8 directed by ground-based forward air controllers located at the OPs would minimize the potential for the  
9 alteration of drainage features due to ordnance delivery and operational range clearance. Within the LZ,  
10 no vegetation clearing or grubbing, and no grading is proposed. In addition, rotary and tilt-rotor aircraft  
11 would not land within drainage features. Therefore, Alternative 1 would not result in significant impacts  
12 to waters of the U.S.

13 Alternative 1 has the potential to result in direct and indirect impacts to water quality within the drainage  
14 features and surface waters. These impacts are discussed in Section 3.8, Water Resources, and include  
15 disruption of soil structure; damage to or loss of vegetation, soil crust, and desert pavement; and soil  
16 compaction that could lead to a local increase in runoff, erosion, and sedimentation. However, these  
17 features are naturally unstable because of the dynamic properties of desert climate, including monsoonal  
18 rain events and major short-term flooding events. Any localized impacts to these features from project  
19 activities would not realistically translate to a reduction of functions and values available in downstream  
20 TNWs, relatively permanent waters, or other water bodies due to distance and capacity of the system to  
21 carry impacted surface water or sediment. Thus, impacts would not be significant.

22 **3.3.2.2 No-Action Alternative**

23 For the No-Action Alternative, the proposed action would not occur. Therefore, there would be no change  
24 in existing conditions. The CMAGR would continue to operate under the existing 1996 BO, which  
25 provides for an annual take of 11 tortoises injured/killed and 112 harassed. Therefore, no impacts to  
26 biological resources would occur.

## 3.4 Cultural Resources

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

Historic properties are defined in the federal regulations outlining Section 106 of the National Historic Preservation Act (NHPA), as amended [54 USC §300101 *et seq.*], 36 CFR 800, as prehistoric and historic sites, buildings, structures, districts, or objects listed or eligible for listing on the National Register of Historic Places (NRHP), as well as artifacts, records, and remains related to such properties. Compliance with Section 106 of the NHPA, which directs federal agencies to take into account the effect of a federal undertaking on a historic property, is outlined in the Advisory Council on Historic Preservation's regulations, *Protection of Historic Properties* (36 CFR Part 800). A traditional cultural property can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

In order to be eligible for the NRHP, a property must possess integrity of location, design, setting, workmanship, feeling, and association, and meet the criteria for evaluation in at least one area of significance as defined by the *Secretary of the Interior's Standards for Evaluation* (36 CFR 60):

- a. associated with events that have made a significant contribution to the broad patterns of American history; or
- b. associated with the lives of persons significant in our past; or
- c. embody the distinctive characteristic of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant or distinguishable entity whose components may lack individual distinction; or
- d. have yielded, or may likely yield, information important in prehistory or history.

Once the NRHP-eligibility of the properties has been determined, the federal agency must assess the effects that the undertaking or proposed action may have on any historic properties (i.e., finding of effect). Through consultation with federally recognized tribes who assert ancestral ties to the area, the federal agency attempts to identify any traditional cultural properties and sacred sites that may be affected by the undertaking. The agency then seeks concurrence from the State Historic Preservation Officer (SHPO) on their determinations and findings.

### 3.4.1 Affected Environment

The affected environment for cultural resources is based on the establishment of the area of potential effects (APE) of an undertaking, through consultation with SHPO. An APE is defined in 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist." The APE, and therefore the affected environment, for the proposed action includes the 99-acre target area plus a 656-foot (200-meter) buffer, the 2.4-acre LZ plus a 350-foot (107-meter) buffer, and 5.7 acres for the three OPs with 164-foot (50-meter) buffers, for a total of approximately 280 acres.

The affected environment for the proposed action includes the buffers around the project components to provide a limit of potential ground disturbance. This includes metal fragments and dirt/rock debris being

1 dispersed as a result of ordnance detonation at or near the targets (for the proposed target area), from  
2 hovering and landing aircraft that could cause dust and debris to be scattered and/or become airborne  
3 from aircraft rotor wash (for the LZ), and from minor ground disturbance due to use by ground troops  
4 (for the OPs).

### 5 **3.4.1.1 Prehistoric and Historic Setting**

6 The following discussion of prehistory and history of the Colorado Desert region of California is  
7 condensed from the overview in the *Integrated Cultural Resources Management Plan for the Chocolate*  
8 *Mountain Aerial Gunnery Range, California* (MCAS Yuma 2010).

#### 9 *Regional Prehistory*

10 The regional prehistory is divided into the Paleo-Indian (or Early), Archaic, and Late Prehistoric periods.

11 The Paleo-Indian period ranges from approximately 12,000 Before Christ (BC) to 5000 BC. It is  
12 represented by an artifact assemblage known as the San Dieguito complex that consists almost entirely of  
13 flaked stone tools associated with a hunting and gathering economy, including the hunting of big game.

14 The Archaic period ranges from 5000 BC to Anno Domini (AD) 700. It is a period generally  
15 characterized as a time when regional adaptations became well established within diverse local  
16 conditions, but is not well represented in the Colorado Desert region. Potential causes for the paucity of  
17 Archaic-period sites in the region include climatic conditions unfavorable to human exploitation and  
18 occupation, or destruction or obscuration of sites by later natural or human processes.

19 The Late Prehistoric period in the Colorado Desert is represented by the Patayan I cultural complex,  
20 which dates roughly from AD 700 to the historic period. This period is characterized by marked changes  
21 in human settlement patterns, economic system, and the artifact assemblage. Artifacts typically  
22 encountered from this period include paddle and anvil ceramics and small projectile points indicative of  
23 adoption of the bow and arrow. Subsistence included floodplain horticulture featuring maize, beans,  
24 squash, and other crops, possibly introduced from peoples to the south in what is now Mexico  
25 (MCAS Yuma 2010).

#### 26 *History of the CMAGR Area*

27 As early as 1539, the Spanish began to explore parts of California, and were the first Europeans to venture  
28 into the region surrounding the Chocolate Mountain Range. Spanish exploration for the next 200 years  
29 was intermittent in this area as it was considered remote and difficult to access. In the late 1700s, various  
30 Spanish expeditions led by Father Francisco Garcés (1771), Pedro Fages (1772), and Captain Juan  
31 Bautista de Anza (1774) established overland routes, opening up the region to travel, but the desert  
32 conditions were still too harsh for Euro-American settlement.

33 Development in the Colorado Desert was largely dependent on transportation and water. With the  
34 discovery of gold in California in 1848, an influx of immigrants from the east into California led to the  
35 establishment of wagon roads, a mail route, and a stage line along de Anza's route. By 1862, a route to  
36 Yuma from Dos Palmas along the east side of the Salton Basin ran south of the Chocolate Mountains, and  
37 an overland stage route from San Bernardino to La Paz skirted the northern edges of the Chocolate  
38 Mountains. By 1868, the Castle Dome cutoff route through the Chocolate Mountains was in use.  
39 Transportation to and through the area advanced further with the 1872 construction of the Southern  
40 Pacific Railroad from Los Angeles to present-day Indio and Yuma, and the 1881 linking of the Southern  
41 Pacific and the Atchison, Topeka, and Santa Fe railroads. The railroads provided a quick and easy access

1 to the Chocolate Mountains region for mining, which was at its peak between 1890 and 1910, and again  
2 during the depression era of the 1930s.

3 A canal along the old Alamo River channel was completed in 1901, carrying water from the Colorado  
4 River to what was then renamed the Imperial Valley, providing a viable water source to support  
5 agricultural development and settlement. Populations increased in the area, and El Centro was established  
6 in 1905. The Salton Sea was inadvertently created when attempts to cut a new channel to relieve silting of  
7 the Alamo Canal led to the accidental flow of the Colorado River into the Imperial Valley between  
8 1904 and 1907.

9 Military training use of the CMAGR region began during World War II when General George S.  
10 Patton, Jr., established the Desert Training Center/California-Arizona Maneuver Area, encompassing  
11 18,000 square miles in southeastern California, western Arizona, and southern Nevada, for training in  
12 desert survival and warfare. In addition to Army's use of the area, the Navy established Camp Dunlap as  
13 a Marine artillery training base, which expanded to include portions of the Chocolate Mountains and  
14 later became the CMAGR. The CMAGR land and airspace have served as a bombing range since  
15 World War II.

#### 16 **3.4.1.2 Cultural Resources within the Affected Environment**

17 A Class III intensive cultural resources field survey of the 280-acre APE was conducted in March 2014.  
18 Approximately 8.9 acres were composed of slopes greater than 30 percent and were deemed too  
19 dangerous for pedestrian survey. A re-survey of approximately 2 acres of the APE (within the proposed  
20 Target Area and buffer) was conducted in March 2015.

##### 21 *Traditional Cultural Resources*

22 Through consultation with tribes who assert ancestral ties to the CMAGR region, it has been established  
23 that there are no known traditional cultural resources within the affected environment.

##### 24 *Historic Buildings and Structures*

25 There are no historic buildings or structures located in or immediately adjacent to the APE.

##### 26 *Archaeological Resources*

27 The cultural resources survey resulted in the identification and recording of five new archaeological sites  
28 and 26 isolated occurrences within the APE (Leidos 2014c).

29 All five archaeological sites are within the buffer areas outside of the target area footprint. No  
30 archaeological sites were located within the footprint of the target area, LZ, or OPs. The sites date to the  
31 historic period and consist of rock features and scattered artifacts such as cans and bottles. No structural  
32 remains of any kind were observed at the sites. The paucity of artifacts and their approximate dates of  
33 manufacture suggest that these locations were only occupied for short spans of time, likely during the  
34 1950s or 1960s (Leidos 2014c).

35 The archaeological sites contain limited information and do not have sufficient data content or potential to  
36 yield data to meet the criteria for inclusion in the NRHP. MCAS Yuma has determined that the sites are  
37 not eligible for the NRHP and received SHPO concurrence on those determinations in accordance with  
38 36 CFR 800.

1 The isolated occurrences consist of steel cans, glass bottles, one prehistoric core/scrapper, and several rock  
2 cairns or features. The 26 isolated occurrences are not eligible for the NRHP, nor are they considered  
3 traditional cultural resources by any of the tribes with whom MCAS Yuma consults. Therefore, they are  
4 not considered cultural resources under NEPA.

### 5 **3.4.2 Environmental Consequences**

6 The regulations implementing Section 106 of the NHPA require that federal agencies take into account  
7 the effects (impacts) of their undertakings (proposed actions) on historic properties (cultural resources).  
8 Impacts on cultural resources are considered significant if a historic property, as defined in 36 CFR 60.4,  
9 would be physically damaged or altered, would be isolated from the context considered significant, or  
10 would be affected by project elements that would be out of character with the significant property or  
11 its setting.

#### 12 **3.4.2.1 Alternative 1**

13 Alternative 1 could potentially impact cultural resources in the APE during several phases of activity:  
14 installation of the steel target replicas within the target area; utilization of the training area for  
15 air-to-ground delivery of conventional live high-explosive ordnance; target repair that would be  
16 conducted a minimum of two times per year; operational range clearance that would occur every one to  
17 two years; use of the LZ for takeoff and landing operations by rotary-wing and tilt-rotor aircraft; and use  
18 of the OPs by ground-based forward air controllers during training activities. None of the archaeological  
19 sites identified in the APE are determined eligible for listing on the NRHP. Since none of the resources  
20 brought to light through surveys and consultation are considered cultural resources as defined above, no  
21 significant impacts to cultural resources would occur.

22 In compliance with Section 106 of the NHPA and 36 CFR 800, MCAS Yuma has initiated consultation  
23 with relevant tribal governments and the SHPO regarding the NRHP-eligibility determinations of the five  
24 archaeological sites located within the APE. MCAS Yuma has made a finding of no historic properties  
25 affected (no significant impacts) by the proposed undertaking (Alternative 1). SHPO concurred with  
26 MCAS Yuma's determinations and finding in a letter dated 18 November 2014 (Appendix D).

27 In the event that previously unrecorded or unevaluated cultural resources are encountered during ground  
28 disturbing activities associated with Alternative 1, MCAS Yuma would manage these resources in  
29 accordance with the NHPA and other federal and state laws, Marine Corps and DoD regulations and  
30 instructions, and DoD American Indian and Alaska Native Policy.

#### 31 **3.4.2.2 No-Action Alternative**

32 Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and three  
33 OPs, would not be constructed and training would continue under current conditions. Existing conditions  
34 would remain as described in Section 3.4.1. Therefore, no impacts to cultural resources would occur  
35 under the No-Action Alternative.

## 3.5 Hazardous Materials and Waste

### 3.5.1 Affected Environment

The affected environment for hazardous materials and waste is related to the past and present hazardous materials use and hazardous waste disposal practices within the project site. Hazardous materials are defined as chemical substances that pose a substantial hazard to human health or the environment. Hazardous materials include hazardous substances, extremely hazardous substances, hazardous chemicals, and toxic chemicals. In general, these materials pose hazards because of their quantity, concentration, physical, chemical, or infectious characteristics. Hazardous materials may be found in the form of a solid, liquid, semi-solid, or contained gaseous material that alone or in combination may: 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA), which provides the EPA with authority to control hazardous waste from “cradle-to-grave,” including its generation, transportation, treatment, storage, and disposal. RCRA identifies hazardous sites with lists of specific wastes, and categorizes wastes that exhibit a specific characteristic (e.g., ignitable, corrosive, reactive, or toxic) in accordance with RCRA-specific definitions. The EPA uses the term “hazardous substance” for chemicals that, if released into the environment above a certain amount, must be reported and, depending on the threat to the environment, federal involvement in handling the incident can be authorized under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Also, as part of the MCAS Yuma Range Management, the CMAGR is required to adhere to environmental requirements enforced by the California EPA.

#### 3.5.1.1 Installation Restoration Program Sites

In the early 1980s, the DoN Installation Restoration Program (IRP) was established to search for, investigate, and remediate DoN sites that were contaminated with chemicals and hazardous substances in the years before safe handling and waste management practices were established. In addition, sites with munitions and explosives-related contaminants were investigated. These investigations were completed in compliance with CERCLA. In 1992, the DoN conducted a Preliminary Assessment of the CMAGR to look for signs of hazardous waste disposal or spills. Seven sites were identified, two of which were eliminated. Site 2, an open burn site, consisting of burnt scrap metal, was eliminated because it was located in an active live-fire range and the DoD prohibits sampling due to safety concerns at active ranges. Site 3 consisted of a diesel fuel spill area, approximately 10 feet in diameter, beneath a 500-gallon aboveground storage tank. This site was re-classified as a RCRA site, as petroleum spills are addressed under that program. None of the five remaining IRP sites are located in proximity to the project site for Target Complex Invader (DoN 2003, 2013).

#### 3.5.1.2 Management of Hazardous Materials and Wastes and Petroleum, Oil, and Lubricants

Hazardous materials at the CMAGR mainly occur from use of ordnance during training exercises, storage and use of fuel, storage of weapons cleaning solvents and rags for disposal, and the storage and use of miscellaneous material such as petroleum, oils, and lubricants (POLs); adhesives; sealants; battery terminal cleaners and protectors; brake fluid; brake cleaner; antifreeze; spray paint; degreasers; and routine cleaning products. For most of the training activities, munitions are obtained at MCAS Yuma, where the training flights originate. The Environmental Director has the overall responsibility for management of the hazardous materials and waste program at the CMAGR. The Compliance Director

1 is second in command for this program. Fuel storage tanks are located only within the Camp  
2 Billy Machen area. There is one 180-day hazardous waste accumulation area on the range, where  
3 petroleum-contaminated soil generated during training missions is stored. No satellite accumulation areas  
4 for hazardous wastes are located on the CMAGR, nor are there any open burn/detonation sites for  
5 munitions treatment. According to the Environmental Director, no Notice of Violation has been issued  
6 against the range (DoN 2013).

7 A Spill Prevention, Control, and Countermeasures (SPCC) Plan and Stormwater Management Plan have  
8 been developed for the CMAGR. In addition, standard operating procedures have been developed to  
9 govern the use, storage, and accountability of ammunition and explosives, including Naval Sea Systems  
10 Command (NAVSEA) OP 5 Volume 1 Seventh Revision (*Ammunition and Explosives Safety Ashore*),  
11 MCO P8020.1 (*Marine Corps Ammunition Management and Explosive Safety*), and NAVSEA SW020-  
12 AG-SAF-10 (*Transportation Safety Handbook for Ammunition Explosives and Related Hazardous*  
13 *Material*). Detailed daily records are kept of all range ordnance expenditure events, including the event  
14 date, type of activity (i.e., range training, open burning, open detonation, tamped detonation, and range  
15 clearance), type of munitions expended, and the quantity expended. This information is used to evaluate  
16 the usage in anticipation of preparation of annual Toxic Chemical Reporting submittals and for tracking  
17 information regarding the release of munitions constituents from the range to off-range areas (DoN 2013).

18 The project site is not currently used for specific, range-related training operations. Therefore, hazardous  
19 materials, hazardous wastes, and POLs are not currently used and managed at the project site. However,  
20 the site contains the remnants of munitions, indicating that it has been used occasionally since the  
21 World War II period. Ordnance observed during a biological and archaeological survey included a few  
22 scattered practice bombs, up to approximately 30 inches long and 18 inches in diameter, and machine gun  
23 bullet clips. Some of the practice bombs contained spotting charges (Leidos 2014c).

### 24 3.5.1.3 Toxic Chemical Reporting

25 The Emergency Planning and Community Right-to-Know Act (EPCRA), or Title III of the Superfund  
26 Amendments and Reauthorization Act of 1986, acknowledges the public's right to information  
27 concerning toxic chemical usage and releases to the environment. Facilities that are required to submit  
28 a Toxic Release Inventory (TRI) Report, under EPCRA Section 313, must complete a Form R annually  
29 for each listed toxic chemical that meets the reporting criteria. Reports documenting range activities  
30 (i.e., ordnance expenditures) and non-range activities are required. For the most recent reporting year  
31 (2012), six toxic chemicals associated with operations at the CMAGR exceeded the EPCRA Section 313  
32 thresholds, including aluminum (fume or dust), copper, lead, lead compounds, nitroglycerin, phosphorus  
33 (yellow or white), and naphthalene (DoN 2013; EPA 2012).

### 34 3.5.1.4 Range Environmental Vulnerability Assessment

35 Hazardous constituents contained in munitions delivered to the CMAGR air-to-ground ranges are usually  
36 consumed in a series of chemical reactions that occur upon detonation. Occasionally the munitions do not  
37 fully detonate or do not detonate at all. If EOD teams do not recover these undetonated munitions and the  
38 munitions case is damaged or eventually corrodes, the munitions constituents could be available to the  
39 environment and cause an unacceptable risk to human health and the environment (DoN 2013).

40 The Marine Corps Range Environmental Vulnerability Assessment (REVA) program meets the  
41 requirements of the current DoD Directive 4715.11, *Environmental and Explosives Safety Management*  
42 *on Operational Ranges within the United States*, and DoD Instruction 4715.14, *Operational Range*  
43 *Assessments*. The purpose of the REVA program is to identify whether there is a release or substantial  
44 threat of a release of munitions constituents from the operational range, or range complex, to off-range

1 areas. This is accomplished through an assessment of operational areas, development of a conceptual site  
2 model, and (as applicable) screening-level fate and transport modeling of the REVA indicator munitions  
3 constituents (DoN 2013).

