FINAL

SUPPLEMENTAL
ENVIRONMENTAL ASSESSMENT

Phase 2 of the Range 500 Upgrades
Marine Corps Air Ground Combat Center
Twentynine Palms, California

September 2004

DEPARTMENT OF DEFENSE
UNITED STATES MARINE CORPS

FINDING OF NO SIGNIFICANT IMPACT FOR PHASE 2 OF THE PROPOSED RANGE 500 UPGRADES AT MARINE CORPS AIR GROUND COMBAT CENTER, TWENTYNINE PALMS, CALIFORNIA.

Pursuant to Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA), the U.S. Department of the Navy (U.S. Navy) gives notice that a Supplemental Environmental Assessment (EA) has been prepared and an Environmental Impact Statement (EIS) is not required for Phase 2 of the proposed Range 500 upgrades at Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California. This EA supplements the previous September 2003 Environmental Assessment for Range 500 Upgrades at MCAGCC, Twentynine Palms, California (Range 500 EA).

The Range 500 EA addressed construction and installation of infrastructure upgrades and associated increases in operational tempo facilitated by these upgrades. The proposed action would occur in three phases. Phase 1 of the Range 500 EA proposed action consisted of the short-term priority equipment and basic range upgrades. Phases 2 and 3 were conceptual in nature and were not formally proposed at that time. As such, the Range 500 EA provided a programmatic-level of analysis of potential environmental effects associated with each phase. Following Marine Corps review of the Range 500 EA and the consideration of potential environmental impacts, a Finding of No Significant Impact (FONSI) was issued on 30 September 2003 with a commitment to complete supplemental NEPA documentation as the remaining phases became more defined and funding became available for implementation. Phase 2 of the Range 500 upgrades is now being proposed and is addressed in this Supplemental EA

The purpose of the proposed action is to increase armored vehicle training efficiency and to allow more training requirements to be satisfied at MCAGCC. The proposed upgrades are needed because the current range layout provides only two tank trails and thus allows Tank and Light Armored Reconnaissance Battalion (LAR) units to accomplish only *crew-level* and *section-level* portions of their training requirements; *platoon-level* portions of their training requirements (for Tank units and LAR units, respectively) cannot be met without traveling to other locations.

Phase 2 of the proposed action includes construction and installation of infrastructure upgrades, as well as associated increases in operational tempo facilitated by these range upgrades. As stated in the Range 500 EA, implementation of Phase 2 will increase the operational tempo approximately five percent greater than current conditions. Improvements or upgrades associated with Phase 2 will continue to support Tank and LAR training requirements by incrementally increasing the number and variety of trails and targets, allowing the units to satisfy more training requirements at MCAGCC.

Phase 2 of the Range 500 upgrades is addressed in this Finding of No Significant Impact. Potential environmental effects associated with Phase 2 have been analyzed in the SEA: Phase 2 of the Proposed Action and the No-Action Alternative. The Proposed Action is the upgrading of equipment and the increasing of the number and variety of trails and targets. The Proposed Action will convert the existing main supply route (MSR) for co-use as a third trail, creates three new access trails, connecting the MSR to the adjacent trail, and increases the number of targets in the far western portion of Range 500 – along

the MSR and also west of it. The No-Action Alternative is represented by current Range 500 configuration and continuation of current operations. The Phase 2 of the Proposed Action is the preferred alternative for this EA.

The Supplemental EA presents a review and analysis of the potential environmental impacts associated with Phase 2 of the Range 500 Upgrades. Resources analyzed include geological resources, water resources, biological resources, cultural resources, air quality, noise, land use, and public health and safety. No significant environmental impacts would result from implementation of Phase 2 of the proposed action. In coordination with the Natural Resources and Environmental Affairs Division (NREA) of the Marine Air Ground Task Force Training Command (MAGTFTC), the currently proposed project component locations were identified to minimize potential natural and cultural resource impacts. A comprehensive follow-up survey for the federally recognized desert tortoise was conducted for Phase 2 components of the proposed Range 500 upgrades. Based upon the results of the survey, MAGTFTC has determined that the proposed Range 500 upgrades "may affect" the desert tortoise. MAGTFTC's Biological Opinion (MAGTFTC, 2002) allows ground disturbance to a total of 150 acres per calendar year if it's terms and conditions are met. Consistent with what was analyzed in the 2003 Range 500 EA Record of Non-Applicability for Clean Air Act Conformity, air quality impacts associated with proposed demolition and construction activities were evaluated and found to be below significance threshold criteria. Therefore, no additional documentation is required.

Cumulative effects of the proposed action in combination with other past, present, or reasonably foreseeable future actions were also analyzed. Based on this analysis, cumulative impacts at MCAGCC Twentynine Palms would not be significant.

The Supplemental EA prepared by the U.S. Marine Corps addressing this action is on file, and interested parties may obtain a copy from: Commanding General, Head NREA, Building 1451, Box 8110, Marine Air Ground Task Force Training Command, Twentynine Palms, CA, 92278. A limited number of copies of the EA are available to fill single copy requests. Telephone inquiries may be directed to Mr. Scott Kerr at (760) 830-7396, extension 270.

FINDING OF NO SIGNIFICANT IMPACT

After careful review of the EA prepared in accordance with the requirements of NEPA, CEQ regulations, and Department of Navy Procedures for Implementing NEPA (32 CFR 775) as described in Marine Corps Order P5090.2A, I have determined that implementation of Phase 2 of the proposed action would not have significant impacts on the natural and human environment; therefore, an EIS does not need to be prepared.

OCT 13 2004

Date

R.C. ZILMER
Brigadier General, U.S. Marine Corps

ACRONYMS

1TNK	1st Tank Battalion
3LAR	3rd Light Armored Reconnaissance Battalion
AMTC	Armor Moving Target Carrier
APE	Area of Potential Effect
ASP	ammunitions supply pad
Bearmat	Operations and Training Directorate, Range Control Section
BO	Biological Opinion
BZO	Battle Site Zero
CAA	Clean Air Act
CAX	Combined Arms Exercise
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	centimeter
CNEL	Community Noise Equivalent Level
CNO	Chief of Naval Operations
CNPS	California Native Plant Society
CO	carbon monoxide
dB	decibel(s)
dBA	A-weighted decibel
DC	direct current
DTC	Desert Tortoise Council
EA	Environmental Assessment
EO	Executive Order
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
ESQD	explosive safety quantity distance
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
HERO	Hazards of Electromagnetic Radiation to Ordnance
Hz	Hertz
ICOP	Integrated Contingency and Operations Plan
INRMP	Integrated Natural Resources Management Plan
IR	Installation Restoration
IRP	Installation Restoration Program
km	kilometer(s)
LAR	Light Armored Reconnaissance Battalion
LAV	Light Armored Vehicle
LCTA	Land Condition Trend Analysis
m	meter(s)
mm	millimeter(s)
MAGTFTC	Marine Air Ground Task Force Training Command
MBTA	Migratory Bird Treaty Act
MCAGCC	Marine Corps Air Ground Combat Center
MCO	Marine Corps Order
MSR	main supply route
$\mu g/m^3$	micrograms per cubic meter
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NREA	Natural Resources and Environmental Affairs Division
NRHP	National Register of Historic Places
O_3	ozone
O&T	Operations and Training
PM_{10}	particulate matter $\leq$ 10 microns
POL	petroleum, oils, and lubricants
ppm	parts per million
RRPC	Range Residue Processing Center
SAT	Stationary Armor Target
SCM	Special Conservation Measures
SDZ	Surface Danger Zone
SIP	State Implementation Plan
SIT	Stationary Infantry Target
SO_2	sulfur dioxide
SOP	Standard Operating Procedure(s)
SO_x	oxides of sulfur
TEC	The Environmental Company, Inc.
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
VHF	very high frequency
VOC	volatile organic compound

FINAL

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Lead Agency for the EA:	Department of the Navy; U.S. Marine Corps
Title of Proposed Action:	Phase 2 of the Range 500 Upgrades at the Marine Corps Air Ground Combat Center,, Twentynine Palms, California
Affected Region:	San Bernardino County
Designation:	Supplemental Environmental Assessment

Abstract

This Supplemental Environmental Assessment (EA) has been prepared to evaluate the environmental impacts associated with Phase 2 of the Range 500 upgrades and associated increase in training operations, and supplements the previous programmatic EA for Range 500 Upgrades at the Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (Range 500 EA). The Range 500 EA addressed construction and installation of infrastructure upgrades (trails, targets, and facilities), as well as associated increases in operational tempo facilitated by these range upgrades. Following Marine Corps review of the Range 500 EA and the consideration of potential environmental impacts, a Finding of No Significant Impact was issued with a commitment to complete supplemental NEPA documentation as the remaining phases became more defined and funding became available for implementation. Phase 2 of the Range 500 upgrades is now being proposed and is addressed in this Supplemental EA.

Consistent with the Range 500 EA, the purpose of the proposed Phase 2 Range 500 upgrades is to increase armored vehicle training efficiency and to allow more training requirements to be satisfied at MCAGCC. The proposed upgrades are needed because the current range layout allows units to accomplish only *crew-level* and *section-level* portions of their training requirements; *platoon-level* portions of their training requirements cannot be met without traveling to other locations.

Consistent with the Range 500 EA, Phase 2 of the proposed action includes construction and installation of infrastructure upgrades (trails, targets, and facilities), as well as associated increases in operational tempo facilitated by these range upgrades.

This Supplemental EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC § 4321 *et seq.*); the CEQ implementing regulations (40 CFR §§ 1500-1508); and procedures for implementing NEPA as described in the Marine Corps' Environmental Compliance and Protection Manual (Marine Corps Order P5090.2A). Potential impacts have been analyzed for geological resources, water resources, biological resources, cultural resources, air quality, noise, land use, and public health and safety. This Supplemental EA addresses Phase 2 of the Range 500 Upgrades and the No-Action Alternative.

