



**Final
Realignment and Development of a
Weapons Survivability Complex at Naval Air
Weapons Station China Lake, California
Environmental Assessment**

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Prepared for:

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List of Abbreviations and Acronyms

°C	degrees Celsius
°F	degrees Fahrenheit
µg	micrograms
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
AFB	Air Force Base
AICUZ	Air Installations Compatible Use Zone
AMSL	above mean sea level
APCD	Air Pollution Control District
APE	Area of Potential Effect
AQMA	Air Quality Management Area
ASM	ASM Affiliates, Inc.
BLM	Bureau of Land Management
BMP	Best Management Practices
BO	Biological Opinion
B.P.	before present
BRAC	Base Realignment and Closure
BRACON	Base Realignment and Closure Construction
BSA	Biological Study Area
Btu	British thermal unit
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CATEX	Categorical Exclusion
CBC	California Building Code
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLPD	China Lake Police and Physical Security Division
CLUMP	Comprehensive Land Use Management Plan
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CWA	Clean Water Act

List of Abbreviations and Acronyms

dB	decibel(s)
dBA	A-weighted decibel(s)
dB L _{eq}	equivalent noise level
DoD	Department of Defense
EA	Environmental Assessment
ECR	Electronic Combat Range
EIS	Environmental Impact Statement
EMR	electromagnetic radiation
EO	Executive Order
ESA	Endangered Species Act
ESQD	explosive safety quantity distance
FONSI	Finding of No Significant Impact
ft ²	square foot (feet)
FTA	Federal Transportation Administration
FY	Fiscal year
HERF	Hazards of Electromagnetic Radiation to Fuel
HERO	Hazards of Electromagnetic Radiation to Ordnance
HERP	Hazards of Electromagnetic Radiation to Personnel
INRMP	Integrated Natural Resources Management Plan
kVA	kilovolt-ampere
LAN	local area network
LBP	lead-based paint
LFT&E	Live Fire Test and Evaluation
LMU	Land Use Management Unit
LOS	level of service
m ²	square meter(s)
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
mgd	million gallons per day
MILCON	military construction
mld	million liters per day
MW	megawatt(s)

List of Abbreviations and Acronyms

NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NAVAIRINST	Naval Air Systems Command Instruction
NAVFACENGCOM	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
Navy	U.S. Department of the Navy
NAWCWD	Naval Air Warfare Center Weapons Division
NAWCWDINST	Naval Air Warfare Center Weapons Division Instruction
NAWS	Naval Air Weapons Station
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMCI	Navy/Marine Corps Intranet
NO ₂	nitrogen dioxide
NOI	Notice of Intent
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service, formerly Soil Conservation Service (SCS)
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
NSWC	Naval Surface Warfare Center
NWC	Naval Weapons Center
NWS	Naval Weapons Station
O ₃	ozone
OP	Ordnance Publication
OPNAVINST	Operational Navy Instruction
OSRD	Office of Scientific Research and Development
Pb	lead
PG&E	Pacific Gas & Electric
PL	Public Law
PM ₁₀	respirable particulate matter smaller than 10 micrometers in diameter
PM _{2.5}	respirable particulate matter smaller than 2.5 micrometers in diameter
POV	privately owned vehicle
ppm	parts per million
PSD	Prevention of Significant Deterioration
RDT&E	research, development, testing, and engineering
ROI	Region of Influence
RONA	Record of Non-Applicability
RSM	Range Safety Manual
RWQCB	Regional Water Quality Control Board

List of Abbreviations and Acronyms

SCS	Soil Conservation Service (obsolete; now Natural Resources Conservation Service [NRCS])
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	sulfur dioxide
STATSGO database	State Soil Geographic database
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&E	Test and Evaluation
TPY	Tons per year
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
W&ARD&AT&E	Weapons and Armaments Research, Development, and Acquisition, Test, and Evaluation
WSC	Weapons Survivability Complex

Executive Summary

ES1 Purpose and Need for the Proposed Action

This Environmental Assessment (EA) describes the potential environmental consequences resulting from the proposed realignment of Wright-Patterson Air Force Base's (AFB's) Fixed-Wing Live Fire Test and Evaluation (LFT&E) to Naval Air Weapons Station (NAWS) China Lake, California. This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] §§ 4321-4370d [1994]), as implemented by the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508 [1997]), the U.S. Department of the Navy (Navy) regulations implementing NEPA (32 CFR 775), and Navy Base Realignment and Closure (BRAC) Implementation Guidance.

ES1.1 Introduction

The Proposed Action is in response to the BRAC Commission of 2005 recommendations for the realignment of fixed-wing-related LFT&E from Wright-Patterson AFB, Ohio to NAWS China Lake.

The BRAC Act (commonly known as the BRAC legislation) was signed into law on October 24, 1988 (Public Law [PL] 101-526) and subsequently amended in November 1990 (PL 101-510, commonly known as the BRAC II legislation). The purpose of the BRAC legislation was to establish a procedure for the realignment and closure of U.S. Department of Defense (DoD) military installations. To achieve this objective, the legislation established nonpartisan BRAC commissions to review and evaluate the military installation closure or realignment recommendations of the Secretary of Defense and to make closure and realignment recommendations to the President and the Congress. Recommendations were issued by the commissions in 1988, 1991, 1993, 1995, and 2005; all of the recommendations have become law.

ES1.2 Proposed Action Location

NAWS China Lake is in the Upper Mojave Desert of California, approximately 242 kilometers (150 miles) northeast of Los Angeles (Figure 1-1). NAWS China Lake, composed of the North Range and the South Range, covers approximately 4,402 square kilometers (1,700 square miles) and is located in three counties: Inyo, Kern, and San Bernardino. The North Range lies in all three of these

counties; the southwest portion of the North Range is in Kern County, the northern two-thirds are in Inyo County, and the southeast portion is in San Bernardino County. The South Range lies entirely in San Bernardino County. The Proposed Action is in San Bernardino County in the North Range.

NAWS is predominantly surrounded by federally owned lands interspersed with pockets of private and state lands. Small areas of privately owned land are found immediately to the south and along the western boundary of the North Range and south of the South Range. The incorporated city of Ridgecrest and the unincorporated town of Inyokern are located adjacent to NAWS China Lake.

ES1.3 Purpose of the Proposed Action

The purpose of the Proposed Action is to implement the recommendations of the 2005 BRAC Commission by realigning the above-referenced functions from Wright-Patterson AFB LFT&E to NAWS China Lake. The Proposed Action would provide the DoD with essential LFT&E capabilities to ensure that aircraft, weapons systems, and mission-essential equipment are capable of achieving optimal survivability in a hostile environment, ensuring fleet air force effectiveness.

ES1.4 Need for the Proposed Action

The Navy's internal planning process identified a number of different actions that are needed now, in advance of movement of functions and equipment, to successfully implement the realignment of functions from Wright-Patterson AFB, Ohio to China Lake, California. By addressing the need for additional infrastructure and facilities upgrades at this time, the Navy can provide the facilities necessary to support the incoming assets, which would result in little or no interruption to operational readiness activities that are ongoing at the selected sites. These actions would encompass one BRAC Construction (BRACON) project that would take place over a two-year period. This BRACON represents the maximum number of construction projects that could occur as a result of the Proposed Action. The BRACON involves the construction of the following:

- A new LFT&E Center, along with associated special test and ordnance storage facilities.

This EA analyzes the action of the 2005 BRAC Commission's recommendation to establish a center for fixed wing air platform LFT&E: the realignment of certain Wright Patterson AFB live fire functions, along with the construction of a weapons fabrication and test facility with laboratory offices for personnel supporting the LFT&E functions at the NAWS China Lake Weapons Survivability Complex (WSC), which would facilitate the realignment and consolidation of the BRAC-designated facilities into one Naval Integrated LFT&E Center at NAWS China Lake. As a result, the DoD would be able to exploit center-of-mass scientific, technical, and acquisition expertise into one integrated LFT&E site situated in one geographical location.

The LFT&E Law (Title 10 U.S.C. Section 2366 and DoD Regulation 5000.2-R) is a congressionally mandated law that requires major weapons/aircraft systems and major upgrades to undergo LFT&E against a wide range of threats. LFT&E missions require selected battlefield threats, such as conventional weapons, be evaluated against aircraft operating at various power settings with a full range of weapon configurations in operational environments. The testing is to be conducted at the earliest development stages so changes can be incorporated into development hardware of major aircraft or upgrades of existing systems.

ES1.5 Environmental Scope of the Proposed Action

In accordance with the CEQ regulations for implementing NEPA, material relevant to a proposed action may be incorporated by reference with the intent of reducing the size of the document. Accordingly, the following documents are incorporated by reference into this EA because the actions addressed are applicable to the Proposed Action:

- *NAWS China Lake Comprehensive Land Use Management Plan*, May 2005 (CLUMP);
- *NAWS China Lake Environmental Impact Statement (EIS)*, February 2004;
- *NAWS China Lake Integrated Natural Resources Management Plan (INRMP)*, February 2000; and
- *Preliminary Final Environmental Assessment (EA) for the Realignment and Development of a Naval Integrated Weapons and Armaments Research, Development, and Acquisition, Test, and Evaluation Center at Naval Air Weapons Station China Lake, California*, February 2007.

This EA covers the full range of environmental issues given the potential for broad effects resulting from the realignment of assets and functions from Wright-Patterson AFB to NAWS China Lake. The primary issues of concern in evaluating the potential impacts of the Proposed Action are the effects it could have on cultural resources. Consequently, these issues have received the greatest emphasis in the evaluations presented in this document. Other issues are also addressed and evaluated in this EA, but to a lesser degree. For each of the other issues, the level of evaluation and depth of discussion in this document are commensurate with the relative degree of importance attributed to each issue in the decision process. Specifically, the EA contains an evaluation of the following issues of concern.

Primary Issue

- Cultural Resources.

Other Issues

- Geology, Soils, and Seismicity;
- Hydrology/Water Quality;
- Biological Resources;

- Land Use;
- Socioeconomics;
- Traffic/Circulation;
- Air Quality;
- Noise;
- Aesthetics;
- Services and Utilities; and
- Safety and Environmental Health.

ES1.6 Intergovernmental Coordination

As part of the NEPA compliance process, coordination and consultation with appropriate governmental agencies will be initiated to obtain regulatory input and guidance related to the Proposed Action. The purpose is to ensure that all applicable laws, rules, regulations, and policies have been identified and the Proposed Action has been duly evaluated in light of these considerations.

This EA has been prepared pursuant to the following:

- NEPA (42 U.S.C. §§ 4321-4370d);
- CEQ Regulations (40 CFR 1500-1508);
- DoD 4165.66-M – Base Redevelopment and Realignment Manual;
- Secretary of the Navy Instruction 5090.6A – Environmental Planning for Department of the Navy Actions;
- Navy BRAC Implementation Guidance, Chapter 10;
- Revitalizing Base Closure Communities and Addressing Impacts of Realignment (32 CFR Parts 174, 175, and 176);
- Navy Guidance on Administrative Records – Developing an Administrative Record for Litigation Pursuant to NEPA, a Legal Primer for the Navy;
- Archaeological Resources Protection Act of 1979 16 U.S.C. § 470aa (1994);
- Clean Air Act (CAA) 42 U.S.C. § 7401 (1994);
- CAA (Amendments of 1990) PL No. 101-549, 104 Statute 2399;
- Clean Water Act (CWA) 33 U.S.C. § 1251 (1994);
- CWA (Section 404 Permitting) 33 U.S.C. §1344 (1994);
- Endangered Species Act (ESA) 16 U.S.C. §1531 (1994);
- Federal Safe Drinking Water Act 42 U.S.C. 300f;

- Executive Order (EO) 11988 (Floodplain Management), 42 Federal Register 26951 (1977) (Codified as 42 U.S.C. § 4321 (note) (1994));
- EO 11990 (Wetlands Protection), 42 Federal Register 26961 (1977);
- EO 12898 (Environmental Justice), 59 Federal Register 7629 (1994);
- EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks), 62 *Federal Register* 19885 (1997);
- EO 12372 (Intergovernmental Review of Federal Programs), 7 CFR § 3015 (1977), Subpart V and Final Rule-related notices published at 48 Federal Register 29114 (1983) and 49 Federal Register 22676 (1984);
- National Historic Preservation Act (NHPA) of 1966, as amended 16 U.S.C. § 470 (1994); and
- National Register of Historic Places (NRHP), 36 CFR § 60 (1977).

Environmental compliance requirements for Navy activities are defined in Operational Navy Instruction (OPNAVINST) 5090.1B, as amended. Specific local environmental management policies and procedures are contained in the 2005 CLUMP and the 2000 INRMP. The Environmental Planning and Management Office has responsibility for the protection of sensitive resources and was consulted throughout the preparation of this EA and associated technical surveys and reports.

ES1.7 Decisions to be Made

The decision-maker for the Proposed Action is the Commander, Naval Installations Command.

Based on this EA, a decision will be made whether a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS is appropriate for the Proposed Action. This decision will be based on a determination of whether all potential impacts either would be less than significant or can be reduced to less than significant levels through the implementation of mitigation measures. If it is determined that all potential impacts either would be less than significant or can be mitigated to less than significant levels, then preparation of a FONSI will be appropriate. If any potential impacts are considered significant and cannot be avoided or reduced to less than significant levels, then the preparation and processing of an NOI to prepare an EIS will be required.

The Proposed Action also may require the following decisions and approvals from federal and state agencies.

Clean Air Act General Conformity Rule

The Navy must prepare a Conformity Review prior to the finalization of this EA, in accordance with requirements and procedures described in the OPNAVINST 5090.1B Appendix F.

Section 106 Compliance

The NHPA requires federal agencies to consider the preservation of historic and prehistoric resources. Under the NHPA, the Secretary of the Interior is authorized to expand and maintain the NRHP. Section 106 of the NHPA mandates that all federal agencies take into account the effects of their undertakings (actions) on historic/prehistoric resources and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to review and comment on any action that may affect properties that are listed, or are eligible for listing, in the NRHP.

Under Section 101 of the NHPA, a State Historic Preservation Officer (SHPO) was established in each state and designated the responsibility of reviewing and commenting on any action affecting NRHP properties or properties eligible for listing in the NRHP. Consultation with the SHPO is complete.

The Navy initially determined that there were four sites (ASM-3, ASM-4, ASM-5, and ASM-6) potentially eligible for listing on the NRHP, and subsequently determined that the Proposed Action would not adversely affect these sites. In November 2006, the Navy initiated consultation with the SHPO in reference to the four archaeological sites that would be affected under the proposed construction. The Navy requested comments from the SHPO regarding the initial determination of eligibility and the adequacy of the data recovery plan for the four sites to be affected by the proposed BRAC actions. The SHPO never responded on the determination of eligibility or the adequacy of the recovery plan. Since no response was obtained on either topic, in accordance with Section 106 of the NHPA, consultation is completed. Additionally, local Native American groups were also consulted regarding the presence of cultural deposits in the Proposed Action area. No comments or concerns were raised by any of the Native American groups consulted. In the course of finalizing its investigation and analysis of these sites, the Navy ultimately determined the Proposed Action did not present a risk of adverse effect to any cultural resources of potential significance.

Endangered Species Act, Section 7 Consultation

Federally listed species and designated critical habitat that are known to be present or potentially may be present in the Proposed Action area are the desert tortoise (*Gopherus agassizii*) and its habitat. NAWS China Lake has a Biological Opinion (BO) on the desert tortoise from the U.S. Fish and Wildlife Service (USFWS), which is included in this document as Appendix A. The BO was issued in 1995 and evaluates the impacts that *NAWS China Lake's Tortoise Management Plan* (Navy 1992) would have on desert tortoise critical habitat. It was the opinion of the USFWS that *NAWS China Lake's Tortoise Management Plan* would not likely jeopardize the continued existence of the desert tortoise or adversely modify desert tortoise critical habitat. In this case, no consultation with the USFWS is required since the Proposed Action area: is not within the Desert Tortoise Management Area, is less than 20.2 hectares (50 acres) in total area, and biological surveys found no sign of desert tortoise; therefore, NAWS China Lake

would only be required to notify the USFWS concerning the Proposed Action in its annual report (Paragraph 1.h of the Terms and Conditions of the BO).

ES2 Description of the Proposed Action and Alternatives

This section provides an in-depth discussion of the Proposed Action and its alternatives.

In September 2005, the BRAC Commission recommended the realignment of assets and functions from Wright-Patterson AFB, Ohio, to NAWS China Lake. On 27 October 2005, the BRAC Commission's recommendations were enacted into law.

Unlike the official BRAC Commission's Final Recommendations of 8 September 2005, Navy BRACON projects are discretionary actions proposed by the Navy and, therefore, are subject to analysis under NEPA. Thus, the Proposed Action considered by this EA is the construction of the BRACON and the operational activities that would occur after the realignment of assets and functions from the above-mentioned installation.

The two alternatives considered in this EA are the Proposed Action and the No Action Alternative. Section ES2.3 discusses additional alternatives that were not carried forward for detailed analysis.

ES2.1 Description of the Proposed Action

The Proposed Action would require the implementation of one BRACON project, P-700V. BRACON P-700V would be the construction of a weapons fabrication and test facility with laboratory offices for associated personnel at the NAWS China Lake WSC located north of the existing Aircraft Survivability Complex. BRACON P-700V would begin in Fiscal Year (FY) 2008 and continue through FY 2010.

Note that under the Proposed Action, no personnel associated with the LFT&E functions at Wright-Patterson AFB, Ohio, would be required to relocate. In addition, the BRACON design drawing, as shown in Figure 2-1 of this document, is conceptual and subject to change. The drawing addresses the site and scope of the projects.

The primary component of P-700V would be the construction of a 929-square-meter (m²; 10,000-square-foot [ft²]) open-air concrete test pad. An article (e.g., an aircraft, aircraft panel ["panel testing"], or an aircraft component such as an actuator, control rod, etc. ["component testing"]) would be static tested on this pad. The pad would be raised to allow a single-shot gun of some type (typically small arms fire or Anti-Aircraft Artillery) to be mounted in an area underneath to allow firing at the article as part of the Live Fire Test Program. The pad itself would be a solid fill with a concrete cap. There would be a slot in the center (i.e., a gun trough, from which to fire). Spent casings within a 91- to 137-meter (100-

to 150-yard) radius of the test pad would be collected for disposal after testing events. There also would be fuel storage for JP-8 and JP-5, aqueous film-forming foam to put out fires, an oil/water separator, power to the site, and utilities from the control room. A 186-m² (2,002-ft²) test control building would be co-located with the test pad. The Proposed Action is typical of other weapons testing activities occurring within the Weapons Survivability Labs complex.

A facility at the main site of the WSC would be constructed on the site of Building 31175 and the surrounding sidewalk and concrete slab and would provide space for a 372-m² (4,004-ft²) laboratory office. A 558-m² (6,006-ft²) fabrication facility also would be at the main site and would consist of a prefabricated metal building with high bay lights, power, and a crane. As part of the Proposed Action, Building 31175 and the surrounding sidewalk and concrete slab would need to be removed from the project area. These structures represent the only buildings/structures potentially subject to demolition in conjunction with the Proposed Action.

An existing traveling crane would be used to carry the test weapon or equipment from the main site of the WSC to the test pad. The existing road is a dirt road, which would have to be widened to approximately 40 feet wide and paved for approximately 1 mile for use by the traveling crane – the tires on the traveling crane are far apart and wide. Two parallel asphalt-paved lanes spaced approximately 12 feet apart would be used to accommodate the tires of the traveling crane. In addition, the road would have to be minimum incline since the crane can only traverse a 3.5-degree slope.

BRACON P-700V would be near several other test pads, including K2 and Military Construction (MILCON) P-407. Each test pad has a 379-meter (1,250-foot) explosive safety quantity distance (ESQD) arc. When these other pads are in use, access would not be available to the P-700V pad; therefore, a dirt road that traverses all ESQD arcs would need to be graded to allow access from the main site of the WSC to the P-700V pad. This grading would be part of BRACON P-700V.

All structures associated with BRACON P-700V would be designed to be compliant with the Americans with Disabilities Act and would meet all current seismic requirements. Built-in equipment would include individual heating, ventilation, and air conditioning equipment; and the Navy/Marine Corps Intranet (NMCI) equipment room. Electrical systems would include lighting, power, fire alarms, fiber optic lines, and information systems (telephone, local area network [LAN], and NMCI). Mechanical systems would include plumbing, fire suppression, and propane. Supporting facilities would include site and building utility connections (water, fire, stormwater drainage, sanitary sewer, gas, electrical, telephone, LAN, and NMCI). Anti-Terrorism/Force Protection measures would include blast-resistant glazed window and door systems, mass notification systems, and emergency air distribution shut-off.

Table ES-1 shows square footages of all components of the proposed WSC.

Table ES-1 Weapons Survivability Complex Components

Component	Footprint (square meters/square feet)	Type
Fabrication Facility	558 / 6,006	New
Test Control Building	186 / 2,002	New
Laboratory Building	372 / 4,004	New
Telecommunications Room	7 / 75	New
Test Pad	929 / 10,000	New
Grand Total	2,052 / 22,087	

ES2.2 Alternatives to the Proposed Action

The CEQ considers the discussion of alternatives of the utmost importance in a NEPA environmental planning analysis. As defined in 40 CFR 1502.14, the heart of an EA is the analysis of alternatives, which provides decision-makers and the public with a clear picture of the issues and rationale used to determine the preferred alternative.

ES2.2.1 Alternative Criteria

The Navy used the following criteria in identifying and considering reasonable alternatives for analysis in this EA. The EA criteria are based on the purpose and need for the Proposed Action.

Criterion A: Meet facility needs and requirements of incoming commands.

The command that is being realigned has very specific and uncommon facility needs, including the capability to safely store explosive materials; use large X-ray systems for examination of weapons, ordnance, and other explosive materials; and be sited in areas of open space. The open space needs to be such that large-scale research and development, developmental testing, and operational testing can take place within a newly established 1,250-foot ESQD arc as required by Naval Sea Systems Command (NAVSEA) Ordnance Publication (OP) 5, Volume 1, Ammunition and Explosive Safety Ashore.

Under Criterion A, a reasonable alternative would be able to accommodate the facility needs and the requirements of the realigned activities.

Criterion B: Locate realigned Live Fire Test and Evaluation activities and required new facilities, to the extent practicable, in proximity to existing Live Fire Test and Evaluation facilities and activities for aircraft.

The command that is being realigned primarily performs LFT&E. These types of activities are most efficiently performed when personnel involved in a similar mission are able to share facilities and easily exchange ideas and information. Time and distance are major factors in facilitating operations and information exchanges.

Under Criterion B, a reasonable alternative for evaluation in this EA would site the LFT&E activities being realigned to NAWS China Lake from Wright-Patterson AFB as close as possible to the existing LFT&E facilities and activities for aircraft.

Criterion C: Maximize the use of existing facilities. One purpose of the BRAC program is to generate cost savings by making DoD operations more efficient and eliminating excess infrastructure. The resulting savings would then be reinvested in war-fighting capability. Consequently, maximizing the use of existing facilities is essential to meeting the cost savings goal. NAWS China Lake has a large number of unused facilities that can be reused “as is” or renovated to allow for an efficient layout of functions, thus decreasing the surplus of space. Additionally, co-locating facilities with existing infrastructure, facilities, and expert personnel would help to achieve optimum LFT&E operations and eliminate the need to construct duplicate facilities (including additional roads that would likely be extensive). Use of the existing facilities would also eliminate the need to either purchase duplicate equipment such as the heavy crane used to transport certain items for testing (see Section 2.1) or to move such equipment between sites, resulting in preventive cost savings to the Navy. Other examples of these facilities are test asset and fixture storage facilities; jet engine, paint, machine, and welding shops; and instrumentation, controls, and aircraft power resources.

Under Criterion C, a reasonable alternative would be one that would make extensive use of existing facilities at NAWS China Lake.

ES2.2.2 Alternatives to be Evaluated in this EA

The No Action Alternative is also considered in this EA. While alternatives other than the Proposed Action and No Action Alternative are discussed for this EA (see Section 2.3, below), none were selected for further consideration because none were found that met all of the functional criteria previously discussed in Section 2.2.1.

Under the No Action Alternative, no functions would be relocated to NAWS China Lake from Wright-Patterson AFB as recommended by the 2005 BRAC Commission; additionally, the proposed BRACON would not be implemented. Implementation of the No Action Alternative would impair the Navy’s ability to implement BRAC 2005 recommendations to create an LFT&E Center at NAWS China Lake. While short-term costs associated with construction and renovation would be avoided, overall, given the loss in efficiency and productivity that would occur as a result of not implementing the BRACON contemplated in the Proposed Action, no actual savings or other efficiencies would be realized. The No Action Alternative is used primarily as a baseline to support the impacts analysis of the Proposed Action and the other two alternative actions considered. The No Action Alternative is not an action within the agency’s discretion, but is used as a baseline to forward the impacts analysis.

ES2.3 Alternatives Considered but Not Carried Forward

The Navy considered the possibility of performing complete analyses of alternatives other than the Proposed Action, such as alternatives that would situate the realigned functions at locations on NAWS China Lake other than the Proposed Action site, or alternatives that would focus on renovation rather than

new construction. The following alternatives were considered but not carried forward for additional analysis.

ES2.3.1 Alternative Siting of the WSC

In considering the possibility of locating the realigned functions at locations other than the Proposed Action site, the Navy looked at locations that could potentially meet the alternative criteria, including use of existing facilities generally, and relative proximity to existing LFT&E facilities and functions in particular. The Navy considered two such alternatives for possible further analysis.

Under the first of these two alternatives, the proposed WSC would be situated on a dry lakebed at a lower elevation relative to the Proposed Action site (the latter would be situated to the north, upgradient from the dry lakebed under consideration). This alternative would be within a few miles of the facilities associated with existing LFT&E functions, and thus could meet Criterion A and arguably Criteria B and C as well. However, this alternative is not considered to be a reasonable alternative because, at this lower elevation, the alternative site would need to be constructed on marine pylons due to the presence of water 46 centimeters (18 inches) below the ground surface, and would also potentially be subject to flooding during high-precipitation events. The Proposed Action site would not require the use of pylons, and it would not be subject to potential flooding because of its higher elevation. (The Navy notes that the Proposed Action site was not inundated during flooding in 1984, which the Navy believes was comparable to a 100-year flood event.) Therefore, this alternative location would conflict with E.O. 11988, which directs federal agencies to avoid actions located in areas subject to flooding unless there is no practicable alternative. Additionally, locating the alternative site within an area subject to flooding would raise the risk of having to cancel operations during inclement weather.

Consequently, while this alternative arguably meets Criteria A, B, and C, the Navy believes that it would be an unreasonable option in light of: (1) the unsuitability of the lakebed location relative to E.O. 11988; (2) the construction and operational constraints associated with the pylons and other construction measures necessary to build the WSC on the dry lakebed; (3) the additional costs associated with construction at the lakebed location; and (4) the loss of proximity to existing facilities relative to the Proposed Action site. Therefore, this alternative was not carried forward for additional analysis.

The other alternative site that received consideration for potential further analysis is the K2 Range, which is located adjacent to the existing LFT&E facilities for aircraft (see Criterion B). However, locating the Proposed Action within the K2 Range would result in overlapping ESQD arcs between the Proposed Action and established test sites. Siting the Proposed Action within the K2 Range would result in restrictions to access and inability to conduct testing when neighboring test pads are conducting testing events due to overlapping safety arcs, thereby reducing the operational efficiency of both the Proposed Action and/or ongoing testing activities at the already-established test sites.

Thus, while the K2 Range alternative also arguably meets Criteria A, B, and C, the Navy believes that the access and other operational constraints associated with use of the K2 Range, in addition to the K2 Range's reduced proximity to existing aircraft LFT&E facilities relative to the Proposed Action, cause it to be an unreasonable option. Therefore, this alternative was not carried forward for additional analysis.

The Navy notes that locating the realigned functions at locations on NAWS China Lake other than the Proposed Action site or those locations discussed above in Section 2.3.1 would necessitate conducting such functions in areas not previously associated with aircraft live fire testing, and would otherwise fail to meet both Criterion B and, to a lesser extent, Criterion A. Consequently, the Navy has not evaluated any such additional alternatives.

ES2.3.2 Renovation/Modernization in Lieu of New Construction at NAWS China Lake

Renovation or modernization in lieu of new construction is not a viable alternative for this BRACON because there are not enough unused facilities at NAWS China Lake meeting project alternative criteria to accommodate the needs of the incoming commands. Therefore, this alternative was not carried forward for additional analysis.

ES2.4 Summary of Impacts

In November 2006 the Navy initiated consultation with the SHPO in reference to the four archaeological sites that would be affected under the Proposed Action. The Navy requested comments from the SHPO regarding the determination of eligibility and the adequacy of the data recovery plan for the four sites to be affected by the proposed BRAC actions. The SHPO did not respond on the determination of eligibility or the adequacy of the recovery plan. Since no response was obtained on either topic, in accordance with Section 106 of the NHPA, consultation is completed. In addition, the Navy consulted with members of local Native American groups to inform them of the Proposed Project; none of the groups consulted (Kern River Indian Community, Ft. Independence, Timbisha, Big Pine, Bishop, and Lone Pine representatives) had comments on the Proposed Action. No other resource areas would be impacted as a result of project implementation.

Table ES-2 is a summary of the environmental consequences expected to occur as part of this Proposed Action.

Table ES-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
Geology, Soils, and Seismicity	No significant impacts.	No significant impacts.
Hydrology and Water Quality	No significant impacts.	No significant impacts.
Terrestrial Biological Resources	<p>Plants To minimize impacts to creosote bush scrub and saltbrush scrub communities, the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> • Proper erosion control practices would be used when sediment and surface erosion is anticipated in regard to road improvements and culvert installations. • Construction activities would implement measures to prevent the spread of invasive weeds. • After construction, the Navy would reseed or restore the construction area to pre-construction conditions to avoid permanent habitat loss. Areas cleared of vegetation would be seeded with grasses or other vegetation as follows: <ul style="list-style-type: none"> - Disturbed or graded areas would be planted with vegetation native to the area. - If required, previously vegetated areas and inactive portions of the construction site would be seeded and watered until vegetation is grown, if needed. - Revegetated areas would be monitored to evaluate the success of the restoration effort, and to replant or reseed (if required) to conform to the requirements of the agencies involved with habitat restoration. <p>Sensitive Species Of the three federally listed threatened and endangered species known to occur on NAWS China Lake, the desert tortoise is the only species with the potential to be affected. The P-700V area is known to be desert tortoise habitat; it is not USFWS-designated desert tortoise critical habitat or within the NAWS China Lake Desert Tortoise Management Area. Surveys conducted by Epsilon in November 2005 and April 2006, however, yielded no sightings or evidence of the desert tortoise, and thus the Proposed Action would have no adverse effect or other significant impact on the desert tortoise.</p> <p>In order to avoid or minimize any potential impact on individual members of the species in the unlikely event any desert tortoise should be found on the project site, the Navy will follow the guidance set forth in the USFWS's Biological Opinion for the desert tortoise (Appendix A). Formal consultation with the USFWS is not required since the Proposed Action area is not within the Desert Tortoise Management</p>	No significant impacts.

Table ES-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
	Area, and is less than 20.2 hectares (50 acres) in total area, and biological surveys found no evidence of the desert tortoise; therefore, NAWS China Lake would only be required to notify the USFWS concerning the Proposed Action in its annual report (Paragraph 1.h of the Terms and Conditions of the BO).	
Cultural Resources	No significant impacts.	No significant impacts.
Land Use	No significant impacts.	No significant impacts.
Socioeconomics/ Environmental Justice	No significant impacts.	No significant impacts.
Traffic and Circulation	The Proposed Action would result in a temporary and minor increase in traffic within the Aircraft Survivability Complex during the construction period. The Proposed Action would not require additional personnel relocating to NAWS China Lake; therefore, traffic conditions post-construction would be largely as outlined in the December 2006 traffic study (Navy 2006), apart from a few additional vehicles (likely 17 or fewer) associated with anticipated local hiring of new contractor personnel for ongoing operations. Implementation of the Proposed Action would not result in impacts to the existing or forecasted traffic conditions at NAWS China Lake; therefore, no additional mitigation measures would be required.	No significant impacts.
Air Quality	<p>Total annual emissions resulting from project construction in each year of activity have been estimated. Annual PM₁₀ emissions are estimated to increase 3.54 tons in FY 2009 and 4.10 tons in FY 2010. Once construction is complete, final annual emissions are estimated to increase as shown in Table 3.8-6. These annual emission increases will not result in an impact to air quality.</p> <p>Since no calendar year would have annual emissions of PM₁₀ that exceed the 100-tons per year <i>de minimis</i> threshold, the project is exempt from the General Conformity regulation and does not require a Conformity Determination. Additional detail related to this issue is provided in Appendix D in the Record of Non-Applicability (RONA).</p> <p>For P-700V, test events at this facility are not expected to result in the generation of additional air pollution. Emissions produced during testing events would be the same as those of existing testing facilities located nearby (such as the existing K2 testing facility), and would not exceed current Mojave Desert Air Quality Management District limits.</p>	No significant impacts.

Table ES-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
Air Quality (Cont.)	<p>Although construction-related air quality impacts would be minor, the following Best Management Practices or similar measures would be implemented to reduce air quality impacts from the Proposed Action:</p> <ul style="list-style-type: none"> • Using water to control dust during construction operations, grading roads, or clearing land; • Applying water on dirt roads, materials stockpiles, and other surfaces that could create airborne dust; and • Covering open equipment for conveying or transporting material likely to create objectionable air pollution when airborne. 	
Noise	<p>Although construction-related noise impacts would be minor, the following Best Management Practices or similar measures would be used to reduce noise impacts from the Proposed Action:</p> <ul style="list-style-type: none"> • Require that construction occurs only during normal weekday business hours; • Use properly maintained construction equipment mufflers; • Notify occupants adjacent to construction areas of the construction activity and the anticipated duration of construction prior to the onset of work; and • Require construction personnel, and particularly equipment operators, to use adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations. 	No significant impacts.
Aesthetics	No significant impacts.	No significant impacts.
Public Services and Utilities	No significant impacts.	No significant impacts.
Public Health and Safety	No significant impacts.	No significant impacts.

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Purpose and Need for the Proposed Action

This Environmental Assessment (EA) describes the potential environmental consequences resulting from the proposed realignment of Wright-Patterson Air Force Base's (AFB's) Fixed-Wing Live Fire Test and Evaluation (LFT&E) to Naval Air Weapons Station (NAWS) China Lake, California. This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] §§ 4321-4370d [1994]), as implemented by the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508 [1997]), U.S. Department of the Navy (Navy) regulations implementing NEPA (32 CFR 775), and Navy Base Realignment and Closure (BRAC) Implementation Guidance.

1.1 Introduction

The Proposed Action is in response to the BRAC Commission of 2005 recommendation for the realignment of fixed-wing-related LFT&E from Wright-Patterson AFB, Ohio to NAWS China Lake.

The BRAC Act (commonly known as the BRAC legislation) was signed into law on October 24, 1988 (Public Law [PL] 101-526) and subsequently amended in November 1990 (PL 101-510, commonly known as the BRAC II legislation). The purpose of the BRAC legislation was to establish a procedure for the realignment and closure of U.S. Department of Defense (DoD) military installations. To achieve this objective, the legislation established nonpartisan BRAC commissions to review and evaluate the military installation closure or realignment recommendations of the Secretary of Defense and to make closure and realignment recommendations to the President and the Congress. Recommendations were issued by the commissions in 1988, 1991, 1993, 1995, and 2005; all of the recommendations have become law.

1.2 Proposed Action Location

NAWS China Lake is in the Upper Mojave Desert of California, approximately 242 kilometers (150 miles) northeast of Los Angeles (Figure 1-1). NAWS China Lake, composed of the North Range and the South Range, covers approximately 4,402 square kilometers (1,700 square miles) and is located in three counties: Inyo, Kern, and San Bernardino. The North Range lies in all three of these counties; the southwest portion of the North Range is in Kern County, the

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northern two-thirds are in Inyo County, and the southeast portion is in San Bernardino County. The South Range lies entirely in San Bernardino County. The Proposed Action is in San Bernardino County in the North Range.

NAWS is predominantly surrounded by federally owned lands interspersed with pockets of private and state lands (Figure 1-2). Small areas of privately owned land are found immediately to the south and along the western boundary of the North Range and south of the South Range. The incorporated city of Ridgecrest and the unincorporated town of Inyokern are located adjacent to NAWS China Lake.

1.3 Purpose of the Proposed Action

The purpose of the Proposed Action is to implement the recommendations of the 2005 BRAC Commission by realigning the above-referenced functions from Wright-Patterson AFB LFT&E to NAWS China Lake. The Proposed Action would provide the DoD with essential LFT&E capabilities to ensure that aircraft, weapons systems, and mission-essential equipment are capable of achieving optimal survivability in a hostile environment, ensuring fleet air force effectiveness.