4 To evaluate whether there is a release or substantial threat of a release of munitions constituents from the  
5 operational ranges on the CMAGR, an initial REVA was conducted in 2008. The REVA was conducted  
6 for the Yuma Training Range Complex, which includes the CMAGR. Loading rates for munitions  
7 constituents were calculated for 35 range areas. The loading rates at 12 of the sites in the CMAGR North  
8 and all 15 of the sites in CMAGR South were found to be potentially significant, based on a threshold of  
9 greater than 1 milligram per square meter per year. However, because surface water in the washes  
10 draining from the CMAGR is not used as a potable water source, as an irrigation water source, or for any  
11 contact activity, either on-range or off-range, no human or ecological receptors were identified in the  
12 baseline. The pathways evaluated for REVA include both surface water and groundwater. Since no  
13 complete exposure pathway was identified, it was assumed that there was no potential risk to human  
14 health or the environment. All operational ranges will be reassessed at a minimum every five years to  
15 ensure both long-term sustainability to the ranges and protectiveness to human health and the  
16 environment (DoN 2013). The REVA is currently in the process of being updated.

17 The project site is not currently utilized as a training range. Therefore, it was not included in  
18 the 2008 REVA.

### 19 **3.5.2 Environmental Consequences**

#### 20 **3.5.2.1 Alternative 1**

21 No IRP sites are located in the vicinity of the project site; therefore, no impacts are anticipated with  
22 respect to training in existing contaminated areas.

23 Military vehicles would access the project site during target maintenance and operational range clearance.  
24 Whenever vehicles are in use, there is the possibility of spills or leaks of POLs. POLs may be used within  
25 the project site to fuel and service vehicles during target maintenance and operational range clearance.  
26 Similar to other ranges at the CMAGR, military personnel accessing the Target Complex Invader would  
27 take precautions against spills and leaks by laying large plastic tarps on the ground on which vehicles can  
28 park. The existing SPCC Plan for CMAGR would be updated to include activities at Target Complex  
29 Invader. Personnel would manage transport and use of minor amounts of petroleum products and  
30 hazardous substances, such as vehicle fuel, oil, lubricants, antifreeze, brake fluid, and transmission fluid,  
31 in accordance with existing range rules and in compliance with the updated CMAGR SPCC Plan. As a  
32 result, Alternative 1 would not result in significant impacts from the storage, use, and disposal of  
33 petroleum products, hazardous materials, and hazardous waste and no mitigation is required.

34 The target area would be used for air-to-ground delivery of conventional high-explosive ordnance. Limits  
35 have been established for drops of such live ordnance. The limits are defined as the maximum net  
36 explosive weight of all the ordnance combined that can be dropped per aircraft pass. Range activities  
37 at Target Complex Invader would be included in the annual CMAGR TRI Report as described in  
38 Appendix B. In accordance with EPCRA, the report would include a summary of ordnance expenditures  
39 and a list of toxic chemicals that meet reporting criteria used at Target Complex Invader. Such  
40 information would inform the public of munitions-related hazardous materials use on the range.  
41 Therefore, Alternative 1 would not result in significant impacts from toxic chemical usage and releases to  
42 the environment.

1 Based on the existing REVA, surface water in the washes draining from the CMAGR is not used as a  
2 potable water source, as an irrigation water source, or for any contact activity, either on-range or  
3 off-range; therefore, no human or ecological receptors are present. Since no complete exposure pathway  
4 was identified, it was assumed that there was no potential risk to human health and the environment  
5 (DoN 2013). However, operational range clearance would be conducted every one to two years to remove  
6 and destroy military munitions, including UXO and munitions debris, which would minimize the  
7 potential munitions contaminants to impact water resources. As such, Alternative 1 would not result in the  
8 unacceptable risk to human health and the environment from munitions-related hazardous waste.  
9 Therefore, no significant impacts would occur and no mitigation is required.

10 Water quality could be impacted by the metals and explosive fillers used in ordnance used at Target  
11 Complex Invader. Section 3.8 evaluates the impacts of Alternative 1 on water quality.

12 **3.5.2.2 No-Action Alternative**

13 Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and  
14 three OPs, would not be constructed and training would continue under current conditions. Therefore,  
15 no impacts related to hazardous materials and waste would occur.

## 3.6 Geological Resources

### 3.6.1 Affected Environment

The CMAGR is located in the Colorado Desert and Salton Sea geomorphic provinces of California, which are situated in the southwestern portion of the Basin and Range physiographic province. This province is characterized by generally steep, subparallel, discontinuous mountain ranges that trend northwest to southeast, separated by broad, gently sloping to nearly flat, deep alluvial basins. The CMAGR is characterized by the rugged Chocolate Mountains, a range that rises abruptly from broad alluvium-filled desert basins. These mountains are largely tilted fault blocks comprised of the Southern California batholith and Orocopia Schist of Mesozoic age (about 65 to 250 million years ago), overlain by thrust fragments of an older Precambrian metamorphic complex, with minor Tertiary (about 3 to 65 million years ago) volcanic and intrusive rocks. Pliocene (about 3 to 5 million years ago) and Pleistocene (about 2 to 3 million years ago) older alluvium occur within the adjacent basins to the east and west (DoN 2013).

Late Pliocene, Pleistocene, and Holocene alluvial deposits overlie most of the older formations in the Chocolate Mountains and form dissected piedmont slopes around the CMAGR. These alluvial fan and terrace deposits have been informally designated as older, intermediate, and younger alluvium, based on their stratigraphic relationships (DoN 2013). The proposed LZ and target area are underlain by older alluvium along the eastern flank of the Chocolate Mountains, adjacent to an elongated, north-south-trending ridge of volcanic bedrock that emanates from the surrounding alluvial fan deposits (California Geological Survey 2010). The proposed OPs are located on top of the bedrock ridge.

The topography at the LZ is relatively flat to gently sloping to the southeast, with undulating, northwest-southeast-trending, low-lying drainages traversing the site. The southwestern portion of the target area similarly consists of undulating topography, comprised of northwest-southeast-trending ephemeral drainages, while the northeastern portion of the target area is relatively flat, with two east-southeast-trending ephemeral washes traversing the area.

Surficial soils overlying onsite alluvium consists of the Rillito-Gunsight series, which is characterized by very deep, sandy and rocky loams prone to high to extremely high water erosion and high to very high wind erosion (NRCS 2011; DoN 2013). However, based on a site visit conducted in March 2014 associated with the archaeological and biological resource surveys, desert pavement covers the surface across much of the project site. Desert pavement acts as a type of surface armor that reduces wind and water erosion.

### 3.6.2 Environmental Consequences

#### 3.6.2.1 Alternative 1

Alternative 1 would include establishment and use of a target area, LZ, and three OPs. Existing roads in the CMAGR would be used to provide access to the project site for support training and range maintenance activities. A new unimproved service road would be established within the proposed target area. The conditions of the roads vary from graded dirt surfaces to four-wheel-drive tracks; none are paved. No cut-and-fill grading or changes in topography would occur. Other than minor ground disturbance for the new service road within the target area and associated with the OPs on the rocky ridge overlying the training area, no grading or construction would occur in association with Alternative 1.

The primary direct impact from Alternative 1 would be the disturbance of range soils and loss of soil crusts (i.e., protective desert pavement) by military surface use. Soils in the target area would be affected

1 by the impact of live ordnance, weapons debris, and chemical or explosive residue during training and  
2 during target repair and operational range clearance activities. Soils within the LZ would be affected  
3 during landing of rotary-wing and tilt-rotor aircraft, and soils within the OPs would be disturbed during  
4 uses by ground-based forward air controllers during training exercises.

5 Alternative 1 would result in indirect impacts to soils from wind and water erosion, increased runoff and  
6 sediment loads, and downstream sedimentation along ephemeral drainages. The potential for erosion  
7 would be slightly increased over existing conditions. However, onsite soils are highly susceptible to wind  
8 and water erosion. Therefore, minor ground disturbances associated with Alternative 1 activities could  
9 exacerbate erosion during precipitation events. Rainfall in the CMAGR is very limited and no perennial  
10 surface waters are located on or adjacent to Target Complex Invader. The nearest downstream perennial  
11 surface water body is the Colorado River, located approximately 30 miles to the east of the project site.  
12 Although ephemeral drainages are present in the target area and LZ, these drainages typically only  
13 contain water during flash flood events. Therefore, it is unlikely that significant water quality impacts  
14 associated with erosion-induced sedimentation would result from the proposed operations under  
15 Alternative 1. Additionally, compliance with measures set forth within the INRMP and Integrated  
16 Cultural Resources Management Plan (ICRMP) related to soil conservation would minimize  
17 erosion/sedimentation impacts. Therefore, Alternative 1 would not result in significant impacts as a result  
18 of soil disturbance and erosion.

19 See Section 3.8 for additional discussion related to water quality.

20 **3.6.2.2 No-Action Alternative**

21 Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and  
22 three OPs, would not be constructed and training would continue under current conditions. Existing  
23 conditions would remain as described in Section 3.6.1. Therefore, no impacts to geological resources  
24 would occur under the No-Action Alternative.

## 3.7 Public Health and Safety

### 3.7.1 Affected Environment

The Marine Corps practices Operational Risk Management as outlined in OPNAVINST 3500.39A and MCO 3500.27A. Requirements outlined in these documents provide a process for maintaining readiness in peacetime and achieving success in combat while safeguarding people and resources. Station Order 3710.6, *Range and Training Area Standard Operating Procedures*, defines the procedures and regulations for Commands using range and training areas managed by MCAS Yuma, including the CMAGR. Station Order 3710.6 specifies individual responsibilities; gives descriptions of available training ranges; provides instructions on how to schedule training activities; and defines safety regulations for all live-fire, maneuver, and air operations within the CMAGR. MCAS Yuma is responsible for range safety and management at the CMAGR, including the project site.

#### 3.7.1.1 Aviation Safety

As described in Section 3.1, the FAA is responsible for ensuring safe and efficient use of airspace by military and civilian aircraft and supporting national defense requirements. To meet these requirements, the FAA has established regulations for airspace safety, developed airspace management guidelines, implemented a civil-military common system, and coordinated cooperative activities between the FAA and DoD. R-2507S is special use airspace that overlies the project site and provides exclusive-use for military aircraft operations and serves to contain and segregate training and other military activities that could be hazardous to non-participating aircraft. MCAS Yuma schedules all activities within R-2507S and has adopted specific air safety rules as directed in Station Order 3710.6.

As stipulated in Station Order 3710.6 and MCO 3550.1, the Range Control Officer must approve entry of personnel or aircraft into range training areas, including the project site. MCAS Yuma has very descriptive directions for how all entry and exit procedures must be handled. In the event any civilian or unauthorized aircraft enter the controlled airspace at the CMAGR, MCAS Yuma has strict procedures to immediately halt all military training missions until the violating aircraft can be safely removed from the restricted airspace.

Prior to any air-to-ground bombing (i.e., live ordnance drop), pilots are required to confirm that all targets are clear before engagement with the target. As part of the MCAS Yuma Air Safety Program, WDZs are established to ensure that munitions (for inert ordnance) and hazardous fragments (for live ordnance) are contained within the range boundary. The DoD standard for risk acceptance on all ranges is a 99.9999 percent level of containment, which means the probability of munitions and hazardous fragments escaping the containment area is one in a million. This level of containment is designed to protect public health and safety.

#### 3.7.1.2 Ground Safety

##### *Unauthorized Entry*

Public access to the CMAGR, including the project site, is prohibited at all times. A series of warning signs are posted along the perimeter of the CMAGR warning unauthorized persons not to enter. MCAS Yuma and federal and local law enforcement officials periodically conduct patrols along the range boundaries. Access control gates are located at the entry and exit points to the CMAGR. In addition, MCAS Yuma has conducted public outreach programs to raise awareness of the military training mission at the CMAGR and the associated dangers and hazards.

1 Unauthorized persons are not allowed on the CMAGR at any time; however, there are occasions where  
2 trespassers or “scrappers” access the range despite the strict controls on access. Scrappers are individuals  
3 who enter the CMAGR without authorization for the purpose of removing salvageable materials  
4 (e.g., aluminum, brass, and copper). Standard procedure is to immediately notify Range Control with a  
5 description of the trespassers and their location. In accordance with Station Order 3710.6, any live-fire  
6 exercises are terminated until the trespassers have been removed from the range.

### 7 *Ordnance and Unexploded Ordnance Safety*

8 EOD is routinely performed to neutralize hazards from live-fire training exercises. Although periodic  
9 sweeps are conducted at the CMAGR, UXO can be found throughout the range. Unexploded bombs,  
10 rockets, and other types of ordnance may be encountered on the ground surface or partially or fully  
11 buried; these munitions have the potential to explode. CMAGR EOD personnel provide 24-hour first  
12 response assistance for MCAS Yuma and federal, state, and local authorities.

## 13 **3.7.2 Environmental Consequences**

### 14 **3.7.2.1 Alternative 1**

#### 15 *Aviation Safety*

16 Alternative 1 would not result in new aircraft training activities; existing WTI training within the  
17 CMAGR, which occurs twice per year in April and September, would be redistributed to the project site.  
18 Any of the fixed-wing, rotary-wing, and tilt-rotor aircraft that currently operate within the CMAGR could  
19 utilize the project site for air-to-ground delivery with conventional live high-explosive ordnance. The use  
20 of ordnance would be consistent with Station Order 3710.6, *Range and Training Area Standard*  
21 *Operating Procedures*, and would be coordinated with the Range Control Officer at MCAS Yuma. In  
22 addition, a WDZ would be established around the target areas for each type of aircraft, weapon, and  
23 method of weapon delivery to ensure containment of munitions within designated WDZs. Similar to  
24 existing operations, air safety rules would continue to contain and segregate activities that would be  
25 hazardous to non-participating aircraft within the CMAGR and adjacent and associated operating areas.  
26 Therefore, implementation of Alternative 1 would not have a significant impact to aviation safety.

#### 27 *Ground Safety*

28 Alternative 1 would include the insertion and extraction of ground troops at the proposed LZ,  
29 ground-based forward air controller training at the proposed OPs, the delivery of live ordnance within the  
30 target area, target repair/maintenance activities, and operational range clearance. The proposed LZ and  
31 OPs would be located outside the WDZs and would support ground-based forward air controller training  
32 activities. Minimal equipment would be used by the forward air controllers and no ground disturbance  
33 would occur at the OPs. Proposed target repairs/maintenance would be conducted subsequent to WTI  
34 training. A sweep for UXO would occur prior to target repairs and maintenance activities. Under this  
35 alternative, operational range clearance (e.g., removal of munitions, including UXO, and debris from  
36 range targets) would occur every one to two years to enhance operational range safety. Proposed range  
37 clearance activities would be conducted in accordance with the CMAGR’s existing operational range  
38 clearance program.

39 Other potential risks are related to the trespass of unauthorized persons onto the project site and the  
40 possibility of injury to trespassers and/or users of the Target Complex Invader. The public is not  
41 authorized to enter the project site for safety reasons, and no change in this policy would occur under  
42 Alternative 1. Potential risks associated with unauthorized entry are controlled by military protocols that

1 restrict access and facilitate routine clearance of ranges to destroy and remove munitions that may pose  
2 potential risks to and/or attract scrappers and other trespassers, and procedures to abort live-fire exercises  
3 when range trespassers are detected. Therefore, implementation of Alternative 1 would not have a  
4 significant impact to ground safety.

5 **3.7.2.2 No-Action Alternative**

6 Under the No-Action Alternative, establishment of the Target Complex Invader, including the target area,  
7 LZ, and three OPs, would not occur and training would continue under current conditions. Existing  
8 conditions would remain as described in Section 3.7.1. Therefore, no impacts to public health and safety  
9 would occur under the No-Action Alternative.

**This page intentionally left blank.**

## 3.8 Water Resources

### 3.8.1 Affected Environment

#### 3.8.1.1 Surface Water

Target Complex Invader is located at the CMAGR, within the Imperial Reservoir regional watershed and on a more local level, within the Arroyo Seco-Upper Milipitas Wash watershed. Surface water is extremely scarce at the CMAGR. There are no naturally occurring perennial surface water features on the range, where annual average precipitation ranges from 3 to 5 inches and the pan evaporation rate is 100 inches per year, resulting in a net water loss of up to 95 inches. Surface water is derived from infrequent rainfall events that produce localized flash-flooding and temporary surface water runoff, especially during thunderstorms in the monsoon seasons. The combination of low precipitation and high evaporation prevents surface water from infiltrating deeply into CMAGR soils. Therefore, most of the year, the desert washes on the CMAGR are dry. Groundwater locally discharges from bedrock joints and fractures, but is also ephemeral and short lived, occurring only after a rainfall event (MCAS Yuma 2014; DoN 2013).

Although the Target Complex Invader does not border directly on any water bodies, there are numerous unnamed ephemeral streams and washes within the project site and in the project vicinity. Two of these drainages traverse the LZ in a southeast direction, with a third southeast-trending drainage located southwest of the LZ. These drainages converge south of the LZ, abutting an elongated ridge that emanates from the valley floor. This drainage follows the perimeter of the ridge to the target area, located immediately southeast of the ridge.

Within the target area, the drainage disperses into three separate ephemeral drainages that traverse the project site in an east and southeast directions. Two of these three drainages are delineated as blue-line streams (i.e., jurisdictional water of the state) on the USGS 7.5 Minute Pegleg Well topographic map and terminate less than 0.5 mile southeast of the target area. The ephemeral washes within the project site were visited during the biological resource surveys conducted in March 2014 (Leidos 2014a). These two washes consist of defined drainages that connect to a large east-northeast-trending wash, which connects downstream to the Milpitas Wash and eventually the Colorado River. The third drainage that traverses the target area is a continuous blue-line stream that also connects with the large east-northeast-trending blue-line wash, previously described.

#### 3.8.1.2 Groundwater

There are currently no active water supply wells on the CMAGR. Target Complex Invader overlies the western portion of the Arroyo Seco Valley Groundwater Basin. The basin is bound by nonwater-bearing rocks of the Chocolate Mountains on the southwest and south; the Chuckawalla and Little Chuckawalla Mountains on the north and northwest; the Little Mule Mountains, Black Hills, and Palo Verde Mountains on the northeast; and the Peter Kane Mountains on the southeast. Groundwater is present within alluvial sediments, which include unconsolidated, Holocene age deposits and underlying unconsolidated to semi-consolidated, Pliocene to Pleistocene age deposits. Recharge to the basin is derived chiefly from the infiltration of runoff through alluvial deposits at the base of the surrounding mountains. Additional recharge may be obtained from subsurface inflow from the Chocolate Valley Groundwater Basin. Natural recharge to the basin is estimated to be about 1,500 acre-feet per year. Depth to groundwater has only been measured in the southern and eastern portions of the basin; therefore, the depth to groundwater beneath the project site is unknown. However, based on regional topography and available groundwater data, regional groundwater flow is to the southeast. There are no currently active water supply wells on the CMAGR and groundwater use beneath the CMAGR is precluded by Public Water Reserve 65. Water for CMAGR activities is transported to the range (California Department of Water Resources 2004; DoN 2013; MCAS Yuma 2014).

1 **3.8.1.3 Water Quality**

2 No known water quality data are available for runoff within or adjacent to the project site. In general,  
3 runoff in uninhabited desert regions, such as the project site and vicinity, is free of man-made pollutants.  
4 However, runoff is typically turbid as a result of erosive scour of underlying soft sediments within washes  
5 and drainages during precipitation events.

6 The character of the groundwater quality varies widely with location; however, the predominant cations  
7 within the Arroyo Seco Valley Groundwater Basin are generally sodium or calcium and the predominant  
8 anions are bicarbonate or chloride. Total dissolved solids (TDS) concentrations in the basin generally  
9 range from about 300 to 900 milligrams per liter (mg/l), although at some locations range from 2,300 to  
10 2,450 mg/l. Elevated fluoride and boron concentrations often occur in conjunction with elevated TDS  
11 concentrations. Fluoride concentrations range from 0.10 to 5.20 mg/l and boron concentrations range  
12 from 0.10 to 5.0 mg/l (California Department of Water Resources 2004; DoN 2013).