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SEPTEMBER 23, 2004

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EXECUTIVE SUMMARY

This Supplemental Environmental Assessment (EA) has been prepared to evaluate the environmental impacts associated with Phase 2 of the proposed Range 500 upgrades and associated increases in training operations, and supplements the previous programmatic EA for Range 500 Upgrades at the Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (Range 500 EA). The EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC§ 4321 *et seq.*); the Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations §§ 1500-1508); and U.S. Marine Corps (USMC) procedures for implementing NEPA, as described in Marine Corps Order (MCO) P5090.2A *Environmental Compliance and Protection Manual.*

The Range 500 EA addressed construction and installation of infrastructure upgrades (trails, targets, and facilities), as well as associated increases in operational tempo facilitated by these range upgrades. The Range 500 EA evaluated the proposed action in 3 phases as outlined in the *Range 500 Master Plan* (MAGTFTC 2003b). Phase 1 of the proposed action consisted of the short-term priority equipment and basic range upgrades. Phases 2 and 3 were conceptual in nature and were not formally proposed at that time. As such, the Range 500 EA provided a programmatic-level of analysis for potential environmental effects associated with each phase. Following Marine Corps review of the Range 500 EA and the consideration of potential environmental impacts, a Finding of No Significant Impact (FONSI) was issued on 30 September 2003 with a commitment to complete supplemental NEPA documentation as the remaining phases became more defined and funding became available for implementation. Phase 2 of the Range 500 upgrades is now being proposed and is addressed in this Supplemental EA.

The purpose of the proposed Range 500 upgrades is to increase armored vehicle training efficiency and to allow more training requirements to be satisfied at MCAGCC. The proposed upgrades are needed because the current range layout provides only 2 tank trails and thus allows Tank and Light Armored Reconnaissance (LAR) units to accomplish only *crew-level* and *section-level* portions of their training requirements; *platoon-level* portions of their training requirements (for Tank units and LAR units, respectively) cannot be met without traveling to other locations.

Phase 2 of the proposed action includes construction and installation of infrastructure upgrades, as well as associated increases in operational tempo facilitated by these range upgrades. As stated in the Range 500 EA, implementation of Phase 2 would increase the operational tempo approximately 5 percent greater than current conditions. Improvements or upgrades associated with Phase 2 would continue to support Tank and LAR training requirements by incrementally increasing the number and variety of trails and targets, allowing the units to satisfy more training requirements at MCAGCC.

NEPA, CEQ regulations, and U.S. Marine Corps procedures for implementing NEPA specify that an EA should focus only on those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact.

Consequently, this Supplemental EA focuses on geological resources, water resources, biological resources, cultural resources, air quality, noise, land use, and public health and safety. Cumulative effects of the proposed action in combination with other past, present, or reasonably foreseeable future actions at MCAGCC are also analyzed.

Table ES-1 summarizes the potential impact to each resource area under Phase 2 of the Proposed Action and the No-action Alternative. As indicated in Table ES-1, Phase 2 would have less than significant impacts on all environmental resources.

Table ES-1: Potential Impact to Resource Area

Resource Area	***Phase 2***	***No-Action Alternative***
Geological Resources	○	○
Water Resources	○	○
Biological Resources	○	○
Cultural Resources	○	○
Air Quality	○	○
Noise	○	○
Land Use	○	○
Public Health and Safety	○	○

○ indicates no significant impact.

FINAL
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

PHASE 2 OF THE RANGE 500 UPGRADES AT
MARINE CORPS AIR GROUND COMBAT CENTER
TWENTYNINE PALMS, CALIFORNIA

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1.1 INTRODUCTION

This Environmental Assessment (EA) analyzes the potential environmental effects associated with Phase 2 of the proposed Range 500 upgrades and associated increases in training operations, and supplements the previous programmatic EA for Range 500 Upgrades at the Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California (MAGTFTC 2003a; hereafter referred to as the "Range 500 EA"). This supplemental EA has been prepared in compliance with:

- National Environmental Policy Act of 1969 (42 U.S. Code [USC] § 4321);
- Council on Environmental Quality Regulations for Implementation of the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500-1508); and
- The Marine Corps Environmental Compliance and Protection Manual (Marine Corps Order [MCO] P5090.2A).

The Range 500 EA addressed construction and installation of infrastructure upgrades (trails, targets, and facilities), as well as associated increases in operational tempo facilitated by these range upgrades. The proposed action would occur in 3 phases as outlined in the *Range 500 Master Plan* (MAGTFTC 2003b). Phase 1 of the proposed action consisted of the short-term priority equipment and basic range upgrades. Phases 2 and 3 were conceptual in nature and not formally proposed at that time. As such, the Range 500 EA provided a programmatic-level of analysis of potential environmental effects associated with each phase. Following Marine Corps review of the Range 500 EA and the consideration of potential environmental impacts, a Finding of No Significant Impact (FONSI) was issued on 30 September 2003 with a commitment to complete supplemental NEPA documentation as the remaining phases became more defined and funding became available for implementation. Phase 2 of the Range 500 upgrades is now being proposed and will be addressed in this supplemental EA.

1.2 PURPOSE AND NEED

Consistent with the Range 500 EA, the purpose of the proposed Phase 2 Range 500 upgrades is to increase armored vehicle training efficiency and to allow more training requirements to be satisfied at MCAGCC. The proposed upgrades are needed to allow Tank and LAR units to accomplish *platoon-level* portions of their training requirements (for Tank units and LAR units, respectively) without traveling to other locations. Specifically, the current range configuration (i.e., 2 trails and their associated targets) allows units to conduct crew-level gunnery training and their twice-annual crew qualifications at Range 500 and meet the respective requirements in the Tank and LAR training manuals. However, conversion of the existing Main Supply Route (MSR) with additional moving and stationary targets will enhance the range capabilities to adequately support training for both Tank and LAR units.

1.3 RANGE 500 OVERVIEW

Range 500 is situated in the central part of the Cleghorn Pass Training Area between 2 mountain ridges with peaks about 1,000 ft (300 meters [m]) above the central portion of the range. Range 500 boundaries are used for administrative and scheduling purposes only; range activities can occur outside these boundaries as well.

With implementation of Phase 1, Range 500 currently has 2 tank trails with various types of targets: 3 armor moving target carriers (AMTCs), 23 stationary armor targets (SATs), 39 stationary infantry targets (SITs), 10 moving infantry targets (MITs), and 66 Armor Target Kill Simulators and Hostile Fire Simulators. Support facilities consist of a Battle Sight Zero (BZO) Range in the southeastern portion of Range 500, a bivouac area, an aluminum-covered ammunition loading area, an administration/maintenance building, a control tower, 3 electric generators that provide power to the control tower and targets, fuel tanks that supply fuel to the generators, and 135 solar panels for the provision of electricity. In addition to the tank trails, a variety of other trails exist on the range. This includes the MSR, a gravel-based road that is the main access route from the west and the north, and a variety of maintenance trails accessing the various targets and facilities on the range.

1.4 REGULATORY COMPLIANCE

Various federal and state laws, rules, regulations, and policies are pertinent to implementation of the proposed action. A description of the proposed action's consistency with these policies and regulations, as well as regulatory agencies responsible for their implementation, is presented in Chapter 5 of this EA.

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

The proposed action, Phase 2 of the Range 500 EA, includes construction and installation of infrastructure upgrades, as well as associated increases in operational tempo facilitated by these range upgrades. Phase 2 of the proposed action would continue to support Tank and LAR training requirements by increasing the number and variety of trails and targets and satisfy more training requirements at MCAGCC. Upon implementation of Phase 2 of the proposed action, operational tempo would be approximately 5 percent greater than current conditions.

2.1 PROPOSED ACTION – PHASE 2 UPGRADES

The major components of Phase 2 are illustrated in Figure 2-1 and shown in Table 2-1. Specific construction and operational descriptions of these components are included below. Consistent with the description of Phase 2 in the Range 500 EA, the existing MSR would be converted for use as the third trail. Three cross trails would also be constructed to connect the MSR to the adjacent tank trail. This phase involves placing a number of targets in the far western portion of Range 500 – along the MSR and also west of it (see Figure 2-1). Much of the fill to build up the target bunkers would be from the cutting and grading for the new target areas as well as from the existing borrow area in the southwest corner of the range. Total estimated ground disturbance for Phase 2 would be approximately 43.5 acres (17.6 hectares). Coordinates for siting of the targets and support facilities are included in Appendix A of this Supplemental EA.

2.1.1 Trails and Targets

Trails

Conversion of the MSR for co-use as a moving armor firing line requires widening of the road in portions that do not meet the 30 ft wide requirement for tanks to move adequately. Three cross trails connecting the MSR to the adjacent trail would be established. One cross trail would be developed through the repair and widening of an existing trail. The other two would require new construction approximately 1100 - 1300 ft in length and 30 ft wide.

Armor Moving Target Carrier

One new permanent revetted earthen bunker, parallel access trail on protected berm, track bed, earthwork and drainage to protect the remote controlled AMTC would be constructed as part of the Phase 2 proposed action. The length of run for the AMTC is 1,161 ft (354 m). The AMTC is protected by a minimum of 50 ft of berm and a bunker.

Moving Infantry Target

Two new MIT bunkers would also be constructed as part of the Phase 2 proposed action. The bunkers would consist of a minimum 15 ft earthen berm approximately 100 ft long to protect the target.