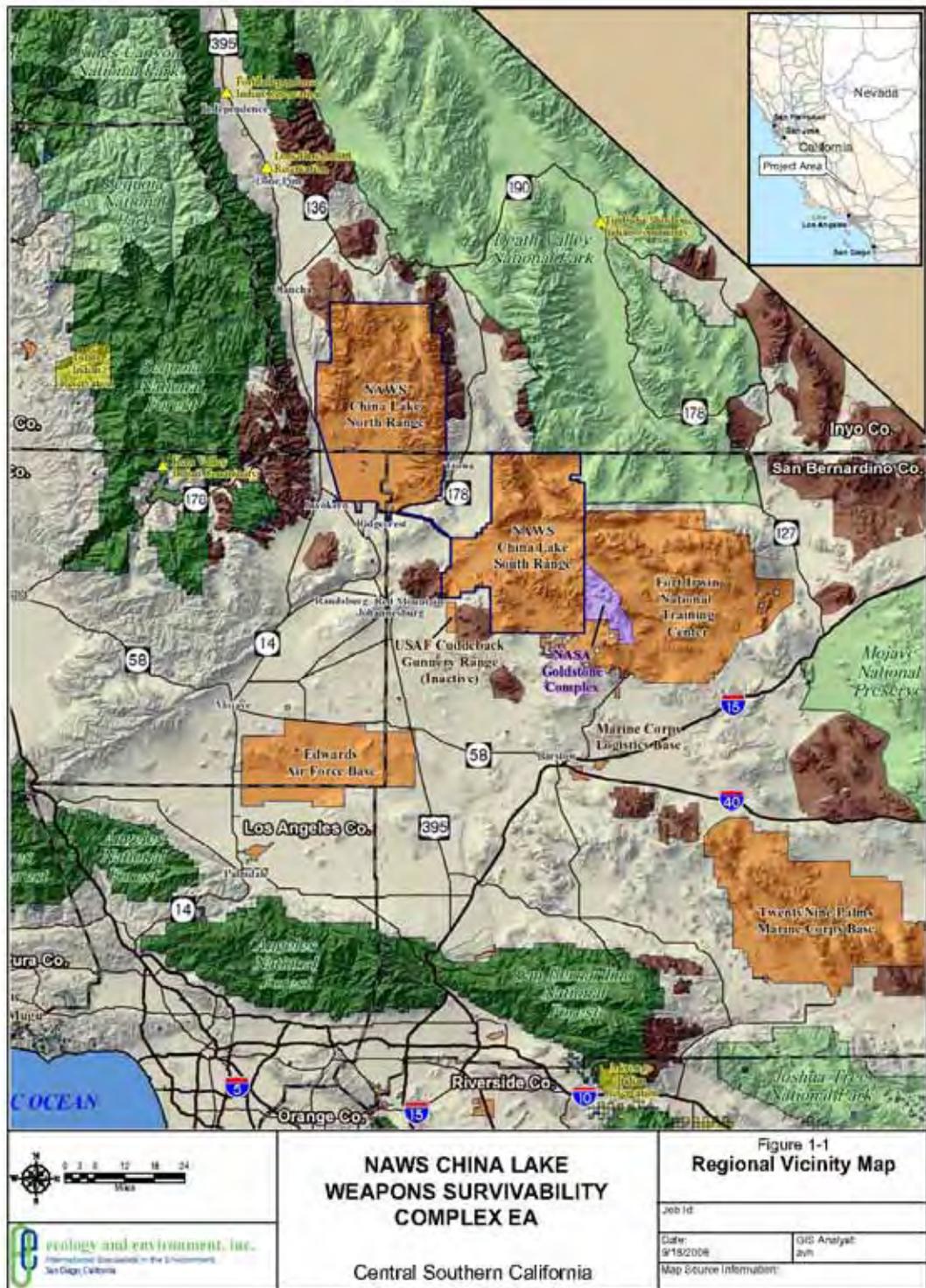
1.4 Need for the Proposed Action

The Navy's internal planning process identified a number of different actions that are needed now, in advance of movement of functions and equipment, to successfully implement the realignment of functions from Wright-Patterson AFB, Ohio to China Lake, California. By addressing the need for additional infrastructure and facilities upgrades at this time, the Navy can provide the facilities necessary to support the incoming assets, which would result in little or no interruption to operational readiness activities that are ongoing at the selected sites. These actions would encompass one BRAC Construction (BRACON) project that would take place over a two-year period. This BRACON represents the maximum number of construction projects that could occur as a result of the Proposed Action. The BRACON involves the construction of the following:

- A new LFT&E Center, along with associated special test and ordnance storage facilities.

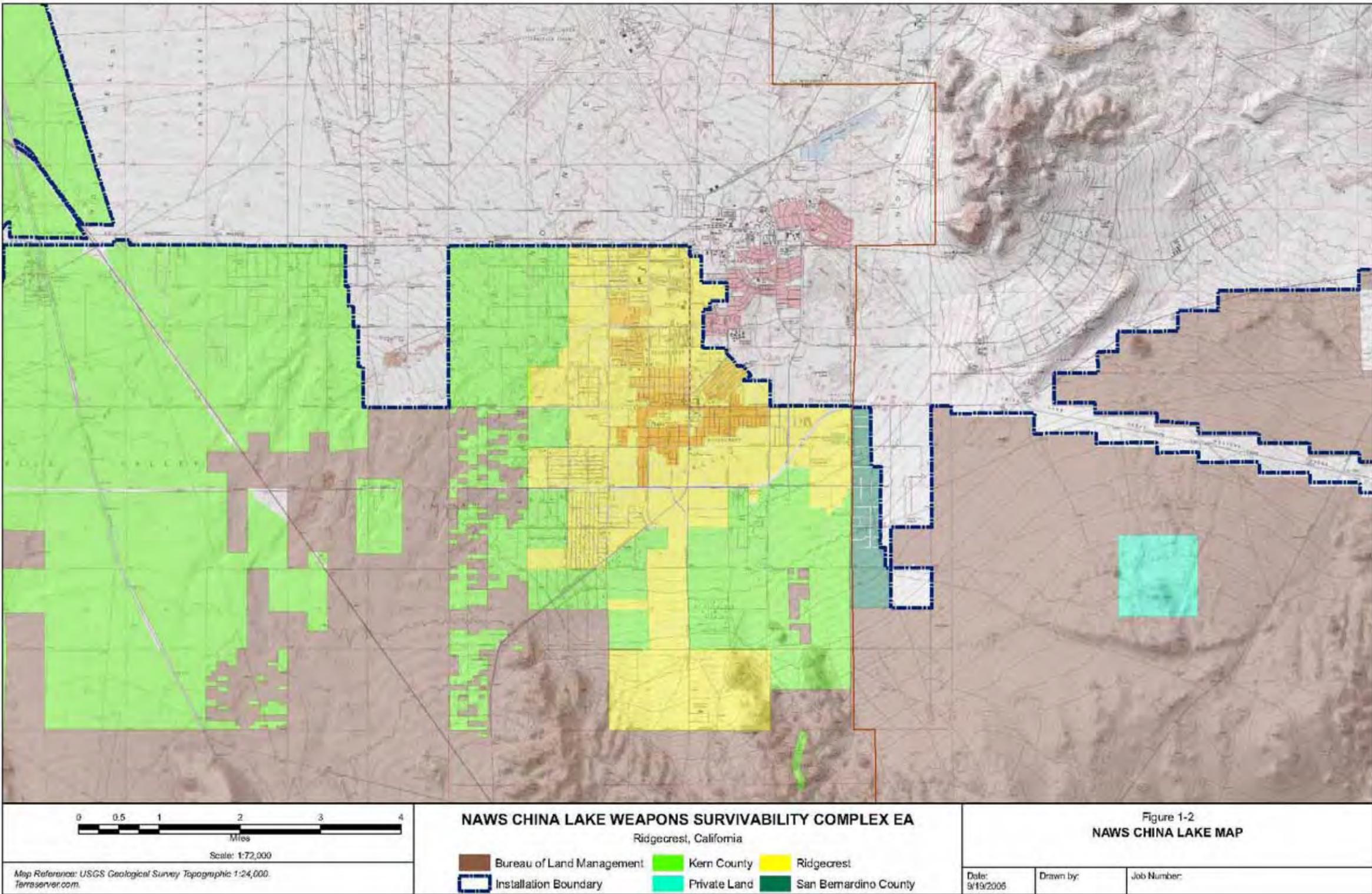
This EA analyzes the action of the 2005 BRAC Commission's recommendation to establish a center for fixed wing air platform LFT&E: the realignment of certain Wright Patterson AFB live fire functions, along with the construction of a weapons fabrication and test facility with laboratory offices for personnel supporting the LFT&E functions at the NAWS China Lake Weapons Survivability Complex (WSC), which would facilitate the realignment and consolidation of the BRAC-designated facilities into one Naval Integrated LFT&E Center at NAWS China Lake. As a result, the DoD would be able to exploit center-of-mass scientific, technical, and acquisition expertise into one integrated LFT&E site situated in one geographical location.

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The LFT&E Law (Title 10 U.S.C. Section 2366 and DoD Regulation 5000.2-R) is a congressionally mandated law that requires major weapons/aircraft systems and major upgrades to undergo LFT&E against a wide range of threats. LFT&E missions require selected battlefield threats, such as conventional weapons, be evaluated against aircraft operating at various power settings with a full range of weapon configurations in operational environments. The testing is to be conducted at the earliest development stages so changes can be incorporated into development hardware of major aircraft or upgrades of existing systems.

1.5 Environmental Documentation

This EA was prepared using a systematic, interdisciplinary assessment process designed to provide decision-makers with an organized analysis of the environmental consequences of implementing the Proposed Action. Chapter 1 discusses the purpose and need for the Proposed Action, and Chapter 2 describes the Proposed Action and alternative actions considered. Chapter 3 characterizes the affected environment and provides an assessment of the environmental consequences of the Proposed Action and post-construction operations. Chapter 4 addresses cumulative impacts under NEPA, and Chapter 5 discusses possible conflicts with other existing plans and policies. Chapter 6 discusses other NEPA considerations. Chapter 7 lists individuals who participated in the preparation of this EA, and Chapter 8 lists personnel and agencies contacted and references used in the EA process to assist readers and decision-makers in the review and use of this document.

1.6 Environmental Scope of the Proposed Action

In accordance with the CEQ regulations for implementing NEPA, material relevant to a proposed action may be incorporated by reference with the intent of reducing the size of the document. Accordingly, the following documents are incorporated by reference into this EA because the actions addressed are applicable to the Proposed Action:

- *NAWS China Lake Comprehensive Land Use Management Plan (CLUMP)*, May 2005;
- *NAWS China Lake Environmental Impact Statement (EIS)*, February 2004;
- *NAWS China Lake Integrated Natural Resources Management Plan (INRMP)*, February 2000; and
- *Preliminary Final Environmental Assessment for the Realignment and Development of a Naval Integrated Weapons and Armaments Research, Development, and Acquisition, Test, and Evaluation Center at Naval Air Weapons Station China Lake, California*, February 2007.

This EA covers the full range of environmental issues, given the potential for broad effects resulting from the realignment of assets and functions from Wright-Patterson AFB to NAWS China Lake. The primary issues of concern in evaluating the potential impacts of the Proposed Action are the effects it could have on cultural resources. Consequently, these issues have received the greatest

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emphasis in the evaluations presented in this document. Other issues are also addressed and evaluated in this EA, but to a lesser degree than the primary issues identified above. For each of the other issues, the level of evaluation and depth of discussion in this document are commensurate with the relative degree of importance attributed to each issue in the decision process. Specifically, the EA contains an evaluation of the following issues of concern.

Primary Issue

- Cultural Resources.

Other Issues

- Geology, Soils, and Seismicity;
- Hydrology and Water Quality;
- Biological Resources;
- Land Use;
- Socioeconomics;
- Traffic and Circulation;
- Air Quality;
- Noise;
- Aesthetics;
- Public Services and Utilities; and
- Safety and Environmental Health.

1.7 Intergovernmental Coordination

As part of the NEPA compliance process, coordination and consultation with appropriate government agencies will be initiated to obtain regulatory input and guidance related to the Proposed Action. The purpose is to ensure that all applicable laws, rules, regulations, and policies have been identified and the Proposed Action has been duly considered in light of these considerations.

This EA has been prepared pursuant to the following:

- NEPA, 42 U.S.C. §§ 4321-4370d;
- CEQ Regulations, 40 CFR 1500-1508;
- DoD 4165.66-M – Base Redevelopment and Realignment Manual;
- Secretary of the Navy Instruction 5090.6A – Environmental Planning for Department of the Navy Actions;
- Navy BRAC Implementation Guidance, Chapter 10;
- Revitalizing Base Closure Communities and Addressing Impacts of Realignment, 32 CFR Parts 174, 175, and 176;

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- Navy Guidance on Administrative Records – Developing an Administrative Record for Litigation Pursuant to NEPA, a Legal Primer for the Navy;
- Archaeological Resources Protection Act of 1979, 16 U.S.C. § 470aa (1994);
- Clean Air Act (CAA), 42 U.S.C. § 7401 (1994);
- CAA (Amendments of 1990), PL No. 101-549, 104 Stat. 2399;
- Clean Water Act (CWA), 33 U.S.C. § 1251 (1994);
- CWA (Section 404, Permitting), 33 U.S.C. §1344 (1994);
- Endangered Species Act (ESA), 16 U.S.C. §1531 (1994);
- Federal Safe Drinking Water Act, 42 U.S.C. 300f;
- Executive Order (EO) 11988 (Floodplain Management), 42 *Federal Register* 26951 (1977) (Codified as 42 U.S.C. § 4321 (note) (1994);
- EO 11990 (Wetlands Protection), 42 *Federal Register* 26961 (1977);
- EO 12898 (Environmental Justice), 59 *Federal Register* 7629 (1994);
- EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks), 62 *Federal Register* 19885 (1997);
- EO 12372 (Intergovernmental Review of Federal Programs), 7 CFR § 3015 (1977), Subpart V, and final rule-related notices published at 48 *Federal Register* 29114 (1983) and 49 *Federal Register* 22676 (1984);
- National Historic Preservation Act (NHPA) of 1966, as amended, 16 U.S.C. § 470 (1994); and
- National Register of Historic Places (NRHP), 36 CFR § 60 (1977).

Environmental compliance requirements for Navy activities are defined in Operational Navy Instruction (OPNAVINST) 5090.1B, as amended. Specific local environmental management policies and procedures are contained in the 2005 CLUMP and the 2000 INRMP. The Environmental Planning and Management Office has responsibility for the protection of sensitive resources and was consulted throughout the preparation of this EA and associated technical surveys and reports.

1.8 Decisions to be Made

The decision-maker for the Proposed Action is the Commander, Naval Installations Command.

Based on this EA, a decision will be made of whether a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS is appropriate for the Proposed Action. This decision will be based on a determination whether all potential impacts either would be less than significant or can be reduced to less than significant levels through the implementation of mitigation measures. If it is

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determined that all potential impacts either would be less than significant or can be mitigated to less than significant levels, then preparation of a FONSI will be appropriate. If any potential impacts are considered significant and cannot be avoided or reduced to less than significant levels, then the preparation and processing of an NOI to prepare an EIS will be required.

The Proposed Action also may require the following decisions and approvals from federal and state agencies listed below.

Clean Air Act General Conformity Rule

The Navy must prepare a Conformity Review prior to the finalization of this EA, in accordance with requirements and procedures described in the OPNAVINST 5090.1B Appendix F.

Section 106 Compliance

The NHPA requires federal agencies to consider the preservation of historic and prehistoric resources. Under the NHPA, the Secretary of the Interior is authorized to expand and maintain the NRHP. Section 106 of the NHPA mandates that all federal agencies take into account the effects of their undertakings (actions) on historic/prehistoric resources and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to review and comment on any action that may affect properties that are listed, or are eligible for listing, in the NRHP.

The Navy initially determined that there were four sites (ASM-3, ASM-4, ASM-5, and ASM-6) potentially eligible for listing on the NRHP, and subsequently determined that the Proposed Action would not adversely affect these sites. In November 2006, the Navy initiated consultation with the SHPO in reference to the four archaeological sites that would be affected under the proposed construction. The Navy requested comments from the SHPO regarding the initial determination of eligibility and the adequacy of the data recovery plan for the four sites to be affected by the proposed BRAC actions. The SHPO never responded on the determination of eligibility or the adequacy of the recovery plan. Since no response was obtained on either topic, in accordance with Section 106 of the NHPA, consultation is completed. Additionally, local Native American groups were also consulted regarding the presence of cultural deposits in the Proposed Action area. No comments or concerns were raised by any of the Native American groups consulted. (In the course of finalizing its investigation and analysis of these sites, the Navy ultimately determined the Proposed Action did not pose a risk of adverse effects to any cultural resources of potential significance. See discussion of Cultural Resources at Section 3.4, below.)

Endangered Species Act, Section 7 Consultation

Federally listed species and designated critical habitat that are known to be present or potentially may be present in the Proposed Action area are the desert tortoise (*Gopherus agassizii*) and its habitat. NAWIS China Lake has a Biological Opinion (BO) on the desert tortoise from the United States Fish and Wildlife Service (USFWS), which is included in this document as Appendix A. The BO

1. Purpose and Need for the Proposed Action

was issued in 1995 and evaluates the impacts that *NAWS China Lake's Tortoise Management Plan* (Navy 1992) would have on desert tortoise critical habitat. It was the opinion of the USFWS that the *NAWS China Lake's Tortoise Management Plan* would not likely jeopardize the continued existence of the desert tortoise or adversely modify desert tortoise critical habitat. In this case, no consultation with the USFWS is required since: the Proposed Action area is not within the Desert Tortoise Management Area, the Proposed Action is less than 20.2 hectares (50 acres) in total area, and biological surveys have found no sign of the desert tortoise. Therefore, NAWS China Lake would only be required to notify the USFWS concerning the Proposed Action in its annual report (Paragraph 1.h of the Terms and Conditions of the BO).

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Description of the Proposed Action and Alternatives

This chapter provides an in-depth discussion of the Proposed Action and its alternatives.

In September 2005, the BRAC Commission recommended the realignment of assets and functions from Wright-Patterson AFB, Ohio, to NAWS China Lake. On 27 October 2005, the BRAC Commission's recommendations were enacted into law.

Unlike the official BRAC Commission's Final Recommendations of 8 September 2005, Navy BRACON projects are discretionary actions proposed by the Navy, and, therefore, are subject to analysis under NEPA. Thus, the Proposed Action considered by this EA is the construction of the BRACON and the operational activities that would occur after the realignment of assets and functions from the above-mentioned installation.

The two alternatives considered in this EA are the Proposed Action and the No Action Alternative. Section 2.3 discusses additional alternatives that are not carried forward for detailed analysis.

2.1 Description of the Proposed Action

The Proposed Action is the implementation of one BRACON project, P-700V. BRACON P-700V would be the construction of a weapons fabrication and test facility with laboratory offices for associated personnel at the NAWS China Lake Weapons Survivability Complex (WSC) located north of the existing Aircraft Survivability Complex (Figure 2-1). BRACON P-700V would start in Fiscal Year (FY) 2008 and continue through FY 2010.

Note that under the Proposed Action, no personnel associated with the LFT&E functions at Wright-Patterson AFB, Ohio would be required to relocate. In addition, the BRACON design drawings contained in this document are conceptual and subject to change. The drawings address the site and scope of the projects.

The primary component of P-700V would be the construction of a 929-square-meter (m^2 ; 10,000-square-foot [ft^2]) open-air concrete test pad. An article (e.g., an aircraft, aircraft panel ["panel testing"], or an aircraft component such as an

2. Description of the Proposed Action and Alternatives

actuator, control rod, etc. [“component testing”]) would be static tested on this pad. The pad would be raised to allow a single-shot gun of some type (typically small arms fire or Anti-Aircraft Artillery) to be mounted in an area underneath to allow firing at the article as part of the Live Fire Test Program. The pad itself would be a solid fill with a concrete cap. There would be a slot in the center (i.e., a gun trough, from which to fire). Spent casings within a 91- to 137-meter (100- to 150-yard) radius of the test pad would be collected for disposal after testing events. There also would be fuel storage for JP-8 and JP-5, aqueous film-forming foam to put out fires, an oil/water separator, power to the site, and utilities from the control room. A 186-m² (2,002-ft²) test control building would be co-located with the test pad. The Proposed Action is typical of other weapons testing activities occurring within the Weapons Survivability Labs complex.

A facility at the main site of the WSC would be constructed on the site of Building 31175 and the surrounding sidewalk and concrete slab and would provide space for a 372-m² (4,004-ft²) laboratory office. A 558-m² (6,006-ft²) fabrication facility also would be at the main site and would consist of a prefabricated metal building with high bay lights, power, and a crane. As part of the Proposed Action, Building 31175 and the surrounding sidewalk and concrete slab would need to be removed from the project area. These structures represent the only buildings/structures potentially subject to demolition in conjunction with the Proposed Action.

An existing traveling crane would be used to carry the test weapon or equipment from the main site of the WSC to the test pad. A new 1,600-meter (1-mile) road would be constructed, consisting of two 3.5-meter (12-foot) paved lanes, with the lanes spaced 8.5 meters (28 feet) apart and with the centerlines of the lanes 12 meters (40 feet) apart, for a total width of 15.85 meters (52 feet), which would be used to accommodate the tires of the traveling crane. In addition, the road would have to be of minimum incline since the crane can only traverse a 3.5-degree slope.

BRACON P-700V would be near several other test pads, including K2 and Military Construction (MILCON) P-407. Each test pad has a 379-meter (1,250-foot) explosive safety quantity distance (ESQD) arc. When these pads are in use, access would not be available to the P-700V pad; therefore, a dirt road that traverses all ESQD arcs would need to be graded approximately 12 meters (40 feet) wide by 2,011 meters (6,600 feet) long to allow access from the main site of the WSC to the P-700V pad. The bypass road would be used infrequently, only when the testing at the main test pad closes the paved road. It would be graded, and this grading would be part of BRACON P-700V.

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2. Description of the Proposed Action and Alternatives

All structures associated with BRACON P-700V would be designed to be compliant with the Americans with Disabilities Act and would meet all current seismic requirements. Built-in equipment would include individual heating, ventilation, and air conditioning equipment, and the Navy/Marine Corps Intranet (NMCI) equipment room. Electrical systems would include lighting, power, fire alarms, fiber optic lines, and information systems (telephone, local area network [LAN], and NMCI). Mechanical systems would include plumbing, fire suppression, and propane. Supporting facilities would include site and building utility connections (water, fire, stormwater drainage, sanitary sewer, gas, electrical, telephone, LAN, and NMCI). Anti-Terrorism/Force Protection measures would include blast-resistant glazed window and door systems, mass notification systems, and emergency air distribution shut-off.

Table 2-1 shows square footages for all components of the proposed WSC.

Table 2-1 Weapons Survivability Complex Components

Component	Footprint (m²/ft²)	Type
Fabrication Facility	558 / 6,006	New
Test Control Building	186 / 2,002	New
Laboratory Building	372 / 4,004	New
Telecommunications Room	7 / 75	New
Test Pad	929 / 10,000	New
Grand Total	2,052 / 22,087	

2.2 Alternatives to the Proposed Action

The CEQ considers the discussion of alternatives of the utmost importance in a NEPA environmental planning analysis. As defined in 40 CFR 1502.14, the heart of an EA is the analysis of alternatives, which provides decision-makers and the public with a clear picture of the issues and rationale used to determine the preferred alternative.

2.2.1 Alternative Criteria

The Navy used the following criteria in identifying and considering reasonable alternatives for analysis in this EA. The EA criteria are based on the purpose and need for the Proposed Action.

Criterion A: Meet facility needs and requirements of incoming commands.

The command that is being realigned has very specific and uncommon facility needs, including the capability to safely store explosive materials; use large X-ray systems for examination of weapons, ordnance, and other explosive materials; and be sited in areas of open space. The open space needs to be such that large-scale research and development, developmental testing, and operational testing can take place within a newly established 1,250-foot ESQD arc as required by Naval Sea Systems Command (NAVSEA) Ordnance Publication (OP) 5, Volume 1, Ammunition and Explosive Safety Ashore.

2. Description of the Proposed Action and Alternatives

Under Criterion A, a reasonable alternative would be able to accommodate the facility needs and the requirements of the realigned activities.

Criterion B: Locate realigned Live Fire Test and Evaluation activities and required new facilities, to the extent practicable, in proximity to existing Live Fire Test and Evaluation facilities and activities for aircraft. The command that is being realigned primarily performs LFT&E. These types of activities are most efficiently performed when personnel involved in a similar mission are able to share facilities and easily exchange ideas and information. Time and distance are major factors in facilitating operations and information exchanges.

Under Criterion B, a reasonable alternative for evaluation in this EA would site the LFT&E activities being realigned to NAWS China Lake from Wright-Patterson AFB as close as possible to the existing LFT&E facilities and activities for aircraft.

Criterion C: Maximize the use of existing facilities. One purpose of the BRAC program is to generate cost savings by making DoD operations more efficient and eliminating excess infrastructure. The resulting savings would then be reinvested in war-fighting capability. Consequently, maximizing the use of existing facilities is essential to meeting the cost savings goal. NAWS China Lake has a large number of unused facilities that can be reused “as is” or renovated to allow for an efficient layout of functions, thus decreasing the surplus of space. Additionally, co-locating facilities with existing infrastructure, facilities, and expert personnel would help to achieve optimum LFT&E operations and eliminate the need to construct duplicate facilities (including additional roads that would likely be extensive). Use of the existing facilities would also eliminate the need to either purchase duplicate equipment such as the heavy crane used to transport certain items for testing (see Section 2.1) or to move such equipment between sites, resulting in preventive cost savings to the Navy. Other examples of these facilities are test asset and fixture storage facilities; jet engine, paint, machine, and welding shops; and instrumentation, controls, and aircraft power resources.

Under Criterion C, a reasonable alternative would be one that would make extensive use of existing facilities at NAWS China Lake.

2.2.2 Alternatives to be Evaluated in this EA

The No Action Alternative is also considered in this EA. While alternatives other than the Proposed Action and No Action Alternative are discussed for this EA (see Section 2.3, below), none were selected for further consideration because none were found that met all of the functional criteria previously discussed in Section 2.2.1.

Under the No Action Alternative, no functions would be relocated to NAWS China Lake from Wright-Patterson AFB as recommended by the 2005 BRAC Commission; additionally, the proposed BRACON would not be implemented. Implementation of the No Action Alternative would impair the Navy’s ability to implement BRAC 2005 recommendations to create an LFT&E Center at NAWS

2. Description of the Proposed Action and Alternatives

China Lake. While short-term costs associated with construction and renovation would be avoided, overall, given the loss in efficiency and productivity that would occur as a result of not implementing the BRACON contemplated in the Proposed Action, no actual savings or other efficiencies would be realized. The No Action Alternative is used primarily as a baseline to support the impacts analysis of the Proposed Action and the other two alternative actions considered. The No Action Alternative is not an action within the agency's discretion, but is used as a baseline to forward the impacts analysis.

2.3 Alternatives Considered But Not Carried Forward

The Navy considered the possibility of performing complete analyses of alternatives other than the Proposed Action, such as alternatives that would situate the realigned functions at locations on NAWS China Lake other than the Proposed Action site, or alternatives that would focus on renovation rather than new construction. The following alternatives were considered but not carried forward for additional analysis.

2.3.1 Alternative Siting of the WSC

In considering the possibility of locating the realigned functions at locations other than the Proposed Action site, the Navy looked at locations that could potentially meet the alternative criteria, including use of existing facilities generally, and relative proximity to existing LFT&E facilities and functions in particular. The Navy considered two such alternatives for possible further analysis.

Under the first of these two alternatives, the proposed WSC would be situated on a dry lakebed at a lower elevation relative to the Proposed Action site (the latter would be situated to the north, upgradient from the dry lakebed under consideration). This alternative would be within a few miles of the facilities associated with existing LFT&E functions, and thus could meet Criterion A and arguably Criteria B and C as well. However, this alternative is not considered to be a reasonable alternative because, at this lower elevation, the alternative site would need to be constructed on marine pylons due to the presence of water 46 centimeters (18 inches) below the ground surface, and would also potentially be subject to flooding during high-precipitation events. The Proposed Action site would not require the use of pylons, and it would not be subject to potential flooding because of its higher elevation. (The Navy notes that the Proposed Action site was not inundated during flooding in 1984, which the Navy believes was comparable to a 100-year flood event.). Therefore, this alternative location would conflict with E.O. 11988, which directs federal agencies to avoid actions located in areas subject to flooding unless there is no practicable alternative. Additionally, locating the alternative site within an area subject to flooding would raise the risk of having to cancel operations during inclement weather.

Consequently, while this alternative arguably meets Criteria A, B, and C, the Navy believes that it would be an unreasonable option in light of: (1) the unsuitability of the lakebed location relative to E.O. 11988; (2) the construction and operational constraints associated with the pylons and other construction measures necessary to build the WSC on the dry lakebed; (3) the additional costs

2. Description of the Proposed Action and Alternatives

associated with construction at the lakebed location; and (4) the loss of proximity to existing facilities relative to the Proposed Action site. Therefore, this alternative was not carried forward for additional analysis.

The other alternative site that received consideration for potential further analysis is the K2 Range, which is located adjacent to the existing LFT&E facilities for aircraft (see Criterion B). However, locating the Proposed Action within the K2 Range would result in overlapping ESQD arcs between the Proposed Action and established test sites. Siting the Proposed Action within the K2 Range would result in restrictions to access and inability to conduct testing when neighboring test pads are conducting testing events due to overlapping safety arcs, thereby reducing the operational efficiency of both the Proposed Action and/or ongoing testing activities at the already-established test sites.

Thus, while the K2 Range alternative also arguably meets Criteria A, B, and C, the Navy believes that the access and other operational constraints associated with use of the K2 Range, in addition to the K2 Range's reduced proximity to existing aircraft LFT&E facilities relative to the Proposed Action, cause it to be an unreasonable option. Therefore, this alternative was not carried forward for additional analysis.

The Navy notes that locating the realigned functions at locations on NAWS China Lake other than the Proposed Action site or those locations discussed above in Section 2.3.1 would necessitate conducting such functions in areas not previously associated with aircraft live fire testing, and would otherwise fail to meet both Criterion B and, to a lesser extent, Criterion A. Consequently, the Navy has not evaluated any such additional alternatives.

2.3.2 Renovation/Modernization in Lieu of New Construction at NAWS China Lake

Renovation or modernization in lieu of new construction is not a viable alternative for this BRACON because there are not enough unused facilities at NAWS China Lake meeting project alternative criteria to accommodate the needs of the incoming commands. Therefore, this alternative was not carried forward for additional analysis.

2.4 Summary of Environmental Consequences

Two large, complex, archaeological sites dating from the Pleistocene/early Holocene era are located within the Proposed Action area. Consultation with the SHPO is currently being performed. No other resource areas would be impacted as a result of project implementation.

Table 2-2 is a summary of the environmental consequences expected to occur as part of this Proposed Action.

Table 2-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
Geology, Soils, and Seismicity	No significant impacts.	No significant impacts.
Hydrology and Water Quality	No significant impacts.	No significant impacts.
Biological Resources	<p><u>Impacts</u></p> <p><u>Plants</u></p> <p>No significant impacts to plant species. Impact-minimization measures (e.g., erosion control practices, invasive weed prevention, reseeded post-construction) would further decrease any non-significant impacts.</p> <p><u>Sensitive Species</u></p> <p>Of the three federally listed threatened and endangered species known to occur at NAWS China Lake, the desert tortoise is the only species with the potential to be affected. The P-700V area is known to be desert tortoise habitat, but not USFWS-designated desert tortoise critical habitat, and the area is not within the NAWS China Lake Desert Tortoise Management Area; additionally, surveys conducted by Epsilon Systems Solutions, Inc. (Epsilon) in November 2005 and April 2006 produced no sightings or evidence of the presence of the desert tortoise and, thus, the Proposed Action would have no adverse effect or other significant impact on the desert tortoise.</p> <p><u>Mitigation</u></p> <p><i>Desert Tortoise</i></p> <p>In order to avoid or minimize any potential impact on individual members of the species in the unlikely event any desert tortoise should be found on the project site, the Navy would follow the guidance set forth in the USFWS's BO for the desert tortoise (Appendix A). Formal consultation with the USFWS is not required since the Proposed Action area is not within the Desert Tortoise Management Area, the Proposed Action area is less than 20.2 hectares (50 acres) in total area, and biological surveys have found no desert tortoise signs. Therefore, NAWS China Lake would only be</p>	No significant impacts.

Table 2-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
	required to notify the USFWS concerning the Proposed Action in its annual report (Paragraph 1.h of the Terms and Conditions of the BO). No mitigation required for biological resources impacts.	
Cultural Resources	<u>Impacts</u> Consultation concerning relevant sites of potential interest, and analysis of such sites, was undertaken in order to comply with legal requirements and to avoid and/or minimize any potential impacts at such sites. After conducting consultation and analysis, it has been determined that the Proposed Action would not present the potential for any significant impacts on cultural resources. No mitigation is required.	No significant impacts.
Land Use	No significant impacts.	No significant impacts.
Socioeconomics	No significant impacts.	No significant impacts.
Traffic and Circulation	<u>Impacts</u> The Proposed Action would result in a temporary and minor increase in traffic within the Aircraft Survivability Complex during the construction period. The Proposed Action would not require additional personnel relocating to NAWS China Lake; therefore, traffic conditions post-construction would be largely as outlined in the December 2006 traffic study (Navy 2006), apart from a few additional vehicles (likely 17 or fewer) associated with anticipated local hiring of new contractor personnel for ongoing operations. Implementation of the Proposed Action would not result in significant impacts to the existing or forecasted traffic conditions at NAWS China Lake; therefore, no mitigation measures would be required.	No significant impacts.

Table 2-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
Air Quality	<p><u>Impacts</u></p> <p>Total annual emissions resulting from project construction within each year of activity have been estimated. Annual emissions of respirable particulate matter smaller than 10 micrometers in diameter (PM₁₀) are estimated to increase 3.54 tons in FY 2009 and 4.10 tons in FY 2010. These construction-related emissions would not significantly impact air quality. Once construction is complete, final annual emissions are estimated to increase as shown in Table 3.8-6. These annual emission increases would not result in any significant impact to air quality.</p> <p>Since no calendar year would see annual emissions of PM₁₀ exceeding the 100-tons-per-year <i>de minimis</i> threshold, the project is exempt from the General Conformity regulation and does not require a Conformity Determination. Additional detail related to this impact is provided in Appendix D in the Record of Non-Applicability (RONA).</p> <p>Test events at P-700V will be very similar to those already being conducted at the Weapons Survivability Complex. The resulting emissions can be accommodated within the existing Mojave Desert Air Quality Management District permit limits for the Weapons Survivability Complex.</p> <p>Although construction-related air quality impacts would be minor, the following measures would be used to reduce air quality impacts from the Proposed Action:</p> <ul style="list-style-type: none"> • Using water for controlling dust during construction operations, grading roads, and clearing land; • Applying water on dirt roads, materials stockpiles, and other surfaces that could create airborne dust; and • Covering open equipment for conveying or transporting material likely to create objectionable air pollution when airborne. 	No significant impacts.

Table 2-2 Summary of Impacts

Resource Area	Proposed Action	No Action Alternative
Noise	<p><u>Impacts</u></p> <p>No significant impacts. Noise impacts associated with post-construction operations would be low-level, and comparable to noise levels generated by existing testing facilities in the vicinity.</p> <p>Although construction-related noise impacts would be minor, the following Best Management Practices (BMPs) or similar measures would be used to reduce noise impacts from the Proposed Action:</p> <ul style="list-style-type: none"> • Require that construction occurs only during normal weekday business hours; • Use properly maintained construction equipment mufflers; • Notify occupants adjacent to construction areas of the construction activity and the anticipated duration of construction prior to the onset of work; and • Require construction personnel, and particularly equipment operators, to use adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations. 	No significant impacts.
Aesthetics	No significant impacts.	No significant impacts.
Public Services and Utilities	No significant impacts.	No significant impacts.
Safety and Environmental Health	No significant impacts.	No significant impacts.

3

Affected Environment and Environmental Consequences

This chapter describes existing conditions at NAWS China Lake in relation to each environmental issue area. The existing conditions provide the baseline for the analysis of potential effects resulting from the Proposed Action described in Chapter 2. Issue areas addressed include: Geology, Soils, and Seismicity; Hydrology and Water Quality; Biological Resources; Cultural Resources; Land Use; Socioeconomics; Traffic and Circulation; Air Quality; Noise; Aesthetics; Public Services and Utilities; and Safety and Environmental Health.

This chapter also provides an analysis of the environmental impacts for the Proposed Action and the No Action Alternative. The impact assessment for the Proposed Action addresses the impacts associated with the implementation of the project discussed in detail in Chapter 2. The No Action Alternative is used primarily as a baseline to support the impacts analysis of the Proposed Action. The No Action Alternative is not an action within the agency's discretion, but is used as a baseline to forward the impacts analysis.