13 **3.8.1.4 Floodplains/Flooding**

14 Floodplains are defined as areas with a one percent chance of flooding in any given year. Based on  
15 mapping by the Federal Emergency Management Agency (FEMA) (FEMA 2008), the Target Complex  
16 Invader is located within Zone D, which is an area of undetermined flood risk, where flooding is possible.

17 **3.8.2 Environmental Consequences**

18 **3.8.2.1 Alternative 1**

19 *Surface Water*

20 Several ephemeral drainages traverse the proposed target area and LZ. Alternative 1 would result in direct  
21 impacts to these ephemeral drainages within the target area during live ordnance delivery and operational  
22 range clearance activities and within the LZ as a result of downwash/rotor wash associated with aircraft  
23 landing and takeoffs. These impacts include disruption of soil structure; damage to or loss of vegetation,  
24 soil crust, and desert pavement; and soil compaction that could lead to increased runoff, erosion, and  
25 sedimentation. However, this impact would not significantly alter the drainage pattern within the  
26 ephemeral drainages. Therefore, Alternative 1 would not result in significant impacts to surface waters.

27 *Groundwater*

28 Groundwater resources are not currently used for military operations at the CMAGR and Alternative 1  
29 would not involve the use of groundwater for consumptive or other purposes. As such, Alternative 1  
30 would not result in impacts to groundwater supply. Potential impacts to groundwater quality are described  
31 below under the *Water Quality* section.

32 *Water Quality*

33 Alternative 1 would result in direct and indirect impacts to water quality in ephemeral drainages within  
34 the project site as a result of increased erosion-induced sediment load, sedimentation, and suspended  
35 sediment. In addition, Alternative 1 could result in decreased water quality within the ephemeral  
36 drainages due to the presence of metals and explosive fillers used in the ordnance. Iron, manganese,  
37 copper, molybdenum, lead, nickel, and zinc are found in shell and various projectile components of  
38 ordnance. Areas currently exposed to moderate or complete military surface use are estimated to be about  
39 five percent of the total CMAGR, which minimizes the overall surface water impacts (DoN 2013).

1 However, because the proposed target area would be located well within the CMAGR boundary, and  
2 because of low rainfall, little of the eroded sediment would be expected to be transported off the project  
3 site and increased sediment load in the ephemeral drainages would be unlikely to reach natural off-range  
4 receiving waters (i.e., the Colorado River). The use of ordnance would be consistent with range standard  
5 operating procedures that describe which type of ordnance may be utilized on a given target area. Natural  
6 resources conservation measures outlined in the CMAGR INRMP (MCAS Yuma 2014), including  
7 maintaining “active and thoughtful compliance with the appropriate natural resources law and regulations,  
8 agency guidance, relevant order and binding regulatory opinions,” would be adhered to in an effort to  
9 prevent contaminated surface runoff associated with munitions use. In addition, the toxicity thresholds for  
10 humans and other biological receptors are several magnitudes above the estimated munitions constituent  
11 concentrations reaching the range boundary (Headquarters Marine Corps 2008). Therefore, Alternative 1  
12 would not result in significant water quality impacts to offsite portions of the ephemeral drainages or  
13 off-range receiving waters (i.e., the Colorado River).

14 Measures to reduce the sources of contamination, including range clearance of ordnance fragments and  
15 containment of spilled or leaked fuels, lubricants, coolants, and hydraulic fluids from vehicles, as  
16 discussed in Appendix B would also minimize the potential for impacting distant surface water resources.  
17 Therefore, no significant water quality impacts associated with potential deposition of metals in the  
18 environment by exploded ordnance would occur.

19 See Section 3.6 with respect to erosion-related water quality impacts and Section 3.5 for additional  
20 information pertaining to munitions constituents.

### 21 *Floodplains/Flooding*

22 EO 11988, dated 24 May 1977, and amended by EO 12148 on 20 July 1979, requires agencies to take  
23 actions to reduce risks to human safety and property that may be associated with floods, and to preserve  
24 the natural and beneficial values served by floodplains. In addition, agencies are required to analyze  
25 potential effects of any actions that may be taken in a floodplain, and include requirements outlined in this  
26 order in the planning process. The project site is not located within a designated flood zone. Rather, it is  
27 located within Zone D, an area of undetermined flood risk. No structures would be built as part of  
28 Alternative 1. Therefore, no impacts to floodplains or flooding-related impacts would occur.

### 29 **3.8.2.2 No-Action Alternative**

30 Under the No-Action Alternative, the Target Complex Invader, including the target area, LZ, and three  
31 OPs, would not be constructed and training would continue under current conditions. Existing conditions  
32 would remain as described in Section 3.8.1. Therefore, no impacts to water quality would occur under the  
33 No-Action Alternative.

**This page intentionally left blank.**

## 4 Cumulative Impacts

### 4.1 Introduction

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

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

CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997).

The first step in assessing cumulative effects, therefore, involves identifying and defining the scope of other actions and their interrelationship with the proposed action or alternatives. The scope must consider other projects that coincide with the location and timetable of the proposed action and other actions. Section 4.2 identifies relevant past, present, and reasonably foreseeable future actions, including both military actions in the region as well as other federal and non-federal actions. Projects were selected because they are either similar to the proposed action, large enough to have far reaching effects, or in proximity to the proposed action. Section 4.4 provides an analysis of cumulative impacts for relevant environmental resources, and further defines the ROI and relevant projects for each resource area.

### 4.2 Past, Present, and Reasonably Foreseeable Future Projects Considered in the Cumulative Analysis

Information on past, present, and reasonably foreseeable future projects and their associated anticipated impacts was gathered through a review of available environmental documentation (conducted in March 2014) and in coordination with the Marine Corps. A list of the cumulative projects, summary information, and their associated impacts are presented in Table 4.2-1. The locations of the cumulative projects are shown on Figure 4.2-1.

**Table 4.2-1. Cumulative Project and Associated Anticipated Impacts**

<i>Project Number<sup>1</sup></i>	<i>Project Name</i>	<i>Project Location</i>	<i>Project Description</i>	<i>Project Status</i>	<i>Relevant Areas of Potential Cumulative Impact</i>
1.	Chocolate Mountain Solar Farm Extension	Northwest of Niland	Construction of a 49.9-megawatt (MW) photovoltaic solar power plant.	Conditional use permit obtained (2013).	<ul style="list-style-type: none"> <li>• Impacts to air quality.</li> </ul>
2.	SunPeak Solar Park	Northwest of Niland	Construction of a 23-MW fixed solar photovoltaic system and substation on a 123-acre property.	In operation.	<ul style="list-style-type: none"> <li>• Impacts to air quality.</li> <li>• Beneficial impacts to greenhouse gases (GHGs).</li> </ul>
3.	Infrastructure Improvements at Camp Billy Machen	Near Niland	Utility upgrades, construction of instructional spaces, materials handling and material preparation facilities, and berthing.	Construction planned for 2014.	<ul style="list-style-type: none"> <li>• Potential impacts to desert tortoise.</li> </ul>
4.	Bureau of Land Management (BLM) West Chocolate Mountains Renewable Energy Evaluation Area	Near Niland	Evaluated the suitability of geothermal and solar energy development within the west Chocolate Mountains Renewable Energy Evaluation Area.	Bids for projects being evaluated.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources, including desert tortoise critical habitat.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
5.	Desert Renewable Energy Conservation Plan	Mojave and Colorado deserts, CA	Provide binding, long-term endangered species permit assurances while facilitating review and approval of renewable energy projects.	Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) currently in process.	<ul style="list-style-type: none"> <li>• Impacts to desert tortoise critical habitat and cultural resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
6.	CMAGR Geothermal Well Drilling	CMAGR, northwest of Camp Billy Machen	Drill geophysical test holes to investigate hydrothermal potential at three sites.	In operation.	<ul style="list-style-type: none"> <li>• Potential impacts to desert tortoise.</li> </ul>
7.	CMAGR Land Withdrawal Renewal	CMAGR	BLM withdrawn lands within the CMAGR would continue to be withdrawn and reserved for continued military use.	Final Legislative Environmental Impact Statement (EIS), April 2013. Legislation included in the Fiscal Year 2014 National Defense Authorization Act to transfer administrative jurisdiction of BLM withdrawn lands to the Department of the Navy (DoN), and realign CMAGR boundary to exclude the Bradshaw Trail from the CMAGR.	<ul style="list-style-type: none"> <li>• Biological resources, including desert tortoise critical habitat, water resources, air quality, and cultural resources.</li> </ul>

**Table 4.2-1. Cumulative Project and Associated Anticipated Impacts (continued)**

<b>Project Number<sup>1</sup></b>	<b>Project Name</b>	<b>Project Location</b>	<b>Project Description</b>	<b>Project Status</b>	<b>Relevant Areas of Potential Cumulative Impact</b>
8.	Range Redesign of SWATs 4 and 5	Western Area of CMAGR	Proposed designs to reconfigure existing training ranges.	Draft EA currently in preparation.	<ul style="list-style-type: none"> <li>• Impacts to cultural resources and jurisdictional waters of the U.S. (ephemeral drainages).</li> </ul>
9.	Devers-Palo Verde No. 2 Transmission Line Project	Blythe, CA, and Palm Springs, CA, to Phoenix, AZ	Construction of a new 500/22-kilovolt (kV) Colorado River Substation near Blythe and a new 111-mile 500-kV transmission line between the Southern California Edison Company's Devers Substation near Palm Springs, California, and the new Colorado River Substation.	In operation.	<ul style="list-style-type: none"> <li>• Impacts to biological resources, including desert tortoise, air quality, and water resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
10.	Blythe Solar Power Project	Near Blythe	Construction and operation of a 485-MW solar energy generating facility on 4,138 acres of BLM land. A 230-kV gen-tie line will connect the facility to the Southern California Edison Colorado River Substation, located 5 miles southwest.	Draft EIS has been submitted for public comment (2014).	<ul style="list-style-type: none"> <li>• Impacts to biological resources, including desert tortoise.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
11.	Black Mountain Wind Project <sup>3,4</sup>	Black Mountain south of the CMAGR	Wind energy testing and development for eight meteorological towers on 15,335 acres; approximately 40 acres total footprint for meteorological towers.	Testing right-of-way (ROW) expired in September 2012. BLM is awaiting a Plan of Development (POD) for a 48-65-MW wind energy facility.	<ul style="list-style-type: none"> <li>• Impacts to biological resources, including desert tortoise.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
12.	Black Mountain Wind Project No. 2 <sup>3,4</sup>	Black Valley, near State Route (SR) 78 and Ogilby Road; Imperial County	Wind energy testing and development for three meteorological towers on 11,227 acres; approximately 15 acres total footprint for meteorological towers.	Testing ROW expired August 2013. ROW authorization is pending. BLM is awaiting POD for 129.6- to 180-MW wind energy facility.	<ul style="list-style-type: none"> <li>• Impacts to biological resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>

**Table 4.2-1. Cumulative Project and Associated Anticipated Impacts (continued)**

<b>Project Number<sup>1</sup></b>	<b>Project Name</b>	<b>Project Location</b>	<b>Project Description</b>	<b>Project Status</b>	<b>Relevant Areas of Potential Cumulative Impact</b>
13.	Gold Wind Basin Project <sup>3,4</sup>	East of the Imperial Sand Dunes in the Gold Basin Area of Imperial County	Wind energy testing of 3 meteorological towers. The total ROW would be 8,446 acres.	ROW authorization expires September 2014.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
14.	Ogilby Solar Project <sup>3,4</sup>	West of Ogilby Road, Imperial County	100- to 250-MW concentrating solar thermal tower energy development project on 4,000 acres.	Pending authorization. Updated POD and hydrology report have been received by BLM.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
15.	Milpitas Wind Testing Project <sup>3,5</sup>	Chuckwalla Bench, North Imperial County	5,763-acre ROW authorized for wind energy testing. Project consists of two meteorological towers and one SODAR (sonic detection and ranging) unit.	Authorized by BLM.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
16.	Shavers Valley/ Interstate 10 (I-10) Corridor <sup>4,5</sup>	Riverside County	Solar energy development.	Project pending.	<ul style="list-style-type: none"> <li>• Impacts to air quality, biological resources, and water resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
17.	Green Energy Express Transmission Line Project	West of SR 177 and North of I-10 in Riverside County	70-mile double-circuit 500-kV transmission line and new 500/230-kV substation from near the Eagle Mountain Substation (eastern Riverside County) to southern California.	Project pending.	<ul style="list-style-type: none"> <li>• Impacts to biological resources.</li> </ul>
18.	Desert Southwest Transmission Line Project <sup>4</sup>		118-mile-long 500-kV electrical transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation.	In operation.	<ul style="list-style-type: none"> <li>• Impacts to biological resources.</li> </ul>
19.	RedBluff Substation <sup>4,6</sup>	South of I-10	A 500/220-kV substation near Desert Center with two new parallel transmission line segments to connect the substation to the existing Devers-Palo Verde 500-kV transmission line.	In operation.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources.</li> </ul>

**Table 4.2-1. Cumulative Project and Associated Anticipated Impacts (continued)**

<b>Project Number<sup>1</sup></b>	<b>Project Name</b>	<b>Project Location</b>	<b>Project Description</b>	<b>Project Status</b>	<b>Relevant Areas of Potential Cumulative Impact</b>
20.	Mule Mountain III <sup>7</sup>	Mule Mountains	250-MW solar power tower located on 8,160 acres.	In planning process.	<ul style="list-style-type: none"> <li>• Impacts to air quality, biological resources, and water resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
21.	Sonoran West SEGS <sup>7</sup>	Palo Verde Mesa	540-MW solar power tower located on 12,269 acres.	In planning process.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
22.	Graham Pass <sup>7</sup>	North of the CMAGR	Wind energy testing on 30,855 acres.	In planning process.	<ul style="list-style-type: none"> <li>• Impacts to air quality and biological resources.</li> <li>• Beneficial impacts to GHGs.</li> </ul>
23.	Proposed Establishment of Special Use Airspace Restricted Area R-R2507W	CMAGR	Establishment of restricted airspace over Special Warfare Training Areas (SWATs) 4 and 5.	Final EA, July 2014. FAA to conduct aeronautical study to initiate rulemaking process.	<ul style="list-style-type: none"> <li>• Potential for small increase in bird/bat aircraft strikes.</li> </ul>
<p><i>Notes:</i></p> <p><sup>1</sup> Project numbers correspond to project locations presented on Figure 4.2-1.</p> <p><sup>2</sup> Section 4.4 provides a discussion of which resource areas are analyzed at a cumulative level and why.</p> <p><sup>3</sup> Draft Environmental Impact Report (EIR) for ORNI21 Geothermal Project.</p> <p><sup>4</sup> Final EIR for West Chocolate Mountains Renewable Energy Evaluation Area.</p> <p><sup>5</sup> Final EIR for the Imperial Valley Solar Company 2.</p> <p><sup>6</sup> Southern California Edison Red Bluff Station Website (SCE 2014).</p> <p><sup>7</sup> BLM Renewable Energy Applications Geodatabase (BLM 2014).</p>					

4 Cumulative Impacts

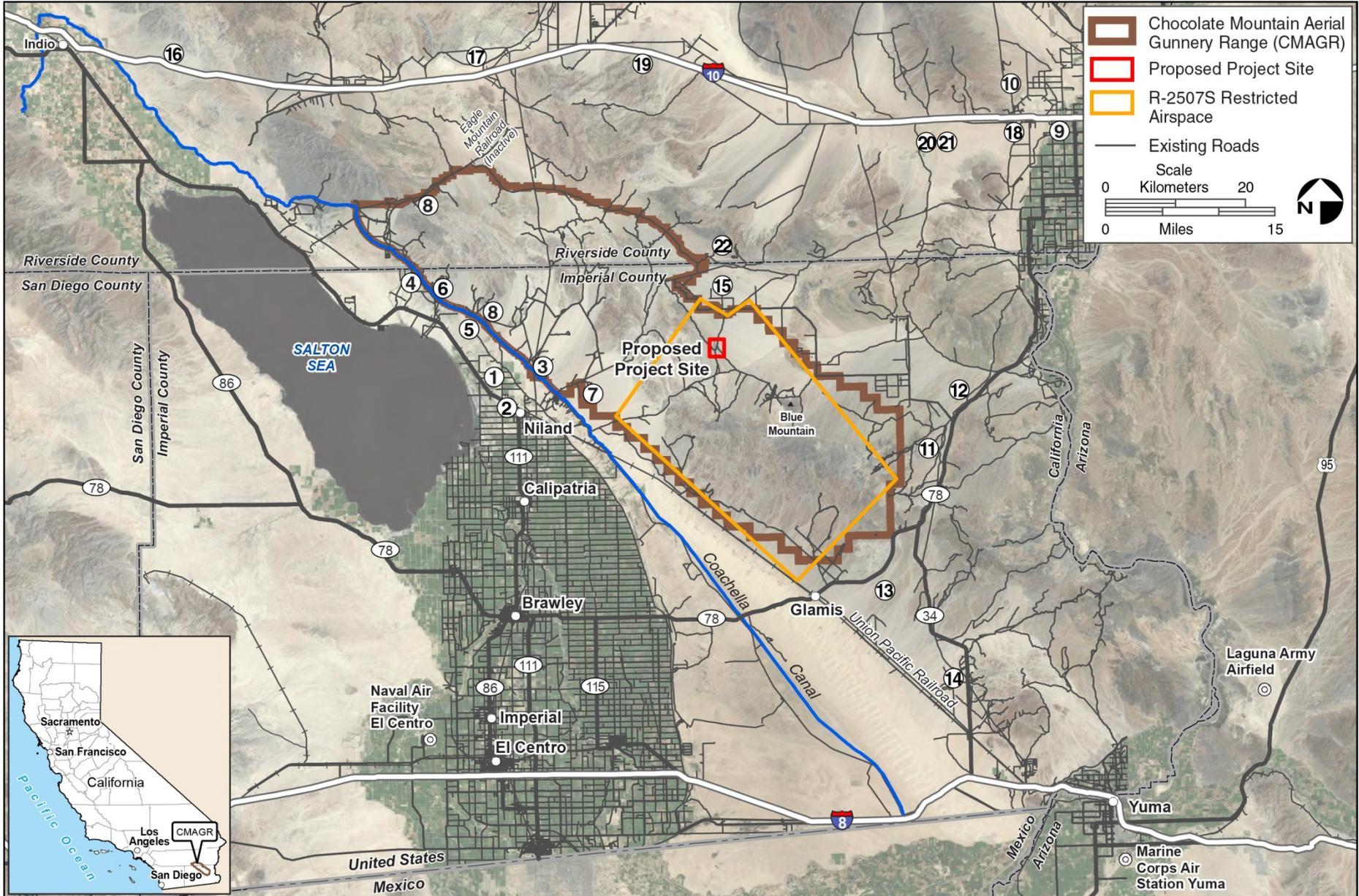


Figure 4.2-1. General Location of Cumulative Projects in the Project Vicinity

## 4.3 Methodology

### 4.3.1 Geographic Scope of the Cumulative Effects

For this analysis, a geographic scope, or ROI, for each cumulative effects issue was established. The ROI is generally based on the natural boundaries of the resources affected, rather than jurisdictional boundaries. The geographic scope may be different for each cumulative effects issue. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed action and alternatives. However, if the proposed action and alternatives are determined to have no direct or indirect effects on a resource, no future cumulative effects analysis is necessary. ROIs are defined in Section 4.4 for each resource listed below. Because ROIs vary for different resources, not all of the projects listed in Table 4.2-1 would be located within the ROIs defined for a particular resource.