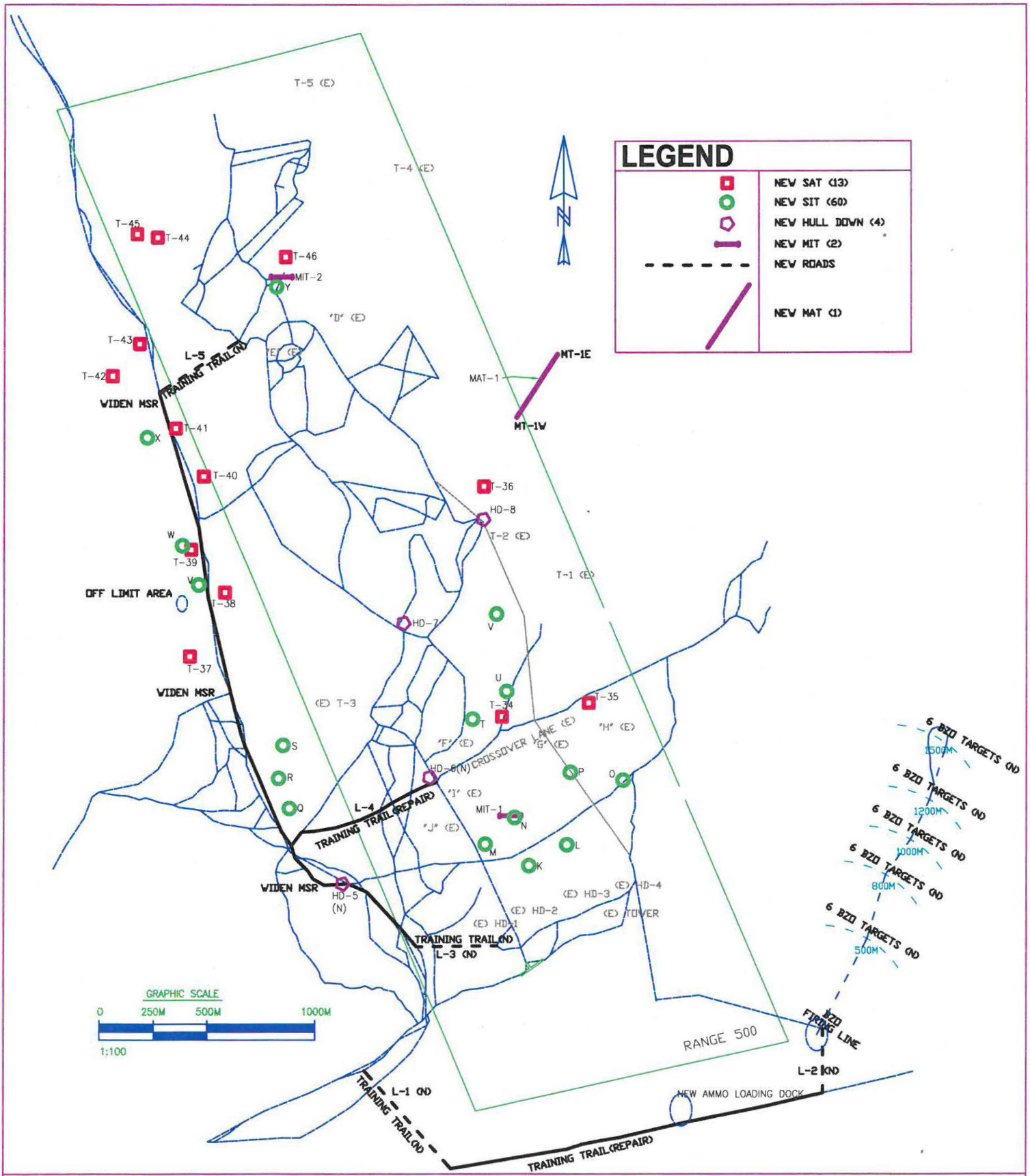

FIGURE 2-1: RANGE 500 IMPROVEMENTS PHASE 2

Table 2-1. Proposed Phase 2 Upgrades – Major Components

Component	*Existing*	*Phase 2*
Trails		
Tank Trail	2	1*
Maintenance Trail	1	2
Trail to ASP		1
BZO Access Trail		1
Targets		
AMTC	3	1
MIT	10	2
SAT	18	13
SIT	48	60
BZO	9	26
Concrete Pads		
Hull down Pad	-	4
BZO Pad	1	1
Maintenance Pad		1
Facilities		
ASP	1	1
Road Guard Shelters		3
Observation Tower Security Fencing	-	1

*Note: The trail under Phase 2 would consist of using the existing MSR as a tank trail.

Stationary Armor Target

Thirteen additional SATs would be installed during Phase 2 of the proposed action. The targets would be protected by a minimum of 50 ft (15.24 m) of earthen berm with concrete and/or railroad tie retaining walls.

Stationary Infantry Target

An additional 60 new SITs bunkers would be installed during Phase 2 of the proposed action which supplement and support training on Range 500. These would consist of 15 SIT clusters (four targets each) along the MSR and central portion of the range. Bunkers would be reinforced by a minimum of 15 ft of earthen material on all approaches to the bunker exposed to armored weapons system machine gun fires.

Battle Sight Zero Target

Thirty new BZO target bunkers would be installed, 6 each at the 500m, 800m, 1000m, 1200m and 1500m distance target lines during Phase 2 of the proposed action. The existing BZO firing line would be expanded in depth and width to reduce dust emissions from armored and tracked vehicles positioning at the firing line.

2.1.2 Support Facilities

Additional proposed facilities to support Phase 2 of the Range 500 upgrades include two road guard shelters (at access points leading into the range), and an expanded maintenance pad at the existing bivouac area. The ammunition supply pad, along with lighting, would be relocated to

the southern part of the range behind the hull down firing points. The ASP provides a shaded concrete slab used to temporarily hold and distribute munitions to vehicles.

2.1.3 Operations

As stated in the Range 500 EA, full implementation of the proposed action (Phases 1, 2, and 3), would increase operational tempo approximately 15 percent. As summarized in Table 2-2, the additional trail and targets would account for an operations increase of only 5 percent under Phase 2. Specific operational elements are summarized in Table 2-2.

Table 2-2. Proposed Annual Use of Range 500

Use Category	*Existing* [1]	*Phase 1*	*Phase 2*	*Phase 3*	*Total*
Munitions					
0.50-Caliber	77,210	7,721	3,861	0	88,792
0.762-mm	325,952	32,595	16,298	0	374,845
25-mm	37,854	3,785	1,893	0	43,532
120-mm	5,727	573	286	0	6,586
Subtotal	446,743	44,674	22,337	0	513,754
Vehicle Hours [2]					
Tanks	1,933	193	97	0	2,223
LAVs	1,412	141	71	0	1,624
Other	1,943	194	97	0	2,234
Subtotal	5,288	529	264	0	6,081
Personnel					
Total personnel at Range 500	19,089	1,909	954	0	21,952

Notes:
[1] Based on 2002 operations tempo at Range 500.
[2] Vehicle hours correspond to the number of hours each vehicle type is operating or idling at Range 500.
Source: MAGTFTC 2003e.

2.2 Special Conservation Measures

Phase 2 of the proposed action would again include the implementation of Special Conservation Measures (SCMs), as described in the Range 500 EA, in order to minimize any potential impact to biological resources, particularly the federally "Threatened" desert tortoise. Most of the conservation measures would directly apply to this project; however, some may be removed from the project requirements based upon timing of construction and other factors, to be determined only by MAGTFTC Natural Resources and Environmental Affairs (NREA) Division personnel. The measures are based upon technical assistance from the U.S. Fish and Wildlife Service (USFWS); current Biological Opinion (BO) on base-wide training and maintenance operations (USFWS 2002), and accompanying terms and conditions (e.g., USFWS 2002); and the Integrated Natural Resources Management Plan (INRMP) for MCAGCC (MAGTFTC 2001a).

2.3 Alternatives

This Supplemental EA addresses in more detail Phase 2 of the Range 500 EA proposed action. Since each of the three alternatives carried forward in the initial Range 500 EA for analysis met the purpose and need of the proposed action by providing the additional trails, targets, and

supporting facilities needed to increase armored vehicle training efficiency and to allow more training requirements, no additional alternatives for this Supplemental EA are analyzed.

2.3.1 Proposed Action –Phase 2

The proposed range upgrades under Phase 2, as described in Sec. 2.1.1 of this chapter, is consistent with what was proposed in the Range 500 EA. Implementing Phase 2 of the proposed action would provide the capability for a 5 percent increase in the tempo of training activities and would also enhance the quality and variety of training that can be conducted at Range 500.

2.3.2 The No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Under this alternative, training efficiency would not be optimal, and the Tank and LAR units would continue to travel to other locations than MCAGCC to satisfy their platoon-level and section-level requirements. However, as required by NEPA, the No-Action Alternative is carried forward for analysis in this Supplemental EA.

2.3.3 Comparison of Alternatives

Table 2-3 presents a comparison of the potential environmental consequences resulting from implementation of the Phase 2 upgrades and the No-Action alternative.

Table 2-3. Comparison of Potential Environmental Consequences

Resource Area	*Phase 2*	*No-Action Alternative*
Geological Resources	o	o
Water Resources	o	o
Biological Resources	o	o
Cultural Resources	o	o
Air Quality	o	o
Noise	o	o
Land Use	o	o
Public Health and Safety	o	o

° indicates no significant impact.

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 GEOLOGICAL RESOURCES

Although there are no major faults within the Cleghorn Pass Training Area, the main faults in the vicinity of MCAGCC are the San Andreas, Pinto Mountain, and Garlock Faults, located to the southwest, south, and north, respectively (Norris and Webb, 1990). Other smaller faults in the area include Lavic Lake, Surprise Spring, West Calico, Bullion Mountain, Mesquite Lake, Emerson, Galway, Deadman, Mesquite, and Quackenbush Lake. In addition, another fifty smaller faults, some of which are unnamed, are located within the boundaries of MCAGCC (MAGTFTC 2001a).

As discussed in the Range 500 EA, soils within Range 500 are classified as Arizo soils. Arizo soils are sandy-skeletal soils formed in mixed alluvium (U.S. Department of Agriculture 2000). Arizo soils are typically light brown to gray in color and have gravelly sandy loam surface layers up to about 8 in (20 cm) thick, overlying very gravely sand to 60 in (150 cm) or more. These soils have very low water capacity, are highly permeable, and have moderate erosion potential (Hendricks 1985).