3.1 Geology, Soils, and Seismicity

3.1.1 Existing Conditions

This section describes the geologic and soil environment at NAWS China Lake, including: physiography; general geology, faults and seismicity; liquefaction potential; and geothermal resources.

Geologic resources consist of the geomorphologic features in the project area (i.e., the playas [dry lakebeds] surrounding foothills and mountains, and the underlying geologic formations and sedimentary cover). Seismicity includes the distribution of earthquake faults and the distribution and severity of seismic activity in the study area.

Soil resources are a subset of geologic resources. Soils are the thin, typically biologically active layer of sediments covering the earth's surface from which most plants and many animals derive moisture and nutrients. Soils are normally formed in place from the weathering of rock material, although soils may be formed elsewhere and transported by erosion or by human activities. Traditionally, soils are classified with respect to characteristics that affect plant growth (moisture retention capacity, drainage, depth, and organic matter content). Since soils are located at the earth's surface, their engineering characteristics—

3. Affected Environment and Environmental Consequences

such as stability on slopes, compaction, and shrink-swell potential—are also important. Soils grade with depth to the parent rock material from which they are derived, so the difference between soil and non-soil deposits is not necessarily distinct. The term “soil” is often used to describe any unconsolidated deposits found near the earth’s surface, which is the definition used for this document.

3.1.1.1 Geology

The North Range is located within the Basin and Range Province and includes parts of the Coso and Argus ranges. Coso is a northwest-trending mountain range that dominates the northwest quadrant of the North Range. The Coso Range extends from Owens Lake in the north (elevation 1,084 meters [3,557 feet] above mean sea level [AMSL]) to the Indian Wells Valley (Navy 2005).

South of the Coso Range is the Indian Wells Valley, which covers most of the southwest quadrant of the North Range and extends south beyond the boundaries of the North Range. The Sierra Nevada is the most prominent mountain range in the region and has an important effect on climate and runoff. The Sierra Nevada rises higher than 2,744 meters (9,000 feet) AMSL, compared to peak elevations in the Coso Range that average about 1,982 meters (6,500 feet) AMSL. The Sierra Nevada captures most of the moisture carried inland from the Pacific Ocean, making these mountains a more significant source of runoff and sediment to Indian Wells Valley than the smaller ranges farther east. Lack of rainfall and runoff east of the Sierra Nevada is responsible for the desert landscape features that characterize the NAWS China Lake region. These features include the following:

- Large alluvial fans that extend from the mouths of the canyons and fill the basins;
- Shallow, intermittent stream channels or washes that occasionally carry flash floods onto the valley floor from intense storms at higher elevations;
- Jagged rock outcrops; and
- Dry, terminal playa lakes that accumulate mineral salts and fine sediments as evaporation rates exceed the rate of inflow from runoff.

The southern rim of Indian Wells Valley is formed by the El Paso Mountains, Rademacher Hills, and the Spangler Hills. Near the southern end of the valley, several washes that drain the Sierra Nevada canyons and the El Paso Mountains converge to form Little Dixie Wash. The wash continues onto the North Range east of Inyokern, and terminates in the Charlie Range land use management unit (LMU). Occasionally, the wash causes flooding in the North Range (Navy 2005).

3.1.1.2 Soils

The soil units listed in Table 3.1-1 are soil associations occurring in the NAWS China Lake region and are based on the classification system of the State Soil Geographic (STATSGO) database established by the U.S. Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS).

3. Affected Environment and Environmental Consequences

Soil association identification numbers are shown in Table 3.1-1, which lists the STATSGO name and a summary description for each soil unit. The STATSGO database is the only available source of soils data that encompasses the entire NAWS. The database was designed for regional, multi-state, river basin, state, and multi-county resource planning, management, and monitoring. The NRCS describes this database as having “not enough detail to make interpretations at the county level” (SCS 1991).

Table 3.1-1 Soil Characteristics

Identification Number	STATSGO Name	Description
CA 919	Calvista, Rock Outcrop, Trigger	Shallow, gravelly to coarse, sandy loams on low-to-moderate slopes at the foot of rocky outcrops. Low susceptibility to water erosion, but high susceptibility to wind erosion where sandy soils are exposed. Depth to rock from 0 to 20 inches (0 to 50.8 centimeters). On the margins of Salt Wells Valley in the North Range, and on the western margin of Superior Valley in the South Range.
CA 635	Cajon, Wasco, Rosamond	Cajon soil consists predominantly of loamy sand with varying amounts of gravel below the upper 0.3 meter (1 foot). Wasco soil is similar, but generally contains finer sand and silt. The Rosamond component consists of loamy fine sand. Deep soil found on alluvial plains in the North Range. Moderately susceptible to water erosion. Moderately to highly susceptible to wind erosion.

Sources: STATSGO Database, SCS 1991, SCS 1989.

Soils occurring in the George Range LMU (i.e., the project area) are identified in Table 3.1-1. In the George Range LMU soils are formed on alluvial plains. These soils have a sandy surface layer in most areas, but the underlying soil varies widely in clay content and layering. Some of these soils contain cemented layers that are referred to as “caliche” or “hardpan” (SCS 1989). In the North Range, the STATSGO database map unit corresponding to this environment is CA635. The soils of granitic mountains, also found on the George Range, are typically shallow or moderately deep (SCS 1989). CA919 refers to the STATSGO soil units in steep areas underlain chiefly by granite found in the George Range LMU.

3.1.1.3 Seismicity and Seismic Hazards

Under California Public Resources Code § 2622 (the Alquist-Priolo Earthquake Fault Zoning Act of 1972), the California Division of Mines and Geology has delineated seismic zones deemed to be “sufficiently active and well defined as to constitute a potential hazard to structures from surface faulting or fault creep.” The state geologist is required to continually review new geologic and seismic data and revise earthquake fault zones, or to delineate new zones based on new information. The Navy requires geotechnical investigations to be performed as

3. Affected Environment and Environmental Consequences

part of the design and retrofit of structures. Construction plans are reviewed for conformance with provisions of the Alquist-Priolo Act.

The California Code of Regulations (24 CCR Part 2), also known as the California Building Code (CBC), contains the enforceable state building standards. CBC § 1629A.2 requires every structure to have sufficient ductility and strength to undergo the displacement caused by “upper-bound earthquake” motion without collapse. The upper-bound earthquake ground motion is defined as the motion having a 10 percent probability of being exceeded in a 100-year period, or a maximum level of motion that may ever be expected at the building site within the known geological framework. Navy construction requirements are in full compliance with the CBC (Navy 2005).

Seismic (earthquake) hazards are caused by intense ground shaking, which is typically associated with movements along breaks (faults) in the earth’s crust. Geologists have observed that earthquakes are more likely to occur on or near an existing fault than in an area not previously faulted. Moreover, earthquakes also occur more frequently on relatively young faults than on very old faults. The Quaternary Period (the last 1.6 million years) is typically used as a cutoff for determining earthquake probability because faults inactive throughout this period are extremely unlikely to be active again soon. Major fault zones active within the Quaternary Period and within 80 kilometers (50 miles) of the NAWS include the following:

- Wilson Canyon Fault Zone – approximately 8 kilometers (5 miles) to the northeast of the proposed project area;
- Sierra Nevada Fault Zone – immediately adjacent to the western boundary of North Range;
- Valley Fault Zone – along the same trend as the Sierra Nevada Fault Zone and within 16 kilometers (10 miles) of the northwest corner of the North Range;
- Garlock Fault Zone – traverses the South Range and lies within about 18 kilometers (11 miles) of the southern boundary of the North Range;
- Panamint Valley Fault Zone – extends onto the northern portion of the South Range; and
- Furnace Creek and Death Valley Fault Zones – about 24 kilometers (15 miles) northeast of the South Range.

A number of other, smaller Quaternary or younger faults occur in the immediate vicinity of the North Range. A large earthquake on one of these faults could cause damaging seismic shaking within the boundaries of the NAWS (Navy 2005).

The primary seismic hazard at the North Range (southern China Lake playa area) is liquefaction. Liquefaction occurs when ground shaking causes a temporary increase in pore pressure in water-saturated silts and sands, resulting in a sudden

3. Affected Environment and Environmental Consequences

loss of shear strength. Liquefaction of near-surface soils can cause foundations to settle, roadways to buckle, and hillsides to fail. For example, during and after an earthquake on October 1, 1982, minor wall cracking, door jamming, and similar problems in several structures were attributed to liquefaction-induced foundation settlement (Navy 2005).

The southern portion of the North Range has been evaluated for liquefaction potential. Gentle slopes underlain by highly liquefaction-susceptible sediments occur within limited areas of the NAWS, especially in and around the China Lake playa area (Banks 1982). Facilities within the Aircraft Survivability Complex area of George Range would be moderately susceptible to liquefaction (Navy 2005).

3.1.2 Environmental Consequences

3.1.2.1 Approach to Analysis

For this analysis, factors considered in determining whether an impact would be significant include the potential for substantial changes in soil characteristics that would preclude established land uses, or would adversely impact a sensitive environmental resource, such as threatened or endangered species or their habitats.

3.1.2.2 Proposed Action

Potential Impacts

Geology, Seismicity, and Soils. Newly constructed weapons testing facilities, laboratory space, test pads, and assembly areas would be subject to stormwater measures contained in a stormwater pollution prevention plan (SWPPP) and would include other Best Management Practices (BMPs) as required by a general construction activity stormwater permit issued by the California State Water Resources Control Board (SWRCB). The SWPPP would be subject to the review and approval of the Lahontan Regional Water Quality Control Board (RWQCB) (see Section 3.2, Hydrology and Water Quality, for additional information on SWPPP requirements). Current soil erosion and sediment control measures at NAWS China Lake that would be implemented during all phases of construction would include road maintenance, grading, culvert maintenance and installation, water runoff control, installation of storm drain inlet protection devices, use of erosion control blankets and soil stabilizers, use of hay bales and sand bags, mulching areas with a protective cover of organic material such as wood chips, and vegetation. Because this alternative would include implementation of erosion control measures, impacts on soils would not be adverse.

Faulting and Seismicity. NAWS China Lake is located within a seismically active region. No known faults are located within the site area. The fault zone most likely to affect the project is the Wilson Canyon Fault Zone, which is located approximately 8 kilometers (5 miles) to the northeast of the proposed project area and has not had a recent rupture since the late Quaternary period. Fault information on the Wilson Canyon Fault is not currently available (Navy 2005). Given the distance from the faults and the likelihood of a rupture occurrence, the Proposed Action would not be adversely affected by ground shaking. However, the risk of liquefaction is moderate in the George Range LMU area. Compliance

3. Affected Environment and Environmental Consequences

with the Uniform Building Code and the incorporation of appropriate design criteria would minimize impacts resulting from regional seismicity.

Mitigation Measures

No significant impacts would occur and, therefore, no mitigation measures are proposed.

3.1.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the proposed BRACON project would not be constructed; therefore, no groundbreaking for new facilities would occur. No changes in geologic conditions would result.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts and, therefore, no mitigation measures are proposed.

3.2 Hydrology and Water Quality

3.2.1 Existing Conditions

This section describes the existing surface and subsurface water conditions at NAWS China Lake.

3.2.1.1 Surface Water

NAWS China Lake is located in the South Lahontan Hydrologic Basin, a region extending from north of Mono Lake to the Colorado Basin on the eastern side of the Sierra Nevada. Average annual precipitation in the South Lahontan Basin ranges from about 178 centimeters (70 inches) at high elevations in the Sierra Nevada to less than 13 centimeters (5 inches) in parts of the basin floor. Average annual precipitation ranges from about 25 centimeters (10 inches) in the Coso and Argus ranges to less than 13 centimeters (5 inches) at the lower elevations (Navy 2005).

The Lahontan RWQCB divides the South Lahontan Basin into hydrologic units that represent watersheds or groups of watersheds (RWQCB 2006). The North Range contains all or a portion of 11 hydrologic units. On the North Range, the Indian Wells Valley forms a natural basin which receives drainage from the southern Sierra Nevada, Coso and Argus ranges, Rademacher Hills, Spangler Hills, and El Paso Mountains. Most precipitation flowing into the North Range region falls in the Sierra Nevada. About 53 percent of watersheds extending within the North Range originate in the Sierra Nevada (Navy 2005). The Coso Hydrologic Unit, including the Renegade Canyon and Mountain Springs Canyon watersheds, receives about 31 percent of the total precipitation. About 8 percent of this precipitation falls on the southern Argus Range in the eastern part of the Indian Wells Valley Hydrologic Unit, south of Mountain Springs Canyon. The remaining 7 to 8 percent falls on the El Paso Mountains, Rademacher Hills, and Spangler Hills in the south part of the Indian Wells Valley Hydrologic Unit. Although not the largest component of inflow to the Indian Wells Valley, runoff

3. Affected Environment and Environmental Consequences

from the El Paso Mountains is important to developed areas, given the contribution to flooding along washes leading to China Lake, Mirror Lake, and Satellite Lake playas (dry lakebeds) (Navy 2005).

More than 120 springs have been identified at NAWS China Lake. These springs range from small areas with almost imperceptible discharge to areas supporting extensive riparian vegetation with discharges of up to 23 liters (6 gallons) per minute (Navy 2004). A few of these springs may disappear and reappear, depending on rainfall. Water is currently extracted for domestic use from New House Spring and Tennessee Spring in support of the Junction Ranch test site.

Seeps at NAWS China Lake consist of two interconnected seep systems: the Lark Seep system and the G-1 Seep system, both of which are located near the southern end of the North Range. Lark Seep and G-1 Seep are brackish marshes formed on the edge of the China Lake playa. The seeps are not natural features, but have resulted from various engineered sources, including leakage and percolation from the Ridgecrest wastewater treatment facility facultative evaporation and storage ponds, irrigation water from the NAWS golf course, NAWS China Lake housing and landscape water, and leakage from the NAWS potable water distribution system (Navy 2004).

3.2.1.2 Groundwater

Regional groundwater studies mainly have focused on Indian Wells Valley groundwater conditions, since the valley represents the principal source of drinking water for NAWS China Lake and the area's major population centers. Hydrogeology studies of Indian Wells Valley have been conducted by the U.S. Geological Survey, the Bureau of Reclamation, the Navy, and others. Current research indicates the Lahontan groundwater basin is not a closed system and recharge to the basin is greater than indicated by previous studies. However, this finding has not been fully investigated at this time. The Proposed Action would be located in Hydrologic Unit 24.20, which drains to China Lake (Navy 2005).

The Indian Wells Valley basin is the sole source of drinking water in the North Range. Hydrogeologic evidence indicates more than one aquifer is present in the Indian Wells Valley basin beneath the North Range. At a minimum, there appears to be a shallow aquifer and a deep aquifer, separated by a clay zone (Dutcher and Moyle 1973). The shallow aquifer is present in the eastern side of the valley and may include numerous local, perched water-bearing zones. Groundwater quality in the shallow aquifer is generally poor. The deep aquifer serves as the sole source of potable water for the NAWS and underlies much of the Indian Wells Valley. This aquifer is mostly unconfined but is considered to be confined or partly confined beneath the shallow aquifer in the eastern part of the Indian Wells Valley (Navy 2005).

Indian Wells Valley's principal water users include the agricultural sector (primarily the Brown Road Land and Farming Company), the Indian Wells Valley Water District, IMC Chemicals, the Inyokern Community Services District, NAWS China Lake, and private well owners (Navy 2005).

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3.2.1.3 Floodplains

Although rainfall is limited in the China Lake area, occasional storms produce periods of intense rainfall and subsequent flooding. Stormwater flooding occasionally has been a significant problem for the developed areas on the southern portion of the North Range. Most runoff in Indian Wells Valley comes from the southwest and forms four major ephemeral streams (streams that do not flow all year): El Paso Wash, Little Dixie Wash, Ridgecrest Wash, and Bowman Wash. El Paso Wash crosses Highway 178 about 3.22 kilometers (2 miles) west of the Main Gate and runs east of Armitage Field before discharging into the China Lake playa. Little Dixie Wash originates in the southwestern-most part of the basin, within the southern Sierra Nevada, crosses Highway 178 east of Inyokern, and runs in a northeast direction to China Lake playa. Ridgecrest Wash enters NAWS near the Main Gate, flows northeast toward Michelson Laboratory area, and discharges to the China Lake playa (Navy 2005). The CLUMP for NAWS does not identify any areas of China Lake being within Federal Emergency Management Act-designated flood zones (Navy 2005).

3.2.2 Environmental Consequences

3.2.2.1 Approach to Analysis

Factors considered in determining whether an alternative would have significant impacts on water resources include the extent or degree to which an action would:

- Significantly affect surface water quality or supply; or
- Significantly affect groundwater quality or supply.

3.2.2.2 Proposed Action

Potential Impacts

Surface Water Hydrology. The site chosen for the Proposed Action is within a disturbed area (an existing aircraft survivability testing range). The new impervious surfaces that would result from construction activities would be a relatively minor source of increased surface runoff, but the Proposed Action would not substantially change runoff characteristics. All new construction at the NAWS would be required to provide a drainage system capable of conveying surface water equivalent to that of a 10-year storm. Therefore, potential impacts on surface water hydrology would not be considered adverse.

Surface Water Quality. The construction activities associated with site preparation for this BRACON do not have the potential for temporary impacts on surface water quality, particularly through erosion of disturbed soil from stormwater, because of the lack of surface water in the project area. Nevertheless, the BRACON construction activities would comply with the CWA as implemented by the SWRCB's National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, a general permit for construction activities, and the associated Order No. 92-08-DWQ, "Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity." Projects of 0.4 hectare (1 acre) or more are subject to this general construction permit process. Additionally, the contractor would be required to eliminate or

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reduce non-stormwater discharges to stormwater systems, develop an SWPPP prior to beginning construction, inspect all stormwater control structures, and implement other pollution prevention measures, such as applicable BMPs and conservation measures during construction.

The SWPPP would include specific measures and techniques to be implemented to protect the project sites and adjacent areas from erosion and deposition during site grading, construction, and post-construction stabilization of sediment on the site. The contractor would provide a copy of the SWPPP for the various crews performing work on the construction site, and a copy would be kept on site during the project to satisfy the requirements of the NPDES permit. A draft of this SWPPP would be forwarded to NAWS China Lake for review prior to finalization of the SWPPP. Because construction crews would comply with the SWPPP contained in the NPDES permit process, the project's potential to increase erosion would not be considered adverse.

Because of the similarity between the existing structures at George Range (specifically the Aircraft Survivability Complex) and the project structures that would be constructed as part of the BRACON, surface water runoff would have similar characteristics. Storm drains would have catch basin inserts to collect debris carried by stormwater runoff. This measure would reduce litter in the washes where stormwater flows to China Lake. As noted above, there is little to no surface water in the vicinity of the project area and, consequently, operations could not be expected to impact surface water quality. Although the test pad is not enclosed, ongoing operations would not release or threaten to release materials that could impact surface water quality. The Proposed Action would not introduce testing activity different than historically permitted testing occurring elsewhere within the Aircraft Survivability Complex. The Proposed Action project area is not located in the vicinity of surface water features such as wetlands, springs, seeps, or riparian areas. Use of ordnance in testing would occur on the concrete-paved test pads. It is anticipated that residues from firing of ordnance would largely remain on the pads: these residues would not migrate to soil, and thus would not have the potential to impact surface water quality. Moreover, any residues that did migrate from the test pads would be relatively minimal in volume, and would not present the potential to impact surface water quality in light of the amount of residue involved; the absence of surface water features and surface water generally; Navy practices for cleanup of test residues (see discussion of Groundwater Quality, below); and the rapid degradation of chemical residues in arid environments. Previous studies have indicated that ordnance residue is not accumulating in soil, air, groundwater, plants, or animals at NAWS China Lake generally, nor is such residue migrating through surface wash areas (see CLUMP EIS, Section 4.7.). Therefore, potential impacts on surface water quality are not considered adverse.

Groundwater Quality. The new construction at George Range is not expected to significantly alter the existing drainage patterns because grading the areas subject to ground disturbance would not require significant landform modification. The new test pads, laboratories, and research facilities would not introduce any new or

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different pollutants to the area that would threaten the use of groundwater for potable or irrigation uses. (Groundwater in the vicinity of the Proposed Action project area is of generally poor quality and historically is not utilized for any purpose.) Ordnance residues from testing at the Proposed Action site do not present the potential to migrate to groundwater (see CLUMP EIS, Section 4.7, and discussion of Surface Water Quality, above). Additionally, in accordance with established practice at NAWS China Lake, spent armament casings from test activities found within a 137-meter (150-yard) radius of the test pad would be retrieved and disposed of to minimize potential impacts to the groundwater. The drinking water aquifer may not be present under the Proposed Action project area. If it is present, it would be separated from the shallow groundwater by extensive clay layers, and the nearest drinking water sources are located upgradient from the Proposed Action project area, approximately 10 miles away. Accordingly, notwithstanding the lack of potential for impacts to groundwater in the vicinity of the Proposed Action project area, any impacts that might theoretically occur in that area would not have the potential to impact groundwater for drinking sources. Potential impacts on groundwater quality or quantity would not be considered adverse.

Floodplains. Information obtained from the 2004 EIS for the CLUMP for NAWS China Lake indicates that the proposed BRACON actions at George Range are not within a 100-year floodplain; thus, there would be no adverse impacts.

Mitigation Measures

No significant impacts would occur and, therefore, no mitigation measures are proposed.

3.2.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented and the proposed realignment to NAWS China Lake would not occur. As a result, no impacts to surface or groundwater quality would occur.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts; therefore, no mitigation measures are proposed.

3.3 Biological Resources

In response to BRAC 2005 recommendations, this section describes existing terrestrial habitat and plant and animal species in the Proposed Action area. Potential impacts on biology due to implementation of the Proposed Action are identified. The following discussion of biological resources at NAWS China Lake is based on information contained in the *Integrated Natural Resources Management Plan 2000 – 2004 for NAWS China Lake* (Navy 2000), the *Final Environmental Impact Statement for NAWS China Lake* (Navy 2004), the *Weapons Survivability BRAC Biological Reconnaissance and Desert Tortoise Survey Report* (Epsilon 2005), and the *BRAC Phase 2 Biological Reconnaissance*

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and Desert Tortoise Survey Reports (Epsilon 2006b). Information is also based on biological surveys conducted by Epsilon in December 2005 and May 2006 for the Proposed Action area.

A Biological Study Area (BSA) was established for the Proposed Action area. The BSA includes the Proposed Action site itself (i.e., the permanent development footprint) and both 30.5-meter (100-foot) and 152.5-meter (500-foot) buffer zones surrounding the Proposed Action site. The 30.5-meter (100-foot) buffer was used to determine potential indirect impacts to plants and vegetation communities, and the 152.5-meter (500-foot) buffer was used to determine potential indirect impacts to sensitive wildlife species and wildlife corridors.

3.3.1 Existing Conditions

NAWS China Lake is composed of the North and South ranges. For purposes of this EA, discussions related to biological resources will pertain to all actions proposed on land in relation to the Proposed Action, which is located in the southeastern portion of NAWS China Lake's North Range.

3.3.1.1 North Range

Plants

California is botanically divided into three floristic provinces: California, Great Basin, and Desert (Navy 2004). All three provinces are present in the northern half of the North Range of NAWS China Lake. The southern half of the North Range is in the desert floristic province (Navy 2004).

Vegetation was mapped by Epsilon in November 2005 and April 2006 by walking linear transects, spaced a maximum of 10 meters (33 feet) apart on the areas that would be disturbed during project construction. Additionally, zone of influence surveys were conducted and consisted of walking transects along lines spaced at 30 meters, 91 meters, 183 meters, and 732 meters (100 feet, 300 feet, 600 feet, and 2,400 feet) from the boundaries of the project site (refer to Appendix B for Epsilon's Biological Reconnaissance and Desert Tortoise Survey Report for in-depth survey analysis). An inventory of all plant species was recorded by Epsilon.

Plant Communities

A specific plant community system for NAWS China Lake was created for natural resource management purposes by Holland (1986) (Navy 2004). Sixteen different plant communities occur at NAWS China Lake, two of which are associated with actions stated in this EA; they are as follows:

- Creosote Bush Scrub covers extensive areas of NAWS China Lake, particularly in the valleys of the North and South ranges (Navy 2004). Creosote bush grows from the lowest, well-drained, non-alkaline areas at 579 meters (1,900 feet) to about 1,676 meters (5,500 feet) AMSL. Above 1,066 meters (3,500 feet) AMSL, creosote bush is present as an associated species of other plant communities (Navy 2004). At the NAWS China Lake WSC, species found in this community include white bursage

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(*Ambrosia dumosa*), creosote bush (*Larrea tridentate*), fourwing saltbush (*Atriplex canescens*), and teddybear cholla (*Opuntia bigloveii*) (Epsilon 2006b).

- Saltbush Scrub occurs at NAWS China Lake in both the North Range and South Range at elevations less than 1,524 meters (5,000 feet) AMSL. Saltbrush scrub communities are defined by areas where allscale and spinescale (*Atriplex spinifera*) are the dominant cover shrub, with the areas often devoid of other shrubs (Navy 2004). This community exists on the southern portions of the NAWS China Lake WSC, which is an impoverished alkaline playa with very sparse growth of shadscale (*Atriplex confertifolia*), cattle spinach (*Atriplex polycarpa*), dessert holly (*Atriplex hymenlaytra*), green molly (*Kochia Americana*), and Parish pickleweed (*Salicornia subterminalis*) (Epsilon 2005, 2006b).

Special-Status Species

Plant Communities

From its surveys conducted in November 2005 and April 2006, as well as review of literature from the California Department of Fish and Game, Epsilon has determined that no state-listed plant species, or plant species on California Native Plant Society Lists 1A, 1B, or 2, are on or within the Proposed Action area or have a record of previous occurrence on or within such an area.

Federally Listed Plant Species

Currently, there are no known occurrences of federally listed threatened or endangered plant species on NAWS China Lake lands. No rare plant surveys were conducted within the NAWS China Lake WSC BSA; however, surveys conducted by Epsilon in December 2005 and May 2006 and literature review show no plant species that are federally listed to have a previous record of occurrence on or within the vicinity of the Proposed Action area.

Sensitive Plant Species

Surveys conducted by Epsilon in December 2005 and May 2006 and literature review show that no state-listed plant species, or plant species on California Native Plant Society Lists 1A, 1B, or 2, have a previous record of occurrence on or within the vicinity of the Proposed Action area.

Wildlife

Wildlife at NAWS China Lake is rich and diverse due to varied topography and diversified habitats. This section provides an overview of wildlife resources occurring at NAWS China Lake.

A wide variety of wildlife occurs within all floristic provinces. Many species are wide-ranging (existing in all floristic provinces), while others are restricted to microhabitats within a particular plant community. Many of the more mobile species, especially larger mammals and birds, may use a variety of plant communities, even within a single day. Less mobile species, smaller mammals,

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some invertebrates, reptiles, and amphibians, may live their entire life cycles within a single plant community.

Avian Species

NAWS China Lake provides foraging and nesting habitat for a variety of birds. Some of these species are resident, while others are migratory, using NAWS China Lake's habitat seasonally. More than 310 bird species, including the federally listed Inyo California towhee (*Pipilo fuscus eremophilus*), are known to occur at NAWS China Lake. The National Audubon Society conducts an annual Christmas bird count on the North Range and, since 1988, has completed more than 800 surveys at the wastewater ponds in the southern portion of George Range.

Special-Status Species

Wildlife

There are three federally listed threatened or endangered resident species known to occur at NAWS China Lake (Mohave tui chub [*Gila bicolor mohavensis*], desert tortoise, and Inyo California towhee), and five federally listed threatened or endangered nonresident bird species that occur on the installation as transients or migrants. In addition, NAWS China Lake has a number of other species considered sensitive for various reasons. These sensitive species include: those listed or are being considered for listing as endangered or threatened; those considered a species of special management concern by the USFWS, Bureau of Land Management (BLM), U.S. Forest Service (USFS), National Audubon Society, or the California Department of Fish and Game (CDFG); those with limited range or endemic to a particular area; those of questionable or unclear taxonomic status; species of scientific interest (e.g., butterflies); those exhibiting unique or rare features; those found in a known valuable habitat (e.g., riparian areas or sand dunes); and those species found in a protected habitat (e.g., wetlands, riparian areas, or playas). Table 3.3-1 notes federally listed threatened and endangered species that are known to occur at NAWS China Lake and indicates their potential to occur within the Proposed Action project area. While certain state sensitive species occur or have the potential to occur on NAWS China Lake, no such state-listed species have the potential to occur in the Proposed Action area.

Avian Species

Federally Listed Birds

The USFWS listed the Inyo California towhee as a threatened species on August 3, 1987. It is the only federally listed bird species resident at NAWS China Lake. Inyo California towhees are a relict of a species that was widespread in the southwestern United States and northern Mexico. This subspecies is thought to have become restricted to mountain areas in the northern Mojave Desert as a result of climatic changes beginning in the Pliocene era. It is now restricted to riparian habitats in the southern Argus Mountain Range of Inyo County. The primary threat to towhees is the degradation or destruction of riparian habitat that has occurred on off-station lands. On NAWS China Lake

Table 3.3-1 Special-Status Species Known or Potentially Occurring Within the Proposed Action Area

Species	Status	Known Occurrence/Survey Results	Potential to Occur
Threatened and Endangered Species			
Avian Species			
Inyo California Towhee (<i>Pipilo crissalis eremophisus</i>)	T	Riparian habitats in southern Argus Range, and an isolated subspecies of the California towhee in the southern Argus Mountains of Inyo County	Absent
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	E	Recorded twice at Lark Seep	Absent
Bald eagle (<i>Haliaeetus leucocephalus</i>)	E	Migrates over most habitats	Low
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	E	Riparian habitats, and housing and golf course areas	Absent
Willow flycatcher (<i>Empidonas traillii extimus</i>)	E	Riparian habitats, and housing and golf course areas	Absent
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	T	Wastewater Treatment Facility ponds, G-1 Seep	Absent
Fish			
Mohave tui chub (<i>Gila bicolor mohavensis</i>)	E	Lark Seep, G-1 Seep	Absent
Reptiles			
Desert Tortoise (<i>Xerobates (Gopherus) agassizii</i>)	T	Creosote bush scrub, saltbush scrub, and Joshua tree woodland; designated critical habitat on South Range	Absent

Source: Epsilon 2005, 2006b; Navy 2004.

Key:

E – Endangered

T – Threatened

Absent – Species is restricted to habitats that do not occur within the Proposed Action area, or a focused survey failed to detect the species.

Low – No recent or historical records exist of the species occurring within the Proposed Action area or its immediate vicinity; and/or the habitats needed to support the species on the site are of poor quality.

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lands, potential for habitat degradation results primarily from burros and horses using springs and grazing on native vegetation in upland areas (Navy 2004).

Based on information from Epsilon, there are no riparian areas that exist either on the NAWS China Lake WSC site or in the vicinity; therefore, this species may be considered absent from the site.

Federally Listed Nonresident Bird Species

Five federally listed nonresident birds occur as migrants with varying degrees of abundance at NAWS China Lake: the California brown pelican (*Pelecanus occidentalis californicus*), bald eagle (*Haliaeetus leucocephalus*), least Bell's vireo (*Vire bellii pusillus*), willow flycatcher (*Empidonax traillii*), and western snowy plover (*Charadrius alexandrinus nivosus*). Immature California brown pelicans have been recorded only twice, both times at Lark Seep; as such, they are considered vagrants. The bald eagle has recently been proposed for federal delisting from the endangered species list. The eagle and least Bell's vireo occur at NAWS China Lake only as extremely rare transients during migration. The willow flycatcher is a fairly common transient during migration. Willow flycatchers migrating through NAWS could belong to several subspecies, most likely including the endangered southwestern willow flycatcher. These four species are not known to breed on the NAWS. Because they are extremely rare or are primarily associated with riparian or wetland habitats, which are currently managed for their resource values, these nonresident birds are not considered further in this document (Navy 2004).

The western snowy plover is common during the spring at the city of Ridgecrest's wastewater treatment facility ponds. It is not certain whether these individuals are from the threatened Pacific coast population or the unlisted inland population. The western snowy plover may breed at the ponds or at the G-1 Seep, where fledged juveniles have been observed. However, no nests or non-flying juveniles have been located, and breeding has not been documented at NAWS (Navy 2004).

Surveys conducted by Epsilon in 2005 and 2006 did not detect suitable habitat or sightings for these five federally listed nonresident birds in the Proposed Action area.

State Sensitive Species (No Federal Status)

Certain non-federally listed sensitive species either occur or have the potential to occur at NAWS China Lake (e.g., burrowing owl (*Athene cunicularia*)); however, based on surveys performed by Epsilon in December 2005 and May 2006, no such species are considered to have the potential to occur within the Proposed Action areas.

Mammalian Species

Federally Listed Mammals

Currently, there are no known occurrences of federally listed threatened or endangered mammal species on NAWS China Lake lands. No rare mammal surveys were conducted within the NAWS China Lake WSC BSA; however,

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surveys conducted by Epsilon in December of 2005 and May of 2006 and literature review show no federally listed mammal species have a previous record of occurrence on or within the vicinity of the Proposed Action area.

State Sensitive Species (No Federal Status)

The Mohave ground squirrel (*Spermophilus mohavensis*), a California-listed threatened species, is known to occur historically approximately 4.8 kilometers (3 miles) north of NAWS China Lake WSC. The Proposed Action area, however, does not have appropriate habitat to support this species; therefore, the Mohave ground squirrel is considered to have a low potential to occur within the Proposed Action areas (Epsilon 2006b).

Fish Species

Federally Listed Fish

Mohave tui chub is a federally listed endangered fish species. This species is typically associated with deep pools and slough-like areas of the Mojave River, where they are the only native fish in that system. It is likely the Mohave tui chub no longer exists in natural habitats within its native range.

Surveys conducted by Epsilon in November 2005 and April 2006 have shown that no open water occurs in the Proposed Action area; therefore, the Mohave tui chub is considered absent from NAWS China Lake WSC.

Herpetofauna

Federally Listed Herpetofauna

In August 1989, the USFWS listed the Mojave population (west of the Colorado River) of the desert tortoise as endangered under the emergency listing provisions of the ESA. The State of California listed the species as threatened in June 1989, and the USFWS formally listed the desert tortoise as threatened in April 1990. The USFWS finalized the Desert Tortoise Recovery Plan in 1994 and designated critical habitat in 1995. The USFWS issued a BO on the desert tortoise in 1995, which is included as Appendix A to this document. The BO states that the absence of shrub cover and fine soils in the southern portion of the North Range in association with the large playa would not support desert tortoises.

At NAWS China Lake, tortoises occur in creosote bush scrub and saltbush scrub communities. Surveys of the North Range and South Range conducted in 1990 and 1991 demonstrated that the highest-density tortoise habitat tends to be on gentle slopes (bajadas) in creosote bush scrub with sandy loam to pebbly soils (Navy 2004).

Reconnaissance-level biological surveys and focused area surveys were conducted in November of 2005 and April of 2006 by Epsilon for the presence of the desert tortoise. The surveys consisted of walking linear transects, spaced a maximum of 10 meters (33 feet) apart on the areas that would be disturbed during project construction. Additionally, zone of influence surveys were conducted and consisted of walking transects along lines spaced at 30 meters, 91 meters, 183 meters, and 732 meters (100 feet, 300 feet, 600 feet, and 2,400 feet) from the

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boundaries of the project site. Epsilon did not detect any evidence of the desert tortoise's presence on the NAWS China Lake WSC site (Epsilon 2006b). Epsilon's reports are included as Appendix B to this document.

State Sensitive Species (No Federal Status)

Certain non-federally listed sensitive species either occur or have the potential to occur at NAWS China Lake (e.g., the western toad [*Bufo boreas*]) and the Pacific tree frog [*Pseudacris regilla*]); however, no such species are considered to have the potential to occur within the Proposed Action areas.

3.3.1.2 Wetlands and Waters of the U.S.

Wetlands typically are defined as areas inundated or saturated by surface or groundwater, often supporting vegetation typically adapted for life in saturated soil conditions. Wetlands serve important biological functions, such as providing nesting, breeding, foraging, and spawning habitat for aquatic or land species (see Section 3.2.1.1, Surface Water).

3.3.1.3 Regulatory Setting

This section provides an overview of the laws and regulations that influence the management of biological resources in the Proposed Action area. While many of these regulations will not apply to the Proposed Action if biological resources are avoided as part of the project, they are discussed here for context in determining which biological resources are considered "sensitive" for the purposes of this report and to discuss the effects the Proposed Action may have on them.