### 4.3.2 Time Frame of the Cumulative Effects Analysis

A time frame for each issue related to cumulative effects has been determined. The time frame is defined as the long-term and short-term duration of the effects anticipated. Long-term can be as the longest-lasting effect. Time frames, like geographic scope, can vary by resource. Each project in a region has its own implementation schedule, which may or may not coincide or overlap with the schedule for implementing the proposed action. This is a consideration for short-term impacts from the proposed action. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the proposed action.

Past actions are projects that have been approved and/or permitted, and that have either very recently completed construction/implementation or have yet to complete construction/be implemented. Present actions are actions that are ongoing at the time of the analysis. Reasonably foreseeable future actions are those for which there are existing decisions, funding, or formal proposals, or which are highly probable based on known opportunities or trends. However, these are limited to within the designated geographic scope and time frame. Reasonably foreseeable future actions are not limited to those that are approved for funding. However, this analysis does not speculate about future actions that are merely possible, but not highly probable based on information available at the time of this analysis.

For this cumulative effects analysis, the time frame considered for cumulatively considerable projects includes projects recently approved or completed that are not yet addressed as part of the existing conditions of the area, projects under construction, and projects that are in the environmental review or planning process and for which enough information is available to discern their potential impacts. Projects for which no or insufficient information is known, or for which substantial uncertainty exists regarding the project, are considered speculative and are not evaluated as part of this analysis.

## 4.4 Potential Cumulative Impacts by Environmental Resource Area

This section addresses the potential cumulative impacts of the proposed action in conjunction with the aforementioned cumulative projects. These projects represent past, present, and reasonably foreseeable actions with the potential for cumulative impacts when considered in conjunction with the potential impacts from the proposed action. However, if a project would not result in direct or indirect impacts on a resource area, it would not contribute to a cumulative impact on that resource area and no further evaluation from a cumulative impact perspective is warranted. The resources that do not meet these criteria are airspace (Section 3.1), cultural resources (Section 3.4), hazardous

1 materials and waste (Section 3.5), geological resources (Section 3.6), and public health and safety  
2 (Section 3.7). Therefore, the proposed action would not cumulatively contribute to impacts to these  
3 resources areas, and they are not evaluated further in this section.

#### 4 **4.4.1 Air Quality**

##### 5 **4.4.1.1 Criteria Pollutants**

6 The ROI of the criteria air pollutant cumulative analysis is primarily the SSAB. As described in  
7 Section 3.2.2 of this EA, activities associated with the installation, operation, and maintenance of project  
8 Alternative 1 would produce emissions that would remain substantially below all emission significance  
9 thresholds. Emissions from cumulative projects potentially would contribute to ambient pollutant impacts  
10 generated from Alternative 1. However, these emissions would occur far enough away from proposed  
11 activities such that they would produce low ambient pollutant impacts in proximity to the project site.  
12 Therefore, air quality impacts due to the minor amounts of emissions produced from Alternative 1, in  
13 combination with emissions from cumulative projects, would not be substantial enough to contribute  
14 to an exceedance of an ambient air quality standard. As a result, Alternative 1 would produce less than  
15 significant cumulative air quality impacts.

##### 16 **4.4.1.2 Greenhouse Gases**

17 The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as  
18 individual sources of GHG emissions are not large enough to have an appreciable effect on climate  
19 change. Therefore, an appreciable impact on global climate change would only occur when proposed  
20 GHG emissions combine with GHG emissions from other man-made activities on a global scale.

21 Currently, there are no formally adopted or published NEPA thresholds of significance for GHG  
22 emissions. Therefore, in the absence of an adopted or science-based NEPA significance threshold for  
23 GHGs, this EA compares GHG emissions estimated for Alternative 1 to the U.S. net GHG emissions  
24 inventory of 2011 (EPA 2013b) to determine the relative increase in proposed GHG emissions.

25 As described in Section 3.2.2 of this EA, activities proposed under Alternative 1 would produce nominal  
26 amounts of criteria pollutant emissions. This also would be the case for potential emissions of GHGs from  
27 the alternative. The CO<sub>2</sub>e emissions associated with the net U.S. sources in 2011 is approximately  
28 5,797 million metric tons. Emissions of GHGs from Alternative 1 would equate to very minimal amounts  
29 of the U.S. inventory. As a result, they would not substantially contribute to global climate change.  
30 Therefore, GHG emissions from Alternative 1 would produce less than significant cumulative impacts to  
31 global climate change.

32 Although Alternative 1 would not produce significant cumulative impacts to global climate change,  
33 renewable energy projects currently implemented and planned within the jurisdiction of Marine Corps  
34 Installation (MCI) West would reduce emissions of GHGs by about 250,000 metric tons from current  
35 operations over a 25-year life cycle (MCI West 2009). These projects include thermal and photovoltaic  
36 solar systems, geothermal power plants, and wind generators. These renewable energy initiatives are not  
37 proposed as emission reductions to directly offset GHG emissions produced by either alternative, but  
38 rather demonstrate initial responses for DoN compliance with EO 13514 and to factor GHG management  
39 into DoN proposals and impact analyses.

#### 40 *Climate Change Adaptation*

41 In addition to assessing whether Alternative 1 would potentially impact climate change, the following  
42 considers how climate change could impact these actions and what adaptation strategies, if any, would be

1 required to respond to these future conditions. For projects within the southeastern desert region of  
2 California, the main effect of climate change to consider is increased temperatures and droughts, as  
3 documented in *Our Changing Climate 2012 – Vulnerability and Adaptation to the Increasing Risks from*  
4 *Climate Change in California* (California Energy Commission 2012). Current operations at the CMAGR  
5 have adapted to the arid conditions in the area. Exacerbation of these conditions in the future could  
6 impede proposed activities during extreme events, such as excessive heat or significant dust storms. No  
7 other substantial effects from future climate change would impact proposed activities at the CMAGR.

#### 8 **4.4.2 Biological Resources**

9 The ROI with respect to desert tortoise is the Chuckwalla Desert Wildlife Management Area, which is  
10 within the Colorado Desert recovery unit for this species. Approximately 41 percent of the CMAGR,  
11 including the action area, is designated as desert tortoise critical habitat within the Chuckwalla Desert  
12 Wildlife Management Area (DoN 2013). Reasonably foreseeable actions include renewable energy and  
13 transmission projects, as well as ongoing military training within existing DoD-owned properties. These  
14 projects likely would result in incremental habitat loss or conversion, and could act as barriers to wildlife  
15 movements. Some types of project, such as wind farms and SUA projects, have the potential to result in  
16 direct mortality of MBTA-protected bird species. The establishment of an LZ, target area, and OPs would  
17 contribute to the modification of existing habitat. However, the project would occur within existing  
18 DoD-owned military training areas and no new infrastructure, with the exception of small temporary steel  
19 targets, is proposed. No habitat would be permanently lost or removed; however, temporary disturbance,  
20 type conversion, and weed establishment could occur from proposed project activities. Minor impacts to  
21 MBTA species could occur as a result of bird air strikes during low-level aircraft operations at the project  
22 site. However, operations would be consistent with existing operations elsewhere in the CMAGR.  
23 Further, all reasonably foreseeable projects would be subject to oversight by the USFWS because of the  
24 potential presence of federally listed species, as required under Section 7, 9, or 10 of the ESA. Oversight  
25 means that all reasonably foreseeable projects would likely include measures to maximize conservation of  
26 the species and associated habitats. Therefore, the cumulative impacts identified for biological resources  
27 from the proposed action, in conjunction with other projects on and in the regional vicinity, would not be  
28 cumulatively significant.

#### 29 **4.4.3 Water Resources**

30 The ROI with respect to water quality impacts is the encompassing watershed of each cumulative project  
31 site, as these areas represent receiving waters for the cumulative projects. The proposed action could  
32 result in surface water and groundwater quality impacts as a result of hazardous materials within  
33 munitions, which become residual hazardous waste upon detonation. Similarly, water quality at other  
34 target complexes within CMAGR would potentially be impaired as a result of residual hazardous waste  
35 associated with spent munitions (Table 4.2-1). Areas currently exposed to moderate or complete military  
36 surface use are estimated to be about 5 percent of the total CMAGR. The propose action in conjunction  
37 with other projects within the CMAGR would not substantially increase that amount. In addition,  
38 compliance with other applicable DoD, federal, state, and local regulations; land use and resource  
39 management plans; and/or requirements would minimize the majority of long-term impacts from both the  
40 proposed action and other projects on and in the regional vicinity. In addition, the relative distance from  
41 the Target Complex Invader to significant perennial waterways makes substantial transport of  
42 contaminants unlikely and would not greatly contribute to the combined actions of other activities  
43 resulting in contaminant transport to waterways. Therefore, the cumulative impacts identified for water  
44 resources from the proposed action, in conjunction with other projects on and in the regional vicinity,  
45 would not be cumulatively significant.

**This page intentionally left blank.**

## 5 Other NEPA Considerations

### 5.1 Energy Requirements and Conservation Potential of Alternatives Including the Proposed Action and All Mitigation Measures Being Considered

The proposed action would not result in an overall increase in energy use within the CMAGR because no new construction or improvements would occur. Additionally, the proposed action would not add new utility demands at any military installation.

### 5.2 Irreversible or Irrecoverable Commitment of Natural or Depletable Resources

NEPA requires an analysis of significant, irreversible effects resulting from implementation of a proposed action. Resources that are irreversibly or irretrievably committed to a project are those that are typically used on a long-term or permanent basis; however, those used on a short-term basis that cannot be recovered (e.g., non-renewable resources such as metal, wood, fuel, paper, and other natural or cultural resources) also are irretrievable. Human labor also is considered an irretrievable resource. All such resources are irretrievable in that they are used for one project and thus become unavailable for other purposes. An impact that falls under the category of the irreversible or irretrievable commitment of resources is the destruction of natural resources that could limit the range of potential uses of that resource.

Implementation of the proposed action would result in an irreversible commitment of building materials, fuel for equipment, vehicles used during range establishment and operational activities, and human labor. However, these commitments of resources are neither unusual nor unexpected, given the nature of the action. The proposed action would not result in the destruction of other environmental resources such that the range of potential uses of the environment would be limited, or affect the biodiversity of the region.

### 5.3 Relationship Between Local Short-Term Use of the Human Environment and Maintenance and Enhancement of Long-Term Biological Productivity

NEPA requires consideration of the relationship between short-term use of the environment and the impacts that such use could have to the maintenance and enhancement of long-term biological productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Such impacts include the possibility that choosing one alternative could reduce future flexibility to pursue other alternatives, or that choosing a certain use could eliminate the possibility of other uses at the site.

Implementation of the proposed action would not result in any such environmental impacts because it would not pose long-term risks to health, safety, or the general welfare of the communities surrounding the project site that would significantly narrow the range of future beneficial uses. In addition, biological productivity would not be affected as implementation of the proposed action would not result in significant direct, indirect, or cumulative impacts to any biological resources.

1 **5.4 Any Probable Adverse Environmental Effects that Cannot be**  
2 **Avoided and are Not Amenable to Mitigation**

3 This EA has determined that the proposed action would not result in any significant unmitigable impacts;  
4 therefore, there are no probable adverse environmental effects that cannot be avoided or are not amenable  
5 to mitigation.

## 6 List of Preparers

### 1 **Lead Agency**

2 Marine Corps  
 3 MCAS Yuma  
 4 Yuma, Arizona  
 5 Jon Gordon, Project Leader

6 This EA was prepared for MCAS Yuma under the direction of the Naval Facilities Engineering  
 7 Command Southwest by Leidos. Members of Leidos’s professional staff who contributed to the  
 8 preparation of this document are listed below.

<i>Name</i>	<i>Title</i>	<i>Degree</i>	<i>Years of Experience</i>	<i>Project Participation</i>
Trevor Pattison	NEPA Project Manager/ Environmental Scientist	B.S., Geological Sciences-Earth Systems	14	Project Manager; Biological Resources; QA/QC
Catrina Gomez	Environmental Planner	MSEM, Environmental Science and Management	10	Deputy Project Manager; Abstract; Chapters 1 and 2, Chapter 4; QA/QC
Chris Crabtree	Air Quality Specialist	B.A., Environmental Studies	21	Air Quality
Jessica Degner	Environmental Planner	B.A., Environmental Studies	10	Public Health and Safety; Other NEPA Considerations
Joe Jimenez	Cultural Resource Specialist	M.A., Anthropology	30	Cultural Resources
Tom Mulroy	Botanist	Ph.D., Botany	30	Biological Resources
Perry Russell	Geologist/ Hydrogeologist	M.S., Geological Sciences	24	Geological Resources; Hazardous Materials and Wastes; Water Resources
Tara Schoenwetter	Senior Ecologist/ Biologist	Ph.D., Ecology & Conservation Biology	13	Biological Resources
Elizabeth Riley	Word Processing Specialist	B.A., Psychology	3	Word Processing
Alison Smith	Technical Editor	B.A., English	7	Copy Editing
Catherine FitzGerald	Graphic Artist	A.A., Fine Arts	30	Graphic Design
Chris Woods	GIS Programmer	B.A., Geography	13	GIS

**This page intentionally left blank.**

## 7 References

- 1 Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The*  
2 *Jepson manual: vascular plants of California*, second edition. University of California Press,  
3 Berkeley.
- 4 Baldwin, B.G., S. Boyd, B.J. Ertter, R.W. Patterson, T.J. Rosatti and D.H. Wilken, editors. 2002. *The*  
5 *Jepson Desert Manual: vascular plants of Southeastern California*. University of California  
6 Press, Berkeley.
- 7 Bell Boeing. 2008. Hover Outwash Profile Comparison of V-22, CH-46A, CH-53E.
- 8 Brattstrom, B.H. and M.C. Bondoello. 1983. Effects of off-road vehicles on desert vertebrates. In  
9 R.H. Webb and H.G. Wilshire (Eds.). *Environmental effects of off-road vehicles*. Springer-  
10 Verlag, New York, New York.
- 11 Brennan, T.C., and A.T. Holycross. 2006. *A Field Guide to Amphibians and Reptiles in Arizona*. Arizona  
12 Game and Fish Department.
- 13 Bureau of Land Management (BLM). 2014. BLM Renewable Energy Applications Geodatabase.  
14 Available at: <http://www.blm.gov/ca/st/en/prog/energy/pendingapps.html>. Accessed March 2014.
- 15 \_\_\_\_\_. 2009. Environmental Assessment for Eight Wildlife Guzzlers for the Chocolate Mountain Aerial  
16 Gunnery Range. California Desert District, El Centro Field Office, 31pp.
- 17 California Air Resources Board (ARB). 2013a. *Ambient Air Quality Standards (AAQS)*. Web site at:  
18 <http://www.arb.ca.gov/research/aaqs/aaqs.htm>. Accessed February 2014.
- 19 \_\_\_\_\_. 2013b. Area Designations Maps/State and National. Web site at: <http://www.arb.ca.gov/desig/>  
20 [adm/adm.htm](http://www.arb.ca.gov/desig/adm/adm.htm). Accessed February 2014.
- 21 California Department of Water Resources. 2004. Arroyo Seco Valley Groundwater Basin.  
22 California Groundwater Bulletin 118. [http://www.water.ca.gov/pubs/groundwater/bulletin\\_118/](http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-37.pdf)  
23 [basindescriptions/7-37.pdf](http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-37.pdf). Site accessed 26 November 2013.
- 24 California Energy Commission. 2012. Our Changing Climate 2012 – Vulnerability & Adaptation to the  
25 Increasing Risks from Climate Change in California. A Summary Report on the third Assessment  
26 from the California Climate Center. Publication number CEC-500-2012-007. Available at:  
27 [http://www.climatechange.ca.gov/adaptation/third\\_assessment/](http://www.climatechange.ca.gov/adaptation/third_assessment/). Accessed May 2013.
- 28 California Geological Survey. 2010. 2010 Geologic Map of California, Geologic Data Map No. 2.  
29 <http://www.quake.ca.gov/gmaps/GMC/stategeologicmap.html>. Site accessed 9 March 2014.
- 30 Council on Environmental Quality (CEQ). 2010. White House Council on Environmental Quality  
31 Announces Steps to Modernize and Reinvigorate the National Environmental Policy Act. Web  
32 site at: [http://www.whitehouse.gov/administration/eop/ceq/Press\\_Releases/18\\_February\\_2010](http://www.whitehouse.gov/administration/eop/ceq/Press_Releases/18_February_2010).
- 33 \_\_\_\_\_. 1997. CEQ Handbook: *Considering Cumulative Effects under the National Environmental*  
34 *Protection Act*. January.
- 35 Farmer, A. 1993. The Effects of Dust on Vegetation - a Review. *Environmental Pollution* 79: 63-75.

- 1 Federal Emergency Management Agency (FEMA). 2008. Flood Insurance Rate Map, Imperial County and  
2 Incorporated Areas. Panel 500 of 2300, Map Number 06025C0500C, Effective 26 September.  
3 [https://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10](https://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=-1&panelIDs=06025C0500C&Type=pbp&nonprinted=&unmapped)  
4 [001&langId=-1&panelIDs=06025C0500C&Type=pbp&nonprinted=&unmapped](https://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=-1&panelIDs=06025C0500C&Type=pbp&nonprinted=&unmapped). Site accessed  
5 21 January 2014.
- 6 Headquarters Marine Corps. 2008. Final Range Environmental Vulnerability Assessment, Marine Corps  
7 Air Station Yuma. Prepared by Malcolm Pirnie, Inc., November. [http://www.denix.osd.mil/sri/](http://www.denix.osd.mil/sri/upload/MCAS-Yuma-2.pdf)  
8 [upload/MCAS-Yuma-2.pdf](http://www.denix.osd.mil/sri/upload/MCAS-Yuma-2.pdf). Site accessed February 8, 2014.
- 9 Imperial County Air Pollution Control District (ICAPCD). 2013. ICAPCD Rules and Regulations.  
10 Rule Revision October 22, 2013. Web site at: [http://www.imperialcounty.net/AirPollution/](http://www.imperialcounty.net/AirPollution/Forms%20&%20Documents/RULEBOOK/10%20RULEBOOK%20JAN%202014.pdf)  
11 [Forms%20&%20Documents/RULEBOOK/10%20RULEBOOK%20JAN%202014.pdf](http://www.imperialcounty.net/AirPollution/Forms%20&%20Documents/RULEBOOK/10%20RULEBOOK%20JAN%202014.pdf). Accessed  
12 February 2014.
- 13 Intergovernmental Panel on Climate Change (IPCC). 2013. Climate Change 2013 - The Physical Science  
14 Basis - Summary for Policymakers. Working Group I Contribution to the Fifth Assessment  
15 Report of the Intergovernmental Panel on Climate Change. Available at <http://www.ipcc.ch/>.  
16 Accessed January 2014.
- 17 Leidos. 2014a. Draft Biological Resources Survey Report. Prepared for Naval Engineering Facilities  
18 Command, Southwest.
- 19 \_\_\_\_\_. 2014b. Draft Desert Tortoise Survey Report. Prepared for Naval Engineering Facilities  
20 Command, Southwest.
- 21 \_\_\_\_\_. 2014c. Draft Archaeological Survey Report. Prepared for Naval Engineering Facilities  
22 Command, Southwest.
- 23 Lichvar, R. W. and S. M. McColley. 2008. A Field Guide to the Identification of the OHWM in the Arid  
24 West Region of the United States; A Delineation Manual. Prepared for the U.S. Army Corps of  
25 Engineers, Publication Number: ERDC/CRREL TR-08-12. August.
- 26 Malusa, J. 2012. Vegetation Mapping at the Barry M. Goldwater Range, Marine Corps Air Station,  
27 Arizona. Phase 3: Copper Mountains, Baker Peaks, Wellton Hills, and Northern Lechuguilla  
28 Valley. Annual report submitted to MCAS, Yuma, in compliance with Cooperative Agreement  
29 DACA87-05-H-0018, Modification P00012.
- 30 Mancini, K.M., D.N. Gladwin, R. Villella, and M. Cavendish. 1988. Effects of Aircraft Noise and Sonic  
31 Booms on Domestic Animals and Wildlife: a Literature Synthesis. U.S. Fish and Wildlife Service  
32 National Ecology Research Center, Ft. Collins, CO. NERC-88/29.
- 33 Marine Corps Air Station (MCAS) Yuma. 2014. Final Chocolate Mountain Aerial Gunnery Range  
34 Integrated Natural Resource Management Plan, October. [http://www.mcas-yuma.marines.mil/](http://www.mcas-yuma.marines.mil/Portals/152/Draft_Chocolate_Mountains_Aerial_Gunnery_Range_Integrated_Natural_Resource_Management_Plan.pdf)  
35 [Portals/152/Draft\\_Chocolate\\_Mountains\\_Aerial\\_Gunnery\\_Range\\_Integrated\\_Natural\\_Resource\\_](http://www.mcas-yuma.marines.mil/Portals/152/Draft_Chocolate_Mountains_Aerial_Gunnery_Range_Integrated_Natural_Resource_Management_Plan.pdf)  
36 [Management\\_Plan.pdf](http://www.mcas-yuma.marines.mil/Portals/152/Draft_Chocolate_Mountains_Aerial_Gunnery_Range_Integrated_Natural_Resource_Management_Plan.pdf). Site accessed 8 February 2014.
- 37 \_\_\_\_\_. 2010. Integrated Cultural Resources Management Plan for the Chocolate Mountain Aerial  
38 Gunnery Range, California.