Previously disturbed areas at Range 500 include support facilities, targets, the MSR, the BZO target line, the two main tank trails, and the access trails to facilities and targets. Total area of disturbance associated with these areas is approximately 184 acres (74 hectares). In addition to these areas, ordnance fired during training activities can land virtually anywhere throughout the range and disturb the soil. Since there is no regular pattern for where ordnance lands, these soil disturbances are not included in the area estimates.

3.2 WATER RESOURCES

As stated in the Range 500 EA, no naturally occurring permanent water bodies exist at MCAGCC or within Range 500 (MAGTFTC 2001a). However, Range 500 is situated on alluvial fans west of the Bullion Mountains, which contain numerous shallow washes that convey runoff to the Cleghorn Lakes Wilderness Area to the southeast of the installation. The areas in the immediate vicinity of the drainage areas within Range 500 are subject to flash flooding during heavy rain events. Groundwater depths at Range 500 are at least 500 ft (152 m) below the ground surface (MAGTFTC 2003b).

3.3 BIOLOGICAL RESOURCES

3.3.1 Vegetation Types

As described in the Range 500 EA, three vegetation types occur within the project area at Range 500: Mojave creosote bush scrub, disturbed creosote bush scrub, and catclaw/desert willow woodland. Over 90% of the project area is Mojave creosote bush scrub and disturbed creosote bush scrub. Catclaw/desert willow woodland covers less than 10 percent of the project area and is restricted to washes. Due to the nature of past and current training activities at Range 500, much of the vegetation within the project area is disturbed to some degree. Several areas of the

proposed work site include sensitive, although unlisted, plant species. These areas will be indicated on maps provided to on-site biological monitors for specific monitoring, and in some cases, salvage and transplanting will be considered. The primary species of concern are cushion foxtail cactus (*Escobaria alversonii*) and smoketree (*Psorothamnus spinosus*).

3.3.2 Wildlife

Wildlife species found within the project are typical of those occurring in the Mojave Desert and are discussed in the Range 500 EA. During Phase 1 project-related field surveys conducted in April 2003, mammals observed within the project area included black-tailed jackrabbit (*Lepus californicus*) and white-tailed antelope squirrel (*Ammospermophilus leucurus*). In addition, scat, dens, middens, or burrows of coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), and Merriam's kangaroo rat (*Dipodomys merriami*) were also observed. Birds observed included ash-throated flycatcher (*Myiarchus cinerascens*), black-tailed gnatcatcher (*Polioptila melanura*), black-throated sparrow (*Amphispiza bilineata*), common raven (*Corvus corax*), great-tailed grackle (*Quisicalus mexicanus*), horned lark (*Eremophila alpestris*), lesser nighthawk (*Chordeiles acutipennis*), mourning dove (*Zenaida macroura*), rock wren (*Salpinctes obsoletus*), turkey vulture (*Cathartes aura*), verdin (*Auriparus flaviceps*), and white-crowned sparrow (*Zonotrichia albicollis*), all of which are considered migratory birds and are protected under the MBTA. Reptiles observed included gopher snake (*Pituophis melanoleucus*), red coachwhip (*Masticophis flagellum*), western patch-nosed snake (*Salvadora hexalepis*), common chuckwalla (*Sauromalus obesus [=ater]*), desert collared lizard (*Crotaphytus bicintores [=insularis]*), desert horned lizard (*Phrynosoma platyrhinos*), desert iguana (*Dipsosaurus dorsalis*), desert spiny lizard (*Sceloporus magister*), long-nosed leopard lizard (*Gambelia wislizenii*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), and zebra-tailed lizard (*Callisaurus draconoides*) (The Environmental Company, Inc. [TEC] 2003).

3.3.3 Special-Status Species

As discussed in the Range 500 EA, no federally or state-listed plant species are known to occur within the project area (MAGTFTC 2001a). Scattered populations of cushion foxtail cactus (*Escobaria alversonii*), a California Native Plant Society (CNPS) List 4 species, were found within Range 500 and were also observed during both the Phase 1 April 2003 surveys (MCAGCC 2000a, TEC 2003) and the August 2004 Phase 2 surveys (MAGTFTC, 2004).

Six special-status wildlife species may potentially occur within the project area (Table 3-1) (TEC 2003). Only the loggerhead shrike (*Lanius ludovicianus*) and the desert tortoise (*Gopherus agassizii*) were observed during April 2003 surveys (TEC, 2003), and one individual desert tortoise was observed during the August 2004 surveys (MAGTFTC, 2004). All other special-status bird species may occur within the Range 500 project area as transients, migrants, or forager; none are likely to nest in the area due to lack of suitable habitat.

The only federally and state-listed wildlife species known to occur within the project area is the federally "Threatened" desert tortoise. In August 2004, a comprehensive follow-up survey was conducted by MAGTFTC NREA staff to determine the presence/absence of tortoises within the proposed Phase 2 project area of Range 500. These surveys, although they did not take place at the ideal time of year, according to FWS guidelines, were conducted in early morning hours and under generally appropriate temperature conditions. One live tortoise and numerous sign (i.e., burrows, and carcasses) were observed primarily within and adjacent to larger drainages with

embankments in the eastern region of Range 500. The one live tortoise was located in the extreme northwest portion of the project site; however, it was some distance from the nearest actual "Disturbance Area". Several burrows and additional types of sign were found in the southeastern portion of the construction site, and a small amount of sign was noted in the BZO portion of the proposed construction site. Refer to MAGTFTC, 2004 for additional details. This document will also be provided to the on-site Biological Monitors prior to the onset of construction.

Table 3-1. Special-Status Wildlife Species Potentially Occurring or Known to Occur within Range 500

Common Name	*Scientific Name*	*Status[1] Federal/State*
Cooper's hawk	*Accipiter cooperii*	- /CSC
Golden eagle	*Aquila chrysaetos*	BGEPA/CSC and FP
Loggerhead shrike	*Lanius ludovicianus*	FSC/CSC
Northern harrier	*Circus cyaneus*	- /CSC
Sharp-shinned hawk	*Accipiter striatus*	- /CSC
Desert tortoise	*Gopherus agassizii*	T/T

Notes: [1] BGEPA = protected under the Bald and Golden Eagle Protection Act; CSC = California Species of Special Concern; FP = Fully protected in accordance with Section 3511 of the California Fish and Game Code; FSC = federal species of concern; T = Threatened.
Sources: MAGTFTC 2001a, CDFG 2003.

3.4 CULTURAL RESOURCES

All of the affected area of Range 500 has been surveyed (Basgall et al. 1998; Hale 2003, 2004; Obermayr and Zeanah 1998), and five prehistoric archaeological sites have been recorded within the APE. No historic archeological sites or structures were identified by any of the surveys. Four of the recorded sites are segregated reduction locations (CA-SBR-9083, -9084, -9583, and -11304), which are cobble testing and reduction areas characterized by an accumulation of flaked stone debitage and/or cores. These four sites are not considered eligible for listing on the NRHP and attempts to relocate three of the four sites were undertaken by NREA personnel with no success (Cottrell and Tyree 2003). The remaining site, CA-SBR-9085, a felsite quarry, has been determined NRHP–eligible. CA-SBR-9085 is located in the southern portion of the Cleghorn Pass Training Area and the western portion of Range 500. Additional surveys in Range 500 are unlikely to find NRHP-eligible sites.

3.5 AIR QUALITY

Air quality is defined by ambient air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. Ambient air quality standards and Clean Air Act conformity requirements are described in the Range 500 EA. The air quality conditions within MCAGCC and Range 500 have not changed.

As described in the Range 500 EA, sources of emissions at MCAGCC include various stationary sources, aircraft operations, ground support equipment, and mobile sources, including personal and government owned vehicles. Stationary sources include stationary engines used for generators and compressors (there are three generators at Range 500), fuel storage and handling

facilities (there are two fuel tanks at Range 500), boilers, and gasoline stations. Emissions from motor vehicles (i.e., heavy wheeled and tracked vehicles) used during training operations generate fugitive dust (PM_{10}) emissions during training events and as a result of vehicle activity represent the primary source of all emissions at MCAGCC.

The entire Mojave Desert Air Basin is in severe nonattainment for the federal and state O_3 standards and in moderate nonattainment for the federal and state PM_{10} standards (California Air Resources Board 2002b, USEPA 2002b). Table 3-3 summarizes representative O_3, PM_{10}, CO, SO_2, and NO_2 air quality data from a monitoring station operated by the Mojave Desert Air Quality Management District and located in the Mainside Area at MCAGCC (8 mi [13 km] southwest of Range 500) for October through December 2002.

Table 3-3 summarizes representative PM_{10} air quality data for each of the six monitoring stations at MCAGCC for October through December. The PM_{10} monitoring stations developed as part of MCAGCC's PM_{10} monitoring network have not recorded a violation of the federal PM_{10} standard (under the Air Quality Management District's Rule 403) over the history of monitoring activities (i.e., at least six years) (MAGTFTC 2002g, Naval Facilities Engineering Service Center 2003). The measured PM_{10} concentrations exceeded the state standard (50 micrograms per cubic meter [$\mu g/m^3$]) once during the October – November 2002 period (see Table 3-3).

3.5.1 Range 500 Emissions

Sources of emissions at Range 500 include the use of military vehicles and three generators for power supply. Baseline emissions have been estimated in order to analyze the potential impacts of the proposed fifteen percent increase in Range 500 operations (Table 3-4). The following assumptions were used for estimating the baseline emissions from current Range 500 operations.