Federal

Federal Endangered Species Act

The federal ESA defines species as "endangered" and "threatened" and provides regulatory protection for listed species. The federal ESA provides a program for conservation and recovery of threatened and endangered species, and conservation of designated critical habitat that the USFWS has determined is required for the survival and recovery of these listed species. Section 9 of the federal ESA prohibits the "take" of species listed by USFWS as threatened or endangered. "Take" is defined as "... to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." In recognition that take cannot always be avoided, Section 10(a) of the federal ESA includes provisions for takes that are incidental to, but not the purpose of, otherwise lawful activities. Section 10(a)(1)(B) permits (incidental take permits) may be issued if take is incidental and does not jeopardize the survival and recovery of the species.

Section 7(a)(2) of the federal ESA requires all federal agencies, including the USFWS and the BLM, to evaluate projects with respect to any species for listing or already listed as endangered or threatened, and any designated critical habitat for the species. Federal agencies must undertake programs for the conservation of endangered and threatened species, and are prohibited from authorizing, funding, or carrying out any action that will jeopardize a listed species or destroy or modify its critical habitat. As defined in the federal ESA, "... individuals, organizations, states, local governments, and other non-federal entities are

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affected by the designation of critical habitat only if their actions occur on federal lands, require a federal permit, license, or other authorization, or involve federal funding.”

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, capture, kill, or possess any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union. Similar to the federal ESA, the MBTA authorizes the Secretary of the Interior to issue permits for incidental take. Due to presence of migratory birds on the project site, project compliance with the MBTA was considered in this evaluation. Nesting birds and the contents of the nest within the project site are afforded protection during the nesting season pursuant to the MBTA.

Section 404 of the Federal Clean Water Act

The U.S. Environmental Protection Agency (USEPA) regulates the discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. As described above, no U.S. Army Corps of Engineers (USACE) jurisdictional wetlands would be affected by the project. Therefore, this permit is not anticipated to be required. If it is later found that federally protected wetlands would be affected, the applicant must obtain a permit from the USACE for all discharges of fill material into waters of the United States, including wetlands, before proceeding with the project.

3.3.2 Environmental Consequences

3.3.2.1 Approach to Analysis

For the purposes of this EA, biological impacts are considered significant if the project may adversely affect:

- A species federally identified as endangered or threatened pursuant to the ESA of 1973; or
- A species reasonably susceptible to suffering significant adverse effects to the species or a population of the species as a result of activities encompassed by the alternatives considered in this EA; or
- Habitat determined to be critical to such species.

The No Action Alternative, or prevailing conditions, provides the baseline for changes discussed in each section.

The following discussion presents the likely effects of the Proposed Action on each resource based on the most current data for vegetation and special-status species provided by NAWS China Lake WSC for the BSAs and the surveys conducted in 2005 and 2006. As mentioned, alternatives would be implemented in compliance with all Navy regulations and federal, state, and local laws as they apply and pertain to the relevant issue.

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3.3.2.2 Proposed Action

Potential Impacts

Overall potential impacts to the NAWS China Lake WSC project area would not be significant. Construction practices would impact vegetation communities; however, these communities are not sensitive and would be reseeded based on mitigation measures and monitored after construction. Potential impacts to animals are not significant based on surveys performed by Epsilon that found that the Proposed Action area does not provide habitat suitable for special-status species. Post-construction operations would not be expected to impact plant communities or animals insofar as such operations would be very similar to activities historically carried out in the vicinity of the Proposed Action project area.

Of the three federally listed threatened or endangered wildlife species resident on NAWS China Lake, the desert tortoise is the only such species with any appreciable potential to occur at the Proposed Action project site. The Proposed Action project site is considered potential desert tortoise habitat; however, it is not USFWS-designated critical habitat and it is not within the NAWS China Lake Desert Tortoise Management Area. Moreover, surveys conducted by Epsilon in November 2005 and April 2006 produced no sightings or evidence of the desert tortoise, and thus the Proposed Action would not adversely affect or otherwise have a significant impact on the desert tortoise or other such threatened or endangered species.

In order to avoid or minimize any potential impact on individual members of the species in the unlikely event any desert tortoise should be found on the project site, the Navy would follow the guidance set forth in the USFWS's BO for the desert tortoise (Appendix A). Formal consultation with the USFWS is not required since the Proposed Action area is not within the Desert Tortoise Management Area, the Proposed Action area is less than 20.2 hectares (50 acres) in total area, and biological surveys have found no signs of the desert tortoise. Therefore, NAWS China Lake would only be required to notify the USFWS concerning the Proposed Action in its annual report (Paragraph 1.h of the Terms and Conditions of the BO).

To minimize impacts to creosote bush scrub and saltbush scrub communities, the following mitigation measures have been proposed:

- Proper erosion control practices would be used when sediment and surface erosion is anticipated in regard to road improvements and culvert installations;
- Construction activities would implement measures to prevent the spread of invasive weeds; and
- After construction, the Navy would reseed or restore the construction area to pre-construction conditions to avoid permanent habitat loss. Areas cleared of vegetation would be seeded with grasses or other vegetation as follows:

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- Disturbed or graded areas would be planted with vegetation native to the area; and
- If required, previously vegetated areas and inactive portions of the construction site would be seeded and watered until vegetation is grown, if needed; and
- Revegetated areas would be monitored to evaluate the success of the restoration effort, and to replant or reseed (if required) to conform to the requirements of the agencies involved with the habitat restoration.

Special-Status Species

Implementation of BRACON P-700V may cause indirect environmental consequences for special-status species. Of the three threatened and endangered wildlife species, the desert tortoise would be the only species considered. Current information provided shows that the area is known to be desert tortoise habitat, not USFWS-designated critical habitat; however, surveys conducted by Epsilon in November 2005 and April 2006 produced no sightings or evidence of the desert tortoise; therefore, no impacts to threatened and endangered species would occur.

Wetlands and Waters of the U.S.

Implementation of BRACON P-700V would not have environmental consequences on wetlands and waters of the U.S. The proposed construction would not impact wetlands or waters of the U.S. because the sites do not contain jurisdictional wetlands.

Mitigation Measures

No significant impacts would occur due to implementation of the Proposed Action, and therefore no mitigation would be required.

3.3.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented. Thus, there would be no BRACON projects and no impacts on biological resources.

Mitigation Measures

Because no impacts on biological resources would be associated with the No Action Alternative, no mitigation measures are proposed.

3.4 Cultural Resources

3.4.1 Existing Conditions

This section describes the cultural resources located within the Area of Potential Effect (APE) for the Proposed Action. This section also identifies potential impacts on cultural resources due to the implementation of the Proposed Action and includes measures to avoid, reduce, or mitigate for these potential impacts.

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Cultural resources consist of archaeological resources (prehistoric and historic sites) and architectural resources (historic districts, buildings, and other structures). Historic architectural resources consist primarily of individual historic buildings or a group of buildings within a historic district, but can also include other structures such as roads, bridges, radio towers, canals, and military earthworks.

3.4.1.1 Prehistory and History

Prehistoric Background

During the Paleo-Indian Period (11,000 to 7,500 Before Present [B.P.]), the prehistoric populations of the Mojave Desert region consisted of small, highly mobile groups of hunter gatherers. The Lake Mojave period (10,000 to 7,000 B.P.) is characterized by increasing temperature, with little change in precipitation. Increased glacial melting led to greater availability of water and higher ecosystem productivity (Navy 2003). The procurement system appears to have been based on exploitation of large and small mammals, reptiles, and plants. Diagnostic artifacts of this period are fluted projectile points (11,000 to 10,000 B.P.), later replaced by stemmed projectile points (10,000 to 7,500 B.P.) (Andrews and Gianbastini 2006). The majority of sites appear to be located along the shorelines of relict lakebeds and fossil washes. The sites rarely have a subsurface component. One of the oldest sites in the Mojave area was discovered at NAWS China Lake and yielded evidence of extinct burned Pleistocene fauna associated with fluted points (Andrews and Gianbastini 2006).

Starting around 9,000 B.P., a climatic trend towards increasing aridity, drying lowlands, and decreased ecological diversity led to increased upland utilization and changes in artifact tool assemblages and diversity (Navy 2003). The emergence of fully fledged, generalized foraging, cultural adaptation was triggered by changing climates during the Pinto Period (7,500 to 4,000 B.P.). Pinto populations continued the exploitation of large animals, but a greater emphasis was placed on the utilization of plant food and small game. The sites of this period are typically associated with fossil and active streams and margins of playas. Diagnostic artifacts included stemmed Pinto points and occasionally leaf-shaped points and contracting-stem Gypsum points. A majority of the points were made of fine-grained igneous basalt and rhyolite. Milling stones are more abundant than in earlier assemblages, indicating an increased consumption of plant foods (Andrews and Gianbastini 2006).

The Gypsum/Newberry Period (4,000 to 1,500 B.P.) is typified by dart-sized projectile points such as Gypsum (contracting-stem), Elko (corner-notched or -eared), and Humboldt (basal-notched). The milling tools seem to have been retained and utilized for longer times than in earlier periods, signifying more intensive land-use strategies. There also is evidence of cultural exchange between the Mojave Desert and Southwest cultures (Andrews and Gianbastini 2006). Late in the period, there is the introduction of the bow and arrow, which may have increased the efficiency of large-game procurement. Most sites tend to be small and short-term occupations of specific landforms. There is greater reliance on plant and small animal resources, possibly due to increased aridity (Navy 2003).

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The Rose Springs Period (1,500 to 700 B.P.) is represented by medium-sized arrow points of Rose Spring, Eastgate, or Saratoga Springs types. The archaeological materials show an increased influence of the Southwest groups, predominately the Anasazi. The Mojave River emerges as a major trade route between the California coast and the Colorado River area (Andrews and Gianbastini 2006). Seasonal movements were restricted to smaller foraging areas, possibly due to increased population pressure (Navy 2003).

The Shoshonean Period (700 to 100 B.P.) is represented by small side-notched or unnotched (Desert Side-Notched or Cottonwood) arrow points (Andrews and Gianbastini 2006). Both the Rose Springs and Shoshonean Periods witnessed a change in subsistence strategies as reflected in a decline in frequency of large residential bases in favor of smaller family-based sites (Navy 2003).

As of 2004, archaeological surveys had been conducted for approximately 37,433 hectares (92,500 acres) of land at the NAWS China Lake. In the area surveyed, 1,736 sites were located, including 1,592 prehistoric sites, 88 historic sites, and 56 dual-component sites. Of these, 697 prehistoric sites have been evaluated for NRHP eligibility and 545 sites have been recommended as eligible (Navy 2004).

A number of prehistoric districts and landmarks are either listed in the NRHP or have been evaluated for NRHP listing. Coso Rock Art District National Historic Landmark contains over 250,000 petroglyphs. The Sugarloaf Archaeological District has over 480 sites that are listed as contributing elements; the area was an extensive source of obsidian, which was widely traded in prehistoric times. The Cactus Flat Village Site, located within the Sugarloaf District, was a major habitation site and included quarries, milling features, and lithic scatters. The Pothunter Spring Site Complex in the South Range consists of a series of rock shelters with a long record of habitation. Coso Hot Springs has been listed for its historic and Native American significance (Navy 2004). Other areas at NAWS China Lake being considered for nomination to the NRHP are the Twenty Mule Team Borax Route; Fort Coso, a 19th Century military outpost associated with Fort Independence; Seep Springs Archaeological District; Lake China Paleo-Indian District; and the Agnes Bierman Pictograph Caves District (Navy 2003).

History

The first map, which shows routes through NAWS China Lake, was drafted by Lieutenant George Wheeler in 1871 and depicts a route through the North Range Complex (Navy 2003). At the time of European contact, the NAWS China Lake area was occupied by Native American groups that included the Chemehuevi, Kawaiisu, and Timbisha (Andrews and Gianbastini 2006; Kaldenberg 2006). In 1860, gold deposits were discovered in the Coso Mountains, which led to the mining settlement of Coso Village. The small village had about 200 inhabitants until it was abandoned and used intermittently throughout the 1880s and 1890s (Navy 2003). In the 1860s, borax was discovered in the region. The growth of the borax industry increased traffic and settlement in the region. China Lake got its name from Chinese settlers who prospected for borax after working on the Central Pacific Railroad (Navy 2003; Andrews and Gianbastini 2006).

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Ranching became an important industry in the area during the late 1800s. Junction Ranch was the only permanent ranch located on China Lake. It operated from the 1880s to the early 1900s and was located at the convergence of trails leading to Darwin, the Panamint Valley, and Renegade Canyon. The Sterling Ranch raised pack mules and also owned and operated several mines, including the Sterling Queen Mine at B-Mountain at NAWS China Lake (California Institute for Rural Health Management 2006). The Indian Wells Valley area was settled starting in 1908 when the area was opened to federal homesteading. Shortly after, a branch of the Southern Pacific Railroad was extended into the Indian Wells Valley. The railroad facilitated the development of the valley, whose population grew until a drought in 1921 drove most families out of the area (Navy 2006).

In the mid-1930s, the airfield at Inyokern was initially used as a provisional emergency landing field for the Trans-Sierra Airlines flight between Fresno, California, and Phoenix, Arizona. In 1942, the airfield was taken over by the U.S. Army, which used the airfield for cross-country flights. Just before World War II, the Office of Scientific Research and Development (OSRD) was created to oversee academic scientists' work on weapon development. OSRD contracted the California Institute of Technology at Pasadena to develop rockets and other weapons. The program needed a test facility near Pasadena, so the Navy requested the release of Inyokern from the U.S. Army in 1943. A Naval Ordnance Test Station was commissioned in 1943 at China Lake and included a 2,331-square-kilometer (900-square-mile) test range. During World War II, the station played an important role in developing non-nuclear bomb components for the Manhattan Project (California State Military Department 2006).

In the 1940s, the primary work site areas were used for the development and testing of rockets and guided missiles, solid propellants, fire-control systems, and air-launched rockets. These projects included Holy Moses, a 12-centimeter (5-inch) high-velocity aircraft rocket and Tiny Tim, a 226-kilogram (500-pound) rocket-propelled bomb.

After the war, China Lake was involved in underwater ordnance and torpedo development. Mighty Mouse, the BOAR rocket, and the Sidewinder missile were under development during the 1950s. The 1960s saw the development of the Snakeeye and Rockeye bombs, the Zuni rocket, the Shrike antiradar missile, and the Walleye. In 1967, the complex was renamed the Naval Weapons Center (NWC) China Lake. During the Vietnam War, 75 percent of the air-to-air and air-to-ground missiles used were developed at NWC. During the 1970s, the Navy shifted to more advanced, computer-intensive systems, including optical and laser systems, advanced propulsion technologies, and anti-radiation guidance systems. In the 1980s, China Lake's Advanced Sidewinder missiles were used in the Middle East and the Falklands, and the Tomahawk Cruise Missile was developed. Sidewinders, Tomahawks, and Shrike weapons systems developed at the NWC were used in Operation Desert Storm. In 1992, the research, development, testing, and engineering (RDT&E) functions of NWC were combined with other Navy Test and Evaluation (T&E) functions to form NAWS China Lake. (California State Military Department 2006; Navy 2004).

3. Affected Environment and Environmental Consequences

3.4.1.2 Legislative Background

The 1966 NHPA (PL 89-665, as amended by PL 96-515; 16 U.S.C. 470 et seq.) provides for establishment of the NRHP to include districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture. Section 106 of the NHPA requires federal agencies with jurisdiction over a proposed federal project to take into account the undertaking's effect on cultural resources listed or eligible for listing in the NRHP, and affords the SHPO and the ACHP an opportunity to comment with regard to the undertaking. The NRHP eligibility criteria have been defined by the Secretary of the Interior's Standards for Evaluation (36 CFR 60). Cultural resources are considered to be NRHP eligible if they display the quality of significance in American history, architecture, archaeology, engineering, and culture that is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, workmanship, feeling, and association, and meet the following criteria:

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

The process of agency review and assessment of the effect of an undertaking on cultural resources is set forth in the implementing regulations formulated by the ACHP (36 CFR 800, Protection of Historic Properties). Other applicable laws and guidelines include the following:

- EO 11593, Protection and Enhancement of Cultural Environment (16 U.S.C. 470 [Supp. 1, 1971]);
- Native American Graves Protection and Repatriation Act (PL 101 – 601; U.S.C. 3001 – 3013);
- Determination of Eligibility for Inclusion in the National Register (36 CFR 63);
- Recovery of Scientific, Prehistoric, and Archaeological Data (36 CFR 66);
- Curation of Federally Owned and Federally Administered Archaeological Collections (36 CFR 79); and
- DoD Directive 4710.1 (outlines the policy to incorporate historic preservation requirements into all DoD activities).

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Section 101(d) (6) (B) of the 1966 NHPA requires federal agencies to consult with Indian tribes that attach religious or cultural significance to historic properties. Compliance with 36 CFR 800.2, which implements consultations with Native Americans, may be conducted by federal agencies as part of a government-to-government undertaking.

In accordance with Section 101(b)(3) of the 1966 NHPA, the SHPOs advise and assist federal agencies in carrying out their Section 106 responsibilities and assist agencies, organizations, and individuals to ensure that historic properties are taken into consideration at all levels of planning and development.

In California, the SHPO is the head of the Office of Historic Preservation of the Department of Parks and Recreation.

3.4.2 Environmental Consequences

3.4.2.1 Approach to Analysis

Impacts have been assessed with respect to their potential to result in a substantial adverse change to the integrity of a historic property's location, design, setting, materials, workmanship, feeling, or association. Impacts to historic properties include, but are not limited to, the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that may alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of a property without adequate provisions to protect its historic integrity.

3.4.2.2 Proposed Action

Potential Impacts and Mitigation

Standing Structures Affected by BRACON. The proposed demolition activities include Building 31175 and the surrounding sidewalk and concrete slab. Building 31175 is a modern trailer and is not eligible for listing on the NRHP; therefore, there would be no effect on NRHP-eligible buildings under the Proposed Action.

Archaeological Resources Affected by BRACON. In compliance with Section 106 of the NHPA, the Navy conducted archaeological investigations of the APE that are documented in a report entitled, *Summary Report and Data Recovery Plan for Cultural Resources Survey and Evaluation Testing at Six Prehistoric Archaeological Sites at the Survivability Tech-0006 Proposed Project Area, NAWS China Lake* (2006). These investigations involved a survey and evaluation testing at six prehistoric archaeological sites (ASM-1 to ASM-6).

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ASM Affiliates, Inc. (ASM) completed a 277-hectare (112-acre) cultural resources survey and test investigations at six prehistoric archaeological sites within the APE of the 2006 Survivability Facilities Improvement Project (Epsilon 2006a). The following is a summary of the resulting report submitted by ASM and Epsilon.

Six sites were located and evaluated for NRHP eligibility. Four of the six sites were recommended for data recovery investigations. Table 3.4-1 summarizes the findings and recommendations. All of the sites are found in areas affected by wind erosion (Epsilon 2006a).

Table 3.4-1 Findings and Recommendations for Six Prehistoric Archaeological Sites

Site	Dimensions	Components/ Site Type	Recommendations
ASM-1	Not provided	Surface lithic scatter	No further work required.
ASM-2	Not provided	Surface lithic scatter	No further work required.
ASM-3	2 x 2 meters	Rock cairn with no visible surface artifacts	No further work required.
ASM-4	400 x 350 meters	Surface lithic scatter	No further work required.
ASM-5	75 x 50 meters	Surface lithic scatter	No further work required.
ASM-6	300 x 150 meters	A simple flaked stone site	No further work required.

Sites ASM-1 and ASM-2 are small, simple prehistoric lithic scatters that lie atop deflated surfaces at the edge of the China Lake playa. Sites ASM-1 and ASM-2 contained some 15 to 20 artifacts (unmodified flakes), and ASM-2 produced one obsidian biface. Due to the absence of diagnostic artifacts or dateable remains, the temporal affiliation of these remains cannot be determined. Neither of the sites has demonstrated the presence of subsurface deposits. Further investigations would not be likely to yield important prehistoric information. These sites are not eligible for listing on the NRHP. Site ASM-3 is a collapsed rock cairn lying atop a dune/terrace. This site was considered potentially eligible for NRHP listing because of the possibility that the feature could contain a buried cultural matrix with dateable remains that could conceivably add to the current scientific body of knowledge of prehistory in the area. However, after further data recovery, this site has been further determined to be of little cultural importance, and the Navy believes it is not in fact eligible for listing in the NRHP.

Site ASM-4 initially appeared to be a habitation site or a quarry with a habitation site. This large site covers an area of approximately 400 by 350 meters (1,300 x 1,150 feet), and is located on a lakebed and lake terrace. Further investigation found ASM-4 to consist of flake scatter with a tremendous amount of redundant data emanating from highly ventifacted (windblown) flakes associated with a deflated lakeshore. There are no organic materials that would allow the site to be definitively placed chronologically. Most of the lithic material is from locally

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derived basalts on the southeast lakeshore and is not obsidian that can be hydrated. ASM-4 merges with ASM-6 near an area of a gravel lot disturbance. The broad layout of the sites is suspected to be partly due to natural processes of inflation/deflation of soils, lake level change, and heavy wind. The assemblage from these sites consists of hundreds of flakes and many tools, including Mohave and Silver Lake stemmed projectile points. Two diagnostic artifacts (“bowtie” crescents) indicate the site dates back at least 7,500 years to the Early Holocene. This site was initially considered potentially eligible for NRHP listing due to the Early Holocene artifacts recovered and the possibility that it might add to the knowledge of Lake Mohave human demography during the Early Holocene; however, data recovery was necessary in order to make the determination that, due to the material, the surface nature of the resource, no organic materials, no features present, and that the site has yielded all of the information it can yield, the Navy determined that it is not eligible for listing in the National Register of Historic Places.

Site ASM-5 appears to be an intensive flake scatter with highly weathered tools on a lakeshore terrace. It is a low-density artifact site made up of mostly debitage (byproducts of tool manufacture) with some stone tools. It was initially considered likely to contain subsurface cultural deposits; however, data recovery efforts found no presence of subsurface cultural deposits. This site was considered eligible for possible listing in the NRHP because of its potential to provide information on human interaction with lake environments in the Early Holocene, the possible presence of subsurface deposits, and its possible relationship with Sites ASM-6 and ASM-4. However, further investigation has determined ASM-5 to be of low cultural importance, and the Navy does not consider it eligible for listing in the NRHP.

Site ASM-6 is a dispersed lithic scatter covering 150 by 300 meters (492 x 984 feet) on a lake terrace and lakebed. Several hundred flakes and three bifaces were identified. ASM-6 merges with ASM-4 in its southwest corner. This site was considered potentially eligible for NRHP listing because it was thought it might show a contrast in technological use in comparison with ASM-4 and ASM-5, and because of the possible presence of subsurface horizons. Prior to further investigation, it was believed that if ASM-6 was found to be younger than ASM-4 and ASM-5, it might be able to provide information on prehistoric land use during the Holocene (Epsilon 2006a). However, after further investigation it has been determined that Site ASM-6 is simply a flake stone site without significant cultural importance.

In November 2006, the Navy initiated consultation with the SHPO in reference to the six archaeological sites that would be affected by the proposed construction (see letter in Appendix E, SHPO Consultation letter). The Navy recommended four of the six sites (ASM-3, ASM-4, ASM-5, and ASM-6) for listing on the NRHP. The four sites recommended for listing in the NRHP were evaluated for their potential to expand the scientific knowledge of the Holocene land use of the area. The Navy developed a data recovery and treatment plan in order to mitigate

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potential effects of the proposed construction on these potentially significant sites (Epsilon 2006a).

The Navy requested comments from the SHPO regarding the determination of eligibility and the adequacy of the data recovery plan for the four sites to be affected by the proposed BRAC actions at the WSC (Shepherd 2006). The SHPO never responded on the determination of eligibility or the adequacy of the recovery plan. Since no response was obtained on either topic, the Navy believes that, in accordance with Section 106 of NHPA, any required consultation has been completed. In addition, meetings to discuss the Proposed Action were held with local Native American groups consisting of the Kern River Indian Community, and representatives from the Fort Independence, Timbisha, Big Pine, Bishop, and Lone Pine communities. None of the Native American groups consulted had any comments concerning either the proposed recovery plan or any of the sites, nor did any of the groups express any concerns with respect to either the plan or the sites.

As a result of the Navy's overall investigation at the various sites referenced above, it has been determined that none of the sites possess significant cultural importance. Accordingly, no adverse effect or other significant impact on cultural resources would occur as a result of implementation of the Proposed Action, and no mitigation would be required.

3.4.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented. There would be no ground-disturbing activities and there would be no impacts on cultural resources.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts, and, therefore, no mitigation measures are proposed.

3.5 Land Use

This section discusses applicable plans and policies, on-base land use, and surrounding land use for the Proposed Action.

3.5.1 Existing Conditions

3.5.1.1 Regional Setting

NAWS China Lake is located in the Upper Mojave Desert of California, approximately 242 kilometers (150 miles) northeast of Los Angeles. The NAWS, composed of the North Range and the South Range, covers approximately 4,402 square kilometers (1,700 square miles) and is located in three counties: Kern, Inyo, and San Bernardino. The North Range is within all three of these counties; the southwest portion of the North Range is in Kern County. The northern two-thirds are in Inyo County, and the southeast portion is in San Bernardino County. The South Range lies entirely in San Bernardino County.

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The NAWS is predominantly surrounded by federally owned lands interspersed with pockets of private and state lands. Small areas of privately owned land are found immediately to the south and along the western boundary of the North Range and south of the South Range. The incorporated city of Ridgecrest and the unincorporated city of Inyokern are located adjacent to the NAWS (Navy 2005).

3.5.1.2 China Lake Lands

The NAWS ranges extend across 445,154 hectares (1.1 million acres) that are in an ecological transition zone between the China Lake Basin and the Mojave Desert. NAWS lands are composed of complex terrain and contain a variety of landforms, including forested mountain peaks, deeply cut canyons within volcanic tablelands, and an extensive system of upland slopes and low-lying playa dry lakes. Thus, these lands contain diverse environmental resources, including extensive natural and cultural (prehistoric and historic) resources (Navy 2005).

3.5.1.3 Land Ownership

NAWS land assets within the China Lake boundaries are a combination of lands owned by the Navy, U.S. Department of the Interior lands withdrawn from public domain, and other lands acquired through lease, easement, or permit for Navy use, as shown in Table 3.5-1.

Table 3.5-1 Lands Acquired by Lease, Easement, or Permit for Navy Use

Status of Land Ownership	Hectares / Acres
Fee Simple (owned by U.S. Navy)	34,996 / 86,479
Withdrawn from public domain (expiration 30 Sep. 2014)	414,307 / 1,023,777
License/permit/agreement	22 / 54
Easement (purchase and/or condemnation)	6 / 16
In-leased (from various sources)	47 / 117
Total Land Assets	449,378 / 1,110,443

Source: Navy 2005.

3.5.1.4 Land Use Management Units

Due to the large size of the North Range, NAWS is divided into smaller planning units to manage activities that occur within the NAWS and for ease of planning. Called LMUs, these planning units are defined by the uses that occur within them, and are divided into two categories by location—within developed portions of the NAWS or within the testing ranges. The northern developed portion of the NAWS, where the Proposed Action would occur, is divided into 18 separate land management units. The proposed BRACON would occur within the George Range LMU.

George Range

The George Range LMU encompasses 790 square kilometers (305 square miles) in the eastern portion of the North Range. George Range is the largest and most heavily instrumented air-to-surface test range on the NAWS. Other activities that occur on George Range include: high explosives testing; training for air-to-surface, surface-to-air, surface-to-surface, and air-to-air guided missiles; aircraft survivability testing; and an open burn/open detonation facility (Navy 2004).

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3.5.1.5 Non-Military Land Use

A variety of civilian uses occur on the NAWS, which are subject to a case-by-case discretionary review by the Base Commanding Officer. Activities such as tours of archaeological resources at Little Petroglyph Canyon, hiking, and equestrian use do occur within the North Range, but would not be subject to the Proposed Action.

3.5.1.6 Applicable Rules and Regulations

A CLUMP written in 2005 guides land management within the NAWS. The CLUMP establishes a formal corporate process for land use management at NAWS that meets current and evolving military mission requirements and ensures compliance with Navy regulations contained in OPNAVINST 5090.1B. Land use includes ongoing and future military operations, public health and safety practices, and environmental resources management programs. The CLUMP provides a strategic framework for managing these operations, practices, and programs until the year 2014, or until the next reauthorization legislation. The CLUMP management framework provides a business compliance plan that consolidates existing procedures and streamlines land management processes. The plan provides the tools to achieve the goals and objectives of existing and developing land use and resource management plans. The CLUMP formally establishes the strategic planning and management vehicle to support the Navy's military mission for both land use and environmental resource management (Navy 2005).

3.5.2 Environmental Consequences

3.5.2.1 Approach to Analysis

Factors used to assess significance include the extent or degree to which implementation of an alternative would cause substantial change to currently approved or planned land uses within the George Range LMU. For this analysis, land use impacts were evaluated by assessing the compatibility of all proposed uses with the existing or planned on-station land uses described in Section 3.5.1. A land use incompatibility would arise when a proposed use would preclude or adversely affect an existing or intended use of an LMU area.

3.5.2.2 Proposed Action

Potential Impacts

Land Use Policies, Plans, and Regulations. The new construction associated with the BRACON would result in land uses being introduced that would be consistent with the land uses established within the China Lake CLUMP for the George Range LMU. Since this action would not change the existing land use at George Range, it is consistent with adopted land use plans, policies, and regulations. Therefore, no conflicts with existing land use plans, policies, and regulations have been identified.

Land Use at George Range. The Proposed Action would involve the construction of new facilities within the George Range LMU. As described above, the George Range LMU contains the aircraft survivability testing facilities within the NAWS. All construction associated with the Proposed Action that would occur within the

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George Range LMU would be consistent with current land uses, namely laboratory and weapons research/development activities. Although the Proposed Action would provide increases in density on the George Range LMU, the land usage would not change as a result.

Mitigation Measures

No significant impacts would occur, and, therefore, no mitigation measures are proposed.

3.5.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented. Personnel and functions would not be relocated to NAWS China Lake and the proposed BRACON would not be constructed. As a result, no changes in land uses would occur. No impacts on land use would occur as a result of the No Action Alternative.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts, and, therefore, no mitigation measures are proposed.

3.6 Socioeconomics

3.6.1 Existing Conditions

The term “socioeconomics” describes the basic attributes and resources associated with the human environment, with particular emphasis on population, employment, and personal income. Substantial changes in these fundamental socioeconomic indicators may influence related variables, such as the provisions of community services and utilities, and the cost and availability of housing. For this EA, relevant socioeconomic indicators are population, housing, and employment. The Region of Influence (ROI) for socioeconomics, as it applies to the Proposed Action, is the Indian Wells Valley, with particular emphasis on the city of Ridgecrest—China Lake’s closest residential and commercial neighbor. Although the proposed project would be located at the northwestern boundary of San Bernardino County, the proposed project is considered unlikely to provide appreciable economic or socioeconomic benefits to, or otherwise appreciably impact, the County of San Bernardino and, thus, is considered outside the County of San Bernardino’s ROI.

The socioeconomic data presented for the areas within the Indian Wells Valley were obtained from the Ridgecrest Chamber of Commerce. The Chamber of Commerce monitors population growth in the valley (through the U.S. Census) as well as population trends, employment information, and economic indicators. Employment information for this section was compiled from the Ridgecrest Chamber of Commerce’s most recent Employment Inventory.

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3.6.1.1 Population

The China Lake area is located within the census-surveyed areas of Ridgecrest, Inyokern, and China Lake Acres. Table 3.6-1 presents population characteristics, including populations in 2000 and 1990 for these statistical areas. As shown in Table 3.6-1, the regional population had decreased by 25 percent from 1990 to 2000. This large decrease is largely due to economic constraints within the Indian Wells Valley area that were present during the 1990s.

Table 3.6-1 Population Growth for Ridgecrest, Indian Wells Valley, and Inyokern Areas – 1980 to 2000

Area	1980	1990 ^(a)	2000	Percent Change 1980-2000
Indian Wells Valley	N/A	36,879	27,772	-25%
Ridgecrest	15,500	27,725	24,927	-11%
Inyokern	N/A	N/A	984	N/A
China Lake Acres	N/A	N/A	1,761	N/A

Source: Ridgecrest Chamber of Commerce 2006.

^(a) China Lake Acres and Inyokern were not counted as separate census areas during the 1980 and 1990 censuses.

3.6.1.2 Housing

While the numbers of available housing stock in the Indian Wells Valley area are not known, an indicator of economic recovery of the area is the increase in building permits being filed with the city of Ridgecrest (Ridgecrest Chamber of Commerce 2006). Housing has been estimated to be increasing at a rate of approximately 1.5 percent annually, as shown in Table 3.6-2. The development philosophy within the Ridgecrest General Plan has Ridgecrest continuing as a support community for the NAWS. The new or planned military facilities on the NAWS as part of the proposed project would result in increases in housing demand. Housing growth is lower than that of the county as a whole.

Table 3.6-2 Estimated Total Housing Units for the Ridgecrest Area

Area	2000	2006	Percent Change 2000-2006
Kern County	232,000	282,934	18%
Ridgecrest	11,370	11,529	9%

Source: Kern Council of Governments 2000b.

3.6.1.3 Employment

The economy of the Indian Wells Valley/Ridgecrest region is based primarily on the military, retail trade, government, and manufacturing sectors of the economy. According to the 2000 Census, 21 percent of the residents of Kern County live below the poverty level. The 2000 Census estimated total employment for the Ridgecrest area at approximately 64 percent (Kern Council of Governments 2000a), with 10 percent of the population living below the poverty level, which is below the county average of 21 percent (Kern Council of Governments 2000b).

According to the Kern County Economic Development Strategy (April 2005), construction (commercial and retail) is a sector contributing broadly to

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employment in Kern County. The construction industry in Kern County is large and highly concentrated, but is driven by the fast growth in housing throughout the county. Kern County has many construction occupations with high location quotients (i.e., a higher concentration than for the national economy). The construction and extraction occupation is the seventh largest occupation in Kern County, with 14,679 people employed in that industry.

3.6.1.4 Environmental Justice

EO 12898, 59 *Federal Register* 7629, “Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,” signed in February 1994, directs federal agencies “... to make achieving environmental justice part of its mission by identifying and addressing ... disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority population and low-income population in the [U.S.]” The aim of the EO is to prevent low-income and minority communities from being subjected to disproportionately adverse environmental effects.

The following provides information on the race and ethnicity of populations near the Proposed Action area as well as economic status. The goal is to identify whether minority or disadvantaged populations are in the vicinity of each of the alternatives. To provide a context for considering these data, it is appropriate to compare the same categories for the local jurisdiction and larger region. Therefore, these data provide information on ethnicity and median income for the Proposed Action area compared to the local jurisdiction and Kern County. For this EA, the environmental justice-affected environment is described in terms of the minority and low-income populations in the city of Ridgecrest and Kern County.

Minority Population Trends

The ethnic composition of the Ridgecrest area is primarily white and Latino residents. In comparison to Kern County, Ridgecrest has a lower minority population than the county as a whole, with 12 percent of the population being of Latino heritage (Kern Council of Governments 2000a). Ridgecrest also has a majority of individuals who are white; consequently, it has a lower percentage of nonwhite population than the county as a whole (12 percent to about 38 percent) (Kern Council of Governments 2000b).

Median Household Income

The estimated median household income for Kern County is \$35,446. The estimated median household income for the Ridgecrest area is \$52,725, significantly above the county average (Kern Council of Governments 2000a).

3.6.2 Environmental Consequences

3.6.2.1 Approach to Analysis

In evaluating potential impacts to socioeconomic conditions in the region, the Navy considered whether each alternative could cause one or more of the following conditions:

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- Increased employment that creates shortages in local labor that exceed historic levels, or increased unemployment rates and loss of income that exceed historic rates; and/or
- Increased housing demand that creates housing shortages, difficulty in finding suitable and affordable housing and likely use of substandard housing, or increased vacancies in support communities that exceed historic vacancy levels.

3.6.2.2 Proposed Action

Potential Impacts

Population, Housing, and Employment. Population for the areas surrounding NAWS China Lake was estimated based on the 2000 Census and estimated projected increases in population for the Indian Wells Valley area.

According to the 2005 CLUMP, off-base housing has been maintained in order to accommodate personnel movements. The 2000 Census also indicates a single-family residence vacancy rate of approximately 13 percent. No personnel relocation is involved in the Proposed Action. No adverse impacts on housing would occur as a result of the BRAC realignment.

The Proposed Action would result in short-term, beneficial socioeconomic impacts on the local project area from the purchase of construction materials and use of labor. The employment base within Ridgecrest is adequate to meet the need for the construction workers. A number of new contractor employees would be needed in support of ongoing operations after completion of the BRACON component of the Proposed Action (approximately 17 positions). It is anticipated that these positions would likely be filled from the local population.

Environmental Justice. The population of the city of Ridgecrest surrounding the project area is not considered disadvantaged, but it does contain a large minority population. The BRACON activities and subsequent operation would occur within NAWS China Lake boundaries (at the George Range LMU) and would not adversely affect human health or the environment either on or off NAWS China Lake. As such, the Proposed Action would not cause “disproportionately high and adverse human health or environmental effects on low-income and minority population” and would not affect the Navy’s ability to achieve environmental justice as defined in EO 12898. Therefore, no adverse impact associated with environmental justice would occur under this alternative.