- 1 Marine Corps Installation (MCI) West. 2009. MCI West Regional Greenhouse Gas Assessment  
2 (2008-2009).
- 3 Marlow, R.W. and K. Tollestrup. 1982. Mining and exploitation of natural mineral deposits by the desert  
4 tortoise, *Gopherus agassizii*. *Anim Behav.* 30:457-478.
- 5 Natural Resource Conservation Service (NRCS). 2011. State Soil Geographic (STATSGO2) Database.
- 6 Naval Facilities Engineering Command (NAVFAC). 2006. Department of the Navy Southwest –  
7 Renewable Energy and Distributed Generation Projects.
- 8 Nussear, K.E., T.C. Esque, R.D. Inman, Leila Gass, K.A. Thomas, C.S.A Wallace, J.B. Blainey, D.M.  
9 Miller, and R.H. Webb. 2009. Modeling Habitat of the Desert Tortoise (*Gopherus agassizii*) in  
10 the Mojave and parts of the Sonoran Deserts in California, Nevada, Utah, and Arizona: United  
11 States Geological Survey Open-File Report 2009-1102, 18 pp.
- 12 Southern California Edison (SCE). 2014. Red Bluff Substation Project. Available at:  
13 <https://www.sce.com/wps/portal/home/about-us/reliability/upgrading-transmission/red-bluff/>.  
14 Accessed on: 27 March 2014.
- 15 United States Department of the Navy (DoN). 2013. Final Legislative Environmental Impact Statement  
16 for the Renewal of the Chocolate Mountain Aerial Gunnery Range Land Withdrawal. April.
- 17 \_\_\_\_\_. 2003. Final Record of Decision/Remedial Action Plan, Installation Restoration Program,  
18 Sites 1, 4, 5, 7, and 8, Chocolate Mountain Aerial Gunnery Range, Niland, CA, December.  
19 [http://www.envirostor.dtsc.ca.gov/regulators/deliverable\\_documents/3063886344/Final%20ROD](http://www.envirostor.dtsc.ca.gov/regulators/deliverable_documents/3063886344/Final%20ROD%20RAP.pdf)  
20 [%20RAP.pdf](http://www.envirostor.dtsc.ca.gov/regulators/deliverable_documents/3063886344/Final%20ROD%20RAP.pdf). Site accessed 20 March.
- 21 \_\_\_\_\_. 1998. *Report of Test Results for V-22 Rotor Downwash Survey*. Report No. NAWCADPAX-98-  
22 88-RTR. Naval Air Warfare Center, Patuxent River, MD. Prepared by Robert E. Lake and  
23 William J. Clark. July.
- 24 United States Environmental Protection Agency (EPA). 2013a. The Green Book Nonattainment  
25 Areas for Criteria Pollutants. Web site at: <http://www.epa.gov/oar/oaqps/greenbk>. Accessed  
26 February 2014.
- 27 \_\_\_\_\_. 2013b. *National Greenhouse Gas Emissions Data - Inventory of U.S. Greenhouse Gas Emissions*  
28 *and Sinks: 1990-2011*. Available at [http://www.epa.gov/climatechange/ghgemissions/](http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html)  
29 [usinventoryreport.html](http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html).
- 30 \_\_\_\_\_. 2012. TRI Explorer Releases: Facility Report. [http://iaspub.epa.gov/triexplorer/release\\_fac?view=COFA&trilib=TRIQ1&sort=\\_VIEW\\_&sort\\_fmt=1&state=06&county=06025&chemical=](http://iaspub.epa.gov/triexplorer/release_fac?view=COFA&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=06&county=06025&chemical=All+chemicals&industry=ALL&year=2012&tab_rpt=1&fld=RELLBY&fld=TSFDSP)  
31 [All+chemicals&industry=ALL&year=2012&tab\\_rpt=1&fld=RELLBY&fld=TSFDSP](http://iaspub.epa.gov/triexplorer/release_fac?view=COFA&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=06&county=06025&chemical=All+chemicals&industry=ALL&year=2012&tab_rpt=1&fld=RELLBY&fld=TSFDSP). Accessed  
32 April 2014.  
33
- 34 United States Environmental Protection Agency and United States Army Corps of Engineers (EPA and  
35 USACE). 2014. Draft Pre-Publication Proposed Rule for Definition of “Waters of the United  
36 States” Under the Clean Water Act. March 25, 2014.
- 37 \_\_\_\_\_. 2008. Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in  
38 *Rapanos v. United States & Carabell v. United States*. 3 December 2008.

## 7 References

---

- 1 United States Fish and Wildlife Service (USFWS). 2012. Draft Range-wide Monitoring of the Mojave  
2 Desert Tortoise (*Gopherus agassizii*): 2012 Annual Report. Report by the Desert Tortoise  
3 Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.
- 4 \_\_\_\_\_. 2011a. Final revised recovery plan for the Mojave population of the desert tortoise (*Gopherus*  
5 *agassizii*). Region 8, Pacific Southwest Region, Sacramento, California.
- 6 \_\_\_\_\_. 2011b. Birds of Management Concern and Focal Species U.S. Fish and Wildlife Service  
7 Migratory Bird Program. November 2011.
- 8 \_\_\_\_\_. 2010. *2010 Field Season Pre-project Field Survey Protocol for Potential Desert Tortoise*  
9 *Habitats (Protocol)*.
- 10 \_\_\_\_\_. 2008. *Status of the Desert Tortoise – Rangewide Status\_of\_Desert\_Tortoise*. October 22, 2008.  
11 Website: [http://www.fws.gov/nevada/desert\\_tortoise/documents/misc/20080813](http://www.fws.gov/nevada/desert_tortoise/documents/misc/20080813). Accessed on:  
12 18 September 2014
- 13 \_\_\_\_\_. 2003. Request for Amendment to the Biological Opinion 1-6-95-F-40 for Military Use of the  
14 Chocolate Mountain Aerial Gunnery Range, Imperial County, California. 9 April 2003.
- 15 \_\_\_\_\_. 1996. Biological Opinion for Military Use of the Chocolate Mountain Aerial Gunnery Range,  
16 California. File number (1-6-95-F-40). 18 April 1996.
- 17 \_\_\_\_\_. 1994. Desert Tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service,  
18 Portland, Oregon.
- 19 \_\_\_\_\_. 1990. Endangered and threatened wildlife and plants; Determination of threatened status for the  
20 Mojave population of the desert tortoise. Federal Register 55(63):12178-12191.
- 21 United States Geological Survey (USGS). 2004. Desert Tortoise Ecology, Mojave Desert Tortoise GATF  
22 Project. Web site at: <http://geochange.er.usgs.gov/sw/impacts/biology/tortoise1>. Accessed  
23 April 2014.
- 24 United States Global Change Research Program. 2009. Global Climate Change Impacts in the United  
25 States. Web site at: [www.globalchange.gov/usimpacts](http://www.globalchange.gov/usimpacts). Accessed March 2010.

# **Appendix A**

---

**Applicable Federal Regulations, Instructions, and Public Law**

**This page intentionally left blank.**

**Appendix A. Applicable Federal Regulations, Instructions, and Public Law**

<i>Name</i>	<i>Regulation</i>
National Environmental Policy Act of 1969	42 USC §§ 4321–4370h
Council on Environmental Quality Regulations for Implementing the Procedural Provisions of National Environmental Policy Act	40 CFR Parts 1500–1508
Department of the Navy Procedures for Implementing National Environmental Policy Act	32 CFR Part 775
Environmental Compliance and Protection Manual Chapter 12	Marine Corps Order P5090.2A, Change 3
National Historic Preservation Act	54 USC §300101 <i>et seq.</i>
Clean Water Act	33 USC §§ 1251–1387
Clean Air Act, as amended, including 1990 General Conformity Rule	USC §§ 7401–7671q
Comprehensive Environmental Response, Compensation, and Liability Act	42 USC §§ 9601–9675
Resource Conservation and Recovery Act	42 USC §§ 6901–6992k
Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, 11 February 1994	Executive Order 12898
Protection of Children from Environmental Health Risks and Safety Risks, 23 April 1997	Executive Order 13045
Endangered Species Act	16 USC §§ 1531–1544
Migratory Bird Treaty Act	16 USC §§ 703–712
Responsibility of Federal Agencies to Protect Migratory Birds, 11 January 2001	Executive Order 13186
Invasive Species	Executive Order 13112
Native Americans Graves Protection and Repatriation Act	25 USC §§ 3001–3013 and 40 CFR Part 10
Federal Compliance with Pollution Control Standards	Executive Order 12088
Greening the Government through Waste Prevention, Recycling, and Federal Acquisition	Executive Order 13101
Greening the Government through Efficient Energy Management	Executive Order 13123
Greening the Government through Leadership in Environmental Management	Executive Order 13148
Strengthening Federal Environmental, Energy, and Transportation Management	Executive Order 13423
United Facilities Criteria for Low Impact Development	United Facilities Criteria 3-210-10
American Indian Religious Freedom Act	PL 95-341; 42 USC §§ 1996 and 1996a
Archaeological Resource Protection Act	16 USC §§ 470aa–470mm; PL 96-95 and Amendments
Federal Leadership in Environmental, Energy and Economic Performance	Executive Order 13514
Federal Aviation Administration Order 7400.2	49 USC § 40103(b)
Operation Risk Management	Marine Corps Order 3500.27A

**Appendix A. Applicable Federal Regulations, Instructions, and Public Law**

<i>Name</i>	<i>Regulation</i>
Range Regulations for activities scheduled by MCAS Yuma	MCAS Yuma Station Order 3710.6
Pre-mishap Plan	MCAS Yuma Station Order 3750.2
National Register of Historic Places	36 CFR Part 60
Operational Risk Management	Office of the Chief of Naval Operations 3500.39A
Pollution Prevention Act of 1990	42 USC §§ 13101–13109
Sikes Act	16 USC §§ 670–670f, 74 Stat. 1052, as amended, PL 86-797, approved 15 September 1960
Waste Discharge Requirements for Discharge of Storm Water Runoff Associated with Construction and Land Disturbance Activities	State of California Water Resources Control Board Order No. 2009-0009-DWQ; National Pollutant Discharge Elimination System General Permit No. CAS000002
Wild Free-Roaming Horses and Burros Act of 1971	16 USC §§ 1331–1340, PL 92-195 approved 15 December 1971

*Notes:* CFR = Code of Federal Regulations; MCAS = Marine Corps Air Station; PL = Public Law; USC = United States Code.

# **Appendix B**

---

**Mitigation, Monitoring, and Reporting Record (MMRR) Tracking Sheet**

**This page intentionally left blank.**

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<p><i>Tortoise Management Representative.</i> The Marine Corps Air Station (MCAS) Yuma Tortoise Management Representative within the Range Management Department will ensure compliance with protective stipulations by all users of Target Complex Invader. This representative has the authority to halt activities that may be in violation of such provisions. The Tortoise Management Representative also will coordinate with the designated United States Fish and Wildlife Service (USFWS) representative on all matters concerning desert tortoise mitigation and management responsibilities. The Tortoise Management Representative does not have to be a qualified tortoise biologist and therefore will receive instructions from a qualified desert tortoise biologist in the handling, data collection, and release procedures for desert tortoise prior to engaging in such activities. MCAS Yuma will submit the name(s) and credentials of the person(s) who will be the Tortoise Management Representative or appointee(s). Only qualified desert tortoise biologists, the Tortoise Management Representative, or appointees (“appointee” is defined as a person having the same qualifications as the Tortoise Management Representative) will handle desert tortoises.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Ensure compliance with protective stipulations by all users of Target Complex Invader;  Coordinate with the designated USFWS representative.</p>	<p>Range Management Department</p>	<p>Submit name(s)/ credentials of the Tortoise Management Representative or appointee(s) to USFWS.</p>	<p>During operations</p>
<p><i>Tortoise Education Program.</i> All military personnel involved in ground operations (hereafter “users”) of Target Complex Invader, which include Explosive Ordnance Disposal (EOD) and range clearance teams, target building and maintenance personnel, training personnel dropped at observation posts, and users of the LZ, will participate in MCAS Yuma’s existing tortoise education program, which has been developed cooperatively with the USFWS. The program will include, at a minimum, the following topics: 1) occurrence of the desert tortoise; 2) sensitivity of the species to human activities; 3) legal protection for desert tortoises; 4) penalties for violations of federal law; 5) general tortoise ecology and activity patterns; 6) reporting requirements; 7) measures to protect tortoises; 8) personal measures that users can take to promote the conservation of desert tortoises; and 9) procedures and a point of contact if a desert tortoise is observed on site. All users of Target Combat Invader will be informed of their responsibility to report any form of take to the Tortoise Management Representative.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>All ground users to participate in MCAS Yuma’s tortoise education program prior to ground operations.  Inform ground users of their responsibility to report take.</p>	<p>Range users/Range Management Department</p>	<p>None</p>	<p>Prior to ground operations</p>

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<p><i>Desert Tortoise Reporting.</i> All users of Target Complex Invader will be informed of their responsibility to report any form of take to the Tortoise Management Representative. If a tortoise is found in a project site, activities may, if appropriate, be modified to avoid injuring or harming it and MCAS Yuma Tortoise Management Representative shall be contacted immediately.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Inform users of responsibility to report take.  Contact Tortoise Management Representative if tortoise is found in project area.</p>	<p>Range Users/ Range Management Division</p>	<p>None</p>	<p>Prior to and during ground operations</p>
<p><i>Off-Road Ground Vehicle Prohibitions and Speed Limits.</i> All off-road ground vehicle use shall be prohibited within Target Complex Invader, except for activities associated with target placement/repair and ordnance removal and range maintenance. As part of range clearance activities across the Chocolate Mountain Aerial Gunnery Range (CMAGR), EOD personnel are responsible for periodically reminding all escorted range users of the prohibitions regarding off-road vehicular travel and of other protective measures for tortoise. Vehicles traveling along roads inside critical habitat should not exceed 20 miles per hour.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Prohibit off-road ground vehicles in the project area, except in association with target placement/repair and operational range clearance.  Periodically, remind escorted range users of off-road vehicle prohibitions and protective measures for tortoise.  Maintain speeds of less than 20 miles per hour within critical habitat for desert tortoise.</p>	<p>Range Users/ EOD Personnel</p>	<p>None</p>	<p>During ground operations</p>
<p><i>Vehicle Inspections.</i> All personnel operating vehicles within Target Complex Invader will inspect underneath their parked vehicle prior to moving it. If a desert tortoise is found beneath the vehicle, the Tortoise Management Representative, or qualified appointee(s), will be contacted to remove the animal from harm's way.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Inspect underneath parked vehicles prior to moving.  Contact Tortoise Management Representative if tortoise are found beneath a vehicle.</p>	<p>Range users/ Range Management Division</p>	<p>None</p>	<p>During ground operations</p>

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<p><i>Pet Prohibitions.</i> No pets will be permitted anytime within Target Complex Invader. Military working dogs will be permitted, under control of their handler if required.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Prohibit pets within the project site with the exception of military working dogs.</p>	<p>Range users</p>	<p>None</p>	<p>During ground operations</p>
<p><i>Waste Management.</i> All ground personnel that enter Target Complex Invader will be required to remove all food stuffs, trash, or other waste that may attract common ravens (<i>Corvus corax</i>) and other desert tortoise predators, in accordance with regulations for the CMAGR. Any temporary trash receptacles will be equipped with latching/locking lids. The Tortoise Management Representative will 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.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Remove all waste from project site in accordance with CMAGR regulations.</p>	<p>Range users</p>	<p>None</p>	<p>During ground operations</p>
<p><i>Clearance Surveys during Initial Target Placement.</i> In accordance with existing Biological Opinion (BO) for the CMAGR (1-6-95-F-40; USFWS 1996), the boundaries of the target sites will be determined in the field, mapped, and marked with monuments prior to initial target placement. Target sites will be placed outside of and away from surface drainages. All new targets will be placed within the boundaries of the designated target site. Clearance surveys conforming to USFWS recommendation will be followed for the initial placement of targets. A qualified desert tortoise biologist or the Tortoise Management Representative will be on-site during initial target placement.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Map and flag target sites.  Avoid locating targets in large washes, where feasible.  Conduct clearance surveys for desert tortoise during initial target placement.</p>	<p>Range users/ Range Management Division</p>	<p>Map of target sites</p>	<p>Initial target placement</p>

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<p><i>Annual Desert Tortoise Surveys and Reporting.</i> The action area will be included in the rotation of ranges that are currently surveyed during ongoing annual surveys at the CMAGR. Surveys will be conducted using the USFWS-recommended methods by the qualified desert tortoise biologist. Surveys are conducted within existing safety protocols and mission parameters at the designated target area(s) within CMAGR during regularly scheduled range closures in the spring and all data are collected and entered into the MCAS Yuma Geographic Information System database. The results of all monitoring are included in the annual monitoring report prepared by MCAS Yuma and delivered to the USFWS on or before 15 January of each year. Any changes in survey methodology will be reported to the USFWS in an annual monitoring report.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Conduct annual desert tortoise surveys at project and prepare annual survey report.</p>	<p>Range Management Division</p>	<p>Annual survey report for USFWS; Enter data into MCAS GIS database</p>	<p>Conduct surveys annually during operations. Submit annual survey report to USFWS on or before 15 January of each year.</p>
<p><i>Tortoise Monitoring during Service Road Construction, Target Repair, and EOD Clearance Activities.</i> All personnel conducting service road construction, target repair, and operational range clearance will monitor take as part of their sweeps of target areas. Personnel will report to the Tortoise Management Representative any injured or dead tortoises located, as well as habitat damage outside of the designated target area. Personnel will fill out a form after target repair and EOD clearance, reporting any take. The Tortoise Management Representative (or appointee) will be present during all target repair and EOD clearance activities and available to respond to individual EOD and target maintenance crews in the event the crews observe tortoise mortality/take, habitat damage, or need to have a tortoise relocated.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Conduct desert tortoise monitoring during EOD clearance activities.  Report injured/dead tortoises located in the project site and habitat damage outside of the target area.</p>	<p>Range users/ Range Management Division</p>	<p>Report take to Tortoise Management Representative or appointee</p>	<p>During EOD clearance activities</p>
<p><i>Notify USFWS of any Take of Desert Tortoise.</i> The USFWS will be notified by the Tortoise Management Representative within three working days of the discovery of any tortoise death or injury caused by military activity. Notification will include the date, time, circumstances, and location of any injury or death. Dead animals will be left in situ. Injured animals will be taken to a veterinarian approved by the USFWS.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3)</p>	<p>Notify USFWS of any take of desert tortoise within 3 days of discovery.</p>	<p>Tortoise Management Representative</p>	<p>Notify USFWS of any take and include date, time, circumstances, and location of any injury or death</p>	<p>Within three working days of take of desert tortoise</p>