- The LAV-25 vehicle is in use for 1,412 hours per year and travels 85 vehicle miles per day for 73 days out of the year.
- The M1A1 Main Battle Tank is in use for 1,933 hours per year and travels approximately 85 vehicle miles per day for 102 days out of the year.
- Support trucks are in use for 1,943 hours per year and travel approximately 85 miles per day for seven days out of the year; typically, support vehicles are stationary at Range 500 and are typically not involved in routine training activities.
- Three generators are used at Range 500, and assumptions were generated based on annual usage between 2000-2002. Assumptions for the 250-kW generator are 4,791 gallons and 488 hours per year. Assumptions for the 15-kW generators are 3,374 gallons and 1,650 hours per year.

Table 3-2. Representative Air Quality Data for the Mainside Area (2002)

Air Quality Indicator	*October*	*November*	*December*
Ozone (O_3)[a]			
Peak 1-hour value (ppm)	0.070	0.051	0.044
Days above federal standard (0.12 ppm)	0	0	0
Days above state standard (0.09 ppm)	0	0	0
Particulate Matter less than 10 microns in diameter (PM_{10})[b]			
Average 24-hour value ($\mu g/m^3$)	30.8	30.2	14.3
Days above state standard (50 $\mu g/m^3$)	0	1	0
Carbon Monoxide (CO)			
Peak 8-hour value (ppm)	0.2	0.3	0.3
Days above federal standard (9.0 ppm)	0	0	0
Days above state standard (9.0 ppm)	0	0	0
Sulfur Dioxide (SO_2)			
Peak 24-hour value (ppm)	0.001	0.001	0.001
Days above federal standard (0.14 ppm)	0	0	0
Days above state standard (0.04 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
Peak 1-hour value (ppm)	0.028	0.029	0.025
Days above state standard (0.25 ppm)	0	0	0

Notes: [a] The APE is in severe nonattainment for the federal and state O_3 standards.
[b] The APE is in moderate nonattainment for the federal and state PM_{10} standards.
Ppm = parts per million by volume, $\mu g/m^3$ = micrograms per cubic meter.
Source: Naval Facilities Engineering Service Center 2003.

Table 3-3. Representative PM_{10} Air Quality Data for the Six Monitoring Stations at MCAGCC (October – December 2002)

Air Quality Indicator	*Average Value ($\mu g/m^3$)* [1]	*Peak Value ($\mu g/m^3$)* [1]
Bristol Perimeter Station	9.9	30.0
East Perimeter Station[2]	16.4	36.9
Emerson Perimeter Station	8.1	18.8
Lavic Perimeter Station	10.6	26.2
Mainside Perimeter Station	27.6	54.2
Sandhill Perimeter Station	11.3	23.7

Notes: [1] These average and maximum readings do not include the 2 days of measurements when winds gusted above 25 mph.
[2] The East Perimeter Station is the closest to Range 500.
Source: Naval Facilities Engineering Service Center 2003.

Table 3-4. Estimated Baseline Vehicle Emissions for Range 500 Operations

	Emissions (tons/year [metric tons/year])				
Category	*VOC*	*NO_X*	*CO*	*SO_X*	*PM_{10}*
Baseline vehicle emissions	1.2 (1.1)	12.2 (11.1)	7.3 (6.6)	0.5 (0.45)	3.4 (3.1)
Baseline generator emissions	0 (0)	3 (3)	1 (1)	0 (0)	0 (0)

Note: Emission factors were derived from the Military Vehicle Database – Emissions Factors for Military Tactical and Support Vehicles.
Source: MAGTFTC 2003f.

3.6 NOISE

3.6.1 Training Areas and Fixed Ranges

The primary noise sources that contribute to the noise environment at MCAGCC continue to be aircraft operations and detonation of high explosive ordnance (Wyle Laboratories 2003). Range 500 is exposed to noise mostly from vehicular maneuvers and ordnance delivery. Aircraft operations are a lesser contributor to the overall noise environment in this area; noise levels at Range 500 as a result of aircraft operations are about 55 CNEL (Wyle Laboratories 2003). The main sources of vehicular noise are the tanks and LAVs transiting to the range and conducting their training there. General traffic noise from maintenance and other activities is a lesser contributor to the noise environment. Ordnance noise generated during training activities includes munitions fired from the tanks and LAVs. The combined noise contours for ordnance noise exposure show the 62-dB CCNEL contour associated with Range 500 activities currently extends to base boundaries (Wyle Laboratories, 2003).

Ordnance activities are audible off-base, but the closest off-base noise sensitive receptors (residences, schools, and libraries) remain located in the City of Twentynine Palms about 8 mi (13 km) southwest of Range 500. However, the majority of the dozen or so noise complaints received by MAGTFTC each year are associated with aircraft flying to or from MCAGCC along the Federal Aviation Administration-controlled airspace corridors connecting MCAGCC to other military installations (MAGTFTC 2003c). Rarely are there any noise complaints associated with training activities being conducted within the installation.

3.7 LAND USE

3.7.1 Range 500

Range 500, as described in the Range 500 Master Plan, is an Armor Live Fire and Maneuver Range within the Cleghorn Pass Training Area, directly east of Ranges 400, 410, and 410 A. Used to simulate military maneuvers in desert terrain, Range 500 remains mostly undeveloped with the exception of targets, trails, and some support facilities. Range 500's southern boundary is approximately 2,635 ft (802 m) from MCAGCC's outer boundary. Physical constraints at Range 500 include steep drainage swales and washes, as well as the Bullion Mountains range to the west, north and east. The main area of the range slopes upward from the south edge to the middle and northern portions of the range.

Range 500 was designed to provide site and supporting facilities to allow armor and anti-armor training. Moving and stationary targets, hostile fire simulators, and computer scoring facilitate training at Range 500 (MCAGCC 1996). The primary users of Range 500 are 1TNK and 3LAR. Other land use at Range 500 includes support facilities for training units and range operations.

3.8 PUBLIC HEALTH AND SAFETY

3.8.1 Range Control and Management of Unexploded Ordnance

As discussed in the Range 500 EA, command and control of all training at MCAGCC is managed and operated by the Operations and Training (O&T) Directorate. The Directorate's

Operations Officer is tasked with overseeing all range scheduling, range control, range safety, and range maintenance activities, including Explosive Ordnance Disposal (EOD). The range safety procedures as outlined in the Range 500 EA continue to be implemented during all training (e.g. tank and EOD) and construction activities out on the ranges; posting of signs on the perimeter fence warn possible trespassers of potential hazards.

As stated in the Range 500 EA, the Range Control Section of the O&T Directorate (Bearmat) maintains communication with all training units and provides oversight of all activities being conducted at MCAGCC's ranges, both on the ground and in associated airspace. Range Safety personnel in the O&T Directorate provide safety guidance, conduct formal classes for training untis, and randomly check units to assist in range safety procedures. Range safety is also the responsibility of each unit commander conducting training or maneuvering on MCAGCC.

Unauthorized public access is not permitted at MCAGCC. The boundaries of the installation are posted with bilingual signs that warn of potential hazards, but there is no perimeter fence installed around the installation. If trespassers are encountered at any time they are escorted out of the area and placed in the custody of Military Police prior to initiation or continuation of training activities. Range guards with radios are posted at each of the access points to the range to further prevent unauthorized access during a training event. No injuries to unauthorized personnel have been documented as a result of operation of Range 500 (MAGTFTC 2003d).

All range clearance operations are conducted in accordance with the MAGTFTC Unexploded Ordnance Range Management Plan (UXORMP) (MAGTFTC 2001e) and with Combat Center Order P3500.4F (*Standing Operating Procedures for Range/Training Areas and Airspace*) (MCAGCC 2000b) and Combat Center Order P3120.4C (*Standard Operating Procedures for Units Training Aboard the Combat Center*) (MCAGCC 1993). These plans and operating procedures clearly define the scope and procedural requirements associated with EOD and range clearance operations.

As stated in the Range 500 EA, the BZO target area is a former sensitive fuse area used as the impact area for tank training 30 years ago (MAGTFTC 2003d). Although the ordnance used at this location was not "live," fuses for the ordnance contained High Explosives. Since many activities have been conducted since that time, many EOD sweeps have been conducted in this area. However, there is still a potential for UXO to occur. However, training maneuvers do not occur within sensitive fuse areas, within ESQD arcs surrounding munitions magazines, or in areas known to contain high densities of UXO.

3.8.2 Storage and Handling of Ammunition and Explosives

The existing Ammunition Supply Pad provides a shaded concrete slab used to temporarily hold and distribute munitions to vehicles. Ammunition is brought to the range in small quantities to support the training schedule and, as described in the Range 500 EA, is handled in accordance with *NAVSEA OP 5 Volume 1, Ammunition and Explosives Safety Ashore, Seventh Revision.*

3.8.3 Hazardous Materials and Wastes

As outlined in the Range 500 EA, management and control of hazardous materials and wastes at MCAGCC is guided by the *Integrated Contingency and Operations Plan* (ICOP) (MAGTFTC 2002e). The ICOP clearly defines all responsibilities, procedures, requirements, and responses

associated with hazardous material and waste management. These procedures apply to activities at Range 500.

3.8.4 Non-Hazardous Waste

Handling of non-hazardous waste, e.g., artillery shells and casings, ammunition cans, wood, cardboard, scrap metal, paper products and food wrappers, generated during training events at Range 500 is done in accordance with Combat Center Order P3500.4F (MCAGCC 2000b) and Combat Center Order P3120.4C (MCAGCC 1993). Specific management and control responsibilities are described in the Range 500 EA.

3.8.5 Installation Restoration Sites

As stated in the Range 500 EA, no IR sites are located within Range 500 (MAGTFTC 2002f).

3.8.6 Hazards of Electromagnetic Radiation to Ordnance

Safety measures, responsibilities, and SOPs associated with hazards of electromagnetic radiation to ordnance (HERO) are contained in Combat Center Order 3565.1 (*Hazards of Electromagnetic Radiation Emissions Control Bill*), and discussed in the Range 500 EA.