Mitigation Measures

No significant impacts would occur, and, therefore, no mitigation measures are proposed.

3.6.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented. The No Action Alternative would result in neither positive nor

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negative impacts with respect to population, housing, or employment, apart from the loss of short-term beneficial economic impacts associated with construction and a small number of additional permanent employment positions.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts; therefore, no mitigation measures are proposed.

3.7 Traffic and Circulation

3.7.1 Existing Conditions

This section will summarize a detailed traffic analysis prepared for the Navy by Kimley-Horn Associates in December 2006 for BRAC actions occurring within NAWS China Lake (Navy 2006).

Traffic conditions discussed were selected intersections and roadway segments within the NAWS China Lake base. To analyze the operations of the intersections in the study area after implementation of the contemplated realignment of Weapons and Armaments Research, Development, and Acquisition, Test, and Evaluation functions to NAWS China Lake (the W&ARD&AT&E realignment), methodologies outlined in the 2000 *Highway Capacity Manual* were used. Published by the Transportation Research Board, the 2000 *Highway Capacity Manual* establishes a system whereby transportation facilities are rated for their ability to process traffic volumes. The terminology “level of service” (LOS) is used to provide a “qualitative” evaluation based on certain “quantitative” calculations, which are related to empirical values.

The December 2006 traffic study found that two intersections within the Mainsite LMU portion of the NAWS (located in the south portion of the North Range) would, if unmitigated after implementation of the W&ARD&AT&E realignment, operate at an undesirable LOS (Kimley-Horn 2006). With mitigation, all intersections would operate at an LOS C or better, the Navy goal (except for one intersection, which would operate at LOS D only during morning peak hours, with potential further mitigation to LOS C through use of a traffic signal). No additional personnel would be relocated to NAWS China Lake for P-700V; therefore, roadway conditions as described in the December 2006 traffic study would remain as analyzed with respect to implementation of the W&ARD&AT&E realignment.

3.7.2 Environmental Consequences

3.7.2.1 Approach to Analysis

This analysis focuses on the potential effects of traffic loading on NAWS and the surrounding roadway system that may occur from implementing any of the alternatives. Proposed increases in traffic loading are compared to roadway capacities identified in Section 3.7.1. Impacts are considered significant if the traffic increases associated with the Proposed Action or alternatives exceed the design capacity of an affected portion of the roadway system.

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3.7.2.2 Proposed Action

Potential Impacts

The Proposed Action would result in a temporary increase in traffic within the Aircraft Survivability Complex during construction and subsequent operations. While the Proposed Action would not require relocation of personnel to NAWS China Lake, it would result in a small permanent increase in traffic within the Aircraft Survivability Complex due to the likely presence of additional workers (estimated 17 new workers) from the local population; however, any such permanent increase would involve only a small number of vehicles and would not be expected to appreciably impact overall traffic and circulation (see Section 3.6.2.2, Proposed Action). Therefore, traffic conditions as outlined in the December 2006 traffic study would remain as analyzed, with respect to implementation of the W&ARD&AT&E realignment.

Mitigation Measures

Implementation of the Proposed Action would not result in any significant impacts to the existing or forecasted traffic conditions at NAWS China Lake; therefore, no additional mitigation measures are required.

3.7.2.3 No Action Alternative

Potential Impacts

Implementation of the No Action Alternative would not introduce additional personnel or vehicles onto the NAWS China Lake roadway system. No impacts to traffic would occur.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts, and, therefore, no mitigation measures are proposed.

3.8 Air Quality

3.8.1 Existing Conditions

3.8.1.1 Applicable Regulations, Plans, and Policies

Clean Air Act

The CAA of 1970, 42 U.S.C. 7401 et seq., amended in 1977 and 1990, is the primary federal statute governing air pollution. The federal CAA designates six pollutants as criteria pollutants, for which National Ambient Air Quality Standards (NAAQS) have been promulgated to protect public health and welfare. The six criteria pollutants are respirable particulate matter smaller than 10 micrometers in diameter (PM₁₀) and particulate matter smaller than 2.5 micrometers in diameter (PM_{2.5}), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), lead (Pb), and ozone (O₃).

National and California Ambient Air Quality Standards

The NAAQS and California Ambient Air Quality Standards (CAAQS) are summarized in Table 3.8-1. The primary NAAQS represent maximum background air pollution levels with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration

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allowable to protect vegetation, crops, and other public resources along with maintaining visibility standards. Areas that meet the NAAQS are designated as in “attainment”; areas where the ambient pollutant concentration exceeds the NAAQS are designated as “non-attainment” areas. The number of exceedances and the concentrations determine the non-attainment classification of an area. The type of non-attainment classification designation of an area is one of the factors in determining its air quality control requirements. There are six classifications of O₃ non-attainment status: transitional, marginal, moderate, serious, severe, and extreme; and two classifications of CO and PM₁₀ non-attainment status: moderate and serious. An area that has been re-designated from non-attainment to attainment is referred to as a “maintenance” area. The State of California Air Resources Board (CARB) has established additional standards that are generally more restrictive than the NAAQS. Federal standards for 8-hour O₃ and PM_{2.5} became effective on July 18, 1997, and were subsequently challenged and litigated. The U.S. Supreme Court affirmed the standards, and on April 15, 2004, the USEPA issued a final ruling for the 8-hour O₃ designations and controls (USEPA 2004).

Attainment with NAAQS and CAAQS for the NAWS at China Lake is determined using air quality data from monitoring stations in the Kern County Air Pollution Control District (APCD), the Mojave Desert Air Quality Management District (MDAQMD), and the Great Basin Unified APCD.

Table 3.8-1 National and California Ambient Air Quality Standards

Pollutant	Time Frame	Federal Primary Standard	Federal Secondary Standard	California Standard
PM ₁₀	Annual	50 µg/m ³	50 µg/m ³	20 µg/m ³
	24-hour	150 µg/m ³	150 µg/m ³	50 µg/m ³
PM _{2.5}	Annual	15 µg/m ³	15 µg/m ³	12 µg/m ³
	24-hour	65 µg/m ³	65 µg/m ³	N/A
SO ₂	Annual	0.030 ppm (80 µg/m ³)	N/A	N/A
	24-hour	0.14 ppm (365 µg/m ³)	N/A	0.04 ppm (105 µg/m ³)
	3-hour	N/A	0.05 ppm (1,300 µg/m ³)	N/A
	1-hour	N/A	N/A	0.25 ppm (655 µg/m ³)
CO	8-hour	9 ppm (10,000 µg/m ³)	None	9 ppm (10,000 µg/m ³)
	1-hour	35 ppm (40,000 µg/m ³)	None	20 ppm (23,000 µg/m ³)
NO ₂	Annual	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)	N/A
	1-hour	N/A	N/A	0.25 ppm (470 µg/m ³)

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Table 3.8-1 National and California Ambient Air Quality Standards

Pollutant	Time Frame	Federal Primary Standard	Federal Secondary Standard	California Standard
Ozone	1-hour	N/A	N/A	0.09 ppm (180 $\mu\text{g}/\text{m}^3$)
	8-hour	0.08 ppm (157 $\mu\text{g}/\text{m}^3$)	0.08 ppm (157 $\mu\text{g}/\text{m}^3$)	0.07 ppm (137 $\mu\text{g}/\text{m}^3$)
Lead	Quarterly	1.5 $\mu\text{g}/\text{m}^3$	1.5 $\mu\text{g}/\text{m}^3$	N/A
	30-Day	N/A	N/A	1.5 $\mu\text{g}/\text{m}^3$

Source: 40 CFR Part 50, last updated July 21, 2005.

Key:

$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter.

N/A = Not applicable.

ppm = Parts per million.

The General Conformity Rule

The General Conformity Rule has been promulgated by USEPA to ensure the actions of federal departments or agencies conform to the applicable State Implementation Plan (SIP). The rule is a statutory obligation in Section 176(c)(4) of the CAA; it was added to the CAA by the 1990 amendments. Parts 51 and 93 were amended to require states to revise their implementation plans to include conformity requirements. Part 6 was amended to reference the General Conformity Rule under the environmental review and consultation requirements associated with NEPA.

The Navy provides *Guidance on Compliance with the Clean Air Act General Conformity Rule* (Navy 2002), a guidance document for conducting conformity reviews. This guidance summarizes provisions of the General Conformity Rule, provides steps to be followed to determine the applicability of the General Conformity Rule to Navy actions, and sets forth procedures for making conformity determinations. The General Conformity Rule requires using the latest USEPA emission estimation techniques and models listed in the most recent version of Guideline on Air Quality Models. The rule also contains reporting, public participation, and mitigation provisions.

The General Conformity Rule covers direct and indirect emissions of criteria pollutants or their precursors that are caused by a federal action, are reasonably foreseeable, and can practically be controlled by the federal agency through its continuing program responsibility.

Conformity is demonstrated if the total net emissions expected to result from a federal action in a non-attainment or maintenance area will not:

- Cause or contribute to any new violation of any NAAQS;
- Interfere with provisions in the applicable SIP for maintenance of any standard;
- Increase the frequency or severity of any existing violation; or

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- Delay the timely attainment of a standard, interim emission reduction or milestone, including, where applicable, emission levels specified in the applicable SIP for purposes of demonstrating reasonable further progress, attainment, or a maintenance plan.

Enforceable mitigation measures may be used to demonstrate conformity. Conformity can also be demonstrated by obtaining emissions offsets; however, the entire emissions increase must be offset, so the action results in no net emissions increase.

A federal action is exempt from applicability of the General Conformity Rule requirements if the action's total net emissions are below the *de minimis* levels shown in Table 3.8-2 and are not regionally significant (i.e., the emissions represent 10 percent or less of a non-attainment or maintenance area's total emission inventory of that pollutant) or are otherwise exempt per 40 CFR 51.153. Total net emissions include direct and indirect emissions from all stationary point and area sources, construction sources, and mobile sources caused by the federal action. However, special considerations regarding mobile-source emissions exist. If the action or a portion of it is subject to the transportation conformity rule, that portion of the action is not subject to the General Conformity Rule.

If the total net emissions increase caused by a federal action exceeds *de minimis* levels for non-attainment pollutants or pollutants subject to a maintenance plan, then a formal conformity determination is required. Conformance with a SIP can be demonstrated by:

- Fully offsetting the emissions increase (i.e., no net increase);
- Showing the emissions of non-attainment or maintenance pollutants are accounted for in the air basin's emissions budget; or
- Obtaining a state commitment to revising the SIP to accommodate the increase in emissions.

Attainment Status

Activities associated with this Proposed Action will take place in San Bernardino County within the MDAQMD. There will be additional vehicle emissions in Kern County within the Kern County APCD, where the main gate is located. An area is designated in attainment when the Air Quality District can demonstrate it is in compliance with the NAAQS and/or CAAQS. The attainment status of these districts is summarized in Table 3.8-3.

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Table 3.8-2 De Minimis Levels for Exemption from General Conformity Rule Requirements

Pollutant	Tons/Year (TPY)
O ₃ (Volatile organic compounds [VOCs] or nitrogen oxides [NO _x])	
Serious non-attainment areas	50
Severe non-attainment areas	25
Extreme non-attainment areas	10
Marginal and moderate O ₃ non-attainment and ozone maintenance areas outside an O ₃ transport region	
VOCs	100
NO _x	100
Marginal and moderate non-attainment and ozone maintenance areas inside an O ₃ transport region	
VOCs	50
NO _x	100
CO	
All non-attainment and maintenance areas	100
SO ₂ or NO ₂	
All non-attainment and maintenance areas	100
PM ₁₀	
Moderate non-attainment and maintenance areas	100
Serious non-attainment areas	70
Pb	
All non-attainment and maintenance areas	25

Source: 40 CFR 51.

Table 3.8-3 NAAQS and CAAQS for NAWS China Lake Area

Pollutant	Designation/Classification			
	Federal Standards		State Standards	
	Kern County APCD ¹	San Bernardino Mojave Desert AQMD ²	Kern County APCD ¹	San Bernardino Mojave Desert AQMD ²
O ₃ – 8- Hour	Attainment	Attainment	Attainment	Attainment
PM ₁₀	Attainment/ Maintenance	Non-attainment	Non-attainment	Non-attainment
PM _{2.5}	Unclassifiable/ Attainment	Unclassifiable/ Attainment	Unclassified	Unclassifiable/ Attainment
CO	Unclassifiable/ Attainment	Unclassifiable/ Attainment	Unclassified	Unclassified
NO _x	Unclassified	Unclassified	Attainment	Unclassified
SO ₂	Unclassified	Unclassified	Unclassified	Unclassified

¹Kern County APCD Web site n.d., retrieved 11/2006.

²Mojave Desert AQMD Web site 2004 and 1995, retrieved 11/2006.

For determining whether an area is in attainment of the PM₁₀ and 8-hour O₃ NAAQS, the Indian Wells Valley has been considered as a separate area from the rest of the Kern County APCD and Mojave Air Basin.

The USEPA has designated a major portion of the San Bernardino County area of the South East Desert Air Basin as a PM₁₀ non-attainment area (MDAQMD 1995)

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and the Southeast Desert Modified AQMA as non-attainment for O₃ NAAQS pursuant to the provisions of the CAA. A portion of the MDAQMD is included in the Southeast Desert Modified AQMA. The CARB has also designated the entire Mojave Desert Air Basin (MDAB) as non-attainment for ozone CAAQS pursuant to the provisions of the California CAA. The entire MDAQMD is located within the MDAB (MDAQMD 2004). It should be noted that no portion of the NAWS China Lake is located in an area currently designated as non-attainment for O₃. Although NAWS China Lake is in attainment for O₃ and General Conformity requirements do not apply, analysis for ozone was performed for completeness and to ensure no impact as a result of the Proposed Action.

Applicable Regulatory Requirements

As specified under USEPA guidance and federal CAA regulations (40 CFR 55.15), the specific provisions of the CAA that may be relevant to the Proposed Action include:

- NAAQS;
- New Source Review (NSR);
- Prevention of Significant Deterioration (PSD);
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAPs);
- Title V Operating Permits; and
- CAAQS.

3.8.1.2 Climate and Meteorology

NAWS's climate is typical of the southern California high desert: hot summers, cold winters, large daily temperature fluctuations, and low rainfall and humidity. Summer daytime temperatures often exceed 38 degrees Celsius [°C] (100 degrees Fahrenheit [°F]), while summer nighttime temperatures drop into the teens (low 60s). Winter daytime temperatures average in the low teens (50s), with winter nighttime temperatures below 5°C (30s). Precipitation averages 10.8 centimeters (4.25 inches) per year, with about 20 days per year of measurable precipitation. It snows an average of two days per year. However, in areas of higher elevation (e.g., Coso Range), the amount of rain or snowfall may be much higher. Maximum precipitation tends to occur from November through March. Winds flow through low mountain passes and gaps in the mountain ranges that surround the NAWS, with the strongest winds occurring in late winter and early spring.

3.8.2 Environmental Consequences

3.8.2.1 Approach to Analysis

The analysis of potential impacts to air quality considers whether implementation of the Proposed Action or an alternative would create any of the following conditions:

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- A net increase in pollutant or pollutant precursor emissions that exceeds the CAA conformity rule *de minimis* levels or other established impact significance thresholds;
- Emissions that would cause or contribute to new or more frequent violations of state or federal ambient air quality standards;
- New land uses that would expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- Conflict with specific air quality management plan policies or programs; or
- Fostering or accommodation of growth and development in excess of levels assumed by the applicable air quality management plan.

Air quality issues associated with implementation of the Proposed Action and the alternatives have been evaluated in terms of predicted changes in air pollutant emissions.

3.8.2.2 Proposed Action

Emissions Evaluation. NAWS China Lake is partially located within an area that is classified under the federal CAA as “non-attainment” for PM₁₀. The General Conformity Rule applies to actions that generate emissions in non-attainment or maintenance areas. Therefore, the General Conformity Rule is applicable at the project location.

The General Conformity Rule requires analysis of emissions of criteria pollutants and their precursors for which an area is designated non-attainment or that are covered by a maintenance plan. The Proposed Action would include construction equipment and mobile sources that would emit particulate matter. Therefore, the General Conformity Rule is applicable to the project emissions of PM₁₀. In addition, since other districts within the region are in non-attainment for ozone, our analysis will also compare VOC and NO_x emissions to the General Conformity Rule *de minimis* levels as a means to determine whether the projected emissions of ozone precursors will cause a significant impact.

Particulate matter (dust, PM₁₀, and PM_{2.5}) is the pollutant of greatest concern with respect to construction activities. PM₁₀ emissions can result from a variety of activities, including excavation, grading, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Construction-related emissions, particularly site grading, can substantially increase localized concentrations of dust and PM₁₀. Particulate matter emissions from construction can lead to adverse health effects and nuisance concerns, such as reduced visibility. Dust control procedures will be implemented to reduce PM₁₀ emissions from construction. PM_{2.5} emissions are included within the PM₁₀ analysis below. However, since the China Lake area is in attainment for PM_{2.5}, PM_{2.5} is not addressed specifically within this analysis, or within the Record of Non-Applicability (RONA) included in Appendix D.

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As part of the Proposed Action, Building 31175 and the surrounding sidewalk and concrete slab would need to be removed from the project area. Building 31175 is a modern trailer that represents the only building/structure potentially subject to demolition in conjunction with the Proposed Action. The Navy anticipates that any contractors involved in work on the Proposed Action would likely choose to remove Building 31175 from the project area intact rather than demolishing them on site, effectively eliminating any potential for release to the atmosphere of any asbestos-containing material (ACM) or lead-based paint (LBP) associated with such trailers. If a decision were to be made to demolish the trailer on site rather than remove it, contractors performing any such demolition would be required to do so in accordance with applicable federal, state, or local requirements for management and disposal of ACM and/or LBP, and, as a result, these emissions would be negligible.

Methodology. The USEPA has determined specific federal actions, or portions thereof, to be exempt from a formal conformity determination. Actions are exempt where the total net increase of all reasonably foreseeable direct and indirect emissions (1) would be less than specified emission rate thresholds, known as *de minimis* limits, and (2) would be less than 10 percent of the area's annual emission budget. Therefore, total annual emissions resulting from project construction will be calculated to determine if the project is exempt and therefore would have no impacts.

Emissions have been calculated using emission rates and assumptions from Air Quality Thresholds of Significance (Sacramento Metropolitan Air Quality Management District 1994), the California Environmental Quality Act (CEQA) Air Quality Handbook (South Coast Air Quality Management District 1993), and Compilation of Air Pollutant Emission Factors (EPA AP-42). See Appendix C for a detailed description of the emission assumptions and calculations. Estimates for building area, demolition area, paved surface area, and total disturbed area were based on data provided in *FY 2008 Military Construction Program* for the Weapons Survivability Complex.

Emission Calculations for FY 2009. Construction activities for BRACON P-700V are expected to begin in FY 2009 and continue through FY 2010. Construction activity would include demolition, site preparation, road widening, new buildings, new parking lots, new sidewalks, and a test pad.

For purposes of this emissions evaluation, it is assumed that site preparation, demolition, and construction of the Fabrication Assembly Facility, Test Control Building, and Test Pad would occur in FY 2009. It is assumed that 9,849 m² (105,975 ft²) of excavation and grading would occur, 1,673 m² (18,008 ft²) of space would be constructed, 441 m² (4,745 ft²) would be demolished, and 2.39 total hectares (5.9 total acres) would be disturbed. Appendix C provides a detailed breakdown and assumptions related to the assessment of air emissions from the construction of these facilities. Emission totals are summarized below in Table 3.8-4.

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Table 3.8-4 Construction Emissions (tons): 2009

Activity	VOC	NO _x	SO ₂	CO	PM ₁₀
Construction Emissions:					
Grading Equipment	0.22	2.03	0.14	0.44	0.17
Material Hauling	0.31	4.48	0.30	0.97	0.32
Fugitive Dust	0.00	0.00	0.00	0.00	3.05
Total Emissions from Construction (tons)	0.53	6.52	0.44	1.41	3.54

Emission Calculations for FY2010. It is assumed that in FY 2010 the Laboratory Office will be constructed, and that road widening and paving, parking lot paving, and concrete and sidewalk work would be done. It is assumed that 372 m² (4,004 ft²) of space will be constructed, 27,389 m² (294,802 ft²) would be paved or surfaced, 2,387 m² (25,685 ft²) of sidewalks and concrete would be laid, and 3.01 total hectares (7.5 total acres) would be disturbed. Appendix C provides a detailed breakdown and assumptions related to the assessment of air emissions from the construction of these facilities. Emission totals are summarized below in Table 3.8-5.

Table 3.8-5 Construction Emissions (tons): 2010

Activity	VOC	NO _x	SO ₂	CO	PM ₁₀
Construction Emissions:					
Grading Equipment	0.27	2.56	0.17	0.56	0.22
Material Hauling	0.39	5.65	0.38	1.22	0.40
Fugitive Dust	0.00	0.00	0.00	0.00	3.48
Total Emissions from Construction (tons)	0.66	8.22	0.55	1.78	4.10

Final Annual Emissions. The permanent changes that would result in increased air emissions include the operation of privately owned vehicles (POVs), heating and cooling of new built space, ordnance detonation, and aircraft testing operations. Emissions from automobiles were calculated using data collected for the NAWS China Lake Traffic Impact Study (Navy 2006), and built space emission estimates were based on new built space, average natural gas use for built space, and USEPA emission factors (Appendix C). The final annual emissions from POVs and new built space are summarized in Table 3.8-6. Since the full implementation of the relocation would not occur until after construction activities are complete, this increase in emissions would occur annually after 2010.

Increases in emissions from ordnance detonation and aircraft testing greater than the increased emissions that would be associated with the Proposed Action have already been analyzed and approved by the MDAQMD. For example, under emissions permits for the area encompassing the Proposed Action site, the Navy is currently allowed to burn 50,000 gallons of fuel per day, detonate 3,000 pounds of energetic materials per day, and conduct 45 total testing events per week

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(MDAQMD). The annual volume of testing associated with the Proposed Action would include approximately 250 panel tests, 150 component tests, 100 aircraft structure tests, 200 aircraft simulator tests, 50 full-up operating aircraft tests, 20 rocket propellant tests, 20 jet-fuel fire/cook-off tests, 50 jet engine tests, and 20 warhead detonations with up to 23 kilograms (50 pounds) of explosives (Navy 2007). The operations associated with the Proposed Action would therefore increase emissions in absolute terms; however, these increases would easily be accommodated within the existing permit limits for the Weapons Survivability Complex set forth above (MDAQMD). Consequently, emissions associated with the Proposed Action would not be expected to significantly impact air quality.

Table 3.8-6 Estimated Final Annual Emission Increase (tons)

Activity	VOC	NO _x	SO ₂	CO	PM ₁₀
POVs	0.094	0.099	0.00	1.1	0.0016
Heating and Cooling	0.0014	0.024	0.00015	0.010	0.0020
Total Emissions (tons)*	0.095	0.12	0.00015	1.1	0.0036

* Note: Numerical estimates do not include figures for emissions associated with ordnance detonation or aircraft testing. Emissions associated with these activities are represented within the narrative discussion (see paragraph preceding Table 3.8-6).

Potential Impacts

Total annual emissions resulting from project construction in each year of activity have been estimated. Annual PM₁₀ emissions are estimated to increase by 3.54 tons in FY 2009 and 4.10 tons in FY 2010. Once construction is complete, final annual emissions are estimated to increase as shown in Table 3.8-6.

Since no calendar year would see annual emissions of PM₁₀ that exceed the 100-tons-per-year *de minimis* threshold, the project is exempt from the General Conformity regulation and does not require a Conformity Determination. Although the Proposed Action will result in different emissions in Kern County and San Bernardino County, the total estimated worst-case emissions are so low that they are treated as one area for comparison with the *de minimis* limits. Additional detail related to this analysis is found in Appendix D in the RONA.

Neither construction-related emissions nor post-construction annual emissions will result in any significant impacts to air quality.

Although construction-related air quality impacts would be minor, the following dust control and similar measures would be used to minimize air quality impacts from the Proposed Action:

- Using water for controlling dust during construction operations, grading roads, or clearing land;
- Applying water on dirt roads, materials stockpiles, and other surfaces that could create airborne dust; and
- Covering open equipment for conveying or transporting material likely to create objectionable air pollution when airborne.

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Mitigation

The Proposed Action would not result in any significant impacts to air quality; and, therefore, no mitigation would be required.

3.8.2.3 No Action Alternative

Potential Impacts

Under this alternative, no construction activities would be conducted and no operations-related emissions would be generated.

Mitigation

Implementation of the No Action Alternative would not result in any significant impacts; therefore, no mitigation measures are proposed.

3.9 Noise

Noise is generally defined as unwanted or annoying sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

Noise levels are quantified in decibels (dB). The “A-weighted” noise scale, which weighs the frequencies to which humans are sensitive, is used to describe noise in the human environment, and noise levels using A-weighted measurements are written as dBA. Average noise levels over a period of minutes or hours are usually expressed as dB L_{eq} , the equivalent noise level. The period of time may be specified— $L_{eq(3)}$ would be a three-hour average. Noise levels that are often used to evaluate noise/land use compatibility are averaged over a period of 24 hours and are normally weighted to account for greater human sensitivity to noise in the evening and nighttime hours. These 24-hour noise averages are the Community Noise Equivalent Level (CNEL) and the L_{dn} . Title 24 of the CCR requires the use of the CNEL for planning purposes. For purposes of this EA, the CNEL is given.

Noise contour lines computed for NAWS China Lake have levels ranging from 60 CNEL (quietest) to 85 CNEL (loudest) (Navy 2005). The loudest activity comes from air operations at Armitage Field (arrivals and departures) and areas where ordnance testing occurs.

With respect to existing noise conditions within the Proposed Action project area, noise is generated by periodic testing events involving, for example, small arms fire and jet engine noise (stationary in-frame and/or out-of-frame engine run-ups associated with aircraft survivability testing), and detonation of ordnance. (See discussion of Air Quality, Section 3.8, and Navy 2007.) Noise from such events can exceed 80 dBA at 15 meters (50 feet); however, personnel involved in such testing are positioned substantially farther away during actual testing, and thus are

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not subject to the high levels of noise in the immediate vicinity of the test pads. The noise profile for current operational profiles at George Range (site of the Proposed Action) is 48 CNEL. (See CLUMP EIS, Section 4.2.) This is well below the level (65 CNEL) for exterior sound levels at which mitigation is appropriate for residential, lodging, classroom, or medical land uses. Moreover, the Proposed Action project area is in a remote part of NAWS China Lake, substantially distant from areas with such land uses (e.g., 8 miles downwind from the nearest residential dwellings).

3.9.1 Applicable Plans, Policies, and Regulations

Planning in the Noise Environment, Naval Facilities Engineering Command (NAVFACENGCOM) P 970, published by the U.S. Departments of the Air Force, Army, and Navy (Navy 1978), provides compatibility criteria for various land uses. Exterior sound levels up to 65 CNEL are compatible with land uses such as residences, transient lodging, classrooms, and medical facilities. Appropriate noise mitigation is required for development in areas where the CNEL would exceed 65 dBA. Sound levels exceeding 75 CNEL are incompatible with these types of land uses.

The amount of ordnance and aircraft testing that can be conducted on a daily, weekly, and annual basis is limited by the air permits issued by the MDAQMD (MDAQMD 2006). As an example, the permit states that no more than 45 tests may be conducted facility-wide during any seven-calendar day period.

Under Section 9 of the ESA, construction noise can be considered harassment. The USFWS defines *harassment* as "an intentional or negligent act or omission which creates the likelihood of injuring federally listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to breeding, feeding, or sheltering" (USFWS No date). Examples of harassment through noise could be construction activities that could disturb federally listed or threatened species, including temporary construction activities. Disturbance of species of special concern during nesting, foraging, and breeding activities can have adverse effects. Actions that do not involve habitat degradation or removal of habitat may still affect the animal if noise will disturb their activities. Measures to avoid or minimize such potential adverse effects might typically include a requirement that construction activities be conducted outside the species' activity schedule, such as during nesting season.

3.9.2 Environmental Consequences

3.9.2.1 Approach to Analysis

Factors considered in identifying the significance of potential effects included a determination of whether a Navy activity would generate sufficient noise to adversely affect on- and off-station noise-sensitive receptors.

3.9.2.2 Proposed Action

Potential Impacts

Construction of the Proposed Action would take place during daytime hours and would result in increased ambient daytime noise levels in the vicinity of the

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project site. However, this noise would be temporary and occur only during the construction period. Construction activities for BRACON P-700V would occur at a variety of locations and on schedules between FY 2008 and FY 2010. Construction equipment noise levels vary widely as a function of the equipment used and the activity level or duty cycle (Table 3.9-1). In a typical construction project, the loudest short-term noise levels—for a few minutes during each cycle—are those of earth-moving equipment (i.e., dump trucks) under full load, which are on the order of 91 dBA at a distance of 15 meters (50 feet) from the source. Construction equipment noise is usually considered a point source, with attenuation within short distances at a rate of 6 dBA per doubling of distance (e.g., a noise level of 90 dBA at 15 meters [50 feet] will be 84 dBA at 30 meters [100 feet], 78 dBA at 60 meters [200 feet], and 72 dBA at 120 meters [400 feet]). The nature of construction projects, with equipment moving from one point to another, work breaks, and idle time, is such that long-term noise averages are less than short-term noise levels.

Table 3.9-1 Construction Equipment Noise Levels

Construction Equipment	SPL at 15 meters (50 feet) (dBA)
Jack hammer	88
Concrete joint cutter	78
Bulldozer	80
Front end loader	79
Truck	91

Source: USEPA 1971.

Key:

SPL = Sound pressure level.

In addition to use of grading and hauling equipment, activities would include the demolition and removal of structures. Demolition (if necessary) would require the use of hoe-rams, jackhammers, and similar tools. Impact equipment generally produces louder maximum noise levels than diesel engines, and the character of the noise is different.

Although the Navy does not have standards for noise impacts during construction, a noise level exceeding 80 dBA L_{eq} is often considered a threshold of significance by federal agencies such as the Federal Transportation Administration (FTA 2006), and is incorporated herein by the Navy not as a standard indicating significance *per se*, but as a screening criterion tied to discussion of potentially sensitive receptors.

Sensitive receptors expected to be exposed to some level of noise generated by these projects would include on-site construction workers and other individuals (military personnel, DoD civilians, and contractors) passing by or working in proximity to such projects at NAWS China Lake. While a number of construction-related activities associated with the Proposed Action may exceed 80 dBA at 15 meters (50 feet), these activities would occur on an intermittent basis.

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Additionally, safety barriers typically keep pedestrian and vehicle traffic at distances greater than 30 meters (100 feet) from a construction site. Thus, average sound levels during construction should be significantly lower than 80 dBA to non-construction personnel and, therefore, would have a less-than-significant impact. Individuals working on these construction projects would be equipped with appropriate protective gear and would follow appropriate occupational health and safety guidance concerning exposure to noise. Adherence to these safety protocols would result in a less-than-significant impact to these receptors.

Other potential sensitive receptors would include wildlife species that may occur in proximity to these construction projects. However, since the proposed construction sites for these BRACON actions are located in previously disturbed locations, it is highly unlikely that a construction- or operational-related noise event would adversely impact a sensitive or protected species. Thus, impacts to wildlife species resulting from the construction or operation of the Proposed Action are considered to be less than significant.

Although construction-related noise impacts would be minor, the following BMPs or similar measures should be used to reduce noise impacts from the Proposed Action:

- Require that construction occurs only during normal weekday business hours;
- Use properly maintained construction equipment mufflers;
- Notify occupants adjacent to construction areas of the construction activity and the anticipated duration of construction prior to the onset of work; and
- Require construction personnel, and particularly equipment operators, to use adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Noise generated during testing events would occur periodically and would include small arms fire, jet engine noise, and detonations from shoulder-fired and air-to-air warheads. While noise from these testing events would exceed 80 dBA at 15 meters (50 feet), due to the risk to humans, no personnel would be permitted within several hundred feet during noise generation (i.e., the testing events themselves). These testing events would be similar to weapons testing occurring elsewhere within the Aircraft Survivability Complex at other nearby sites. The annual volume of testing at the Proposed Action would be approximately 250 panel tests, 150 component tests, 100 aircraft structure tests, 200 aircraft simulator tests, 50 full-up operating aircraft tests, 20 rocket propellant tests, 20 jet-fuel fire/cook-off tests, 50 jet engine tests, and 20 warhead detonations with up to 23 kilograms (50 pounds) of explosives (Navy 2007).

Noise would be generated off site by construction vehicle traffic, including the delivery of equipment and materials, the removal of soils, and the crew commuting to and from work. The disturbances would be intermittent and would

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occur only during selected construction activities. Therefore, the impact would be less than significant.

Mitigation Measures

No significant impacts would occur and, therefore, no mitigation measures are proposed.

3.9.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, no construction activity supporting the BRACON or subsequent operations would occur; therefore, no impacts to noise would occur.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts; therefore, no mitigation measures are proposed.

3.10 Aesthetics

The viewscape is defined as the natural and manufactured features that comprise an area's aesthetic qualities. These features form the overall impression that an observer receives of an area or its landscape character. Topography, landforms, water features, vegetation, man-made features, and the degree of panoramic view available are considered characteristics of an area if they are inherent to the structure and foundation of the landscape.

3.10.1 Existing Conditions

The George Range LMU area of China Lake NAWS is currently occupied by several test and target sites, ordnance impact areas, and the Aircraft Survivability Complex. The existing visual character of the Mainsite LMU is typical of newer military facilities in good condition. George Range, due to the nature of its mission at the NAWS, does not contain landscaped areas of shrubs and grass, but has undeveloped areas of native vegetation.

The Argus Mountain range to the east and the Coso Mountains to the north act as natural buffers for safety, and screen activities occurring within the range from the general public.

3.10.2 Environmental Consequences

3.10.2.1 Approach to Analysis

The assessment of aesthetic impacts focuses on how the Proposed Action sites would appear once construction and renovations are completed. Although it is likely that the proposed construction at the BRACON sites may contrast with its surroundings during construction, this would be a short-term effect and would not constitute an adverse aesthetic impact.

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3.10.2.2 Proposed Action

Potential Impacts

Development of the George Range LMU for the Proposed Action would consist of the construction of several buildings within the LMU, as described in detail in Chapter 2, Description of the Proposed Action and Alternatives. As such, the new construction would be expected to be compatible with the overall appearance of the existing testing facilities at the George Range LMU and no adverse visual impacts would occur. New facilities would be visually compatible with surrounding buildings in the vicinity of the proposed project location.

Because the George Range LMU is already obstructed from public view, the new laboratories and research facilities would not block or obstruct existing views of scenic areas. The proposed project would not obstruct designated scenic viewsheds or public views of areas of natural beauty. The proposed size, scale, and bulk of the development is not substantially different from surrounding uses within the Aircraft Survivability Complex at George Range. Therefore, no adverse impacts on aesthetics would occur.

Mitigation Measures

No significant impacts would occur; therefore, no mitigation measures are proposed.

3.10.2.3 No Action Alternative

Potential Impacts

The No Action Alternative would result in no changes to the existing visual character of the George Range LMU. No viewsheds would be obstructed and the existing viewshed would remain in its current state. No impacts on aesthetics would occur as a result of the No Action Alternative.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts, and, therefore, no mitigation measures are proposed.

3.11 Public Services and Utilities

3.11.1 Existing Conditions

3.11.1.1 Police Protection

Police services at the NAWS are provided and managed by the China Lake Police and Physical Security Division (CLPD). The CLPD has 44 military and civilian personnel, including police officers, security specialists, and administrative staff. Division personnel operate over the entire station and are responsible for maintaining law and order, developing physical security measures, and implementing access control policies and procedures. Currently, the CLPD is able to meet the demand for police services and mandated response times at the NAWS (Navy 2005).

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3.11.1.2 Fire Protection

The NAWS manages and operates fire stations at Mainsite, Armitage Airfield, and Randsburg Wash. There are 67 fire-fighting personnel, including 60 fire fighters, two chief officers, four fire prevention inspectors, and a fire chief. Assistance is also available through a mutual-aid agreement with the Kern County Fire Department stations in Ridgecrest and Inyokern. Cooperation between the two fire-fighting agencies is excellent; however, their response times are not adequate to meet DoD requirements for first-arriving or second-alarm responders (Navy 2005).

3.11.1.3 Utilities

Major utility-based systems at the NAWS include water, wastewater treatment, flood control, electrical service, natural gas, propane, and steam distribution. Most of the systems are at the Mainsite LMU and immediately adjacent areas. Facilities located on the North and South Ranges are served by a limited, local distribution network. Typically, utilities are buried adjacent to the roads on each range (Navy 2005).