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<p><i>Invasive Plant Species Control.</i> In an effort to control the spread of invasive (non-native) weeds, all construction-type equipment and/or vehicles originating outside of the CMAGR shall be power-washed before entering roadways on the way to the CMAGR. While washing wheeled vehicles, the front wheels will be turned lock-to-lock to allow for exposure of surfaces that may hold soil or weed seeds.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Power-wash equipment and vehicles before entering the CMAGR.</p>	<p>Range users</p>	<p>None</p>	<p>During initial target placement and operations</p>
<p><i>Raven Management.</i> The common raven is becoming an increasing threat to the desert tortoise. Luckily, the CMAGR has poor resources to support adequate raven habitat. Ravens require elevated nesting locations (trees, utility poles, cliffs, abandoned vehicles), adequate food, and water supplies within their nesting territories. The surrounding CMAGR desert provides inadequate nesting locations. There are relatively few large trees and only a handful of abandoned vehicles to provide nesting. Also, only one electrical utility line runs through the center of the range. Water sources are few and far between. Common ravens are “human commensals” and thrive in highly disturbed habitats including agricultural, suburban, and urban areas. Their reproductive success in the Mojave Desert is enhanced significantly by proximity to human developments. Additionally, water subsidies are thought to be an important factor contributing to raven increase in desert areas of California. Subsidized water sources include cattle watering troughs, irrigation canals, reservoirs, sewage treatment areas, and irrigated agricultural areas. Even guzzlers for wildlife can contribute to raven water sources. The CMAGR is an isolated desert with surrounding large Bureau of Land Management (BLM) and state uninhabited lands. It serves as an aerial bombing range with live ammunition training, closing the area to any public use. This desert aerial and gunnery range is largely devoid of any buildings or structures to further represent foreign deserts and aid with the realism during training events. A lack of adequate nesting, food sources, water sources, human activity, agriculture, roosting perches, and general remote location has likely kept raven densities on the CMAGR low. In an effort to thwart raven establishment, MCAS Yuma will employ the following measures to further discourage settlement:</p> <ul style="list-style-type: none"> <li>Abandoned vehicles found on the CMAGR will be inventoried and steps will be taken toward their removal.</li> </ul>	<p>Endangered Species Act; Section 3.3</p>	<p>Conduct ongoing raven management throughout the CMAGR.</p>	<p>Range Management Division</p>	<p>None</p>	<p>Ongoing</p>

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<ul style="list-style-type: none"> <li>• Public use is restricted and will continue to be restricted in the CMAGR, thus reducing the raven attraction toward people.</li> <li>• Cattle grazing and cattle watering troughs are restricted on the range and will remain as such for security and raven prevention.</li> <li>• Range signs and fencing will be limited to a minimum, for reduction in elevated perches.</li> <li>• Training operations and personnel will be required to properly dispose of food and trash per Station Order 3710.63.</li> <li>• Construction activities will have appropriate trash receptacles per Station Order 3710.63.</li> <li>• Construction personnel, range wardens, range inspectors, and troops using the training areas will be educated and instructed to report any raven sightings, which will be investigated and documented by MCAS Yuma biologists.</li> <li>• Any raven or raven nests discovered on the CMAGR will be evaluated by MCAS Yuma biologists for tortoise predation. When any raven-damaged tortoise shells are found, the surrounding area will be searched for raven and raven nests. Any predatory ravens and their nests will be removed using similar methods identified in the March 2008 USFWS EA: Reduce Common Raven Predation on the Desert Tortoise, upon completion of any necessary environmental review and in accordance with appropriate permitting.</li> <li>• Periodically, all wildlife guzzlers will be inspected by biologists, range inspectors, and range wardens for raven usage. Observations of tortoise carcasses and raven nests near guzzlers will result in further evaluation for removal.</li> </ul>					
<p><i>Operations under Existing BO.</i> After development activities for the target complex are completed, operations will return to normal and be directed by the BO issued to MCAS Yuma (1-6-95-F-40), dated April 18, 1996.</p>	<p>Endangered Species Act; Biological Opinion (1-6-95-F-40; USFWS 1996); (Section 3.3, Biological Resources)</p>	<p>Conduct operations in accordance with the BO issued to MCAS Yuma (1-6-95-F-40), dated April 18, 1996.</p>	<p>Range Management Division</p>	<p>As required by existing BO</p>	<p>During operations</p>

**Appendix B. Mitigation, Monitoring, and Reporting Record Tracking Sheet  
Target Complex Invader, Chocolate Mountain Aerial Gunnery Range**

Mitigation, Monitoring, and Reporting Measures	Environmental Driver (Document Section)	Implement Procedure or Action	Responsible Organization	Deliverable/ Report	Compliance Schedule
<p><i>Update the CMAGR Spill Prevention, Control, and Countermeasures (SPCC) Plan.</i> The CMAGR SPCC Plan will be updated to address the use of ordnance during training and vehicle use during target maintenance and operational range clearance at Target Complex Invader. Activities at Target Complex Invader will be conducted in accordance with the SPCC Plan to prevent incidental spills of petroleum products from vehicles and fuel from fuel trucks.</p>	<p>SPCC Rule; (Section 3.5, Hazardous Waste and Materials)</p>	<p>Update the CMAGR SPCC Plan and implement SPCC measures.</p>	<p>Range users</p>	<p>None</p>	<p>During operations</p>
<p><i>Update the CMAGR Toxic Release Inventory (TRI) Report.</i> The CMAGR TRI Report will be updated to address range activities at Target Complex Invader.</p>	<p>Emergency Planning and Community Right-to-Know (EPCRA) Section 313; (Section 3.5, Hazardous Waste and Materials)</p>	<p>Update the CMAGR TRI Report to include Target Complex Invader.</p>	<p>Range Management Division</p>	<p>Annual CMAGR TRI Report</p>	<p>Annually</p>
<p>The proposed action will comply with the pending BO during development of the target complex.</p>	<p>Endangered Species Act, Section 7; Biological Opinion-Pending</p>	<p>Implement BO issued by USFWS.</p>	<p>Range Management Division</p>		<p>During development of the target complex</p>

**This page intentionally left blank.**

# **Appendix C**

---

**1996 and 2003 Biological Opinions for the Military Use of the  
Chocolate Mountain Aerial Gunnery Range**

**This page intentionally left blank.**



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Ecological Services  
Carlsbad Field Office  
2730 Loker Avenue West  
Carlsbad, California 92008

April 18, 1996

Major J.D. Cox  
Director, Range Management  
U.S. Marine Corps  
Marine Corps Air Station  
Box 99100  
Yuma, Arizona 85369-9100

Re: Biological Opinion for the Military use of the Chocolate Mountain Aerial Gunnery Range, California (1-6-95-F-40).

Dear Major Cox:

This Biological Opinion responds to your request for formal consultation with the Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act). The Marine Corps Air Station, Yuma (MCAS, Yuma) request was dated July 5, 1995, and was received by our office on August 17, 1995. At issue are the effects of all existing and proposed military use activities of the Chocolate Mountain Aerial Gunnery Range, California (Range), on the federally listed threatened desert tortoise (*Gopherus agassizii*).

This Biological Opinion was prepared using the following information: 1) Desert Tortoise Survey Results, Chocolate Mountain Aerial Gunnery Range, Yuma Training Range Complex, Marine Corps Air Station Yuma (Dames & Moore 1994); 2) Biological Assessment for the Desert Tortoise for the military use of the Chocolate Mountains Aerial Gunnery Range, California (BA) (Dames & Moore 1995); 3) draft Yuma Training Range Complex Environmental Impact Statement (EIS) (May 1994); and 4) other materials contained in our files.

### BIOLOGICAL OPINION

It is the opinion of the Service that the proposed project is not likely to jeopardize the continued existence of the desert tortoise, nor is it likely to result in the significant destruction or adverse modification of critical habitat for the desert tortoise.

DESCRIPTION OF THE PROPOSED ACTION

The Range is located in north-central Imperial County and south-central Riverside County, California. The Range encompasses approximately <sup>509,059</sup> ~~387,200~~ acres (605 square miles). It is bound on the west by the Salton Sea Basin and on the east by the Chuckwalla and Palo Verde Mountains. The northern border is separated from the Orocopia Mountains by Salt Creek and includes part of the Chuckwalla Bench. From the northern border, the Range extends south to State Route 78 near Glamis. A map of the Range is included at the end of this document.

The primary function of the Range is to provide realistic targets for training Marine and Naval aircrews in the tactics of air-to-ground attack.

**Current Activities**

Current on-going activities occur on five Close Air Support (CAS) target ranges, a Rockeye munitions range, and 31 other individual targets dispersed throughout the Range. Fifteen of the individual targets are within, or in close proximity to the CAS ranges. There are 9 observation posts, 11 ground support areas, and 11 sites designated as artillery firing positions.

CAS is the tactic of delivering ordnance from aircraft in near proximity to friendly forces. Rockeye munitions are cluster bombs composed of hundreds of individual bomblets enclosed in a larger bomb case that bursts over the target to distribute the bomblets over a broad area before they detonate. The individual targets are used by aircraft for delivering ordnance with no CAS activities. The total area of the CAS ranges and Rockeye munitions range combined is about 15,360 acres (24 square miles). The 16 individual targets outside of CAS range areas combined cover less than 2560 acres (4 square miles).

Observation posts are positions where forward air controllers direct air strikes onto targets. Ground support areas vary in size, but most are less than 249.6 acres (0.39 square mile). The 11 ground support areas, average 250 acres each, and total approximately 2,746 acres. Ground support areas are used interchangeably as base camps for Forward Arming and Refueling Points, mobile radar, communications, and anti-aircraft missile sites. All of these support areas are located adjacent to established roads. The 11 artillery sites are used to fire spotting rounds into the Iris Pass, Punch Bowl, or Deadman CAS ranges to mark targets for air strikes. Spotting rounds are artillery shells containing white phosphorous, that burn on impact to provide a bright plume of white smoke to mark enemy positions for aircrew attack. No acreage was provided for observation posts or artillery sites in the BA.

Ordnance delivery by fixed-wing aircraft is authorized at Dead Man, Irish Wash, Punch Bowl, and Blue Mountain CAS ranges. Mount Barrow is restricted to ordnance delivery by helicopter. Currently only inert ordnance may be delivered within Range area underlying R-2507N southwest of a line running along the axis of the Chocolate Mountains. Inert and live ordnance may be used throughout R-2507S.

SEALs training by Naval Special Warfare Group-1 (NSWG-1) is also conducted on the

Range. NSWG-1 operates Camp Billy Machen, a training camp located near the southwestern boundary of the Chocolate Mountain Range. SEAL training areas include Training Areas 1 and 2, Firing Zones 1 and 2, and a Fast Attack Vehicle (FAV) driving course. Training Area 1, excluding Firing Zone 2, is approximately 80,000 acres (125 square miles), Training Area 2, excluding Firing Zone 1, is about 29,440 acres (46 square miles). Firing Zones 1 and 2 are about 32,640 acres (51 square miles). SEAL training involves activities such as combat on foot, light vehicle use, parachute drops, and insertions/extractions.

The current ground use, excluding roads, encompasses at least 16,2746 acres of the 387,200 acre Range. Almost one half of these current activities occur in desert tortoise critical habitat (See Maps 1 & 2).

### Proposed Activities

The proposed activities for the Range include an increase in net explosive weight limits, night attack training, live ordnance authorization, target development, relocation of training support areas, and relocation of NSWG-1 training activities.

Current net-explosive weight limits for air-to-ground ordnance delivery are 2,000 pounds per bomb and 3,000 pounds total for all bombs released per aircraft pass in fixed-wing aircraft. The proposed action is to increase these weights to 12 MK 82(500 pound) bombs, 6 MK 83(1,000 pound) bombs, or 4 MK 84(2,000 pound) bombs per aircraft pass.

The proposed action also includes implementation of night ordnance delivery training between 2200 and 0600 hours. (Currently training is permitted between 0600 and 2200 hours only.) Another proposal is to authorize R-2507N section for possible future live ordnance. Three new individual targets are proposed for development as well as redeveloping seven inactive individual target sites in R-2507N.

Currently two ground support areas and a parachute drop zone are located outside of the southern end of the Range boundaries. The proposed action also includes the relocation of these activities to new on-Range positions and the creation of an additional parachute drop zone.

Training Area 1 and Firing Zones 1 and 2 are proposed for closure. Training Area 1 lies in desert tortoise critical habitat. If Training Area 1 closes to SEAL activity, ground activity will be eliminated in 80,000 acres of desert tortoise critical habitat. To continue NSWG-1 training within the Range, further development is proposed for Training Area 2, which will be renamed, "Special Warfare Training Area 4". Existing operations on the current FAV course will be modified to limit use along the Coachella Canal. Use of the FAV course along Salt Creek, the Bradshaw Trail, and the Nyland-Blythe Road is being eliminated.

More detailed descriptions of current and proposed activities in the Range can be found in the BA and draft EIS.

Measures proposed by the MCAS, Yuma to reduce potential impacts to desert tortoise from training activities are as follows:

1. MCAS, Yuma will designate a tortoise management representative within the Range Management Department whose duty will be to ensure compliance with protective stipulations by all users of the Range. This representative will have the authority to halt activities that may be in violation of such provisions. The tortoise management representative also will coordinate with the designated Service representative on all matters concerning desert tortoise mitigation and management responsibilities.
2. All ground users of the Range will participate in a tortoise education program. MCAS, Yuma will develop the educational program, including a video, for the Range users. The educational program will be developed cooperatively with the Service. The program will include, at a minimum, the following topics: 1) occurrence of desert tortoises; 2) sensitivity of the species to human activities; 3) legal protection for desert tortoises; 4) penalties for violations of federal laws; 5) general tortoise activity patterns; 6) reporting requirements; 7) measures to protect tortoises; and 8) personal measures that users can take to promote the conservation of desert tortoises.
3. All users of the Range will be informed of their responsibility to report any form of take to the tortoise management representative.
4. Explosive Ordnance Disposal (EOD) personnel will be responsible for periodically reminding all escorted Range users of the prohibitions regarding off-road vehicular travel and other protective measures for tortoises.
5. All personnel operating vehicles within tortoise habitat on the Range will inspect underneath their parked vehicle, prior to moving it. If a desert tortoise is found beneath the vehicle, the tortoise management representative, or qualified appointee(s), will be contacted to remove the animal from harms way.
6. No pets will be permitted at anytime within desert tortoise habitat. Military working dogs will be permitted, under control of their handler.
7. All ground personnel that enter the Range will be required to remove all food stuffs, trash or other waste that may attract predators. Any trash receptacles used for extended stays will be equipped with latching/locking lids.
8. All roads entering critical habitat will be posted with speed limits of 20 miles per hour.
9. Clearance surveys conforming to Service recommendation will be followed for new construction or other ground disturbing activity, including new target site designation.
10. Surveys will be conducted of existing military activity sites, using Service recommended methods by qualified desert tortoise biologists to the extent funds are made available. The objective will be to walk two hundred miles of transect per year

until all activity sites have been surveyed. Each activity site will require only one survey. Surveys will be conducted during regularly scheduled Range closures in the spring. The survey results, along with data on take at activity sites, will serve as the basis for identifying which, if any activity sites should be relocated. All data will be entered in the MCAS, Yuma geographic information system (GIS) data base. Any changes in survey methodology will be reported to the Service in an annual monitoring report.

11. Boundaries of all target sites, existing and proposed, will be determined in the field, mapped and flagged. All new target constructions will be placed within the boundaries of the designated target site. There will be an on-site tortoise monitor during target placement.
12. A Desert Tortoise Management Plan will be implemented in part, to identify ways to minimize impacts on tortoises from ongoing activities. This will include the relocation of some activities to areas of lower tortoise densities, based on the results of ongoing surveys.
13. EOD personnel will monitor take as part of their sweeps of target areas. EOD personnel will report to the tortoise management representative any injured or dead tortoises located during EOD sweeps, as well as habitat damage outside of designated target areas. Each EOD crew will fill out a form after each sweep, reporting any take. The tortoise management representative (or appointee) will accompany EOD crews on all sweeps.
14. The tortoise management representative, or appointee(s), will survey all ground support areas for dead or injured tortoises after the completion of each ground operation.
15. The Service will be notified by the tortoise management representative within three working days of the discovery of any tortoise death or injury caused by military activity. Notification will include the date, time, circumstances, and location of any injury or death. Dead animals will be left in situ. Injured animals will be taken to a veterinarian approved by the Service.
16. An annual monitoring report will be prepared and delivered to the Service on or before January 15 of each year. The report will briefly outline the effectiveness of the desert tortoise mitigation measures and summarize the mortality or injury to desert tortoises. To enhance desert tortoise protection, the report will make recommendations for modifying or refining the terms and conditions, herein.
17. Surveys will be conducted to further refine tortoise density estimates within critical habitat on the Range and to monitor and determine population trends using the most current methods accepted by the Service, Bureau of Land Management (BLM), and National Biological Survey. The primary objective of surveys would be to evaluate the effectiveness of management prescriptions set forth in the Desert Tortoise

Management Plan. Since there are currently no established survey methods for achieving these objectives, the Marine Corps will develop a survey program for the Range in consultation with the Service. Surveys will be conducted each year until the Mojave population of desert tortoise, or the East Colorado Recovery Unit, is removed from the list of threatened and endangered species. All survey data will be entered into the MCAS, Yuma GIS desert tortoise database.

18. A Desert Tortoise Management Plan (Management Plan) will be created (It is currently being developed in cooperation with the Service and BLM).
  - 18.1. The objective of the Management Plan will be to manage critical habitat for the desert tortoise within the Range in a manner consistent with recommendations presented in the *Desert Tortoise (Mojave Population) Recovery Plan* (U.S. Fish and Wildlife Service 1994).
  - 18.2. The Management Plan will be developed as part of the Northern and Eastern Colorado Desert Coordinated Management Plan being formulated by the BLM. The Management Plan will only address the management of desert tortoises and their habitat within the Range.
  - 18.3. The Management Plan will establish a portion of the Range as part of the Chuckwalla Desert Wildlife Management Area (DWMA). Established within the Chuckwalla DWMA will be Limited Use Zones (LUZs) where military activity will be excluded. The Management Plan will also establish experimental management zones within the Chuckwalla DWMA. These would be within critical habitat where military activities would continue.
  - 18.4. Surveys to monitor tortoise population trends would be used to evaluate the effectiveness of protective measures. Survey results could be used to compare population trends on the Range with areas receiving other management prescriptions on BLM lands, and to evaluate tortoise management practices based on the results of these comparisons.
  - 18.5. The Management Plan would also establish protective measures in areas of the Range outside of critical habitat.