Even though there are certain types of ordnance used on board MCAGCC that are designated HERO Unsafe, this type of ordnance is not generally used at Range 500. The strongest radio-transmitter is a 35-watt, very high frequency (VHF) transmitter at the Control Tower, which requires a minimum separation of 312 ft (95 m) from electro-explosive devices; the Control Tower is 2,887 ft (880 m) from the ASP (MAGTFTC 2003d).

3.8.7 Laser Safety

As stated in the Range 500 EA, range control procedures and safety precautions associated with laser training are described in Combat Center Order P3500.4F (MCAGCC 2000b).

Laser targeting is conducted for virtually all of the munitions fired at Range 500 (MAGTFTC 2003d). Prior to conducting any laser operations, training units must establish laser safety programs that address such issues as laser regulations and SOPs, safety training for all relevant personnel, laser protective goggles and equipment, and medical surveillance. All personnel within the target area or danger area along the laser-target line must wear appropriate eye protection when laser firing is in progress. Range guards with radios are posted at each of the access points to a ground laser range and all laser operations are halted if communication is lost with any of the personnel participating in the laser training (including Bearmat, which maintains control of the training at all times).

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

This chapter of the Supplemental EA incorporates by reference the analysis from the Range 500 EA and focuses on potential environmental consequences associated with the implementation of Phase 2 of the Range 500 Upgrades (as described in Chapter 2 of this Supplemental EA).

4.1 GEOLOGICAL RESOURCES

4.1.1 Phase 2 of the Proposed Action

Impacts to geological resources associated with Phase 2 would be consistent with those identified in the Range 500 EA for Phase 1. Activities associated with Phase 2 which would contribute to soil disturbance are the construction activities, vehicle maneuvers and munitions use.

Construction

As described in the Range 500 EA, proposed upgrades and construction activities would require some excavation, grading, and placement of fill material, but such activities would not be excessive. Estimated ground disturbance associated with Phase 2 (e.g., trails, targets, facilities, and borrow site areas) would be approximately 43.5 acres (17.6 hectares), less than the existing disturbance areas. Potential impacts resulting from erosion during construction activities would be controlled through the use of standard erosion control measures as identified in the Erosion Control Plan (e.g., sandbags, silt fencing, earthen berms, and temporary sedimentation basins). The greatest amount of cut and fill would be associated with the proposed AMTC target berm. There is a maximum slope allowable for the rail that contains the moving target, so a substantial amount of cut and fill would need to be conducted to compensate for the varying terrain in the northern portion of the range. However, it is assumed that for the longevity of these targets, construction design and techniques would be incorporated in order to minimize the potential for future erosion at these locations. The installation of additional concrete turn pads at the entry of hull down areas would prevent the tank tracks from creating large holes and ruts in the ground, which helps to lessen soil disturbance at Range 500. Although there would be an increase in the amount of areas that would be distressed due to the number of new targets, the types of impacts would be consistent with the impacts evaluated in the Range 500 EA. Therefore, activities associated with Phase 2 would not raise these impacts to a level of significance due to continued concentration of activities in disturbed areas, protection or avoidance of undisturbed areas, and continued application of monitoring, conservation, and environmental awareness programs.

Vehicle Maneuvers

As described in the Range 500 EA, Tank, LAV, and other vehicle use would continue to be focused on established roads and tank trails, thereby minimizing impact to soils. The installation and expansion of concrete turn pads would also prevent the tank tracks from creating large holes and ruts in the ground. Accordingly, impacts associated with vehicle maneuvers at Range 500 would not be significant.

Munitions Use

Training associated with Phase 2 of the Range 500 upgrades would involve the same type of munitions and activities as described in the Range 500 EA. Although the ordnance fired during training activities can land virtually anywhere throughout the range and disturb the soil, most disturbance would be aimed at the proposed AMTC, MIT, SAT, SIT, and BZO Targets. These areas of disturbance would coincide with previous disturbed areas

4.1.2 No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Therefore, implementation of the No Action Alternative would not result in significant impacts to geological resources.

4.2 WATER RESOURCES

4.2.1 Phase 2 of the Proposed Action

Phase 2 of the Proposed Action would involve the same types of disturbance as discussed in the Range 500 EA. Impacts to water resources resulting from implementation of the proposed action would be similar to those described in Phase 1 of the Range 500 EA. Proposed construction activities under Phase 2 would temporarily increase the potential for local erosion in the event of rain. However, as described in Chapter 4.1, an Erosion Control Plan would be prepared and followed during construction activities. The total amount of impervious surface would still represent only a small portion of the Range 500 surface area, so potential increases in storm water discharge and volumes would be insignificant. The proposed activities would continue to be concentrated in previously disturbed areas, and monitoring, conservation, and environmental awareness programs would continue to be in effect. Therefore, Phase 2 of the proposed action would not result in significant impacts to surface water resources

4.2.2 No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Therefore, implementation of the No Action Alternative would not result in significant impacts to water resources.

4.3 BIOLOGICAL RESOURCES

4.3.1 Phase 2 of the Proposed Action

Consistent with what is discussed in the Range 500 EA, potential impacts due to current and future military operations (i.e., construction impacts, vehicle maneuvers, and munitions use) would be minimized through implementation of SCMs (see Chapter 2), the goals and objectives in the INRMP, and the Terms and Conditions of the 2002 BO (USFWS 2002). Based upon results of the surveys completed for the APE of the proposed action, MAGTFTC has determined that the construction of Phase 2 of the Range 500 upgrades "may effect" the desert tortoise. MAGTFTC's Biological Opinion (MAGTFTC, 2002) allows ground disturbance to a total of 150 acres per calendar year if it's Terms and Conditions are met. As required under the Terms and Conditions of the 2002 BO, desert tortoise clearance surveys would be conducted by a USFWS-permitted biologist immediately prior to any construction activities associated with Phase 2 of the proposed action. Therefore, implementation of the SCMs (see Chapter 2), Terms

and Conditions of the 2002 BO, and the INRMP would ensure that the construction and subsequent use of facilities associated with Phase 2 would not significantly impact desert tortoises.

Construction activities could also temporarily displace wildlife (including migratory birds) from suitable habitat within the vicinity of the project areas. However, no long-term, permanent impacts to populations of such species would result. To minimize potential impacts to foxtail cactus, individuals would be avoided as much as possible or translocated to adjacent areas outside of the project area.

Total estimated ground disturbance (including zones of influence surrounding each construction component) would be approximately 45 acres (17.6 hectares). Because Phase 2 involves identical types of disturbance as previously discussed in the Range 500 EA, impacts to biological resources resulting from implementation of Phase 2 would be similar to those previously described for Phase 1 of the Range 500 EA. Although a greater area would be disturbed, this increase is not expected to result in significant impacts to biological resources.

4.3.2 No-Action Alternative

Under the No-Action Alternative, existing conditions as described in Chapter 3 would remain unchanged. Therefore, implementation of the No-Action Alternative would not result in significant impacts to biological resources.

4.4 CULTURAL RESOURCES

4.4.1 Phase 2 of the Proposed Action

One NRHP-eligible site (CA-SBR-9085, a felsite quarry) located west of the MSR is near a proposed SIT cluster and proposed locations of three SATs under Phase 2 of the Proposed Action. The site is located at least 1,000 ft (305 m) from the conceptual locations of these targets and thus would be outside the construction footprint of the targets (including direct ground disturbance and a surrounding buffer area). Therefore, construction of the targets would not adversely impact the site. In coordination with NREA, the currently proposed locations were identified to minimize potential impacts associated with ordnance fired at these targets. Most ordnance fired at the targets would land at or in the immediate vicinity of the targets within the buffer area addressed for construction impacts. Some munitions would likely land outside the construction buffer areas; however, the targets are sited sufficiently far (1,000 ft [305 m]) from the cultural resource site in order to facilitate complete avoidance during training activities. Therefore, construction and associated operations for Phase 2 would have no adverse effect to any known cultural resources.

Traditional Cultural Properties

As stated in the Range 500 EA, consultation with Native American tribes in 1995 did not identify any traditional cultural properties on MCAGCC. Therefore, consistent with the Range 500 EA, no known traditional cultural properties would be adversely affected by training activities under Phase 2 of the proposed action. MCAGCC continues to consult with these Native American tribes on range activities and construction projects and is required to consult on

Data Recovery Projects not only with Native American Tribes but also with the State Historic Preservation Officer and Advisory Council on Historic Preservation, per the ICRMP.

4.4.2 No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Therefore, implementation of the No-Action Alternative would not result in significant impacts to cultural resources.

4.5 AIR QUALITY

4.5.1 Phase 2 of the Proposed Action

Section 176(c) of the CAA, as amended, requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year) vary from pollutant to pollutant and are also dependent upon the severity of the nonattainment status. The applicable *de minimis* levels for the APE are listed in Table 4-1.

Table 4-1. Applicable Criteria Pollutant* de minimis *Levels within the APE (tons/year [metric tons/year])

VOCs[1]	*NO_x*[1]	*CO*[2]	*SO_x*[2]	*PM_{10}*[3]
25 (23)	25 (23)	100 (91)	100 (91)	100 (91)

Notes: [1] The APE is in severe nonattainment for the federal and state O_3 standards; VOCs and NO_x are precursors to the formation of O_3.
[2] The APE is in attainment of the federal and state CO and SO_x standards; *de minimis* levels are presented for comparison purposes only.
[3] The APE is in moderate nonattainment for the federal and state PM_{10} standards.
Source: Mojave Desert Air Quality Management District 2004.

The USEPA Conformity Rule establishes a process that is intended to demonstrate that a proposed federal action would not: 1) cause or contribute to new violations of federal air quality standards; 2) increase the frequency or severity of existing violations of federal air quality standards; and 3) delay the timely attainment of federal air quality standards. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. If the increase in emissions for a nonattainment pollutant exceeds *de minimis* levels, a formal conformity determination process must be implemented.