Water

NAWS owns and operates its own water supply, storage, and distribution systems, supplied from local groundwater. Agreements with the Indian Wells Valley Water District and the Inyokern Community Services District provide for additional water to be supplied to the station in emergency situations. These connections are near the NAWS geodesic water reservoirs in the Intermediate Well Field on the North Range and in Inyokern (Navy 2005).

Permits for drinking water wells are administered by Kern County. Requirements for lead and copper sampling are outlined in the federal Safe Drinking Water Act, 42 U.S.C. § 300f et seq. The Navy's Environmental and Natural Resource Program Manual (OPNAVINST 5090.1B) identifies requirements and responsibilities for protecting drinking water supplies at naval facilities.

Deep wells in the Indian Wells Valley are the source of potable water for the population center at North Range. The main water distribution system serves Mainsite and the Michelson Laboratory Complex, the propulsion and ordnance laboratories, Armitage Airfield, and the southern portion of George Range. Currently, seven production wells are on line (Navy 2005). Water for fire protection is provided by this same system. Water usage at NAWS China Lake ranges from a high in the summer of 18.31 million liters per day [mld] (4.838 million gallons per day [mgd]) to a low of 3.69 mld (0.976 mgd) in the winter. Peak demand for water in calendar year 2006 was 19.6 million mld (5.2 mgd). By comparison, in calendar year 2001 the peak demand for water at NAWS China Lake was 26.8 mld (7.1 mgd) (Halpin 2007). NAWS China Lake has produced as much as 30,000 acre-feet per year in the valley without adverse affects. The water supply system is reported to be adequate during the high-use months.

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Wastewater

The City of Ridgecrest leases and operates the on-station wastewater treatment plant (Mainsite) and maintains the plant to meet water quality standards and future loads. The plants operate under the jurisdiction of the Lahontan RWQCB. Individual septic systems are under the jurisdiction of the San Bernardino and Kern county health departments. The City of Ridgecrest's plant operates under two board orders: Waste Discharge #6-93-85 (WDID #6B150116001), and Reclamation #6-93-86 (WDID #6B159101001) (Navy 2004).

The City of Ridgecrest processes wastewater from the NAWS and the Ridgecrest area. The NAWS pays for the cost of disposal based on the measured wastewater flow from entities on station. Primary treatment consists of removing grit and primary sediment. Secondary treatment is provided by seven oxidation ponds and four evaporation/percolation ponds on approximately 88 hectares (220 acres). Most of the effluent is evaporated or percolated; however, up to 5.30 mld (1.4 mgd) of effluent is used to irrigate the NAWS China Lake golf course (Navy 2004).

Electricity

Southern California Edison provides electrical service to the NAWS from its Inyokern substation (Navy 2004). In calendar year 2006, NAWS China Lake had a peak demand of 19.4 megawatts (MW) of electricity. This was down from a peak demand of 23.8 MW in calendar year 2001. The substations have a total capacity of 57,212 kilovolt amperes (kVA), which equates to 45.7 MW. The distribution system has an even greater capacity of 111,862 kVA, which equals 89.5 MW. Thus, the current demand is at 50 percent of the electrical capacity (Halpin 2007). Electrical distribution throughout NAWS is performed by 33 on-station sub-stations, which then distribute electricity to each building via power lines. The electrical system at the NAWS is within system capacity (Navy 2004).

Natural Gas

NAVFACENGCOM Southwest manages the contracts with Pacific Gas & Electric (PG&E) to provide natural gas service to NAWS. PG&E maintains natural gas service easements for operation and maintenance of natural gas lines. Natural gas is the primary fuel used for space, process, and water heating in the more populated areas. Approximately 1,000 natural gas service connections supply the NAWS through a gas main transmission line installed in the late 1950s (Navy 2004). In calendar year 2006, NAWS China Lake used 249,883 British thermal units (Btu) of natural gas. This is down from a recent high of 346,410 Btu used in calendar year 2001 (Halpin 2007). The natural gas distribution system is reported to be in good condition, and the capacity is more than adequate to meet both existing demand and an increase in demand (Navy 2004).

Solid Waste

NAWS China Lake has an active Pollution Prevention Program to reduce the amount of solid waste generated on station. The Pollution Prevention Program is implemented by the Environmental Planning and Management Department and

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includes requirements to develop integrated waste management procedures and to document these procedures in a Solid Waste Management Plan. The Solid Waste Management Plan for NAWS China Lake is currently being updated and revised. This plan outlines procedures to minimize waste generation and landfill disposal and is written in conjunction with the following regulations:

- OPNAVINST 5090.1B, Environmental and Natural Resources Program Manual;
- The California Integrated Waste Management Act (Assembly Bill 939); and
- The California Beverage Container Recycling Act (Assembly Bill 2020).

An aggressive recycling program is an integral part of the NAWS China Lake Pollution Prevention Program. Recycling is the reuse or reclamation of previously used materials that would become wastes and require disposal if not recycled. In addition to recycling, the Pollution Prevention Program also incorporates such efforts as source reduction, waste treatment, and contained disposal; many of these actions are implemented in conjunction with the city of Ridgecrest (Navy 2004).

As of 1 January 2006, the Ridgecrest sanitary landfill had a lifespan of nine years (through October 2015). The remaining capacity of the landfill is 612,570 metric tons (675,243 short tons). The Ridgecrest sanitary landfill annually receives 57,153 metric tons (63,000 short tons) (Ferguson 2007). NAWS China Lake produced 2,277 metric tons (2,510 tons) of non-hazardous waste in calendar year 2006.

3.11.2 Environmental Consequences

3.11.2.1 Approach to Analysis

This section addresses the potential environmental consequences for police protection, fire protection, schools, water, sewer, and solid waste that would result from implementation of the Proposed Action and the No Action Alternative. Impacts and mitigation measures are discussed under each of these subheadings.

Impacts associated with utilities and public services generally are related to changes in the supply or demand of a particular resource. The supply of a utility or public service also is referred to as its capacity. As long as the capacity of a particular utility or service is higher than the demand for that resource, no impact occurs. However, if the demand exceeds the capacity or if the demand is increased beyond the resource's projected rate of increase, an impact would occur, and the significance of the impact is determined based on the degree to which the capacity is strained.

When evaluating impacts on a utility or service, consideration is given to whether or not implementing one of the alternatives would result in either:

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- A violation of federal standards or requirements that regulate a public utility system; or
- An increase in demand that exceeds the utility system's or public service's capacity and necessitates a substantial expansion, additional facilities, or increased staffing levels.

3.11.2.2 Proposed Action

Potential Impacts

Police Protection. The Proposed Action would not result in an increased demand for military police services at the BRACON site located within the George Range LMU. Regular military police patrols would continue to patrol the area. Typical military police emergency and non-emergency response types would be maintained, and a diminished level or quality of police protection services would not be expected. Therefore, impacts on police protection at NAWS China Lake are considered to be not adverse. Since the Proposed Action would not entail an increase in population in the ROI (see Section 3.6.2.2), it would not impact provision of police services in local communities.

Fire Protection. Development of the Proposed Action would result in an increased demand for fire protection at the NAWS due to the construction of additional buildings. Because the site is under exclusive federal jurisdiction, fire service would continue to be provided by the fire department at NAWS China Lake. Project design features that would ensure that fire hazards are minimized include:

- Maintenance of mandatory fire flow requirements of 32 liters per second (8 gallons per second) for one-story units and 47 liters per second (12 gallons per second) for two-story units, with a sustained flow rate at this level for 90 minutes;
- Uniform Fire Code fire flow requirements of 5,678 liters per minute (1,500 gallons per minute) for at least 2 hours; and
- Current fire response times within NAWS China Lake would be maintained.

Therefore, any impacts on provision of fire services at NAWS China Lake would be negligible. Since the Proposed Action would not entail an increase in population in the ROI (see Section 3.6.2.2), it would not impact provision of fire services in local communities.

Schools. Since the Proposed Action would not entail an increase in population in the ROI, it would not impact provision of school services either at NAWS China Lake or in local communities.

Utilities.

Water Supply. The Proposed Action would result in a slight temporary increase in demand for potable water during construction, and a slight permanent increase in demand for potable water at NAWS China Lake, due to the projected hiring of an

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estimated 17 additional workers for post-construction operations associated with the Proposed Action. However, such an increase in demand is expected to be relatively minimal, and would not result in increased demand off base, since it is anticipated that any additional workers would be hired from the existing population in the vicinity of NAWS China Lake. The low-level increases expected on base can easily be accommodated within the station's existing water production and wastewater recycling capacity (see Section 3.11.1.3, above). No significant impact to water supplies would occur.

Sewer. The Proposed Action would result in slightly increased generation of sewage at NAWS China Lake, for the reasons set forth above with respect to water supply. However, the nearest sewer line is approximately 10 kilometers (6 miles) away and connection is not an economically feasible option. Instead, the WSC would require installation of a septic tank system, consistent with other facilities in the area of the WSC. The Navy would install septic tanks and leach fields for normal sanitary waste (one at the control building and one at the Fabrication facility). A holding tank for treated effluent from the oil/water separation facility would be used for any water collected from the test pad. This water would then be trucked and deposited into the City of Ridgecrest's sewer treatment system. No significant impacts to sewer service would occur.

Electricity. The Proposed Action would result in a slight increase in demand for electricity at NAWS China Lake for the reasons set forth above with respect to water supply. Given that electrical demand is only at 50 percent of its capacity, the existing electrical system is more than capable of meeting the increased demand for electricity according to preliminary utility studies conducted by the Navy (Navy 2005). No significant impacts on electrical service would occur. No mitigation is required.

Natural Gas. The Proposed Action would not result in an increased demand for natural gas since natural gas would not be required for the Proposed Action. No impacts to the existing natural gas service would occur. No mitigation would be required.

Solid Waste. The Proposed Action would result in an increase in the production of solid waste for the reasons set forth above with respect to water supply. However, such an increase in demand is expected to be negligible, and would not result in increased demand off base, since it is anticipated that any additional workers would be hired from the existing population in the vicinity of NAWS China Lake. The low-level increases expected on base can easily be accommodated within existing landfill capacity (see Section 3.11.1.3, above). No significant impacts would occur with respect to solid waste.

In total, the Proposed Action is expected to generate up to 5.6 metric tons (6.17 short tons) of solid waste per year once employees have been hired from the local population (apart from any additional solid waste generated during preliminary construction and renovation work, which the Navy believes will be minimal relative to the annual figures discussed above). As of 1 January 2006 the

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Ridgecrest sanitary landfill had a lifespan of nine years (to October 2015). The remaining capacity of the landfill is 612,570 metric tons (675,243 short tons). The Ridgecrest sanitary landfill annually receives 57,152.6 metric tons (63,000 short tons) (Ferguson 2007). The increased amount of waste generated on station by the Proposed Action in the form of post-construction operations would be an increase of less than 1 percent of the current amount the landfill receives annually and would not constitute a significant impact.

Off-station solid waste generation would increase due to the general population increase in the NAWS China Lake area as a result of BRAC realignment. WSC employees would generate additional solid waste off station as well as on station, and family members of introduced employees would generate solid waste as well. Assuming that each of the maximum 17 employees is accompanied by a spouse and two children, each such household would be expected to generate 5.6 kilograms (12.23 pounds) of solid waste per day (City of Los Angeles 2007), for a total estimated amount of 2.02 metric tons (2.23 short tons) per year. This amount, when combined with the estimated increase in on-station solid waste, would represent a much less than 1 percent increase (.003%) in the amount of solid waste currently received at the Ridgecrest Landfill and thus, would not represent a significant impact. The Navy further notes that increases in on- and off-station solid waste associated with the arrival of realigned employees would not begin prior to 2007 and would phase in over time, so initial increases would likely represent a fraction of the estimated increase discussed herein, with the incremental growth up to the total estimated increase.

Mitigation Measures

No significant impacts would occur, and, therefore, no mitigation measures are proposed.

3.11.2.3 No Action Alternative

Potential Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented. The utilities and public services at NAWS China Lake would remain at their current levels. No increases in demands on utilities and services would result.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts, and, therefore, no mitigation measures are proposed.

3.12 Safety and Environmental Health

Public safety issues at NAWS include hazards inherent in munitions transportation, testing, and development. It is the Navy's policy to observe every possible precaution in the planning and execution of all operations to prevent injury to people or damage to property. This section also addresses issues of public proximity and access, electromagnetic radiation (EMR), and potential ordnance hazards.

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NAWS China Lake currently has a variety of range safety procedures in place to ensure human health and safety, both from weapons testing and research, as well as airfield flight operations. All military personnel and visitors register at the NAWS Security pass desk for entry authorization. Airspace above these installations is restricted as well. Portions of these areas have been identified as controlled access areas due to operations and the presence of natural and cultural resources. These areas include not only restricted danger areas but also security zones where access is prohibited based on classified operations that may be occurring.

3.12.1 Existing Conditions

3.12.1.1 Explosive Safety Quantity Distance Arcs

ESQD arcs are safety buffer zones established by the DoD for storage or handling of various quantities and types of ammunition and explosives. Minimum safety distances are prescribed for separating explosives from inhabited structures, public roads, and other explosives. In general, these distances are proportional to the quantity of ammunition at each location. Procedures to safely manage ordnance debris and unexploded ordnance on ranges are implemented in accordance to DoD Directive 4715.11, "Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges." Activities at the NAWS require a wide variety and large quantity of ordnance. The NAWS has more than 100 magazines and other explosives storage facilities located throughout the station.

3.12.1.2 Munitions Storage and Transportation

As previously stated, activities at the NAWS require a wide variety and large quantity of ordnance. The storage facilities are located in remote areas, generally in conjunction within the presence of ESQD arcs (see Section 3.12.1.1, Explosive Safety Quantity Distance Arcs).

3.12.1.3 Hazardous Materials

Hazardous materials are chemical substances that pose a substantial hazard to human health or the environment. In general, these materials pose hazards because of their quantity, concentration, or physical, chemical, or infectious characteristics. A hazardous waste may be a solid, liquid, semi-solid, or contained gaseous material that, alone or in combination, may cause or contribute to an increase in mortality or an increase in illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

3.12.1.4 Weapons Range Access

Several weapons-testing ranges exist in George Range close to the project area, the nearest being the Aircraft Survivability Complex. Access to the NAWS ranges is controlled by Naval Air Warfare Center Weapons Division Instruction (NAWCWDINST) 5520.2A, which applies to all personnel entering the ranges. Safety procedures for range flight and ground operations are addressed in two primary directives, the Naval Air Warfare Center Weapons Division (NAWCWD) Range Safety Manual (RSM) and Naval Air Systems Command Instruction

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(NAVAIRINST) 3960.4A. The NAVAIRINST provides policies and procedures for the conduct of flight, ground, and laboratory testing of air vehicles, weapons, and installed systems. The RSM establishes safety guidelines and procedures for all aspects of range test and training operations conducted at the NAWS China Lake ranges (Navy 2004).

Electromagnetic Radiation

EMR is emitted by electrical circuits carrying rapidly changing signals as a byproduct of normal operation and causes unwanted signals (interference or noise) to be induced in other circuits. This interrupts, obstructs, or otherwise degrades or limits the effective performance of other affected circuits. It can be induced intentionally, as in some forms of electronic warfare, or unintentionally.

Radar and other high-energy electromagnetic emissions from electronic support systems can constitute a hazard to personnel exposed to radiation. The operation of these systems is managed under the regulations of the Navy Hazards of Electromagnetic Radiation to Personnel (HERP) program. HERP is defined in terms of power density or watts of power flowing through a given area. For a HERP condition to exist, personnel would have to be close to an emitting antenna directing the power into a concentrated area. Therefore, HERP zones are not considered as construction exclusion zones for habitable facilities, but rather as zones where a heightened awareness of the potential hazard should exist. The HERP zone distances are designated on a case-by-case basis. Ordnance and fuel are also susceptible to the hazards of electromagnetic radiation. These effects are managed under Navy regulations for Hazards of Electromagnetic Radiation to Ordnance (HERO) and Hazards of Electromagnetic Radiation to Fuel (HERF). A HERO-susceptible ordnance system is any ordnance system that contains electro-explosive devices that can be adversely affected by radio frequency energy, so the safety or reliability of the system is jeopardized when the system is employed. Distances for HERF zones are designated on a case-by-case basis (Navy 2004).

Flight Operations

Safety considerations for airfield flight operations are addressed in the station's Air Installation Compatible Use Zone (AICUZ) Program. The AICUZ Program is a planning tool designed to protect the airfield's operational capability and ensure safe and compatible land use development in the areas surrounding the airfield. Safety considerations for range flight and ground activities are addressed by two primary directives, the NAWCWD RSM and NAVAIRINST 3960.4A. NAVAIRINST 3960.4A provides policies and procedures for the conduct of flight, ground, and laboratory testing of air vehicles, weapons, and installed systems. The RSM establishes the safety planning and management practices applied to test and training operations conducted at the NAWS. The RSM implements the guidance provided in NAVAIRINST 3960.4A and defines procedures for conducting range test and training operations. Such operations involve the use of live and inert ordnance, lasers, and radar, and may include the treatment of accidents and "dudged" or damaged ordnance (Navy 2004).

3. Affected Environment and Environmental Consequences

3.12.2 Environmental Consequences

3.12.2.1 Approach to Analysis

Factors considered in determining whether an alternative would have a significant impact on public health and safety include the extent or degree to which an action would significantly increase the risk to the health and safety of military personnel, the public, and property. The analysis of potential public health and safety impacts considers whether implementing an alternative would:

- Significantly increase flight safety hazards;
- Significantly increase the health and safety risks to station and off-station personnel or property; or
- Significantly increase safety hazards associated with explosives and ordnance use, and electromagnetic systems use.

Actions that significantly increase the hazard potential to personnel or property would be considered to have a significant impact. Actions that reduce the hazard potential to personnel or property would have a beneficial impact.

3.12.2.2 Proposed Action

Potential Impacts

The BRACON site on the NAWS is located on a military installation surrounded by compatible land uses. They are not open to the general public, which minimizes the potential for any members of the public to encounter health and safety hazards that would exist during construction activities. Nonetheless, operational safety procedures and precautions would be implemented to prevent potential injury such as exposure to hazardous materials or operations by workers and the public. Security fencing would be erected around the construction areas and appropriate signs would be posted to prevent unauthorized personnel from accessing the site. Operations would be contained within the restricted construction zone and would not conflict with safe public use of the surrounding areas.

Hazardous Waste

Three 1960s-era trailer-type structures, located at the proposed P-700V site, would be removed to accommodate the Proposed Action. When the three structures are removed, disposal of construction materials containing LBP and non-friable asbestos (if present) would be required. The Navy anticipates that any contractors involved in work on the Proposed Action would likely remove such trailers from the project area intact rather than demolishing them on site, effectively eliminating the potential for release to the atmosphere of any ACM or LBP associated with such trailers. If a decision were to be made to demolish the trailers on site rather than remove them, contractors performing the demolition would be required to comply with applicable federal, state, or local requirements for management and disposal of ACM and/or LBP. Therefore, it is assumed that any emissions associated with either ACM or LBP as a result of demolition would be minimized.

3. Affected Environment and Environmental Consequences

Due to the age of the structures that would be removed or demolished, all have the potential to have some type of hazardous waste present within them. The extent of any potential soil contamination caused by projected removal or demolition, and the nature and extent of any response action that might subsequently be required, would be investigated through NAWS China Lake's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program. The alternative analysis process in the CERCLA program is functionally equivalent to the NEPA process, so a separate analysis of environmental impacts due to any soil remediation would not be necessary.

Accordingly, the Proposed Action does not involve the potential for release of hazardous materials from existing structures in a manner or to an extent that could significantly impact the environment. With respect to hazardous materials associated with post-construction operations (e.g., spent rounds, fuel, fire-fighting foam), with the exception of spent rounds, only small amounts of any such materials would potentially migrate from the test pad into soil. Spent rounds would be gathered out to a 150-yard radius in accordance with standard range practices, and other materials would not be expected to present a risk of significant impacts for the reasons set forth in the discussions of Surface Water Quality and Groundwater Quality (see Section 3.2.2). Therefore, operations from the Proposed Action would not present a risk of significant impacts through the release of hazardous materials to the environment.

ESQD Arcs. At the NAWS, the Proposed Action would result in the introduction of a new 381-meter (1,250-foot) ESQD safety arc within the Aircraft Survivability Complex, located in the George Range LMU. Several other test pads, with 381-meter (1,250-foot) ESQD arcs are located near the proposed location of P-700V. Operations associated with the Proposed Action could potentially involve risk to public safety, given the nature of the testing and the use of weapons and explosives, in the sense that individuals working in the vicinity of the testing could theoretically be harmed. However, testing associated with the Proposed Action would be consistent with current and historical testing and research in the Proposed Action project area. Moreover, utilization of ESQD arcs would effectively preclude any risk of actual significant harm to any workers and observers, or other harm to public safety. Therefore, there would not be an adverse impact to safety or public health from the creation of an additional ESQD arc in the area.

Munitions Storage. Ordnance used on the NAWS is stored in magazines and storage lockers at several facilities within the George Range LMU, and specifically within the Aircraft Survivability Complex. Additionally, operations associated with BRACON P-700V would involve regular short-term, on-site storage and use of munitions. Munitions storage would be in approved design storage containers, similar to existing containers at NAWS China Lake, and would be sited to minimize health and safety risks to the public. Munitions storage in support of the Proposed Action would be consistent with existing uses occurring at the Aircraft Survivability Complex. No impacts to public health and safety would occur.

3. Affected Environment and Environmental Consequences

Weapons Range Access. Access to any of the weapons ranges at the NAWS would not affect any of the project sites and, thus, there would be no adverse impact on safety or public health from access to weapons ranges. When nearby test pads are in use, access to P-700V's concrete test pad would be restricted due to the ESQD safety arcs discussed above. A 2,011-meter (6,600-foot) dirt bypass road would be constructed as part of the proposed project to allow access to the test pad during these events.

EMR. The Proposed Action would not be located within any NAWS China Lake-designated HERP zones (Navy 2004) and, thus, there would be no conflicts with the mission objectives of the Proposed Action. Consequently, no adverse impact to public health and safety would occur from EMR.

Flight Operations. BRACON P-700V would not require a reduction or increase in flight operations at NAWS China Lake. There would be no impact on flight operations at Armitage Airfield from the Proposed Action and, thus, there would be no impact on public health and safety from flight operations.

Mitigation Measures

No significant impacts would occur and, therefore, no mitigation measures are proposed.

3.12.2.3 No Action Alternative

Impacts

Under the No Action Alternative, the BRAC 2005 recommendations would not be implemented. Thus, there would be no impact to public health and safety.

Mitigation Measures

Implementation of the No Action Alternative would not result in any significant impacts; therefore, no mitigation measures are proposed.

4

Cumulative Impacts

The CEQ regulations for implementing procedural provisions of NEPA (40 CFR Parts 1500-1508) define “cumulative impact” as an *impact* on the environment from incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from “individually minor but collectively significant actions taking place over a period of time” (Section 1508.7).

Regulations require an EA to address significant cumulative impacts. The discussion of cumulative impacts should reflect their potential severity and likelihood of occurrence, but it need not provide the same level of detail as discussions of environmental effects attributable solely to the project. Cumulative impacts should be addressed using standards of practicality and reasonableness. For the sake of this analysis, the ROI for the Proposed Action is defined as the George Range LMU. In addition, the surrounding Ridgecrest area is considered for socioeconomic impacts, and the Kern County APCD and the MDAQMD are considered for air quality.

Section 4.1 lists relevant projects with respect to potential cumulative impacts. Section 4.2 discusses any cumulative environmental effects associated with the Proposed Action and the projects discussed in Section 4.1.

4.1 Ongoing and Reasonably Foreseeable Actions

In order to assess potential cumulative impacts, NAWS China Lake staff assisted in identifying past, present, and reasonably foreseeable actions within, or in potentially significant proximity to, the Proposed Action area. Additionally, the EIS for the CLUMP (Navy 2004) was used to assist in determining what, if any, projects or planning efforts might have the potential to contribute to cumulative impacts in conjunction with the Proposed Action, along with information concerning current or potential projects not referenced in the EIS.

4. Cumulative Impacts

**Table 4-1 Current and Potential Construction Projects at
NAWS China Lake**

MILCON	Project Name	Status
P-121	Advanced Sensors Integrated Lab	CATEX; Under Construction
P-359	Air Traffic Control Tower	CATEX; Unfunded
P-006	Rotary/Fixed-Wing Aprons	CATEX; Unfunded
RM034-05	Repair Airfield Lighting Power Distribution System	NEPA pending (likely CATEX); Funded (award likely early 2008)
P-011	Construct New Auto Hobby Shop	CATEX; Unfunded
NF11-06	Construct TSPIL Lab	CATEX; Under Construction
NF20-06	Construct Weapons Model	CATEX; Under Construction
RM12-06	Reconstruct Runway 21 Concrete Approach, Taxiway, and HP Check Pad	CATEX; Unfunded
RM10-06	Repair Hanger and Roof, Wing 8	CATEX; Contract awarded
RM009-07	Repair Portion of Wing 8/Construct Mezzanine	CATEX; Funded
RM29-06	Construct Carrier Deck Av. Fire Test Facility, Bldg. 31164	CATEX; Funded
NF31-06	Construct Additions to Building 02669	NEPA pending (likely CATEX); Funded
NF032-06	Construct Proximity Fuze Branch Building	NEPA pending (likely CATEX); Funded
NF001-07	Construct EWIL facility	NEPA pending (likely CATEX); Funded

Source: O'Gara, September 2006.

Key:

CATEX = Categorical exclusion.

TSPIL = Threat Signal Processing in-the-Loop.

EWIL = Electronic Warfare Integration Laboratory.

On-station cumulative projects identified in the EIS include laboratory and support facility construction, runway repairs through removal and replacement, facilities demolition, repair and upgrade of housing facilities, the Electronic Combat Range (ECR) threat dispersion facility, and a production water well repair by replacement. Of these six on-station MILCON projects discussed in the EIS (see Section 5.1.1 of the EIS), two have since been completed (P-407, Facility Upgrades at Weapons Survivability Lab and Junction Ranch; and P-455, Construction of Propellants and Explosives Laboratory); two were never implemented and have since been cancelled (P-515, Construction of Base Operating Support Facility; and P-521, Runway, Taxiway, and Parking Apron Repair); and two have never received funding and remain in a potentially pending

4. Cumulative Impacts

status (P-259, Construction of Bachelor Quarters; and P-513, Construction of Electronic Combat Range Threat Dispersion Facility). Two other non-MILCON projects discussed in the EIS (replacing a water well and sinking two deep test wells to test geothermal resource potential) were listed in the EIS as having been completed.

Off-station potentially cumulative projects and/or potentially relevant planning efforts identified in the EIS include the West Mojave Coordinated Management Plan, the Northern and Eastern Mojave Planning Efforts, the Timbisha Shoshone Land Study, highway projects, an expansion of the National Training Center Fort Irwin, the Western Mojave Land Tenure Adjustment Project, and the Expansion of the Ridgecrest Wastewater Treatment Plant.

With respect to projects not listed in the EIS, potentially the most significant and reasonably foreseeable on-station project is the realignment of assets and functions to NAWS China Lake from Naval Weapons Station (NWS) Seal Beach; Naval Base Ventura County (Point Mugu and Port Hueneme); Naval Surface Warfare Center (NSWC) Crane, NSWC Dahlgren, and NSWC Indian Head; and Naval Air Station (NAS) Patuxent River (the Naval Integrated W&ARD&AT&E Project). The primary features of the W&ARD&AT&E project are: the construction of a Weapons and Armaments Technical Center; a Weapons and Armament Facility; and a new aircraft hangar, new warehouses, and special test facilities. Construction of these facilities would, like the Proposed Action analyzed in this EA, be a project undertaken pursuant to a BRAC-mandated realignment of functions from other military installations to NAWS China Lake. Additional on-station Navy projects with the potential to directly or indirectly interact with the Proposed Action are listed in Table 4-1. Where applicable, environmental analyses of the above-referenced projects (EIS-listed projects, projects listed in Table 4-1, etc.) have been (or would be) conducted separately, with results of these analyses incorporated into documents prepared specifically for those actions.

4.2 Environmental Analysis of Cumulative Effects

NEPA only requires a discussion of cumulative impacts with significant potential. Implementation of these projects would not conflict with the implementation of the Proposed Action in terms of construction and operation. Potential impacts associated with these projects would be (or have been) addressed on a project-specific basis via the preparation of NEPA documentation.

No significant impacts are associated with the Proposed Action discussed in this EA. The Proposed Action either would have no impact or any impact would be essentially negligible, with respect to: geology, soils, and seismicity; biological resources; hydrology and water quality; land use; socioeconomics; traffic; air quality; noise; aesthetics; public services and utilities; or safety and environmental health. Therefore, where these categories are concerned, the Proposed Action would not have the potential to contribute to any cumulative significant impacts in conjunction with other actions.

With respect to cultural resources and air quality, the Proposed Action would be expected to have some level of impact; however, these impacts would not in themselves be significant. These impacts would be reduced to near-negligible or negligible levels by adoption of impact avoidance and minimization measures.

The Proposed Action would not generate potentially significant impacts on any resource areas. However, given that there are some impacts, the resource areas in which the Proposed Action could potentially generate certain low-level impacts (cultural resources and air quality) are evaluated in regard to other projects in the area that could result in cumulative effects.

4.2.1 Projects/Planning Efforts Discussed in the EIS

The Moderate Expansion Alternative reflected the broadest operational increases in the EIS. In examining potential cumulative impacts in the context of the Moderate Expansion Alternative, it was determined that the projects set forth in the EIS created no cumulative impacts with respect to cultural resources and air quality (the only resource areas to which the Proposed Action presents any appreciable impacts). In incorporating the EIS into this EA, the Navy has considered these same projects in the context of the Proposed Action, and has concluded that they would not have the potential to create cumulative impacts in conjunction with the Proposed Action.

The planning efforts set forth in the EIS focus primarily on improving resources management, and do not include construction, ground-disturbing activities, or sale or transfer of land. Other projects identified in the EIS either would not affect cultural resources (e.g., repair of runways and other airfield utilities); or, in the event potential impacts for any such project had not been defined as of publication of the EIS, would be subject to compliance with NHPA Section 106 and other applicable requirements prior to any ground-disturbing activities, including SHPO consultation. For this second category of projects, compliance with applicable requirements would reduce any impacts on cultural resources to a less-than-significant level. Therefore, the EIS determined that the Moderate Expansion Alternative, in combination with the other projects considered, would not result in cumulative impacts to cultural resources. Given that the Proposed Action only implicated potential impacts to archaeological resources, and since any such impacts have been determined to be negligible after analysis by the Navy and consultation with the SHPO and potentially interested Native American tribes, the Proposed Action would not have the potential to result in significant cumulative impacts on cultural resources when viewed in combination with the projects and planning efforts set forth in the CLUMP EIS.

The planning efforts set forth in the EIS would not generate readily identifiable air quality impacts, and the other projects would be sufficiently localized and/or would affect areas sufficiently remote from NAWS China Lake that would not present a risk of cumulative significant air impacts in conjunction with the low-level impacts associated with the Proposed Action. As discussed in Chapter 3 of the EA, air quality impacts from construction would occur over a two-year period. Although regional air pollution emissions are expected to increase as a result of

4. Cumulative Impacts

the Proposed Action, and would increase to a somewhat greater extent when the Proposed Action is viewed in conjunction with the other projects potentially contributing to cumulative impacts, such increases are not expected to have cumulative effects of such a magnitude or frequency as to lead to violations of federal and/or state air quality standards in the NAWS ROI, or even to approach such levels of impact. Thus, there would be no significant cumulative air quality impacts as a result of the projects in the ROI in combination with the air quality issues discussed in Chapter 3.

The Naval Integrated W&ARD&AT&E Project

With respect to the W&ARD&AT&E project, the Navy has initiated and is currently conducting a separate NEPA analysis (EA level) of potential environmental impacts associated with this BRAC action. While not finalized, this ongoing analysis indicates that air impacts associated with the W&ARD&AT&E project would, as with the Proposed Action, be negligible. The only air pollutant potentially subject to a Conformity Determination would be PM₁₀, and PM₁₀ emissions from the W&ARD&AT&E would be below *de minimis* levels for purposes of Conformity Review, even in conjunction with emissions associated with the Proposed Action.

Additionally, the W&ARD&AT&E project would not add to any cultural resources-related impacts associated with the Proposed Action because the Proposed Action's cultural resources impacts are limited to archaeological sites, whereas the W&ARD&AT&E project had no impacts on archaeological resources. The W&ARD&AT&E project did implicate two archaeological sites of potential interest; however, neither of these sites had significant cultural context or the potential to contribute meaningfully to local or regional cultural history. The Navy found that neither site was eligible for listing on the NRHP and the SHPO concurred.

The W&ARD&AT&E project would be located at a considerable distance from any Proposed Action component (the nearest component would be approximately 5 kilometers [3 miles] from the Proposed Action site, with the next closest component of the W&ARD&AT&E project approximately 10 kilometers [6 miles] away); therefore, the W&ARD&AT&E project would not have the potential to create cumulatively significant impacts in conjunction with the Proposed Action with respect to geology, soils, or seismicity; hydrology and water quality; cultural resources; land use; traffic and circulation; noise; aesthetics; or public health and safety.

Potential biological resource issues presented by the W&ARD&AT&E project (desert tortoise, burrowing owl, Le Conte's thrasher (*Toxostoma lecontei*), and Mojave ground squirrel (*Spermophilus mohavensis*) would not be factors at the Proposed Action site, as none of the species in question are known to occur in the vicinity of the Proposed Action project site. The USFWS BO for NAWS China Lake concerning the desert tortoise would be followed at the site to provide mitigation in case desert tortoises are found on a portion of the W&ARD&AT&E project site.

4. Cumulative Impacts

The W&ARD&AT&E project would result in a maximum potential influx of approximately 2,100 new civilian and military personnel; however, the Navy anticipates that the W&ARD&AT&E project would not significantly impact socioeconomics or public services and utilities, and the Proposed Action does not have the potential either to create or add to any significant impacts with respect to these resources areas.

Consequently, the Navy believes that the W&ARD&AT&E project would not present any risk of cumulatively significant impacts in conjunction with the Proposed Action.

4.2.2 Other Current or Potential On-Station Projects

Of the projects listed in Table 4-1, only P-121, NF11-06, and NF20-06 are currently under construction. These projects qualified as Categorical Exclusions (CATEX) under the USEPA and Navy's NEPA regulations and, thus, were exempt from EA- or EIS-level NEPA analysis. Inherent in the concept of a CATEX is the assessment that an action will not adversely affect public health or safety; present unique or unknown risks to the human environment; threaten a violation of applicable federal, state, or local environmental laws; or have an adverse effect on federally listed threatened or endangered species, on wetlands, or on resources eligible for listing on the NRHP (32 C.F.R. 775.6(e)).

RM034-05 is considered likely to begin construction sometime next year, in anticipation of its projected contract award date. NEPA analysis has not been concluded for RM034-05; however, preliminary screening has determined that the action is unlikely to require an EA and is, therefore, likely to qualify as a CATEX. With respect to the other projects listed in Table 4-1, some projects have been funded at this time while others have not; however, apart from P-121, NF11-06, NF20-06, RM34-05, and NF10-06, the status of all projects listed in Table 4-1 remains speculative, as it is uncertain whether any of these projects will ultimately be undertaken. For certain unfunded projects, the Navy has concluded NEPA analysis in anticipation of possible funding (e.g., P-359 and P-006), and in each of these instances the proposed project has qualified as a CATEX.

The Navy has yet to initiate and/or complete a NEPA analysis for certain funded projects (as well as for MILCON P-513, discussed in the EIS but neither implemented nor funded to date), indicating that information concerning potential/foreseeable impacts of such projects is limited at this time; however, as with RM034-05, preliminary NEPA screening indicates that all listed projects for which NEPA analysis has not yet been completed will likely qualify as CATEXs. Consequently, no current or potential projects on station present a risk of cumulative significant impacts in conjunction with the Proposed Action.

5

Possible Conflicts with Other Existing Plans and Policies

There are several local land use plans, policies, and controls that address and guide land use for the Proposed Action at NAWS China Lake. These documents include: OPNAVINST 5090.1B; the 2005 CLUMP, INRMP, and draft Integrated Cultural Resources Management Plan; and the Draft AICUZ Program.

As stated in Section 1, the Proposed Action, consisting of BRACON P-700V, and the No Action Alternative are analyzed in this EA. No potential conflicts are anticipated between the Proposed Action site and any of the base plans, policies, and controls that address and guide uses within NAWS China Lake. As the BRACON site will continue to remain under federal ownership, the Proposed Action is not subject to county- or city-level plans or policies. The Proposed Action sites are located on Navy property within the County of San Bernardino. No off-base land uses would be affected by implementation of the Proposed Action.