## EFFECTS OF THE PROPOSED ACTION ON THE LISTED SPECIES

### Species Account

The desert tortoise is a large, herbivorous reptile. Optimal habitat for this species has been characterized as creosote bush scrub in which precipitation ranges from two to eight inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner and Brown 1982, Turner 1982, and Schamberger and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or

sandy soils with some clay, but are occasionally found in windblown sand or in rocky terrain (Luckenbach 1982). Live desert tortoises have been found in the California desert from below sea level to an elevation of 2,190 meters (7,300 ft), but the most favorable habitat occurs at elevations of about 300 to 900 meters (1,000 to 3,000 ft) (Luckenbach 1982; Schamberger and Turner 1986).

Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert. Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Weinstein et al. (1987), and U.S. Fish and Wildlife Service (1994).

Desert tortoises are found in portions of the California, Arizona, Nevada, and Utah deserts. They also occur in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the creosote, shadscale, and Joshua tree series of Mohave desert scrub, and the lower Colorado River Valley subdivision of Sonoran desert scrub.

On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (Service 1990). The Mojave population includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California (a division of the Sonoran Desert). Reasons for the determination included loss and degradation of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and off-highway vehicles have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection, upper respiratory tract disease, and predation on juvenile desert tortoises by northern ravens (Corvus corax).

On February 8, 1994, the Service designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise (U.S. Fish and Wildlife Service 1994). The designation became effective on March 10, 1994. A final Recovery Plan (U.S. Fish and Wildlife Service 1994) for the desert tortoise was published in June 1994. The recovery plan is the basis and key strategy for recovery and delisting of the desert tortoise. Following the recommendations of the desert tortoise recovery team, the Recovery Plan identifies six Recovery Units and recommends establishment of 14 Desert Wildlife Management Areas (DWMA) within the recovery units. The six recovery units represent the biotic and abiotic variability found in desert tortoise habitat. The boundaries of DWMA were to follow accepted concepts of reserve design and, as part of the actions needed to accomplish desert tortoise recovery, the Plan recommends that human activities that negatively affect desert tortoises in DWMA should be restricted (U.S. Fish and Wildlife Service 1994). Within each, the recovery plan recommends specific management actions to achieve recovery of desert tortoises.

The Chocolate Mountain Gunnery Range is situated with the eastern Colorado Desert

recovery unit. The Recovery Plan has recommended establishment of the Chuckwalla DWMA which would encompass a portion of the Range. The proposed Chuckwalla DWMA is composed of critical habitat for the desert tortoise. Approximately 40 percent of the Range lies within designated desert tortoise critical habitat, that is, most of the Range east of the Chocolate Mountains. Approximately 30 percent of the designated critical habitat on the Range is currently used for military activity. The proposed actions will affect less than 10 percent of this critical habitat, that is already in use on the Range.

Between 1992 and 1993, surveys for desert tortoises using strip transects were conducted over the Range. These surveys focused on military activity sites (e.g., targets), and provide the most current data on tortoise distribution and densities on the Range. Other desert tortoise surveys have been conducted since 1982. Survey results and maps depicting estimates of desert tortoise density appeared in the BA. These results are depicted in Table 1. Density estimates of tortoise and burrows on the Range are low, west of the Chocolate Mountains (SEAL Camp CCC & CP Bull). The highest densities of tortoise, and tortoise burrows, occurred in the Chuckwalla Bench area in the northeast portion of the Range (HAWK site, Target 2N, Target 9N, & Deadman CAS). There are also estimated high densities of tortoises on the east-central border of the Range (Gun Pos. 9A & Gun Pos. 8). Burrows and tortoise densities tended to be higher in the Chuckwalla Bench area than in the southeastern and western portions of the Range (Dames & Moore 1994). Detailed descriptions of survey sites can be found in Dames & Moore (1994). Of the 605 square miles in the Range, approximately 242 square miles are in designated critical habitat. Using an average density figure of 35 tortoises per square mile, there are approximately 8,470 individuals in critical habitat on the Range.

Table 1. Estimated Density of Desert Tortoise and Burrows at Target Sites

Activity Site	Tortoises Per Sq. Mile	Burrows Per Sq. Mile	Year of Survey
HAWK Site	101-250	301-400	1993
Target 2N	21-50	201-300	1993
Gun Pos. 9A	21-50	201-300	1993
Target 9N	51-100	101-200	1993
Deadman CAS	21-50	101-200	1993
Gun Pos. 8	21-50	101-200	1993
SEAL Camp CCC	0-20	0-100	1993
Target 1S	21-50	0-100	1993
Targets 12S, 13S, & 15S	0-20	0-100	1993
Targets 4S & 5S	21-50	0-100	1993
Targets 10S & 11S	21-50	0-100	1993
FARP South	21-50	0-100	1993

Activity Site	Tortoises Per Sq. Mile	Burrows Per Sq. Mile	Year of Survey
CP BULL	0-20	0-100	1993
Target 4N	21-50	0-100	1992
Target 1S	0-20	0-100	1992
Target 5S	0-20	0-100	1992
Target 11S	21-50	0-100	1992

## Analysis of Impacts

### Current Activities

Continued use of CAS, Rockeye munitions ranges, and target sites may kill or injure desert tortoises. Collapsed burrows from activities could trap individual animals. Desert tortoises may be killed or injured by gunnery and explosive ordnance activities within unfenced target impact zones. Potential mortality or injury to tortoises from bombing is likely to be proportional to the densities of tortoise burrows at and in the vicinity of the targets.

Current activities may further degrade disturbed desert tortoise habitat associated with target impact zones. Impact craters and debris from bombs and other ordnance have altered the plant composition in some areas (Dames & Moore 1994). Desert tortoises that cross these areas, denuded of natural vegetation, could become more vulnerable to predation and thermal stress in the absence of shrub cover. The craters and debris may also serve as a barrier to the movement of desert tortoise which are resident in the vicinity. The effects of bombing on substrate with well developed desert pavement may persist for hundreds of years (Dames & Moore 1995).

Although uncommon in desert areas, wildfires caused by ordnance may degrade or destroy desert tortoise habitat and may kill individuals. Larger fires could fragment desert tortoise habitat and recurrent fires may reduce the abundance and diversity of native forbs which are the major food source of the desert tortoise.

Desert tortoises may be harmed from noise and ground disturbance generated from: 1) gunnery or explosive ordnance activities; and 2) low-level subsonic or supersonic aircraft flights. An increase in the net explosive weight limit may proportionately increase the impacts associated with noise and ground disturbance. Specific effects of increased noise levels on desert tortoise are not known. However, noise and vibration generated by off-highway vehicles have caused physical damage and behavioral modification in other desert species, such as the desert kangaroo rat (*Dipodomys deserti*), Mojave fringe-toed lizard (*Uma scoparia*), and Couch's spadefoot toad (*Scaphiopus couchi*) (Brattstrom and Bondello 1983). It is likely that desert tortoises are also subjected to some physical damage and stress from these impacts.

SEAL's training conducted by NSWG-1 in its current locations has the potential to result in high mortality and injuries to tortoises. The eastern portions of Training Area 1 support estimated high densities of tortoises, and the FAV training course traverses an area of estimated high densities in the northeast portion of the Range (Dames & Moore 1995). This portion of Training Area 1 occurs in desert tortoise critical habitat. The potential for mortality and injury to tortoises from use of this portion of the FAV training course appears to be high since these vehicles travel at speeds of approximately 55 miles per hour.

Desert tortoises may be killed or injured by vehicles that use existing maintenance roads or travel off-road to retrieve ordnance debris (Bury 1978; Luckenbach 1975; Nicholson 1978). Tortoises that are removed from harms way in impact zones and off maintenance roads may be affected directly by physical stress of the relocation, and by associated stresses, such as lack of knowledge of cover sites, nest sites, foraging areas, and loss of bodily fluids.

Individual desert tortoise could be taken by predators such as common ravens or coyotes (*Canis latrans*), that can be attracted to sites by human activities. Also, if populations of the coyote and northern raven increase due to these activities, the desert tortoise population at the Chuckwalla Bench could be adversely affected through increased predation.

#### Proposed Activities

The proposed delivery of ordnance (bombing) between 2200 and 0600 hours would increase noise and vibration impacts to 24 hours per day from the current 16 hour per day.

The proposed increase in net weight limit of bombs, the proposed use of live ordnance in R-2507N section, the redevelopment of seven inactive target sites in R-2507N, and the development of three new individual target sites could cause an increase in the noise and vibration levels, as well as new ground disturbance. The relocation of two ground support areas and a drop zone will increase ground disturbance in new areas and alter habitat. Tortoise mortality could occur in the course of this disturbance. Current desert tortoise habitat could be adversely modified. Wildfires could increase in number and could occur in new areas. Clearance sweeps could kill, injure, or harass tortoises and possibly prevent habitat from recovering.

On a more positive note, the reconfiguring of the SEALs training area may reduce potential adverse affects of SEAL training on desert tortoises and critical habitat, as will eliminating the FAV training course.

Density of tortoises (from 0-20 to 101-250 individuals/square mile) and tortoise burrows (from 0-100 to 301-400 individuals/square mile) at target sites is extremely variable (See Table 1). In order to estimate the take from the current and proposed activities, the Service looked at the following variables: total Range size; proportion of Range in and out of critical habitat; 1992-93 tortoise density estimates over various parts of the Range; and magnitude and frequency of impacts. Without empirical data, the Service is using a probability of tortoise mortality resulting from ordnance impact of one in one hundred over the course of a year. This would result in the take of approximately eleven individuals annually in the form

of mortality over the 32 square miles directly affected by current and proposed activities. Using a probability for harassment of one in ten over the course of a year, this would result in a take of one hundred twelve individuals annually in the form of harassment associated with current and proposed activities.

### CUMULATIVE EFFECTS

Cumulative effects are those impacts of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative with the proposed project.

Many of the actions that are reasonably expected to occur within the vicinity of the Range will be subject to future section 7 consultations because the Federal government administers large portions of the desert. Activities such as grazing, ground-water pumping, and recreational use, and events such as fire, that occur on private lands may not be subject to section 7 requirements and can contribute to continued desert tortoise take and habitat degradation. To the extent that the effects of these activities are foreseeable, they are subject to the prohibitions of sections 9 and 10 of the Act. The Service is unaware of any proposed activities on private lands in the action area that are not subject to Federal oversight.

### BIOLOGICAL OPINION

The Service does not believe that the impacts of the proposed action, in conjunction with cumulative effects, are sufficient to jeopardize the continued existence of the Mojave population of the desert tortoise or result in significant destruction or adverse modification of its critical habitat. We base this conclusion on the following facts:

1. The approximate acreage of disturbed desert tortoise critical habitat from current activities is less than 93,000 acres. However, only 13,000 acres of desert tortoise critical habitat will continue to be degraded by activities due to the proposed closing of Training Area 1 (80,000 acres). This is a relatively small fraction (0.013 percent) of the overall acreage of critical habitat within the Chuckwalla Critical Habitat Unit (1,020,600 acres). Current plus proposed training actions are estimated to affect only 20,480 acres (32 square miles) which represents only two percent of the critical habitat.
2. MCAS, Yuma has incorporated several actions to minimize the take of desert tortoise and compensate the loss of habitat value.
3. Areas will be established that will be protected for the long-term conservation of desert tortoises on the Range.

4. A Management Plan will be developed and adaptively implemented, to actively pursue efforts to conserve desert tortoises and their habitat on the Range.

#### INCIDENTAL TAKE

Section 9 of the Act prohibits the take of listed species without special exemption. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the proposed action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take statement. The terms and conditions described below are nondiscretionary and must be undertaken.

Based on the analysis of impacts provided above, mitigation measures proposed by MCAS, Yuma, desert tortoise surveys conducted by consultants, and anticipated project duration, the Service anticipates that the following take could occur as a result of the proposed action:

1. Eleven (11) desert tortoises may be incidentally injured or killed by ordnance or vehicles during training activities each year.
2. One hundred twelve (112) desert tortoises may be harassed by removal from target impact zones or roads during military activities each year.

If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring review of the reasonable and prudent measures provided. MCAS, Yuma shall immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures and re-initiation of consultation.

#### **Reasonable and Prudent Measures**

The Service believes that the following Reasonable and Prudent Measures are necessary and appropriate to minimize incidental take.

1. Measures shall be taken to minimize mortality or injury of desert tortoises due to military activities in the Chocolate Mountain Range.

#### **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, MCAS, Yuma is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measure described above.

1. The following Terms and Conditions will implement Reasonable and Prudent Measure

number 1:

- 1.1 MCAS, Yuma shall insure that all of the mitigation measures specified in the project description, including those outlined in the Project Description section of this opinion are implemented.
- 1.2 In addition to MCAS, Yuma's mitigation measure number 1, the Tortoise Management Representative shall receive instruction from a qualified desert tortoise biologist in the handling, data collection, and release procedures for desert tortoise prior to engaging in such activities. MCAS, Yuma shall submit the name(s) and credentials of the person(s) that will be the Tortoise Management Representative or appointee(s). Only qualified desert tortoise biologists, Tortoise Management Representative, or appointees shall handle desert tortoises.
- 1.3 In addition to MCAS, Yuma's mitigation measure number 4, all off-road vehicle use shall be prohibited, except for activities associated with ordnance removal, and Training Area 2. Vehicle speeds outside of critical habitat, with the exception of Training Area 2, shall not exceed 30 mph during periods of desert tortoise activity (February 1 to May 31 and August 15 to September 30). Roads entering critical habitat shall have posted signs stating:
  - 1.3.1 "Entering Desert Tortoise Critical Habitat"
  - 1.3.2 "Desert Tortoises are Protected by Law"
- 1.4 In addition to MCAS, Yuma's mitigation measure number 5, the Service defines an "appointee" as having the same qualifications as the Tortoise Management Representative. Names of appointees shall be submitted to the Service prior to engaging in any tortoise handling.
- 1.5 In addition to MCAS, Yuma's mitigation measure number 10, MCAS, Yuma shall have a qualified desert tortoise biologist survey existing and proposed military activity sites using Service-recommended methods.
- 1.6 In addition to MCAS, Yuma's mitigation measure number 11, the Tortoise monitor shall be a qualified desert tortoise biologist or the Tortoise Management Representative.
- 1.7 In addition to MCAS, Yuma's mitigation measure number 18.2, the Management Plan will be completed within 1 year after the finalization of the Northern and Eastern Colorado Desert Coordinated Management Plan.

#### **Disposition of Sick, Injured, or Dead Specimens**

The Service's Carlsbad Office (619) 431-9440 must be notified within three working days

should any listed species be found dead or injured in or adjacent to the action area. Notification must include the date, time, and location of the carcass, cause of death or injury, and any other pertinent information. In the event that MCAS, Yuma suspects that a species has been taken in violation of the terms and conditions contained within this biological opinion, such situation shall be reported to the Service's, Divisions of Law Enforcement, San Diego, California at (619) 557-5063.

#### CONSERVATION RECOMMENDATIONS

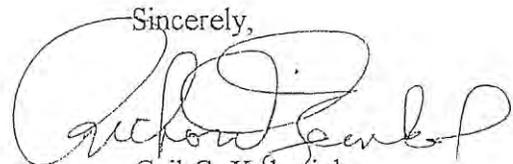
Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information.

1. The Service recommends that MCAS, Yuma initiate a study to determine the effects of noise and ground vibrations generated from: (1) gunnery or explosive ordnance activities, and (2) low-level aircraft flights on desert tortoises living on the Range.
2. The Service recommends that MCAS, Yuma develop a habitat restoration plan to rehabilitate closed target sites, training areas, and unnecessary roads in desert tortoise critical habitat.

#### CONCLUSION

This concludes the formal consultation on the current and proposed military use of the Chocolate Mountain Aerial Gunnery Range, California. As required by 50 CFR 402.16, reinitiation of formal consultation is required if the action is significantly modified in a manner not discussed above, if new information becomes available on the listed species, or if the incidental take limit is exceeded. We would appreciate notification of your final decision on this matter. Any questions or comments should be directed to Karen Jensen of my staff at (619)431-9440.

Sincerely,



Gail C. Kobetich  
Field Supervisor

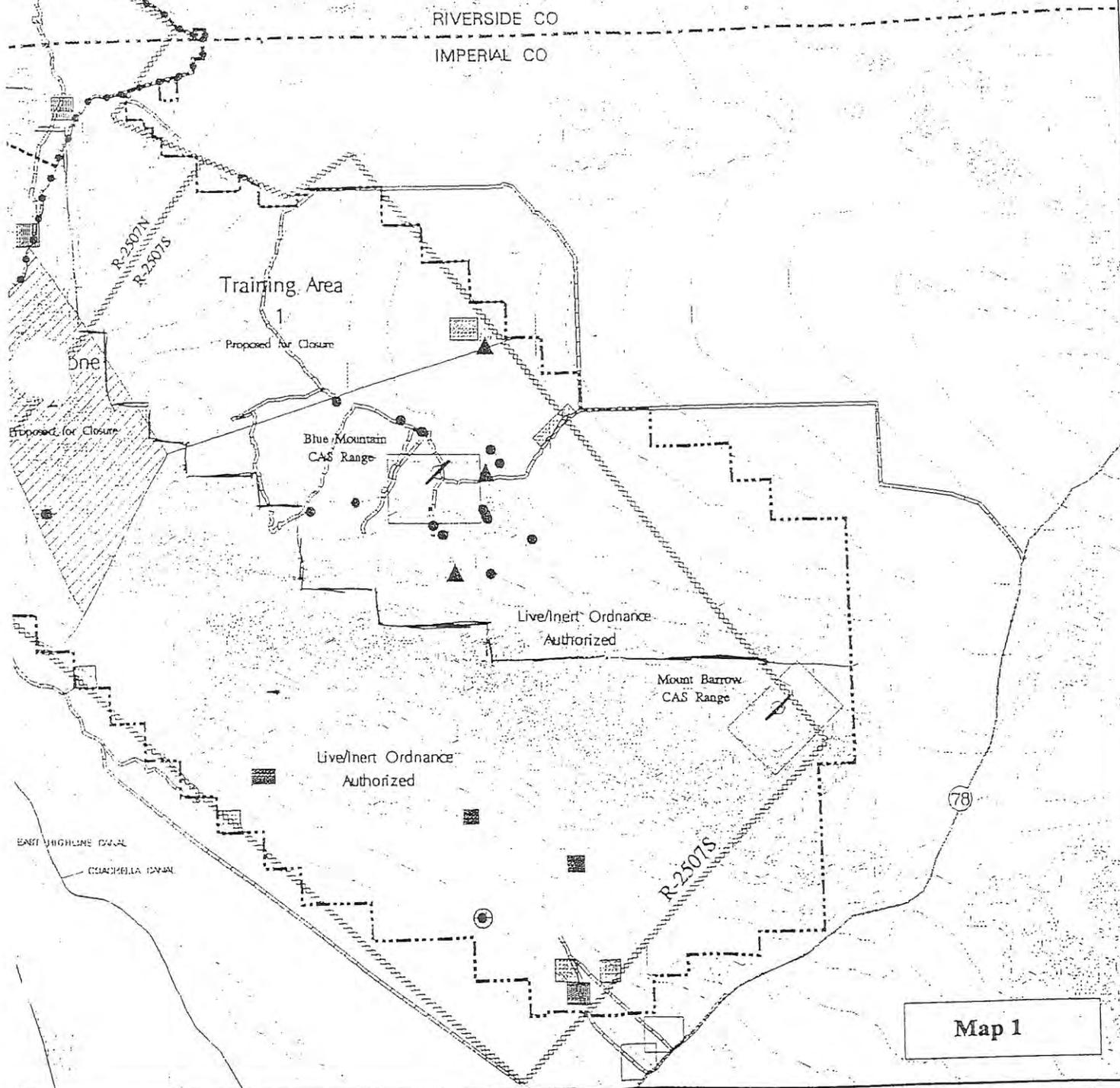
cc: Bill Fisher (SWDIV)  
Ron L. Pearce (MCAS, Yuma)