Emission thresholds associated with federal CAA conformity requirements are the primary means of assessing the significance of potential air quality impacts associated with implementation of the proposed action or alternatives. A formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. Potential impacts are evaluated based on estimated direct and indirect emissions associated with implementation of the proposed action or

alternatives. Air quality impacts would occur if implementation of the proposed action or alternatives would directly or indirectly:

- Produce emissions that would be the primary cause or significantly contribute to a violation of state or federal ambient air quality standards;
- Establish land uses that would expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- Cause a net increase in pollutant or pollutant precursor emissions that exceeds relevant emission significance thresholds (such as CAA conformity *de minimis* levels or the numerical values of major source thresholds for nonattainment pollutants);
- Conflict with adopted air quality management plan policies or programs;
- Foster or accommodate development in excess of levels assumed by the applicable air quality management plan.

Construction

The Range 500 EA conservatively estimated that the Phase 2 construction activities would disturb 124.7 acres (50.5 hectares) and would last six months. Using those estimates, emissions associated with construction and vehicle operations were calculated to show that the proposed actions was below *de minimus* levels and a conformity analysis was not necessary. Additionally, a Record of Non-Applicability was prepared and incorporated into the Final Range 500 EA (MGTFTC 2003). However, as described in this Supplemental EA, construction of Phase 2 is estimated to disturbed only 43.5 acres (17.6 hectares) and last approximately three months. Estimated emissions as a result of implementation of Phase 2 would still remain below *de minimis* levels (Table 4-2) and a conformity analysis would not be necessary. Proposed construction activities would be short-term in nature; no long-term increases in emissions would occur as no new stationary sources would be constructed. Fugitive dust (PM_{10}) emissions would be minimized by incorporating dust control measures (e.g., frequently applying water on surface grading areas). Therefore, Phase 2 construction emissions would not result in significant impacts to air quality.

Table 4-2. Estimated Emissions for Phase 2

	Emissions (tons/year [metric tons/year])				
Category	***VOC[1]***	***NO_X[1]***	***CO[2]***	***SO_X[2]***	***PM_{10}[3]***
Construction emissions	1.0 (0.9)	13.4 (12.1)	12.6 (11.4)	1.2 (1.0)	5.0 (4.5)
Vehicle emissions (5 percent increase over baseline)	0.1 (0.09)	0.6 (0.5)	0.4 (0.36)	0.02 (0.018)	0.2 (0.18)
Generator emissions	0 (0)	3 (3)	1 (1)	0 (0)	0 (0)
de minimis threshold	25 (23)	25 (23)	100 (91)	100 (91)	100 (91)
Exceeds *de minimis* threshold?	No	No	No	No	No

Notes: [1] The APE is in nonattainment (severe) for the federal and state O_3 standards; VOCs and NO_x are precursors to the formation of O_3.
[2] The APE is in attainment of the federal and state CO and SO_x standards; *de minimis* levels are presented for comparison purposes only.
[3] The APE is in nonattainment (moderate) for the federal and state PM_{10} standards.

Operations

As stated in the Range 500 EA, vehicle operations at Range 500 would still increase by 5 percent over baseline conditions under Phase 2 of the Proposed Action. Estimated vehicle emissions as a result of a 5 percent increase in vehicle emissions at Range 500 would be below *de minimis* levels (see Table 4-2); therefore, a conformity analysis would not be necessary.

4.5.2 No-Action Alternative

Under the No-Action Alternative, existing conditions as described in Chapter 3.5 would remain unchanged. Therefore, implementation of the No-Action Alternative would not result in significant impacts to air quality within the APE.

4.6 NOISE

4.6.1 Phase 2 of the Proposed Action

Impacts of construction noise associated with Phase 2 in this Supplemental EA would be the same as the description presented for Phase 1 in the Range 500 EA. The additional 5 percent increase in operations under Phase 2 of the Proposed Action would also be similar to Phase 1 (i.e., little if any change in the 62-CCNEL contour would occur). Implementation of operational increases under Phase 2 would not substantially change the existing noise environment, which is considered compatible with a military training area. Therefore, implementation of Phase 2 would not result in significant impacts to the noise environment.

4.6.2 No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Therefore, implementation of the No-Action Alternative would not result in significant impacts to the noise environment.

4.7 LAND USE

4.7.1 Phase 2 of the Proposed Action

As stated in the Range 500 EA, Phase 2 of the Proposed Action would involve larger areas of disturbance than Phase 1. The larger areas are associated with construction of additional tank trails and targets. However, the projects proposed under Phase 2 would be compatible with current land use at Range 500. Therefore, impacts of Phase 2 to land use would not be significant.

4.7.2 No Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Under this alternative, training efficiency would not be optimal, and the Tank and LAR units would continue to travel to other locations than MCAGCC to satisfy their platoon-level requirements. Therefore, implementation of the No-Action Alternative would not result in significant impacts to land use.

4.8 PUBLIC HEALTH AND SAFETY

4.8.1 Phase 2 of the Proposed Action

Consistent with the Range 500 EA, construction safety procedures for Phase 2 of the Proposed Action would be the same as for Phase 1. Prior to any construction activities, surface clearance of ordnance and range residue would be conducted according to UXORMP. Projects for Phase 2 would not be located in the sensitive fuse area but would involve relocation of the ASP. This would improve range safety by placing stored munitions behind the firing points at the hull down locations. Training maneuvers would not occur within the ESQD arc surrounding the ASP, and the ASP would be located to avoid potential HERO issues. Currently, all shots fired on Range 500 are directed either east on the BZO Range, down range in a northerly direction, or from the west half of the range aiming toward the east (left to right). Few, if any, shots are fired from the east side of the range aiming west (towards the saddle with Range 410A behind). Many of the Phase 2 targets would be along the MSR or to the west of it, so shots at these targets would be fired toward the west. However, SDZ diagrams would be submitted to Bearmat in advance to determine the physical limits of danger and avoid creating safety issues for personnel at Range 500 and at Ranges 406, 410, and 410a. Based upon all of the considerations above, construction and operations for Phase 2 of the Proposed Action would have no significant impacts on health and safety.

4.8.2 No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Therefore, implementation of the No Action Alternative would not result in significant impacts to health and safety.

CHAPTER 5
OTHER CONSIDERATIONS REQUIRED BY NEPA

This chapter of the Supplemental EA addresses additional topics required by NEPA. These include identifying and analyzing cumulative impacts, irreversible and irretrievable commitments of resources, energy requirements and conservation potential, possible conflicts between the No-Action or Proposed Action, and the objectives of federal, regional, state, and local land use plans, policies, and controls. Issues related to Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, and EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, are also presented. Because there are no significant impacts associated with Phase 2 of the proposed action, no analysis of unavoidable adverse impacts or short-term effects versus long-term productivity has been provided.

5.1 CUMULATIVE IMPACTS

For a detailed discussion of cumulative impacts associated with full implementation of the Range 500 upgrades, please refer to the Range 500 EA. In summary, eight projects were analyzed in conjunction with the proposed action by resource area and additive effect. The Range 500 EA concluded that there were no significant cumulative effects with full implementation of the proposed upgrades. Similar factors associated with each of the projects which contribute to non-significant effects included: the projects were site specific, the projects would be implemented with the same SOPs and protection measures applied base-wide and use of similar SCMs, and increase. Based on the more detailed description of Phase 2 of the Proposed Action, and the supplemental analysis provided in this EA, there would still be no significant cumulative effect when evaluated with past, present, and reasonably foreseeable actions.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metaland fuel. Human labor is also considered an irretrievable resource. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Another issue that falls under the category of the irreversible and irretrievable commitment of resources is the unavoidable destruction of natural resources, which could limit the range of potential uses of that particular environment.

Implementation of Phase 2 of the proposed action would require slightly elevated amounts of nonrenewable resources in comparison to the No-Action Alternative. However, implementation of Phase 2 would not result in the destruction of natural resources such that the range of potential uses of the environment would be limited. The proposed action would not affect the biodiversity or cultural integrity of MCAGCC.

5.3 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

Energy required to successfully implement the proposed action would include fossil fuels and electricity needed to power vehicles and equipment. Fuels for training vehicles are currently available and are in adequate supply from Marine Corps-owned sources or from area commercial

distributors. Required electricity demands would be supplied by the existing solar panels at Range 500 or by the three generators at the range.

Direct energy requirements of the proposed action are limited to those necessary to operate established facilities, vehicles, and equipment. No superfluous use of energy related to the proposed action has been identified, and proposed energy uses have been minimized to the maximum extent possible without compromising the integrity of the training and facility management activities. Therefore, no additional conservation measures related to direct energy consumption are identified.

5.4 Possible Conflicts Between the Proposed Action or Alternatives and the Objectives of Federal and State Land Use Plans, Policies, and Controls

Implementation of Phase 2 of the Range 500 upgrades would be consistent with base land use plans as described in the Range 500 EA and the MCAGCC Range 500 Master Plan. Table 6-1 provides a summary of environmental compliance for the proposed action.

Table 5-1. Possible Conflicts between the Proposed Action or Alternatives and the Objectives of Federal and State Land Use Plans, Policies, and Controls

Plans, Policies, and Controls	*Responsible Agency*	*Status of Compliance*
NEPA (42 USC 4321 *et seq.*), U.S. Navy Procedures for Implementing NEPA (32 CFR 775)	U.S. Navy	This Supplemental EA has been prepared in accordance with the CEQ Regulations implementing NEPA and U.S. Navy NEPA procedures.
Clean Water Act Sections 401/402 (33 USC 1251 *et seq.*), Section 404 (33 USC 1251 *et seq.*)	USEPA/ U.S. Army Corps of Engineers	Implementation of Phase 2 of the proposed action would not discharge or place fill material into waters of the U.S.
EO 11990, *Protection of Wetlands*	U.S. Navy	Implementation of Phase 2 of the proposed action would not impact wetlands.
EO 11988, *Floodplain Management*	U.S. Navy	Implementation of the proposed action would not impact floodplains.
ESA (16 USC 1531)	USFWS	No significant impacts to threatened or endangered species would occur as a result of implementation of Phase 2 of the proposed action.
CAA, as amended (42 USC 7401 *et seq.*)	USEPA	Implementation of Phase 2 of the proposed action would not compromise air quality attainment status or conflict with established attainment status and maintenance goals.
EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*	U.S. Navy	Minority or low-income populations would not be disproportionately affected by implementation of Phase 2 of the proposed action
EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*	U.S. Navy	Implementation of Phase 2 of the proposed action would not disproportionately expose children

Plans, Policies, and Controls	*Responsible Agency*	*Status of Compliance*
		to environmental health risks or safety risks.
National Historic Preservation Act, Section 106 (16 USC 470 *et seq.*)	California Office of Historic Preservation	Implementation of the proposed action would not impact cultural resources.
MCAGCC Master Plan	U.S. Marine Corps	Implementation of Phase 2 of the proposed action would be consistent with base land use plans as described in the Master Plan.