As discussed in Chapter 1, development of the site for the Proposed Action would fulfill the need to accommodate the BRAC Commission's recommendations for the realignment of assets and functions from Wright-Patterson AFB, Ohio LFT&E. The commitment of the Proposed Action sites to accommodate additional personnel and equipment does not pose any conflict with federal land uses.

5. Possible Conflicts with Other Existing Plans and Policies

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Other NEPA Sections

6.1 Relationship Between Local Short-Term Uses and Long-Term Productivity

Short-term environmental impacts associated with the Proposed Action would be minimal because construction of the new facilities would involve only minor topographic modification. Short-term impacts would include dust generation, air emissions from construction equipment, and increased noise levels; however, these impacts would be temporary and insignificant.

Long-term impacts of the Proposed Action would include increased local traffic volumes and degradation of local air quality. These long-term impacts are also below a level of significance. No adverse short-term or long-term impacts would occur to biological or cultural resources.

Implementation of the Proposed Action would enhance the productivity of the DoD by realigning assets and functions from Wright-Patterson AFB and incorporating them into one integrated W&ARD&AT&E center in one geographic location.

6.2 Irreversible or Irrecoverable Commitments of Resources

Implementation of the Proposed Action would be consistent with the current uses of NAWS China Lake, namely weapons research and development and training. The BRACON site is located in an area currently containing similar uses, namely weapons testing ranges and research facilities.

Short-term, irreversible commitments of labor, capital, and fossil fuels would be required for construction. Irrecoverable commitments of resources would result from provision of water, sewer, gas, and solid waste service to the sites. Use of new construction materials represents an irreversible commitment of resources, although some may be recyclable in the long-term. These commitments of resources are not considered unusual or unexpected, and are considered necessary to achieve the benefits that would result from implementation of the Proposed Action.

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Desert Tortoise Biological Opinion

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Ventura Field Office
2493 Portola Road, Suite B
Ventura, California 93003

June 27, 1995

Carolyn A. Shepherd
Head, Environmental Project Office
Public Works Department
Department of the Navy
China Lake Naval Weapons Station
China Lake, California 93555-6001

Subject: Reinitiation of Formal Consultation for the Desert Tortoise Habitat Management Plan for the Naval Air Weapons Station, China Lake, California (5090 Ser 823EOOD C8305) (1-8-95-F-30R)

Dear Ms. Shepherd:

By letter, dated March 27, 1995, and received by us on March 30, 1995, you requested reinitiation of formal consultation with the Fish and Wildlife Service (Service), pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act), regarding the referenced Management Plan. Your request was made specifically to evaluate the impacts that the Naval Air Weapons Station's (Station) Desert Tortoise Habitat Management Plan (Management Plan) may have on critical habitat designated for the desert tortoise (*Gopherus agassizii*), a federally listed threatened species. This biological opinion supersedes the non-jeopardy biological opinion on the Management Plan issued on December 3, 1992 (Service file no. 1-6-92-F-60).

This biological opinion was prepared using information: contained in your original request for consultation to the Service in 1992; obtained during informal consultation between our staffs; and in our files.

Biological Opinion

It is the opinion of the Service that the proposed action is not likely to jeopardize the continued existence of the desert tortoise or adversely modify critical habitat for the desert tortoise.

Description of the Proposed Action

The Navy proposes to continue implementation of the Station's Management Plan and administration of the Desert Tortoise Management Area established following issuance of the Service's 1992 non-jeopardy opinion on the Management Plan.

The Station occupies 1,095,680 acres in two discrete units within Kern, Inyo, and San Bernardino Counties (Kiva et al. 1991) (see Service, 1992 for maps). The north ranges are located immediately north of the residential areas of China Lake and the City of Ridgecrest. The southern ranges are approximately 20 miles southeast of China Lake.

The mission of the Station is to provide, operate, and maintain base support services for both tenant and transient organizations at China Lake, California (Navy 1992). The Station is a primary site for the Navy to research, develop, test, and evaluate missile weapons systems and electronic warfare simulation (Kiva et al. 1991). Other activities include landing of planes at back-country locations, training of paratroops, and bombing of stationary targets in the Superior Valley portion of the southern ranges. The high visibility resulting from clean air, open air space free of civilian and commercial aircraft, and seclusion make the Station a suitable site for these activities.

Some activities, such as bombing at the Superior Valley range, are located at the Station on a permanent basis and occur regularly. However, the Station also hosts many Department of Defense units and private contractors from around the nation that require the temporary use of training or testing areas with the physical attributes found at China Lake. Such programs may occur for only a short period of time with little prior notice given to the Station.

In the latter case, the Station's Environmental Project Office is required to provide guidance and support in ensuring that environmental constraints are addressed during the temporary activities. In cases where the desert tortoise could be adversely affected, the short turn-around time required by the transient users conflicts with the longer time frames needed by the Service to process section 7 consultations. As a result, Environmental Project Office and Service staff developed a programmatic approach to project review that would be consistent with section 7 guidelines and at the same time could serve as a management plan to benefit desert tortoises at the Station. }

The Station's Management Plan provides guidelines for project review, standard mitigation measures, and designation of approximately 200,000 acres of the southern ranges as a management area for desert tortoises. For a detailed account of the measures proposed by the Navy see the Service's 1992 biological opinion.

Effects of the Proposed Project on the Listed Species

Species Account

The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. It also occurs in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the creosote, shadscale, and Joshua tree series of Mojave

desertscrub, and the lower Colorado River Valley subdivision of Sonoran desertscrub. Optimal habitat 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 7,300 feet, but the most favorable habitat occurs at elevations of about 1,000 to 3,000 feet (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).

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered. In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened. The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule, published February 8, 1994. A final recovery plan for the desert tortoise was published by the Service in June, 1994.

The recovery plan is the basis and key strategy for recovery and delisting of the desert tortoise (Service 1994). The plan divides the range of the desert tortoise into six distinct population segments or recovery units and recommends establishment of 14 desert wildlife management areas throughout the recovery units. Within each desert wildlife management area, the recovery plan recommends implementation of reserve level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. As part of the actions needed to accomplish recovery, land management within all desert wildlife management areas should restrict human activities that negatively affect desert tortoises (Service 1994).

A portion of the Station's Desert Tortoise Management Area lies within the Superior-Cronese Critical Habitat Unit (CHU), one of four CHUs designated in the Western Mojave Recovery Unit. CHUs and recovery units as defined in the final rule designating critical habitat for the desert tortoise were patterned after the desert wildlife management area and recovery unit concepts in the recovery plan. The Western Mojave Recovery Unit consists of approximately 4,753,000 acres, located entirely in California. Vegetation within this recovery unit is characterized by creosote bush scrub, big galleta-scrub steppe, desert needlegrass scrub-steppe, and blackbrush scrub (in higher elevations). Topography is varied, with flats, valleys, alluvial fans, washes, and rocky slopes. The Superior-Cronese CHU, covers approximately 766,900 acres in San Bernardino County, California.

Regulations found at 50 CFR § 402.02 define destruction or adverse modification of critical habitat as a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features (referred to as the primary constituent elements [50 CFR § 424.12]) that were the basis for determining the habitat to be critical. In the final rule designating desert tortoise critical habitat, the Service determined that desert tortoise habitat consists of the following primary constituent elements: (1) sufficient space to support viable populations within each of the six Recovery Units and provide for movements, dispersal, and gene flow; (2) sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species; (3) suitable substrates for burrowing, nesting, and overwintering; (4) burrows, caliche caves, and other sheltersites; (5) sufficient vegetation for shelter from temperature extremes and predators; and (6) habitat protected from disturbance and human-caused mortality (59 FR 5820).

Joshua tree woodland, creosote bush scrub, and saltbush scrub communities are the most common plant assemblages within the Station. The most common species found within these communities are Joshua trees (*Yucca brevifolia*), creosote bush (*Larrea tridentata*), and bursage (*Ambrosia dumosa*), and saltbush (*Atriplex* spp.), respectively. A large portion of the North Range of China Lake is at higher elevations than are generally occupied by desert tortoises. Additionally, a large playa which, because of its fine soils and absence of shrub cover does not support desert tortoises, occurs within the southern part of the North Range.

A discussion of the density and distribution of desert tortoises within the Station can be found in the original biological opinion for the Management Plan (Service 1992).

Analysis of Impacts

As noted in the original biological opinion for the Management Plan, numerous activities that the Navy undertakes at the Station have the potential to take desert tortoises through mortality, injury, or harassment and to disturb or eliminate desert tortoise habitat. These activities include construction of new facilities, testing of weapons and electronic warfare systems, use and maintenance of roads and utilities, bombing practice, and miscellaneous other activities. The Navy's Management Plan for the Station includes measures to minimize both the likelihood for take of individual desert tortoises and the effects of mission-related activities on desert tortoise habitat.

Key to implementation of the Management Plan is oversight by the Station's Environmental Project Office of a Desert Tortoise Management Area covering approximately 200,000 acres of the Station. As an incentive for project planners to minimize habitat loss or disturbance in this area, under the Management Plan, the maximum amount of disturbance associated with any given action will not exceed 2.5 acres without triggering an individual formal consultation. Cumulative impacts of the Management Plan are addressed through the stipulation that no more than five percent of the planning area could be developed or disturbed on a long-term basis without reinitiation of formal consultation.

The effectiveness of the Management Plan is exhibited by the impact of activities conducted within the planning area since its inception. In the 1993 annual report of actions within the planning area, the Station's Environmental Project Office noted that of 1200 projects reviewed, only 27 were proposed in or near desert tortoise habitat (Station 1993). The Environmental Project Office successfully sited 22 of the 27 projects in previously disturbed areas while the remaining five projects proceeded under the guidance provided in the Management Plan. For the 1993 reporting period, two acres of desert tortoise habitat were eliminated and two acres were disturbed (Station 1993).

At issuance of the original biological opinion on the Management Plan, the Station had removed almost 8,000 feral burros from its lands and installed over 11 miles of fence to exclude trespass livestock grazing from the south range. Under the Management Plan, the Station would continue these efforts and to pursue additional surveys of desert tortoise habitat, research, and educational programs on the desert tortoise and other biological resources of the desert.

The Service believes that the impacts described above resulting from implementation of the Management Plan will not jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat. We present this conclusion for the following reasons:

1. The Navy's Management Plan includes mitigation measures which would reduce the take of individual desert tortoises and their habitat.
2. The impacts that would result from continued implementation of the Management Plan would generally disturb small amounts of land over a large area and would not result in fragmentation of desert tortoise habitat.
3. The establishment by the Navy of an approximately 200,000-acre area to be managed for the desert tortoise furthers recovery efforts in the western Mojave Desert.

Cumulative Effects

Cumulative effects are those impacts of future State and private actions that are reasonably certain to occur in the project area. Future Federal actions will be subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project.

Many of the actions that are reasonably expected to occur within the vicinity of the project will be subject to section 7 consultations, because large portions of the desert consist of Federal lands. Numerous unauthorized actions on both Federal and non-Federal lands, such as collection and vandalism of desert tortoises and off-highway vehicle use, will continue to degrade desert tortoise populations and their habitat, particularly in areas that receive large amounts of recreational use.

The Service has contacted the counties of San Bernardino, Kern, Riverside, Inyo, and Los Angeles (and the incorporated areas within the desert) regarding the listing of the desert tortoise and its implications for city- and county-permitted activities. Many cities within the range of the desert tortoise in San Bernardino, Los Angeles, and Kern counties have expressed interest in

obtaining a section 10(a)(1)(B) incidental take permit from the Service. Regional planning efforts, such as the West Mojave Coordinated Management Plan, could serve as model habitat conservation plans for local governments. Cumulative impacts of future State and private projects will be addressed in regional plans, such as this, and in the section 10(a)(1)(B) incidental take permit process. The measures being developed by the Bureau of Land Management and other participating agencies in the Western Mojave Coordinated Management Plan are likely to be ~~with~~ compatible with management prescriptions specified in the Station's Desert Tortoise Management Plan.

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 sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this incidental take statement. The measures described as reasonable and prudent measures and terms and conditions in this biological opinion are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit, as appropriate.

This biological opinion anticipates the following forms of take which would be associated with implementation of the reasonable and prudent measures:

1. Two (2) desert tortoises per year in the form of direct mortality during implementation of the Management Plan.
2. A total of forty (40) desert tortoises in the form of direct mortality during implementation of the Management Plan.
3. Ten (10) desert tortoises per year in the form of harassment through the excavation of burrows occupied by desert tortoises and the removal of desert tortoises found above ground in project areas during work and training activities.

This biological opinion does not authorize any form of take that is not incidental to implementation of the Desert Tortoise Management Plan at the Station, China Lake. Implementation of the plan is considered to include all activities that meet the criteria as established by the Navy in its plan and the Service in this biological opinion.

If the incidental take authorized by this biological opinion is met, the Navy shall immediately notify the Service in writing. If the incidental take authorized by this biological opinion is exceeded, the Navy shall immediately cease the activity resulting in the take and shall reinitiate formal consultation with the Service.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize the incidental taking authorized by this biological opinion:

1. Worker education programs and well-defined operational procedures shall be implemented to avoid the take of desert tortoises and minimize loss of their habitat implementation of the Desert Tortoise Management Plan.
2. Take of desert tortoises, through injury or death due to the straying of vehicles or equipment beyond project areas, shall be reduced through establishment of clearly defined work areas.
3. Take of desert tortoises, through injury or death, found within proposed project areas shall be reduced through the removal of these animals to safe, undisturbed areas adjacent to project sites.
4. Attraction of common ravens and other potential tortoise predators to project areas shall be reduced to the maximum extent possible.
5. The Station shall continue to manage for the benefit of desert tortoises the approximately 200,000 acres within the Station as described in the original biological opinion for the Management Plan.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, the Navy is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. With the exception of updating reference to handling protocols and ensuring that wording reflects current conditions, the terms and conditions reiterate those presented in the Service's 1992 biological opinion on the Management Plan. They are included here to avoid the necessity of referring to another document and to minimize any confusion that could arise when two documents are involved.

Terms and conditions 1a, 1f, 1h, 1i, 1j, 1l, 1m, 2, 5, and 6, are established to implement reasonable and prudent measure 1. Terms and conditions 1b and 1e are established to implement reasonable and prudent measure 2. Terms and conditions 1c, 1d, 1k, and 4 are established to implement reasonable and prudent measure 3. Term and condition 3 is established to implement reasonable and prudent measure 4. Term and condition 1g is established to implement reasonable and prudent measure 5:

1. a. All proposals for new projects (and modifications to existing project sites) shall be reviewed by the Environmental Project Office (Code 823E00D). New projects include new construction or other land disturbing activities as well as significant changes in land use activities or types at established sites. Ongoing activities that may result in take of desert tortoises shall be reviewed on an annual basis. The Station-wide educational program (discussed in measure 6) shall focus on the procedures and requirements to eliminate off-site impacts and other actions that may result in inadvertent take.

1.b. The primary means to eliminate or minimize impacts to desert tortoises or their habitat shall continue to be through the use of avoidance procedures. These methods shall include the following:

- i. Consultations with project proponents by Environmental Project Office (Code 823E00D) staff early in the planning process shall try to locate proposed project sites in areas that are not in desert tortoise habitat.
- ii. If projects cannot be located in areas outside desert tortoise habitat, then the Environmental Project Office shall try to influence the project design such that projects are located in previously disturbed areas or so that the amount or type of disturbance is minimized.

1.c. Surveys for desert tortoises shall be accomplished for all projects which may be located in desert tortoise habitat. Surveys shall be accomplished by qualified biologists either currently employed by the Environmental Project Office (Code 823E00D) or through the use of contractor personnel. All surveys shall be accomplished in accordance with Service protocol. Modifications to the protocol to meet the requirements of specific actions shall receive prior approval from the Service.

1.d. Whenever possible, project sites shall be selected so that they are located in previously disturbed areas. Measures to minimize take shall include modifications to project size, orientation, location and construction practices. Should projects have to be located where desert tortoises are known to exist, the desert tortoises shall be relocated in accordance with procedures in Appendix A "Desert Tortoise Handling and Overwintering Procedures" (Desert Tortoise Council 1994).

1.e. Incidental take shall be minimized by taking the following measures. Actual measures shall be based on the results of site specific field surveys and shall be implemented at the discretion of Code 823E00D personnel:

- i. Regular monitoring of construction operations and active project activities;
- ii. Placement of signs indicating the need to reduce speeds on roadways and the necessity for all activities to be strictly confined to the project site;
- iii. Clearly delineating the project site boundaries on the ground by flagging, survey lath or wooden stakes;
- iv. Placement of desert tortoise-proof fences around certain projects or portions of projects where, due to the known proximity of desert tortoises to the project site, the probability of take is high;
- v. Conduct project personnel briefings for all project personnel during all project phases. At a minimum the briefings shall discuss:

- the general provisions of the Endangered Species Act;
- the necessity for adhering to the provisions of the Act;
- the penalties associated with violating the provisions of the Act;
- the specific requirements (as delineated by this office) for complying with the provisions of the Act as they relate to each project;
- the exact boundaries of the project within which the project may be accomplished;
- the procedures to be accomplished by project personnel should any problem arise with respect to complying with environmental constraints;
- general behavior and ecology of the desert tortoise; and
- its sensitivity to human activities.

vi. Pre-construction site surveys to ensure the project area has remained clear of desert tortoises since the initial site surveys were accomplished. Pre-construction surveys shall be conducted within 7 days of initiation of construction activities; and

vii. Written operations plans detailing special constraints on project activities such as surveys or sweeps of project areas immediately prior to initiation of project activities for those projects which use areas on an infrequent basis.

1.f. The Station shall conduct an environmental briefing, with emphasis on threatened/endangered species management and the existence and details of the Desert Tortoise Habitat Management Plan to all Station and contractor personnel who use areas considered desert tortoise habitat. The briefing shall be conducted by Code 823E00D biologists. The briefing shall discuss the specific element of the Plan as well as general procedures detailing compliance with the Endangered Species Act.

1.g. The Station shall administer approximately 200,000 acres of land (contiguous) on the its South Range as the Desert Tortoise Management Area. This term and condition does not preclude the use of existing developments or eliminate ongoing or previously occurring activities within these areas. All personnel who use these developments or participate in such actions within these areas shall attend the educational program prior to the onset of activities. All other applicable terms and conditions of this biological opinion shall also be implemented. Existing, developed or utilized areas within the designated Desert Tortoise Management Areas shall be clearly delineated on the ground by placement of permanent markers (wooden posts). Entry points (roads) into these areas shall be delineated by signs indicating that personnel are entering a Desert Tortoise Management Area and that all activities must be strictly confined to established roadways and project sites.

1.h. The procedure for implementing this management plan shall vary depending on the location of the proposed project within or outside of the Management Area, the proposed size (acres) of the project area and the presence or absence of desert tortoises or their sign in the area. A written summary of the procedure is presented below and in the Service's previous biological opinion (Service 1992):

For: Projects outside the Management Area
Less than 50 acres in total area

With desert tortoise sign (on or near the project site):
 Implement appropriate measures to preclude take
 Notify Service in Annual Report

For: Projects outside the Management Area
 Less than 50 acres in total area
 Without desert tortoise sign (on or near the project site):
 Notify Service in Annual Report

For: Projects outside the Management Area
 Greater than 50 acres in total area
 Without desert tortoise sign (on or near the project site):
 Notify Service in Annual Report

For: Projects outside the Management Area
 Greater than 50 acres in total area
 With desert tortoise sign (on or near the project site):
 Notify Service of project proposal with supporting documentation and request
 their review
 ✖→Initiate section 7 consultation on request of Service

For: Projects inside the Management Area
 Greater than 2.5 acres
 With or without desert tortoise sign:
 Notify Service of project proposal with supporting
 documentation and request their review
 ✖→Initiate section 7 consultation on request of Service

For: Project inside the Management Area
 Less than 2.5 acres
 With or without desert tortoise sign:
 Implement appropriate measures to preclude take
 Notify Service in Annual Report

1.i. Should the cumulative acreage developed within the Management Area exceed 5 percent of the total Management Area acreage, the Station shall reinitiate formal section 7 consultation. Should small (less than 2.5 acres) project sites be established in such a fashion that they are adjacent to or near other small projects and the actual area of effect could be considered to be greater than 2.5 acres, the small projects shall each be considered to be greater than 2.5 acres and treated as described in measure 1m.

1.j. Active or usable desert tortoise burrows located adjacent to or near construction sites shall be protected by temporary desert tortoise-proof fencing placed to completely enclose the burrow at a minimum distance of 20 feet from the burrow.

1.k. Desert tortoise burrows which cannot be avoided shall be excavated by hand either by or under the direction of the authorized biologist. Desert tortoise burrow excavation and subsequent handling of any desert tortoises shall follow guidelines established in Appendix A.

The following information shall be recorded for all desert tortoises that are handled: the location where the desert tortoise was found; the location to which it was moved; the date and time of the action; any other pertinent information, including observations on the health and condition of the desert tortoise, and whether it voided its bladder upon handling; and appropriate length measurements, descriptions of unique markings, a detailed photograph of the fourth left costal scute, and photographs of at least the desert tortoise's anterior area and carapace.

1.l. Code 823E00D shall prepare and submit to the Service for its review and comment an **annual report containing:**

i. a **general summary** of all projects that have been initiated on the Station within the one^o year reporting period and shall include:

- a list of projects which implemented the provisions of this agreement;
- the total number of desert tortoises that were taken, through injury, mortality, or harassment;
- the total acreage of desert tortoise habitat lost or disturbed;
- a summary of the effectiveness of the take minimization measures; and
- a discussion of any problems encountered and recommendations on how to reduce or eliminate these problems.

ii. A specific summary of each project undertaken. This report shall detail:

- the project name;
- a project description;
- the project location (map);
- the total acreage of the project;
- the total number of desert tortoises that were taken, through injury, mortality, or harassment;
- the acreage of desert tortoise habitat lost and its relative condition;
- measures taken to ensure that take has been minimized or eliminated;
- follow-up data on success of impact (take) minimization efforts;
- any problems encountered with respect to implementing the provisions of the management plan; and
- the information collected on all desert tortoises as specified in term and condition 1.k of this biological opinion.

1.m. Should unforeseen problems arise or the Station propose activities that are not compatible with the continued implementation of the Desert Tortoise Management Plan, the Station shall reinstate the formal section 7 consultation process. In addition, reinstatement of the consultation process shall be required if the criteria promulgated at 50 CFR 402.16 are met. These criteria are stated at the conclusion of this biological opinion.

2. Only qualified personnel authorized under the auspices of this biological opinion shall handle desert tortoises. Tom Campbell, Susan Williams, and Beverly Kohfield of the Station's Environmental Project Office are hereby authorized to handle desert tortoises as described in this biological opinion. If the Station wishes to use other Navy employees or outside contractors to handle desert tortoises, the names and credentials shall be supplied to the Service for its review and approval at least 15 days prior to the onset of the activities which they are being authorized to monitor.

3. All trash and food items shall be promptly contained within raven-proof containers. These containers shall be regularly removed from the project sites to reduce the attractiveness of the area to common ravens and other desert tortoise predators.

4. The authorized biologist(s) shall follow the general handling methods contained in the guidelines in Appendix A. This biological opinion does not authorize replacement of lost fluids in any desert tortoise with a syringe, the drawing of blood, or notching of the shell to mark animals. Marking of desert tortoises using the epoxy method as described in Arizona Game and Fish Department et al. (1991) is authorized.

5. Desert tortoises moved from harm's way within the vicinity of a project site shall be marked for future identification. An identification number using the acrylic paint/epoxy covering technique shall be placed on the fourth ~~costal~~ costal scute (Fish and Wildlife Service 1991). 35-mm slide photographs of the carapace, plastron, and the fourth costal scute shall be taken.

6. All personnel shall check beneath their vehicles while in desert tortoise habitat prior to moving the vehicle. If a desert tortoise is found beneath the vehicle, an authorized biologist shall move the desert tortoise as described in this biological opinion or the vehicle operator shall wait until the desert tortoise has moved away from the vehicle. The authorized biologist shall ensure that any desert tortoises moved in this manner will not be exposed to temperatures that could be harmful to the desert tortoise. All personnel shall be advised of the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event. This information shall be incorporated into all educational briefings on the desert tortoise.

Disposition of Dead, Injured, or Sick Desert Tortoises

Upon locating dead, injured, or sick desert tortoises, initial notification must be made within three working days of the finding to the Service's Division of Law Enforcement in Torrance, California, at (310) 297-0062. The Service's Ventura Office should also be notified at (805) 644-1766. Written notification to both offices must be made within five calendar days and include the date, time, and location of the carcass, a photograph, and any other pertinent information. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. The Station shall endeavor to place the remains of intact desert tortoises with educational or research institutions holding the appropriate State and Federal permits per their instructions. If such institutions are not available or the shell has been damaged, the information noted above shall be obtained and the

carcass left in place. The Station should consider marking the carcass in a manner that would not be toxic to other wildlife to ensure that it would not be re-recorded in the future.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution by the Station prior to implementation of the action. Injured animals should be transported to a qualified veterinarian. Should any treated desert tortoises survive, the Service should be contacted regarding the final disposition of the animals.

Conservation Recommendations

In furtherance of the purposes of the Endangered Species Act (sections 2 c and 7(a)(1)) that mandate Federal agencies to utilize their authorities to carry out programs for the conservation of listed species, we recommend implementing the following actions:

1. The Station should instruct all personnel in the appropriate procedures to follow if a desert tortoise is encountered on a road where it may be at risk from vehicle traffic. They should also be advised that these procedures may also be followed when traveling outside of Navy lands.
2. The Station should consider cooperating with the Bureau of Land Management (Bureau) in monitoring common raven use within the Station. The Bureau's Desert District Office in Riverside may be able to provide the Station with standard raven monitoring techniques.
3. The Station should attempt to coordinate any enhancement or restoration of desert tortoise habitat that is adjacent to public lands with the Bureau to maximize the beneficial effects of both agencies' efforts.
4. The Station should investigate methods of restoring disturbed habitat to more natural conditions if it can be determined that the disturbed area is unlikely to be used for future activities. Regarding restoration efforts, the Station may wish to contact Dr. Jerry Freilich of Joshua Tree National Park at (619) 347-4528. Joshua Tree National Park has implemented restoration efforts at numerous locations within its boundaries.

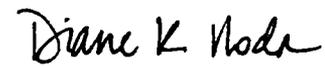
The Service requests notification of the implementation of any conservation recommendations so we can be kept informed of actions that either minimize or avoid adverse effects, or that benefit listed species or their habitats.

Conclusion

This concludes the reinitiation of formal consultation on the proposed Desert Tortoise Habitat Management Plan for the Station at China Lake. Reinitiation of formal consultation is required if: 1) the amount or extent of incidental take is reached; 2) new information reveals effects of the agency action that may adversely affect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; 3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this biological opinion; or 4) a new species is listed or critical habitat designated that may be affected

by this action (50 CFR 402.16). Any questions or comments should be directed to Kirk Waln at the Ventura Field Office at (805) 644-1766.

Sincerely,

A handwritten signature in cursive script that reads "Diane K. Noda".

Diane K. Noda
Field Supervisor

Literature Cited

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B

Epsilon Desert Tortoise Surveys

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BRAC SURVEY – PHASE 2

**BIOLOGICAL RECONNAISSANCE
AND DESERT TORTOISE SURVEY
REPORTS**

**Epsilon Systems Solutions, Inc.
901 N. Heritage Drive
Ridgecrest, CA 93555**

May 2006

**Weapons Survivability BRAC
Biological Reconnaissance
And
Desert Tortoise
Survey Report**

**Epsilon Systems Solutions, Inc.
901 N. Heritage Drive
Ridgecrest, CA 93555**

May 2006

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Appendix A. List of Plants Present on Site	
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SECTION 1.0 – INTRODUCTION

Epsilon Systems was retained by the NAWS Environmental Planning and Management Department (EPMD) to conduct a literature review, a reconnaissance-level biological survey, focused surveys for desert tortoise presence, and to prepare a biological technical report of findings for the construction of a new road and upgrade of existing dirt road on a 218-acre site at the Weapons Survivability range on the Naval Air Weapons Station China Lake (Figure 2). This study is being conducted to provide necessary data required for a NEPA analysis relating to renovation of existing facility and the construction of new facilities. The purpose of this report is to summarize the results of the literature review and surveys and document the existing natural resources at the project site.

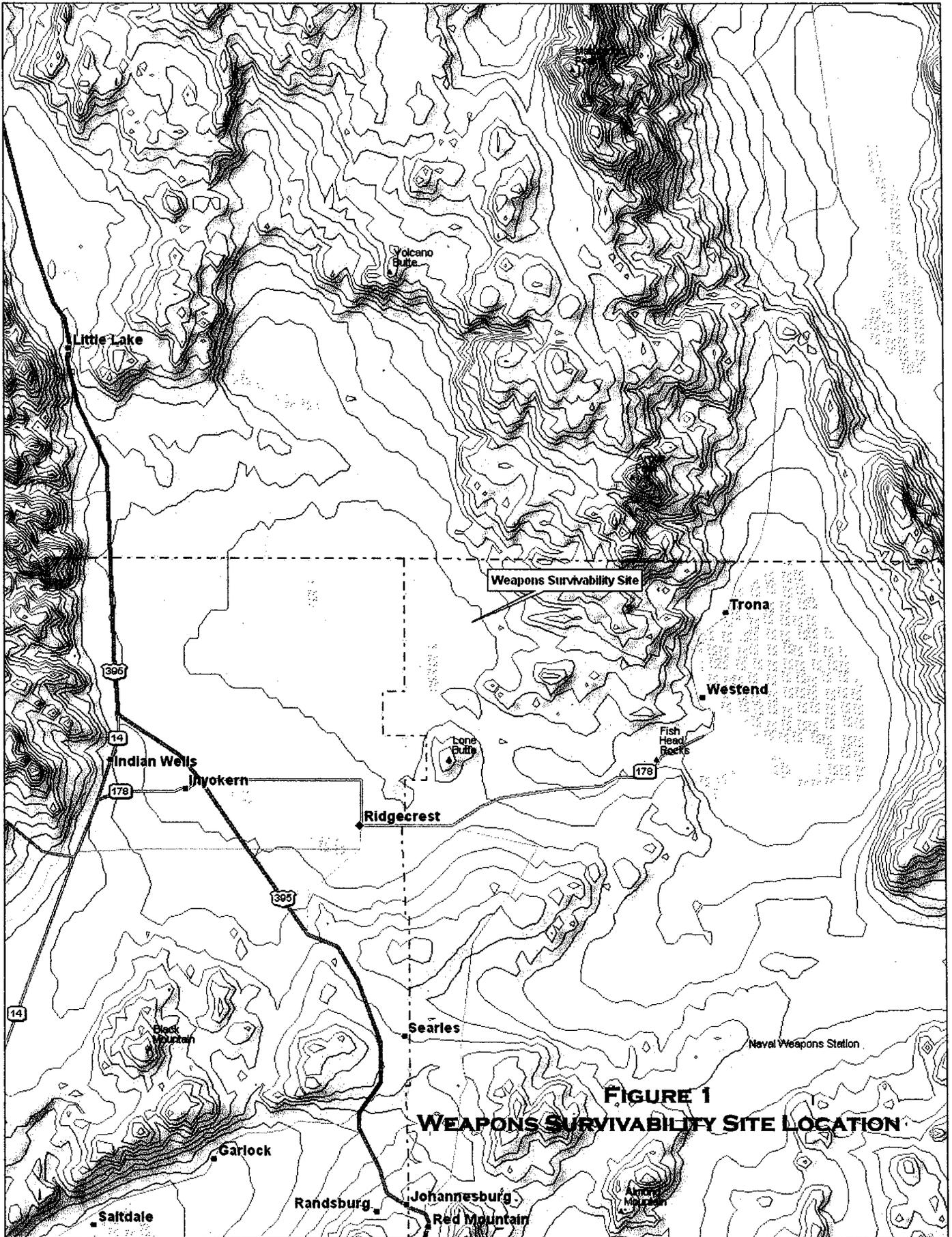
The site is located within Township 28S, Range 41E, Section 28 of the U.S. Geological Survey (USGS) Lone Butte 7.5-minute topographic quadrangle. Elevation on the project site is approximately 2,200 feet above mean sea level (Figure 1).

SECTION 2.0 – METHODS

Prior to performing the field survey, existing documentation relevant to the project site was reviewed. The most recent records of the California Natural Diversity Database (CNDDB 2006) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2006) were reviewed for the quadrangles relevant to the project site (i.e., White Hills and Burro canyon, USGS 7.5 minute quadrangles). These databases contain records of reported occurrences of federal- and/or state-listed endangered or threatened or proposed endangered or threatened species, California Species of Special Concern (CSC), or otherwise special-status species or habitat that have a historical record of occurrence within or in the vicinity of the project site. Lists from the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) were also reviewed.

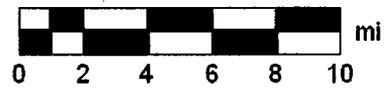
Reconnaissance-level biological surveys and focused surveys for desert tortoise presence were conducted by Epsilon System Solutions biologists Kent W. Hughes, Susan Williams, and Cara Lamoreux on April 3, 2006. These surveys consisted of walking linear transects, spaced a maximum of 10-meters apart on the areas that will be disturbed during project construction. Additionally, zone of influence surveys were conducted April 6 and 24, 2006 and consisted of walking transects along lines spaced at 100 feet, 300 feet, 600 feet, 1200 feet, and 2400 feet from the boundaries of the projects sites (Figure 2).

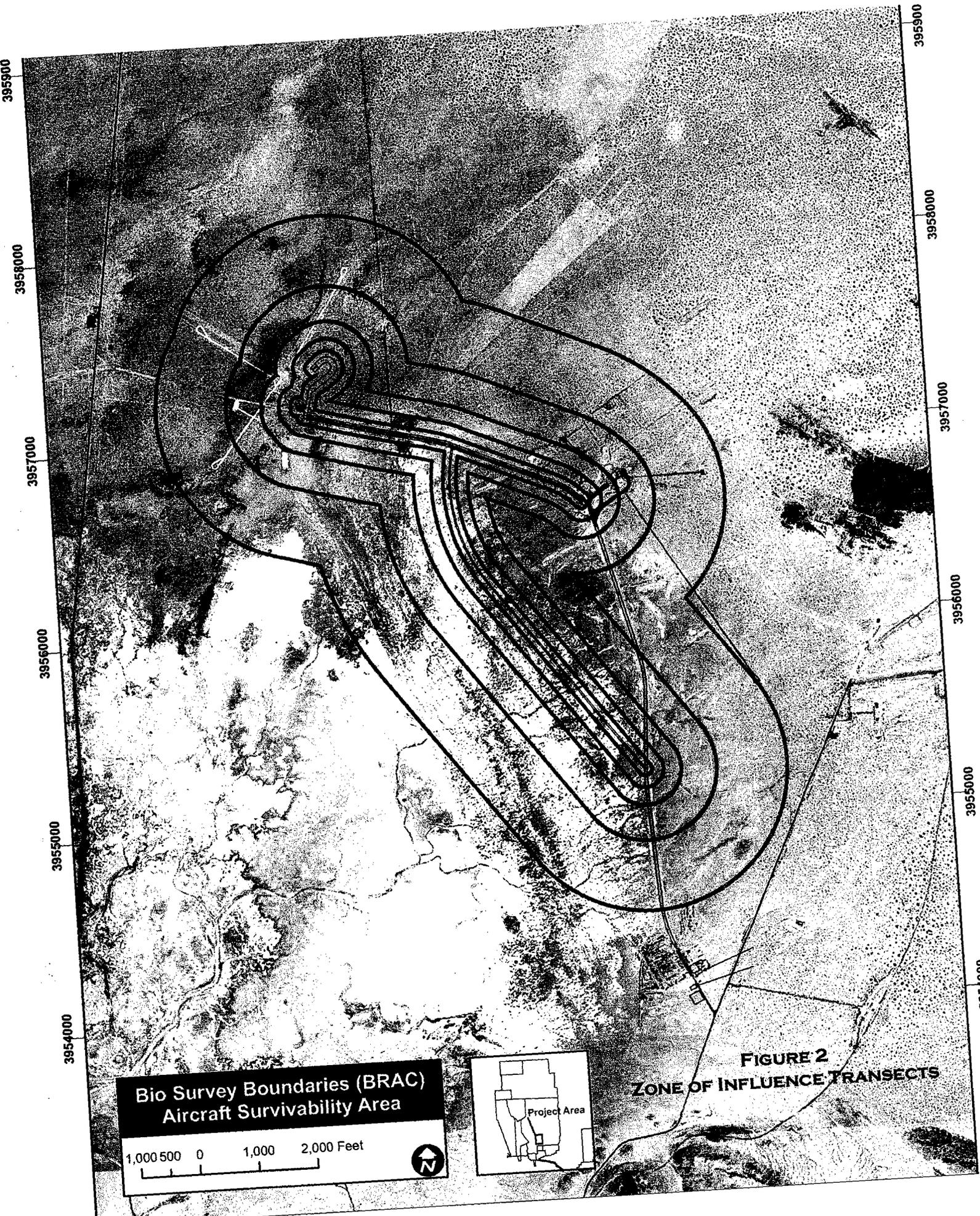
All plant and wildlife species observed were recorded in field notes. Plants of uncertain identity were collected and subsequently identified from vegetative keys or other identification tools. Plant nomenclature follows that of The Jepson Manual, Higher Plants of California (Hickman 1993). Plant communities have been identified and described following the vegetation community descriptions of *A Manual of California* (Sawyer and Keeler-Wolf, 1995). Secondary vegetation communities references may refer to *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986) or other applicable references. A list of plant and wildlife species observed during the survey is presented in Appendix B.