LITERATURE CITED

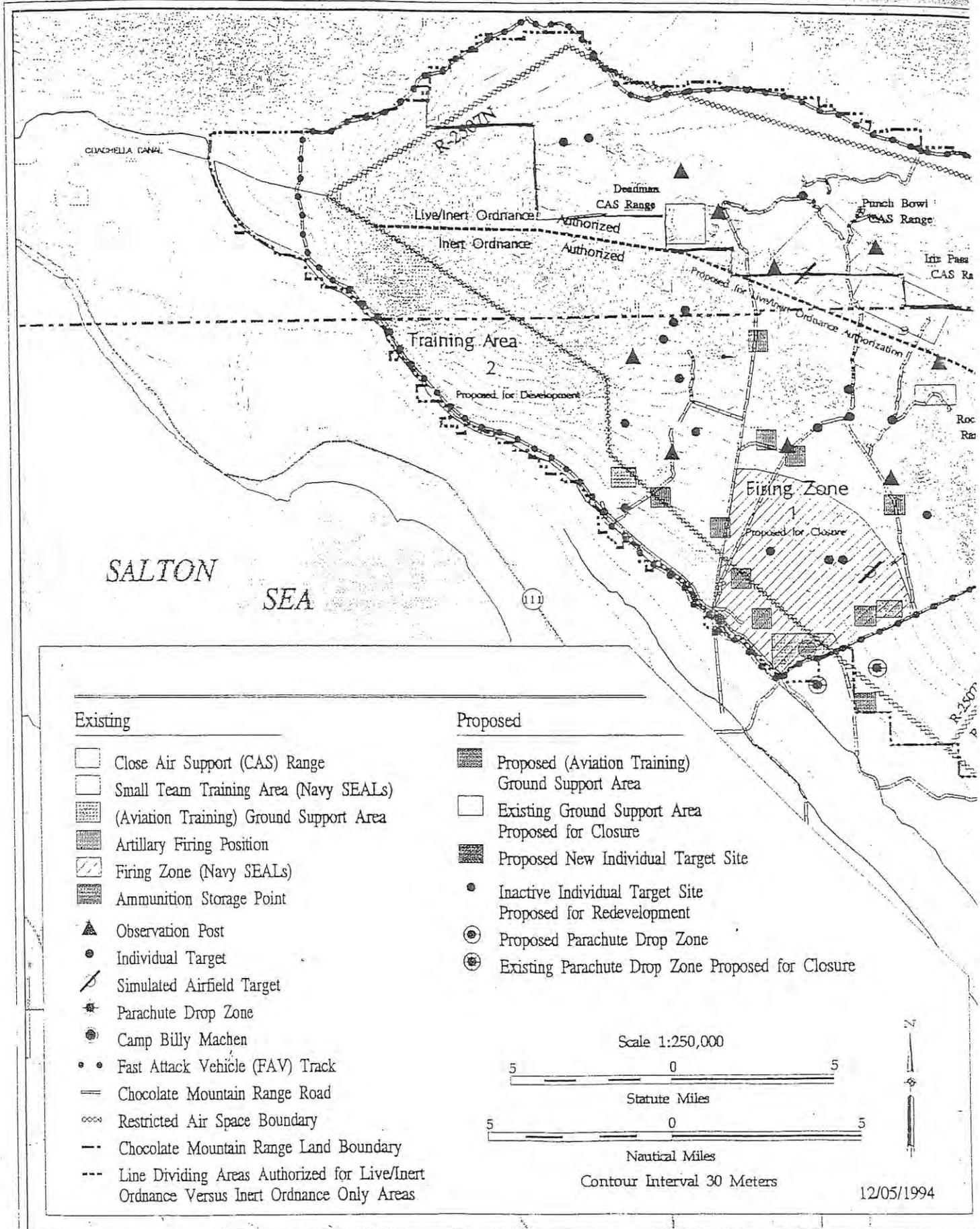
- Brattstrom, B.H. and M.C. Bondello. 1983. Effects of off-road vehicles on desert vertebrates. In R.H. Webb and H.G. Wilshire, (Eds.). *Environmental effects of off-road vehicles*. Springer-Verlag, New York, New York.
- Burge, B.L. 1978. Physical characteristics and patterns of utilization of cover sites by Gopherus agassizii, in a low desert study area in southern Nevada. *Proceedings of the 1976 Symposium*, The Desert Tortoise Council, San Bernardino, CA. P. 51-74.
- Burge, B.L., and Bradley, W.G. 1976. Population density, structure and feeding habits of the desert tortoise, Gopherus agassizii, in a low desert study area in southern Nevada. *Proc. 1976 Symposium*. The Desert Tortoise Council, San Bernardino, CA. Pp. 51-74.
- Bury, R.B. 1978. Desert tortoises and off-road vehicles: do they mix? *Proceedings 1978 Desert Tortoise Council Symposium*. P. 126.
- Dames & Moore. 1995. Biological Assessment for the Desert Tortoise for the military use of the Chocolate Mountain Aerial Gunnery Range, California. June.
- Dames & Moore. 1994. Desert Tortoise Survey Results from the Chocolate Mountain Aerial Gunnery Range Yuma Training Range Complex, Marine Corps Air Station Yuma. March.
- Desert Tortoise Council. July 1994. *Guidelines for Handling Desert Tortoises During Construction Projects*.
- Hovik, D.C., and D.B. Hardenbrook. 1989. Summer and fall activity and movements of desert tortoises in Pahrump Valley, Nevada. Abstract of paper presented at Fourteenth Annual Meeting and Symposium of the Desert Tortoise Council.
- Luckenbach, R.A. 1982. Ecology and management of the desert tortoise (Gopherus agassizii) in California. In: R.B. Bury (ed.). *North American Tortoise: Conservation and Ecology*. U.S. Fish & Wildlife Service, Wildlife Research Report 12, Washington, D.C.
- Luckenbach, R.A. 1975. What the ORVs are doing to the desert. *Fremontia* 2:3-11.
- Nicholson, L. 1978. The effects of roads on desert tortoise populations. Pp 127-129 in M. Trotter and C.G. Jackson, Jr. (Eds.). *Proc, 1978 Symposium of the Desert Tortoise Council*. Also, U.S. Dept. Of Interior, Bureau of Land Management, CDP, Riverside, Calif. Draft report. Contr. No. CA-060-CTB-000024.

- Schamberger, M. and F.B. Turner. 1986. The application of habitat modeling to the desert tortoise (*Gopherus agassizii*). *Herpetologica* 42(1):134-138.
- Turner, R.M. 1982. Mohave desert scrub. In: D.E. Brown (Ed), Biotic communities of the American Southwest-United States and Mexico. *Desert Plants* 4(1-4):157-168.
- Turner, R.M., and D.E. Brown. 1982. Sonoran desert scrub. In: D.E. Brown (Ed.). Biotic communities of the American Southwest -United States and Mexico. *Desert Plants* 4(1-4):181-222.
- U.S. Dept. of Defense, MCAS, Yuma. 1994. Draft Environmental Impact Statement Yuma Training Range Complex. MCAS, Yuma. May.
- U.S. Fish & Wildlife Service. Endangered & Threatened Wildlife and Plants, 50 CFR 17.11 & 17.12. April 15, 1990.
- U.S. Fish and Wildlife Service. 1994. *Desert Tortoise (Mojave population) Recovery Plan*. U.S. Fish & Wildlife Service, Portland, Oregon. 73 pp. plus appendices.
- Weinstein, M., K.H. Berry, and F.B. Turner. 1987. An Analysis of Habitat Relationships of the Desert Tortoise in California. A report to Southern California Edison Company.

# Existing and Proposed Training Facilities and Ground Support Areas Chocolate Mountain Range



Map 1



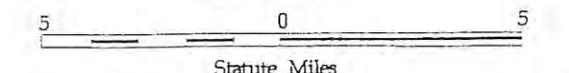
**Existing**

- Close Air Support (CAS) Range
- Small Team Training Area (Navy SEALs)
- (Aviation Training) Ground Support Area
- Artillery Firing Position
- Firing Zone (Navy SEALs)
- Ammunition Storage Point
- Observation Post
- Individual Target
- Simulated Airfield Target
- Parachute Drop Zone
- Camp Billy Machen
- Fast Attack Vehicle (FAV) Track
- Chocolate Mountain Range Road
- Restricted Air Space Boundary
- Chocolate Mountain Range Land Boundary
- Line Dividing Areas Authorized for Live/Inert Ordnance Versus Inert Ordnance Only Areas

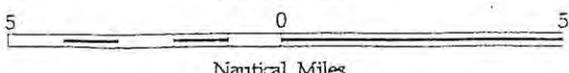
**Proposed**

- Proposed (Aviation Training) Ground Support Area
- Existing Ground Support Area Proposed for Closure
- Proposed New Individual Target Site
- Inactive Individual Target Site Proposed for Redevelopment
- Proposed Parachute Drop Zone
- Existing Parachute Drop Zone Proposed for Closure

Scale 1:250,000



Statute Miles



Nautical Miles

Contour Interval 30 Meters

12/05/1994



United States Department of the Interior  
Fish and Wildlife Service  
Ecological Services  
Carlsbad Fish and Wildlife Office  
6010 Hidden Valley Road  
Carlsbad, California 92009



In Reply Refer to: 1-6-95-F-40

APR 09 2003

Mr. R. L. Pearce  
United States Marine Corps  
Marine Corps Air Station  
Box 99100  
Yuma, Arizona 85369-9100

Subject: Request for Amendment to Biological Opinion 1-6-95-F-40 for the Military Use of the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Dear Mr. Pearce:

This letter constitutes an amendment to the April 18, 1996, Biological Opinion for Military Use of the Chocolate Mountain Aerial Gunnery Range (File No. 1-6-95-F-40). The Fish and Wildlife Service (Service) received your written request for an amendment to the proposed action addressed in the above-mentioned biological opinion on March 21, 2003. This amendment adds to the proposed action the construction of a new SEAL Sniper Range at Camp Billy Machen, located within the Chocolate Mountain Aerial Gunnery Range. Approximately 80 acres of desert scrub habitat would be disturbed by the project. This area was found to support low densities (0-20 per square mile) of desert tortoises (*Gopherus agassizii*) based on information provided in the Biological Assessment submitted to the Service when the consultation was initiated. The photographs included with your March 14, 2003, request support that only a few desert tortoises are anticipated to be on-site, given that much of the site appears to be disturbed and unlikely to support desert tortoise use.

The nature of the proposed project is similar in scope to the activities previously addressed in the biological opinion, and it includes all minimization measures identified in the original proposed action and the terms and conditions of the biological opinion. We anticipate that up to three desert tortoises would need to be moved from the construction zone based on the densities of desert tortoise previously identified for this area. Because this falls within the incidental take level evaluated in the biological opinion, the incidental take associated with this project would not modify our conclusion in the biological opinion nor modify the existing baseline for the desert tortoise on the Chocolate Mountain Aerial Gunnery Range. Should more than three desert tortoises be found in the required pre-construction clearance surveys, construction activities shall not begin until the Service has made a determination whether the number of tortoises actually found in the project area would modify our conclusions and necessitate re-initiation of

Mr. R. L. Pearce, Range Director

2

consultation. We would appreciate receiving a written report of the results of your pre-construction clearance surveys.

If you have any questions regarding this amendment, please contact Carol Roberts of my staff at (760) 431-9440 ext. 271.

Sincerely,



Peter Sorensen  
Acting Assistant Field Supervisor

cc: Tricia Griffin, Southwest Division, Naval Facilities Engineering Command

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL**

# of pages - 2

To <i>Tricia Griffin</i>	From <i>Carol Roberts</i>
Dept./Agency <i>SW Div</i>	Phone # <i>760-431-9440</i>
Fax # <i>619-532-2518</i>	Ext # <i>ext-271</i>

NSN 7540-01-317-7368

5089-101

GENERAL SERVICES ADMINISTRATION

# **Appendix D**

---

**Agency Consultation**

**This page intentionally left blank.**



UNITED STATES MARINE CORPS  
MARINE CORPS AIR STATION YUMA  
BOX 99100  
YUMA, ARIZONA 85369-9100

5090  
YRMD/KJ  
August 14, 2014

Ms. Sherry Cordova  
Chairwoman  
Cocopah Indian Tribe  
14515 S Veterans Dr.  
Somerton, Arizona 85350

Dear Chairwoman Cordova:

Under the National Historic Preservation Act (NHPA) Section 106, as codified in Title 36, Code of Federal Regulations Part 800 (36 CFR 800) Marine Corps Air Station (MCAS) Yuma is requesting your input on cultural resources located during a recent archaeological survey of the area of potential effects (APE) for the proposed Target Complex Invader located on lands within the Chocolate Mountain Aerial Gunnery Range (CMAGR). The project APE consists of 279.6 acres, which includes the Target Invader with a 200-meter buffer (252.5 acres), a Landing Zone with a 107 meter buffer (21.5 ac), and three Observation Posts with 50-meter buffers (5.7 acres).

Prior to the survey, a records search and literature review was conducted for the APE and the surrounding one-mile radius. The records search indicates that no surveys have been performed and no sites have been previously recorded in the APE or within a one-mile radius of the APE.

The 279.6 acre Class III survey was conducted on March 13 and 14, 2014. The entire APE, with the exception of 8.9 acres with over 30 percent slope, was surveyed at 15 meter transect intervals. The survey resulted in the recordation of five new sites and 26 isolated occurrences (IOs). Other than a single prehistoric IO (P-13-14805), a cryptocrystalline silicate core/scrapper, all of the IOs are historic-era cans or bottles or stacked rock features.

<b>Trinomial (CA-IMP-)</b>	<b>Primary Number</b>	<b>Description</b>	<b>NRHP Eligibility Determination</b>
12359	P-13-14782	Stacked rock hearth and a scatter of metal cans	Not eligible
12360	P-13-14783	Stacked rock hearth and a linear rock feature	Not eligible
12361	P-13-14784	Stacked rock hearth, metal cans, amber bottle	Not eligible
12362	P-13-14785	Stacked rock hearth and a scatter of metal cans	Not eligible
12363	P-13-14786	Metal can scatter	Not eligible

All of the five newly recorded sites are attributed to the historical era and consist of rock features, metal cans, and bottles. No association can be found between any of the sites and events or persons significant in our past (criteria A and B). None of the sites embody distinctive characteristics of a type, period, or method of construction, nor do they represent the work of a

5090  
YRMD/KJ  
August 14, 2014

master, or possess high artistic values (Criterion C). The sites also lack information potential and are not eligible under Criterion D. Based on survey observations, none of the five newly recorded historical-era archaeological sites meet any of the criteria for inclusion in the NRHP and MCAS Yuma has determined them all not eligible. MCAS Yuma has made a finding of No Historic Properties Affected.

In accordance with California Office of Historic Preservation Detailed Recommendations for Section 106 Consultation Submittals, MCAS Yuma has completed a Class III survey of the APE for the proposed undertaking. Based on the results of the survey, MCAS Yuma respectfully requests that you provide us with any additional information that you wish to share at this time. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the APE or questions regarding consultation on this proposed project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288; karla.james@usmc.mil.

Respectfully,

  
WILLIAM R. SELLARS  
By direction of the Commanding Officer

Enclosure: 1. Archaeological Survey Report of Target Complex Invader, Chocolate Mountain  
Aerial Gunnery Range, Imperial County, California

Copy to: Ms. Jill McCormick, with enclosure

**OFFICE OF HISTORIC PRESERVATION  
DEPARTMENT OF PARKS AND RECREATION**

1725 23<sup>rd</sup> Street, Suite 100  
SACRAMENTO, CA 95816-7100  
(916) 445-7000 Fax: (916) 445-7053  
calshpo@parks.ca.gov  
www.ohp.parks.ca.gov



November 18, 2014

Reply in Reference To: USMC\_2014\_1029\_001

William R. Sellars, Director  
Yuma Range Management Department  
Marine Corps Air Station Yuma  
United States Marine Corps  
Box 99100  
Yuma, Arizona 85369-9100

Re: Target Complex Invader within the Chocolate Mountain Aerial Gunnery Range, (your letter 5090, YRMD/KJ of October 14, 2014)

Dear Mr. Sellars:

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* (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800. Marine Corps Air Station (MCAS) Yuma proposes to develop the proposed Target Complex Invader, which will include the Target Invader, Invader Landing Zone (LZ), and three Observation Posts (OPs). The proposed undertaking will allow MCAS Yuma to conduct training operations that would include live fire training with air-to-ground delivery of conventional live high-explosive ordnance in the Target Invader area by any of the fixed-wing, rotary-wing, and tilt-rotor aircraft that currently operate within the Chocolate Mountain Aerial Gunnery Range. The LZ would be utilized by rotary-wing and tilt-rotor aircraft for the insertion and extraction of ground-based forward air controllers to the OPs.

The proposed undertaking will consist of the following components:

- The Target Invader area with a 656 feet (200 meters) buffer zone which will encompass 252.5 acres;
- An LZ with a 350 feet (107 meters) buffer zone which will encompass 21.5 acres; and
- Three OPs, each with a 165 feet (50 meters) buffer zone, which will encompass a total of 5.7 acres.

The area of potential effects (APE) has been identified as the three components described above and contains a total of 279.6 acres.

A pedestrian survey of the APE was conducted by Stephen Bryne, Cathy Halley, and Ryan Rolston (Leidos) on March 13-14, 2014, which identified five historic sites and 26 isolates. Those sites and isolates are described succinctly as follows:

- Historic sites – three were stacked rock hearths with historic era can scatters, one was a stacked rock hearth with a linear rock feature, and one was a historic era can scatter.
- Isolates – one was prehistoric and consisted of a cryptocrystalline silicate core/scrapper, and 25 were historic and consisted of isolated historic era cans, bottles, or stacked rock features.

MCAS Yuma evaluated the five historic sites and 26 isolates to determine if any of them were eligible for listing on the National Register of Historic Places and concluded that none of them were eligible.

Between August 19 and 29, 2014, MCAS Yuma consulted with 13 tribal governments or groups in regards to the proposed undertaking. Three of the tribal governments responded as follows:

- Gila River Indian Community – Barnaby V. Lewis, Tribal Historic Preservation Officer, said in a letter dated September 5, 2014 that the tribe concurred with MCAS Yuma's finding of no historic properties affected;
- Cocopah Indian Tribe – H. Jill McCormick, Cultural Resource Manager, said in a letter dated September 8, 2014 that the tribe had no comment in regards to the proposed undertaking, but did want to be contacted if any cultural resources were identified during the proposed undertaking; and
- Agua Caliente Band of Cahuilla Indians – Katie Eskew, Tribal Historic Preservation Officer, said in a letter dated September 9, 2014 that the tribe had no comment in regards to the proposed undertaking.

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

After reviewing your letter of October 14, 2014, 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);
- (2) I concur with your determinations of ineligibility for the five historic sites and the 26 isolates; and
- (3) 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](mailto:Ed.Carroll@parks.ca.gov) or Duane Marti at (916) 445-7030 or at email at [Duane.Marti@parks.ca.gov](mailto:Duane.Marti@parks.ca.gov).

Sincerely,



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