5.5 Relationship Between Short-Term Environmental Impacts and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses being performed at that site.

Implementation of Phase 2 of the proposed action would result in both short-term environmental effects and long-term productivity. However, it would not result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public.

5.6 Protection of Children

Per EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, impacts to children as a result of the proposed action have been evaluated. Proposed training increases at Range 500 would not result in the creation of hazardous substances or contamination that could potentially affect children. As with procedures for unauthorized military personnel, children are restricted from having access to any of the Training Areas used for maneuvers or ordnance delivery and, therefore, do not come into contact with unsafe operations or hazardous materials (such as UXO) at Range 500. Estimated emissions associated with training are in compliance with federal air quality standards, and all solid waste and hazardous substances associated with training activities are disposed of offsite in accordance with all applicable federal and state regulations. Therefore, implementation of the proposed action would not result in significant health and safety risks to children.

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CHAPTER 6
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CHAPTER 7
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APPENDIX A
TARGET AND GUARD SHACK LOCATIONS

TP- 0472R2 New Stationary Infantry Targets

1.4.1 Item	1.4.2 Easting	1.4.3 Northing
K Nest	599335	3797490
L Nest	599513	3797587
M Nest	599130	3797590
N Nest	599268	3797714
O Nest	599776	3797887
P Nest	599529	3797924
Q Nest	598220	3797756
R Nest	598169	3797896
S Nest	598190	3798050
T Nest	599070	3798172
U Nest	599230	3798301
V Nest	597800	3798796
W Nest	597724	3798978
X Nest	597559	3799480
Y Nest	598157	3800183

TP- 0471R2 New Stationary Armor Targets

1.4.4 Item	1.4.5 Easting	1.4.6 Northing
T-34	599208	3798183
T-35	599615	3798247
T-36	599122	3799253
T-37	597760	3798463
T-38	597920	3798761
T-39	597766	3798959
T-40	597823	3799300
T-41	597693	3799523
T-42	597400	3799767
T-43	597524	3799917
T-44	597608	3800411
T-45	597512	3800427
T-46	598200	3800322

TP- 0474R2 (N) Moving Infantry Targets (MIT)

1.4.7 Item	1.4.8 Easting	1.4.9 Northing
MIT-1	599247	3797722
MIT -2	598181	3800230

Existing Stationary Infantry Targets

1.4.10 Item	1.4.11 Easting	1.4.12 Northing
D Nest	598477	3800028
E Nest	598190	3799983
F Nest	598975	3798035
G Nest	599429	3798095
H Nest	599043	3798175
I Nest	599043	3797789
J Nest	598939	3797705

Alternate Site Stationary Infantry Targets

1.4.13 Item	1.4.14 Easting	1.4.15 Northing
Z1 Nest	598940	3798615
Z2 Nest	599181	3798663

Existing Stationary Armor Targets

1.4.16 Item	1.4.17 Easting	1.4.18 Northing
T-1	599561	3798890
T-2	599122	3799052
T-3	598436	3798202
T-4	598795	3800787
T-5	598333	3801182

Alternate New SAT Locations Stationary Armor Targets

1.4.19 Item	1.4.20 Easting	1.4.21 Northing
T-47	598979	3798669
T-48	598790	3798768
T-49	598557	3799090
T-50	599073	3798906

TP-0473R2 New Moving Armor Target (MAT)

1.4.22 Item	1.4.23 Easting	1.4.24 Northing
MT-1E	598708	3800962
MT-1W	598415	3800720

TP- 0475R2 BZO Range Target 'A' Line (E)

1.4.25 Item	1.4.26 Easting	1.4.27 Northing
BZO	600676	3797150
500 M Target	600905	3793448
800 M Target	600990	3797448
1200 M Target	601106	3797796
1000 M Target	601194	3797796
1500 M Target	601235	3798081

Guard Shack Locations

1.4.28 Item	1.4.29 Easting	1.4.30 Northing
RG #1	11 598000	3796288
RG #2	11 591650	3809281

APPENDIX B
DISTURBANCE ESTIMATES FOR PHASE II

Disturbance Estimates for Phase 2 of the Range 500 Upgrades

Feature	L	W	Sq. Feet	Qty	Sq. Feet Total	Acres
SIT	30	85	2550	15	38250	0.9
SAT	100	200	20000	13	260000	6.0
HD	30	75	2250	4	9000	0.2
MIT	65	50	3250	2	6500	0.1
BZO (6)	220	50	11000	4	44000	1.0
BZO (4)	140	50	7000	2	14000	0.3
MAT	1400	175	245000	1	245000	5.6
ROAD (new)	3400	30	102000	1	102000	2.3
Road (repair)	2300	30	69000	1	69000	1.6
Target Access Roads	16325	15	244875	1	244875	5.6
MAT Access Rd	1100	15	16500	1	16500	0.4
"Island" Borrow Site	250	1500	375000	1	375000	8.6
Main Borrow Site	300	750	225000	1	225000	5.2
T-5/T-6 Borrow	100	1000	100000	1	100000	2.3
T-45 Borrow	575	250	143750	1	143750	3.3
TOTAL						43.5

APPENDIX C
AIR QUALITY CALCULATIONS

the southern part of the range behind the hull down firing points. The ASP provides a shaded concrete slab used to temporarily hold and distribute munitions to vehicles.

2.1.3 Operations

As stated in the Range 500 EA, full implementation of the proposed action (Phases 1, 2, and 3), would increase operational tempo approximately 15 percent. As summarized in Table 2-2, the additional trail and targets would account for an operations increase of only 5 percent under Phase 2. Specific operational elements are summarized in Table 2-2.

Table 2-2. Proposed Annual Use of Range 500

Use Category	*Existing* [1]	*Phase 1*	*Phase 2*	*Phase 3*	*Total*
Munitions					
0.50-Caliber	77,210	7,721	3,861	0	88,792
0.762-mm	325,952	32,595	16,298	0	374,845
25-mm	37,854	3,785	1,893	0	43,532
120-mm	5,727	573	286	0	6,586
Subtotal	446,743	44,674	22,337	0	513,754
Vehicle Hours [2]					
Tanks	1,933	193	97	0	2,223
LAVs	1,412	141	71	0	1,624
Other	1,943	194	97	0	2,234
Subtotal	5,288	529	264	0	6,081
Personnel					
Total personnel at Range 500	19,089	1,909	954	0	21,952

Notes:
[1] Based on 2002 operations tempo at Range 500.
[2] Vehicle hours correspond to the number of hours each vehicle type is operating or idling at Range 500.
Source: MAGTFTC 2003e.

2.2 Special Conservation Measures

Phase 2 of the proposed action would again include the implementation of Special Conservation Measures (SCMs), as described in the Range 500 EA, in order to minimize any potential impact to biological resources, particularly the federally "Threatened" desert tortoise. Most of the conservation measures would directly apply to this project; however, some may be removed from the project requirements based upon timing of construction and other factors, to be determined only by MAGTFTC Natural Resources and Environmental Affairs (NREA) Division personnel. The measures are based upon technical assistance from the U.S. Fish and Wildlife Service (USFWS); current Biological Opinion (BO) on base-wide training and maintenance operations (USFWS 2002), and accompanying terms and conditions (e.g., USFWS 2002); and the Integrated Natural Resources Management Plan (INRMP) for MCAGCC (MAGTFTC 2001a).

2.3 Alternatives

This Supplemental EA addresses in more detail Phase 2 of the Range 500 EA proposed action. Since each of the three alternatives carried forward in the initial Range 500 EA for analysis met the purpose and need of the proposed action by providing the additional trails, targets, and

supporting facilities needed to increase armored vehicle training efficiency and to allow more training requirements, no additional alternatives for this Supplemental EA are analyzed.

2.3.1 Proposed Action –Phase 2

The proposed range upgrades under Phase 2, as described in Sec. 2.1.1 of this chapter, is consistent with what was proposed in the Range 500 EA. Implementing Phase 2 of the proposed action would provide the capability for a 5 percent increase in the tempo of training activities and would also enhance the quality and variety of training that can be conducted at Range 500.

2.3.2 The No-Action Alternative

Under the No-Action Alternative, Phase 2 of the Range 500 upgrades would not occur, and operational tempo at the range would continue at current levels. Under this alternative, training efficiency would not be optimal, and the Tank and LAR units would continue to travel to other locations than MCAGCC to satisfy their platoon-level and section-level requirements. However, as required by NEPA, the No-Action Alternative is carried forward for analysis in this Supplemental EA.

2.3.3 Comparison of Alternatives

Table 2-3 presents a comparison of the potential environmental consequences resulting from implementation of the Phase 2 upgrades and the No-Action alternative.

Table 2-3. Comparison of Potential Environmental Consequences

Resource Area	*Phase 2*	*No-Action Alternative*
Geological Resources	○	○
Water Resources	○	○
Biological Resources	○	○
Cultural Resources	○	○
Air Quality	○	○
Noise	○	○
Land Use	○	○
Public Health and Safety	○	○

○ indicates no significant impact.