**FIGURE 1
WEAPONS SURVIVABILITY SITE LOCATION**

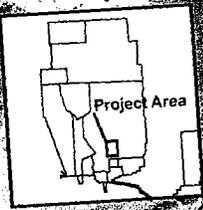
Data use subject to license.
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**Bio Survey Boundaries (BRAC)
Aircraft Survivability Area**

1,000 500 0 1,000 2,000 Feet



**FIGURE 2
ZONE OF INFLUENCE TRANSECTS**

SECTION 3.0 – RESULTS

3.1 VEGETATION

Two vegetation communities are present on the Weapons Survivability site. A disturbed mixed saltbush series in and around the alkaline playa on the south side of the site and a white bursage series community on the north portion of the site. These communities intergrade in the area of the road that will be upgraded from dirt to paved. Photos of these two communities are shown in Figure 3.

3.1.1 Vegetation Communities

Disturbed Mixed Saltbush Series

The Mixed Saltbush Series is a community of various saltbushes (*Atriplex* sp.) that is found on bajadas, flats, lower slopes, playas, and valleys. The canopy is made up of shrubs less than 3 meters tall and may be continuous, intermittent, or open. Soils may be carbonate rich. This community exists on a portion of the southern part of the site which is an impoverished alkaline playa that supports a very sparse growth of cattle spinach (*Atriplex polycarpa*), desert holly (*A. hymenelytra*), green molly (*Kochia Americana*) and Parish's pickleweed (*Salicornia subterminalis*).

White Bursage Series

The white bursage series may be considered part of the creosote bush scrub (Holland, 1986), which, itself, may be considered a collection of series. In this series white bursage dominates in a two-tiered canopy with a sparse upper tier of creosote bush over the lower white bursage tier. It is an upland series found on alluvial fans; bajadas; partially stabilized sand fields; and upland slopes in well-drained soils that may have a pavement surface. At the Weapons Survivability site species found in this community include white bursage (*Ambrosia dumosa*), creosote bush (*Larrea tridentata*), fourwing saltbush (*Atriplex canescens*), and teddybear cholla (*Opuntia bigloveii*).

3.1.1 Special Status Plant Species

The literature review showed no plant species that are either federal- or state-listed or are CNPS List 1A, 1B, or 2, that have a previous record of occurrence on or within the vicinity of the project site.



Mixed saltbush series at Weapons Survivability Site



White bursage series at Weapons Survivability Site.

Figure 3. Vegetation Communities at Weapons Survivability Site

3.2 WILDLIFE

3.2.1 Sensitive Wildlife Species Potential for Occurrence Criteria

A sensitive species was considered as a potential inhabitant of the project site if its known geographical distribution encompassed part of the project site or if its distribution was near the site and general habitat requirements of the species were present (such as the presence of roosting, nesting, or foraging habitat, or a permanent water source). Furthermore, the potential for each species to occur within the project site was also assessed. The potential for occurrence (PFO) ranking is based on the following criteria:

- **Absent** – Species is restricted to habitats that do not occur within the project site or a focused survey failed to detect the species.
- **Low**– No recent or historical records exist of the species occurring within the project site or its immediate vicinity, and/or the habitats needed to support the species on the site are of poor quality.
- **Moderate**– Either a historical record exists of the species within the immediate vicinity of the project site and/or the habitat requirements associated with the species occur within the project site.
- **High** – There is either a recent historical record of the species occurring within the project site or its immediate vicinity and/or the diagnostic habitat requirements strongly associated with the species occur within the project site or its immediate vicinity.
- **Present** – The species was observed within the project site at the time of the survey.

3.2.2 Sensitive Wildlife

A literature review determined that 3 federal- or state listed sensitive wildlife species and 2 CDFG species of concern have historical records of occurrence within the project vicinity. Table 1 provides a list of these and gives their potential to occur on the Weapons Survivability site. Further information regarding these species follows the table.

Additionally, though there were no records of occurrence for desert tortoise (*Gopherus agassizii*) in the vicinity habitat historically associated with desert tortoise occurs on the sight and for this reason surveys for the desert tortoise were conducted.

Table 1
Sensitive Wildlife Species Potentially Occurring Within the Weapons Survivability Project Site

Scientific Name	Common Name	Status Listing	Occurrence	PFO
THREATENED OR ENDANGERED SPECIES				
CLASS OSTEICTHYES	BONY FISH			
<i>Gila bicolor mohavensis</i>	Mojave tui chub	FE FE	Occurs in various desert areas of California.	ABSENT
CLASS MAMMALIA	MAMMALS			
RODENTIA	MICE, SQUIRRELS, RATS, BATS, and WOODCHUCKS			
<i>Spermophilus movahensis</i>	Mojave ground squirrel	ST	Occurs in various desert scrubs of the western Mojave Desert in southwestern Inyo, eastern Kern, northeastern San Bernardino, and extreme northeastern Los Angeles counties.	LOW
EMBERIZIDAE	EMBERIZINE SPARROWS AND THEIR ALLIES			
<i>Pipilo crissalis eremophilus</i>	Inyo California towhee	FE ST	An isolated subspecies of the California towhee in the southern Argus Mountains of Inyo County.	ABSENT
OTHER SENSITIVE SPECIES				
CLASS AVES	BIRDS			
MIMIDAE	MOCKINGBIRDS			
<i>Toxostoma lecontei</i>	Le Conte's thrasher	CSC	Occurs from Inyo County south to the Mexican border and in western and southern San Joaquin Valley.	LOW
FALCONIDAE	DIURNAL RAPTORS			
<i>Falco mexicanus</i>	prairie falcon	CSC	Throughout the American west from Canada to Mexico.	LOW
Status Codes				
Federal FE = Federal-listed; Endangered FT = Federal-listed; Threatened FC = Federal candidate State ST = State-listed; Threatened SE = State-listed; Endangered CSC = California Special Concern Species				
Source: California Natural Diversity Data Base (CNDDDB), California Native Plant Society Electronic Inventory), Burro Canyon, and White Hills , 7.5 USGS Quads.				

3.2.2.1 Threatened, Endangered, and Candidate Species Descriptions

This section provides a brief description of the biology of the threatened, endangered, and candidate wildlife species that have a potential to occur on the project site or were found to occur within the project vicinity.

The **Mojave ground squirrel** (*Spermophilus mohavensis*) is a California state threatened species that inhabits various desert scrub communities, frequently in association with winter fat (*Krascheninnikovia lanata*), desert thorn (*Lycium* sp.), and spiny hopsage (*Grayia spinosa*). Habitat historically associated with Mojave ground squirrel occurrence does not occur on the Weapons Survivability site, however, there is a recorded occurrence of this species approximately 3 miles north of the site. Therefore, this species may be considered to have a low potential for occurrence on the Weapons Survivability site.

The **Mojave tui chub** (*Gila bicolor mohavensis*) is a federal- and state-listed endangered species. The chub prefers a Lacustrine habitat. It was introduced into Lark Seep in 1971 as a refuge site. Since that time the chub have migrated into the adjoining channels. It has been found that they prefer deep pools and slow moving water. The Lark Seep System has approximately 5 miles of channel with ponds of water at the beginning and end of the system. Within that system there are three areas that have a viable population: the George Road Channel, the G1 Channel and the North Channel. No open water occurs on the project site; therefore the Mojave tui chub is considered to be absent from the site.

The **Inyo California Towhee** (*Pipilo crissalis eremophilus*) is a federal-listed threatened, state-listed endangered species historically found to be restricted to the vicinity of dense riparian vegetation for foraging and nesting. It also forages on desert hillsides adjacent to the riparian areas. No riparian areas exist on the Weapons Survivability site nor in the vicinity; therefore, this species may be considered absent from the site.

3.2.2.2 Other Sensitive Wildlife Species Descriptions

Le Conte's thrasher (*Toxostoma lecontei*) is a California special concern species that historically is known to occur primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub vegetation communities; as well as Joshua tree communities with scattered shrubs. Vegetation communities associated with the occurrence of this species occur on the Weapons Survivability site but the nearest recorded occurrence is approximately 10 miles north therefore this species may be considered to have a low potential to occur on the site.

The **prairie falcon** (*Falco mexicanus*) is a California state special concern species that occurs in open, dry countryside and uses grasslands, canyon lands, deserts, foothills and dry mountain valleys for breeding and foraging. It nests on cliff sides and home range estimates for the prairie falcon range from 10 to 50 square miles but the core foraging area is likely to be 10 to 15 square miles for many pairs. This species is known in the vicinity of the Weapons Survivability site from one recorded occurrence in Burro Canyon in 1977. Preferred forage vegetation communities occur on the Weapons Survivability site, therefore this species may be considered to have a low potential for occurrence on the site.

SECTION 4.0 – SUMMARY

Focused desert tortoise surveys did not detect any evidence of desert tortoise presence on the Weapons Survivability site thus, no further surveys nor mitigation measures for impacts to this species will be required.

A low potential for occurrence due to recorded occurrences within the vicinity and preferred habitat exists for 1 state-listed threatened species, the Mojave ground squirrel, and 2 California Special Concern Species, LeConte's thrasher and the prairie falcon. Further actions regarding these species prior to or during construction can be established following consultation with the California Department of Fish and Game.

SECTION 7.0 – REFERENCES

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Appendix A

Weapons Survivability Observed Species Plant List

Scientific Name

Common Name

VASCULAR PLANTS

ANGIOSPERMS (DICOTYLEDONS)

ASTERACEAE

Ambrosia dumosa
Baileya pleneradiata
Chaenactis fremontii
Malacothrix glabrata
Nicolletia occidentalis

SUNFLOWER FAMILY

Burro bush
woolly desert marigold
desert pincushion
desert dandelion
hole-in-the-sand plant

BORAGINACEAE

Cryptantha sp.
Tiquilia plicata

BORAGE FAMILY

cryptantha
plicate tiquilia

BRASSICACEAE

Descurainia pinnata
Lepidium fremontii
Stanleya pinnata

MUSTARD FAMILY

western tansy-mustard
desert alyssum
prince's plume

CACTACEAE

Opuntia bigloveii

CACTUS FAMILY

teddybear cholla

CHENOPODIACEAE

Atriplex canescens
Atriplex hymenlytra
Atriplex polycarpa
Kochia californica
Suaeda moquinii

GOOSEFOOT FAMILY

four-wing saltbush
desert holly
cattle spinach
Mojave red sage
bush seepweed

FABACEAE

Astragalus lentiginosus
Lupinus sp.
Psorothamnus arborescens

LEGUME FAMILY

freckled milkvetch
lupine
indigo bush

LOASACEAE

Mentzelia reflexa

LOASA FAMILY

reflexed blazing star

NYCTAGINACEAE

Abronia pogonantha

FOUR O'CLOCK FAMILY

Mojave sand verbena

ONAGRACEAE

Camissonia sp.
Camissonia claviformis
Oenothera primiveris

EVENING PRIMROSE FAMILY

camissonia
brown-eyed evening primrose
desert evening primrose

PAPAVERACEAE

Argemone munita

POPPY FAMILY

prickly poppy

POLEMONIACEAE

Loeseliastrum schottii

POLYGONACEAE

Eriogonum gracillimum

Eriogonum Mojavense

ZYGOPHYLLACEAE

Larrea tridentata

PHLOX FAMILY

freeboot calico

BUCKWHEAT FAMILY

annual buckwheat

western Mojave buckwheat

CALTROP FAMILY

creosote bush

ANGIOSPERMS (MONOCOTYLEDONS)

POACEAE

Achnatherum hymenoides

*Bromus madritensis ssp. rubens**

Distichlis spicata

*Vulpia myuros**

GRASS FAMILY

Indian ricegrass

foxtail chess

saltgrass

fescue

**Magazines BRAC
Biological Reconnaissance
And
Desert Tortoise
Survey Report**

**Epsilon Systems Solutions, Inc.
901 N. Heritage Drive
Ridgecrest, CA 93555**

May 2006

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Appendices

Appendix A. List of Plants Present on Site	
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SECTION 1.0 – INTRODUCTION

Epsilon Systems was retained by the NAWS Environmental Planning and Management Department (EPMD) to conduct a literature review, a reconnaissance-level biological survey, focused surveys for desert tortoise presence, and to prepare a biological technical report of findings for the construction of a new facilities on portions of a 172 acre site at the Magazines area on the Naval Air Weapons Station China Lake (Figure 2). This study is being conducted to provide necessary data required for a NEPA analysis relating to renovation of existing facility and the construction of new facilities. The purpose of this report is to summarize the results of the literature review and surveys and document the existing natural resources at the project site.

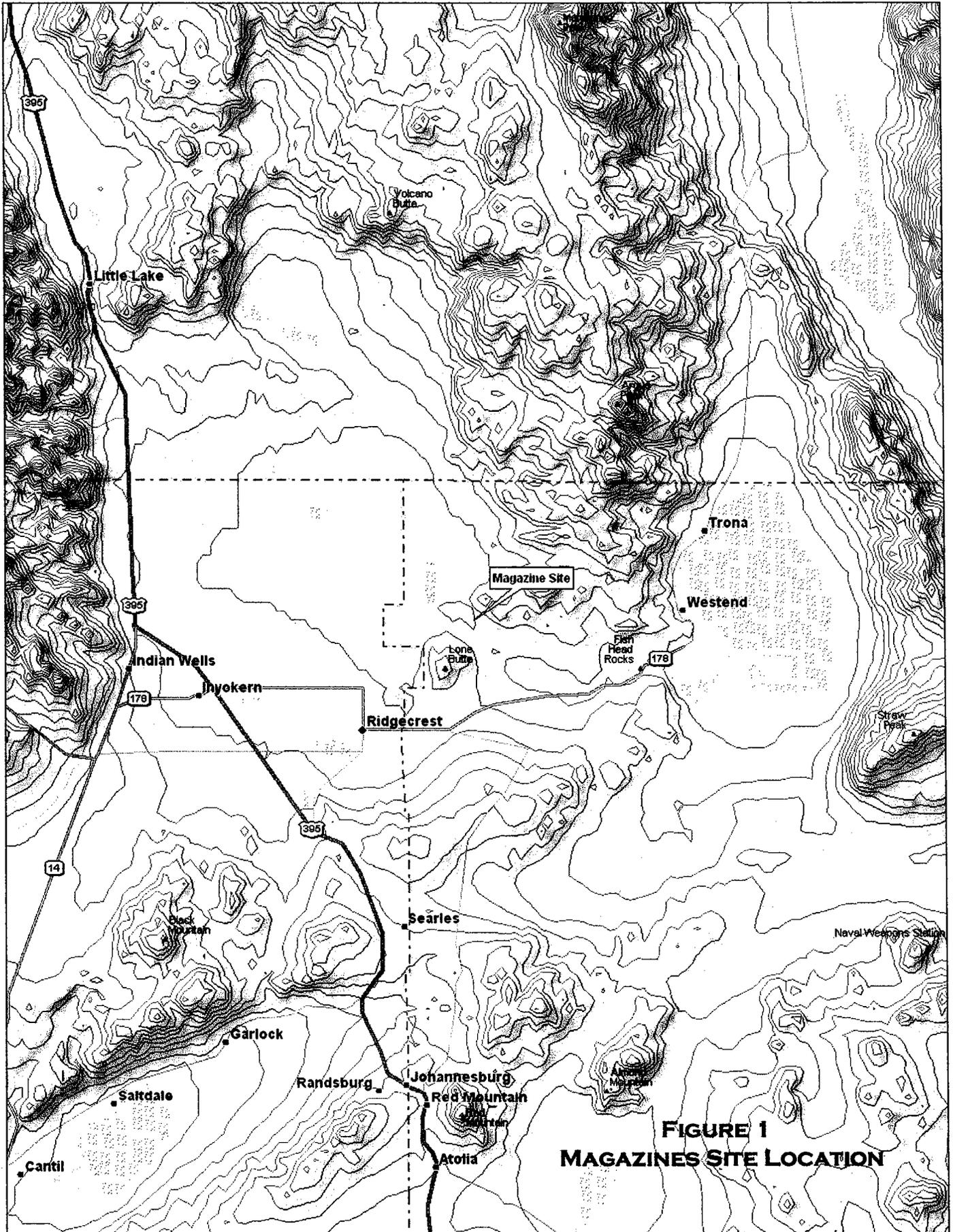
The site is located within Township 26S, Range 41E, Section 10 of the U.S. Geological Survey (USGS) Lone Butte 7.5-minute topographic quadrangle (Figure 1). Elevation on the project site is approximately 2,200 feet above mean sea level.

SECTION 2.0 – METHODS

Prior to performing the field survey, existing documentation relevant to the project site was reviewed. The most recent records of the California Natural Diversity Database (CNDDDB 2006) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2006) were reviewed for the quadrangles relevant to the project site (i.e., Ridgecrest North and Lone Butte USGS 7.5 minute quadrangles). These databases contain records of reported occurrences of federal- and/or state-listed endangered or threatened or proposed endangered or threatened species, California Species of Special Concern (CSC), or otherwise special-status species or habitat that have a historical record of occurrence within or in the vicinity of the project site. Lists from the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) were also reviewed.

Reconnaissance-level biological surveys and focused surveys for desert tortoise presence were conducted by Epsilon System Solutions biologists Kent W. Hughes, Susan Williams, and Cara Lamoreux on April 5, 2006. These surveys consisted of walking linear transects, spaced a maximum of 10-meters apart on the areas that will be disturbed during construction. Additionally, desert tortoise zone of influence surveys were conducted April 25 and 26, 2006. These consisted of walking transects 100 feet, 300 feet, 600 feet, 1200 feet, and 2400 feet from the boundaries of the projects sites (Figure 2).

All plant and wildlife species observed were recorded in field notes. Plants of uncertain identity were collected and subsequently identified from vegetative keys or other identification tools. Plant nomenclature follows that of The Jepson Manual, Higher Plants of California (Hickman 1993). Plant communities have been identified and described following the vegetation community descriptions of *A Manual of California* (Sawyer and Keeler-Wolf, 1995). Secondary vegetation communities references may refer to *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986) or other applicable references.



**FIGURE 1
MAGAZINE SITE LOCATION**

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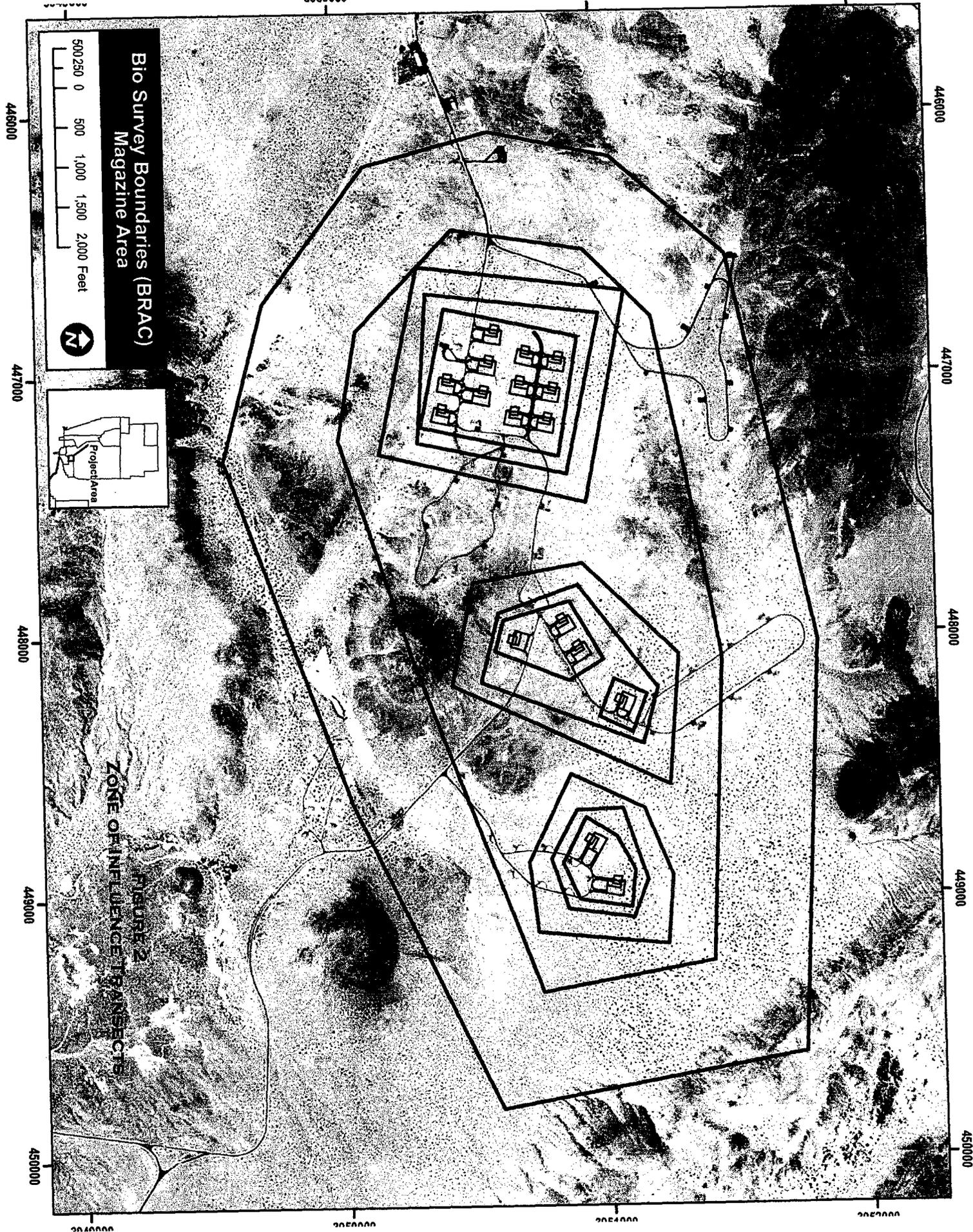


FIGURE 2
ZONE OF INFLUENCE TRANSECTS

SECTION 3.0 – RESULTS

3.1 VEGETATION

3.1.1 Vegetation Communities

3.1.1.1 Creosote Bush Series

The vegetation community present on the Magazines construction sites is a Creosote Bush Series. This series may be considered part of the creosote bush scrub (Holland, 1986) which itself can be considered a collection of series. This is an open canopy community with creosote bush (*Larrea tridentata*) the sole or dominant shrub in this community. The ground layer is open and annuals may be seasonally present. This community occurs on alluvial fans, bajadas, and upland slopes with well-drained soils that may or may not have a pavement surface. Vegetation encountered on the Magazines site typical of this community includes creosote bush (*Larrea tridentata*), four-wing saltbush (*Atriplex canescens.*), teddy-bear cholla (*Opuntia bigloveii*), indigo bush (*Psoralea schottii*), and white bursage (*Ambrosia dumosa*).

A plant list of species encountered during the surveys is available in Appendix A.

3.1.1 Special Status Plant Species

The literature review showed no plant species that are either federal- or state-listed or are CNPS List 1A, 1B, or 2, that have a previous record of occurrence on or within the vicinity of the project site.

3.2 WILDLIFE

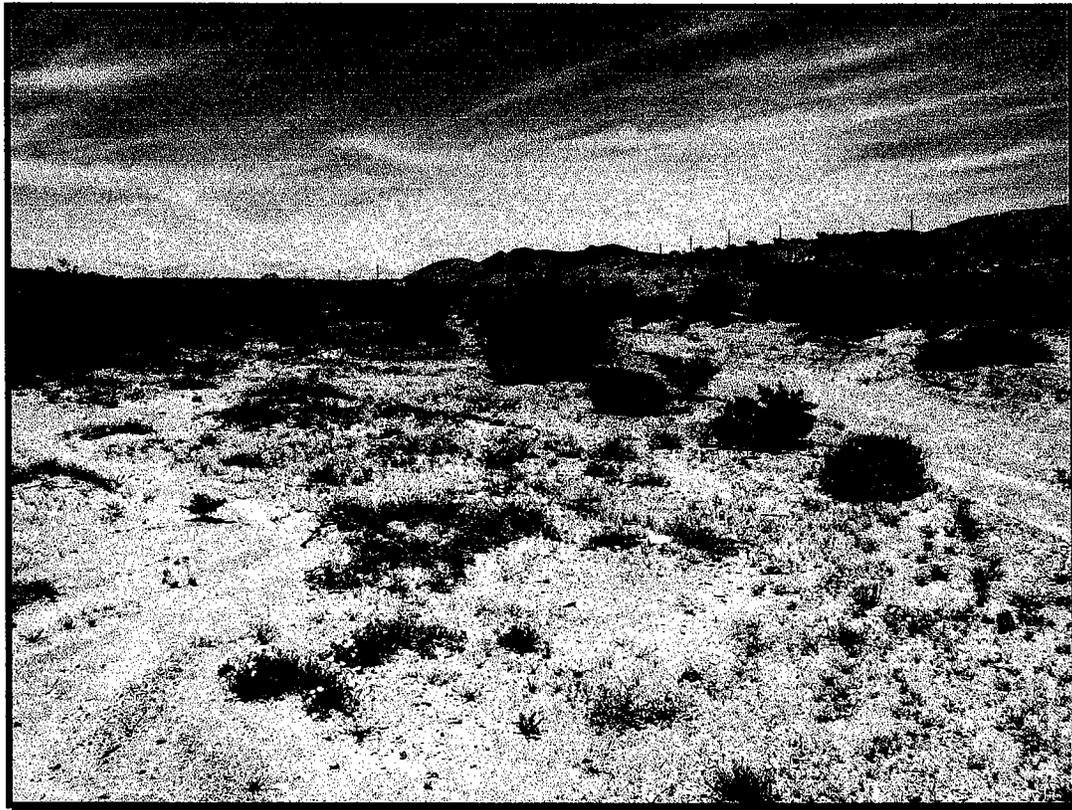
3.2.1 Sensitive Wildlife Species Potential for Occurrence Criteria

A sensitive species was considered as a potential inhabitant of the project site if its known geographical distribution encompassed part of the project site or if its distribution was near the site and general habitat requirements of the species were present (such as the presence of roosting, nesting, or foraging habitat, or a permanent water source). Furthermore, the potential for each species to occur within the project site was also assessed. The potential for occurrence (PFO) ranking is based on the following criteria:

- **Absent** – Species is restricted to habitats that do not occur within the project site or a focused survey failed to detect the species.
- **Low** – No recent or historical records exist of the species occurring within the project site or its immediate vicinity, and/or the habitats needed to support the species on the site are of poor quality.
- **Moderate** – Either a historical record exists of the species within the immediate vicinity of the project site and/or the habitat requirements associated with the species occur within the project site.
- **High** – There is either a recent historical record of the species occurring within the project site or its immediate vicinity and/or the diagnostic habitat requirements strongly associated with the species occur within the project site or its immediate vicinity.
- **Present** – The species was observed within the project site at the time of the survey.



White Bursage Series at Magazines Site



Desert Wash – south side of Magazines Site

3.2.2 Sensitive Wildlife

A literature review determined that 2 federal- or state listed sensitive wildlife species and 1 CDFG species of concern have historical records of occurrence within the project vicinity. Table 1 provides a list of these and gives their potential to occur on the Weapons Survivability site. Further information regarding these species follows the table.

**Table 1
Sensitive Wildlife Species Potentially Occurring Within the Magazines Project Site**

Scientific Name	Common Name	Status Listing	Occurrence	PFO
THREATENED OR ENDANGERED SPECIES				
CLASS OSTEICTHYES	BONY FISH			
<i>Gila bicolor mohavensis</i>	Mojave tui chub	FE SE	Occurs in various desert areas of California.	ABSENT
CLASS MAMMALIA	MAMMALS			
RODENTIA	MICE, SQUIRRELS, RATS, BATS, and WOODCHUCKS			
<i>Spermophilus movahensis</i>	Mojave ground squirrel	ST	Occurs in various desert scrubs of the western Mojave Desert in southwestern Inyo, eastern Kern, northeastern San Bernardino, and extreme northeastern Los Angeles counties.	LOW
OTHER SENSITIVE SPECIES				
CLASS AVES	BIRDS			
MIMIDAE	MOCKINGBIRDS			
<i>Toxostoma lecontei</i>	Le Conte's thrasher	CSC	Occurs from Inyo County south to the Mexican border and in western and southern San Joaquin Valley.	MODERATE
Status Codes				
Federal				
FE = Federal-listed; Endangered				
FT = Federal-listed; Threatened				
FC = Federal candidate				
State				
ST = State-listed; Threatened				
SE = State-listed; Endangered				
CSC = California Special Concern Species				
Source:				
California Natural Diversity Data Base (CNDDDB), California Native Plant Society Electronic Inventory Ridgecrest North and Lone Butte 7.5 USGS Quads				

3.2.2.1 Threatened, Endangered, and Candidate Species Descriptions

This section provides a brief description of the biology of the threatened, endangered, and candidate wildlife species that have a potential to occur on the project site or were found to occur within the project vicinity. Three of these species are listed as federal or state endangered or threatened or candidate species. Two other species are California state-listed as a special concern species. These descriptions and the potential for occurrence are applicable for both the Armitage West and the Armitage East sites.

The **Mojave ground squirrel** (*Spermophilus mohavensis*) is a California state threatened species that inhabits various desert scrub communities, frequently in association with winter fat (*Krascheninnikovia lanata*), desert thorn (*Lycium* sp.), and spiny hopsage (*Grayia spinosa*). Habitat historically associated with Mojave ground squirrel occurrence is absent on the Magazine site but there are recorded occurrences of the species is approximately 5 miles southwest, near Lone Butte. Therefore, there is a low for this Mojave ground squirrel to occur on Weapons Survivability site.

The **Mojave tui chub** (*Gila bicolor mohavensis*) is a federal- and state –listed endangered species. The chub prefers a Lacustrine habitat. It was introduced into Lark Seep in 1971 as a refuge site. Since that time the chub have migrated into the adjoining channels. It has been found that they prefer deep pools and slow moving water. The Lark Seep System has approximately 5 miles of channel with ponds of water at the beginning and end of the system. Within that system there are three areas that have a viable population: the George Road Channel, the G1 Channel and the North Channel. No open water occurs on the project site; therefore the Mojave tui chub is considered to be absent from the Magazine site.

3.2.2.2 Other Sensitive Wildlife Species Descriptions

Le Conte's thrasher (*Toxostoma lecontei*) is a California special concern species that historically is known to occur primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub vegetation communities; as well as Joshua tree communities with scattered shrubs. There is desert scrub (Creosote Bush Series) on the site but the nearest recorded occurrence of the species is approximately 8 miles southeast, near Fishhead Rocks. Therefore Le Conte's thrasher is considered to have a moderate potential to occur on the site.

SECTION 4.0 – SUMMARY

Focused desert tortoise surveys did not detect any evidence of desert tortoise presence on the Magazines site however, vegetation communities historically associated with Le Conte's thrasher are present.

There are records of occurrence for Le Conte's thrasher approximately 8 miles from the site. This in conjunction with the presence of desert scrub habitat on the site give LeConte's thrasher a moderate potential to occur on site.

Mojave ground squirrel occurrences have been recorded within 5 miles of the site but here is no habitat historically associated with the presence of this species thus there is a low potential for occurrence for this species on the Weapons Survivability site.

In as much as Mojave ground squirrel and Le Conte's thrasher are California state special concern species the California Department of Fish and Game should be consulted regarding further action in the case of either of these species prior to or during construction.

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1960 *Illustrated Flora of the Pacific States*, Volume IV. Stanford University Press, Stanford, California.
- California Native Plant Society
1997 *Inventory of Rare and Endangered Vascular Plants of California*. Special Publication No. 1, February 1994.
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2006 Ridgecrest North, Ridgecrest South, Spangler Hills West, and Lone Butte 7.5-minute quadrangles.
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Appendix A

Magazines Observed Species Plant List

**Magazines Plant List
April 2006**

Scientific Name

Common Name

GYMNOSPERMS

EPHEDRACEAE

Ephedra nevadensis

EPHEDRA FAMILY

Mormon tea

ANGIOSPERMS (DICOTYLEDONS)

ASTERACEAE

Acamptopappus sphaerocephalus

Ambrosia dumosa

Baileya pleneradiata

Chaenactis fremontii

Encelia farinosa

Eriophyllum wallacei

Geraea canescens

Lasthenia californica

Malacothrix glabrata

SUNFLOWER FAMILY

goldenhead

Burro bush

woolly desert marigold

desert pincushion

brittlebush

Wallace's woolly daisy

desert sunflower

coast goldfields

desert dandelion

BORAGINACEAE

Amsinckia tessellata

Cryptantha sp.

Pectocarya platycarpa

Tiquilia plicata

BORAGE FAMILY

devil's lettuce

cryptantha

broad-nutted combbur

plicate tiquilia

BRASSICACEAE

Descurainia pinnata

Lepidium fremontii

Stanleya pinnata

MUSTARD FAMILY

western tansy-mustard

desert alyssum

prince's plume

CACTACEAE

Opuntia bigloveii

CACTUS FAMILY

teddybear cholla

CHENOPODIACEAE

Atriplex canescens

Atriplex confertifolia

Atriplex hymenlytra

Atriplex polycarpa

Grayia spinosa

Kochia californica

Suaeda moquinii

GOOSEFOOT FAMILY

four-wing saltbush

shadscale

desert holly

cattle spinach

spiny hop-sage

Mojave red sage

bush seepweed

CUSCUTACEAE*Cuscuta californica***EUPHORBIACEAE***Croton californicus*
Eremocarpus setigerus
*Stillingia linearifolia***FABACEAE***Astragalus lentiginosus*
Lupinus sp.
*Psoralea arborescens***LENNOACEAE***Pholisma arenarium***LOASACEAE***Mentzelia reflexa***MALVACEAE***Eremalche rotundifolia***NYCTAGINACEAE***Abronia pogonantha***ONAGRACEAE***Camissonia sp.*
Camissonia claviformis
*Oenothera primiveris***PAPAVERACEAE***Argemone munita***PLANTAGINACEAE***Plantago ovata***POLEMONIACEAE***Loeseliastrum schottii***POLYGONACEAE***Chorizanthe brevicornu*
Chorizanthe rigida
Eriogonum gracillimum
Eriogonum inflatum
*Eriogonum mojavense***ZYGOPHYLLACEAE***Larrea tridentata***DODDER FAMILY**

California dodder

SPURGE FAMILYCalifornia croton
dove weed
linear-leaved stillingia**LEGUME FAMILY**freckled milkvetch
lupine
indigo bush**LENNOA FAMILY**

dune food

LOASA FAMILY

reflexed blazing star

MALLOW FAMILY

desert five-spot

FOUR O'CLOCK FAMILY

Mojave sand verbena

EVENING PRIMROSE FAMILYcamissonia
brown-eyed evening primrose
desert evening primrose**POPPY FAMILY**

prickly poppy

PLANTAIN FAMILY

woolly plantain

PHLOX FAMILY

freeboot calico

BUCKWHEAT FAMILYbrittle spineflower
spiny-herb
annual buckwheat
desert trumpet
western Mojave buckwheat**CALTROP FAMILY**

creosote bush

ANGIOSPERMS (MONOCOTYLEDONS)

POACEAE

Achnatherum hymenoides

*Bromus diandrus**

*Bromus madritensis ssp. rubens**

*Bromus tectorum**

Distichlis spicata

*Hordeum murinum**

*Schismus barbatus**

*Vulpia myuros**

GRASS FAMILY

Indian ricegrass

ripgut grass

foxtail chess

cheat grass

saltgrass

glaucous foxtail barley

Mediterranean schismus

fescue

**SNORT Safe Haven BRAC
Biological Reconnaissance
And
Desert Tortoise
Survey Report**

**Epsilon Systems Solutions, Inc.
901 N. Heritage Drive
Ridgecrest, CA 93555**

May 2006

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Appendices

Appendix A. List of Plants Present on Site	
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SECTION 1.0 – INTRODUCTION

Epsilon Systems was retained by the NAWS Environmental Planning and Management Department (EPMD) to conduct a literature review, a reconnaissance-level biological survey, focused surveys for desert tortoise presence, and to prepare a biological technical report of findings for the construction of Safe Haven facilities on the SNORT access road on the Naval Air Weapons Station China Lake. This study is being conducted to provide necessary data required for a NEPA analysis relating to renovation of existing facility and the construction of new facilities. The purpose of this report is to summarize the results of the literature review and surveys and document the existing natural resources at the project site.

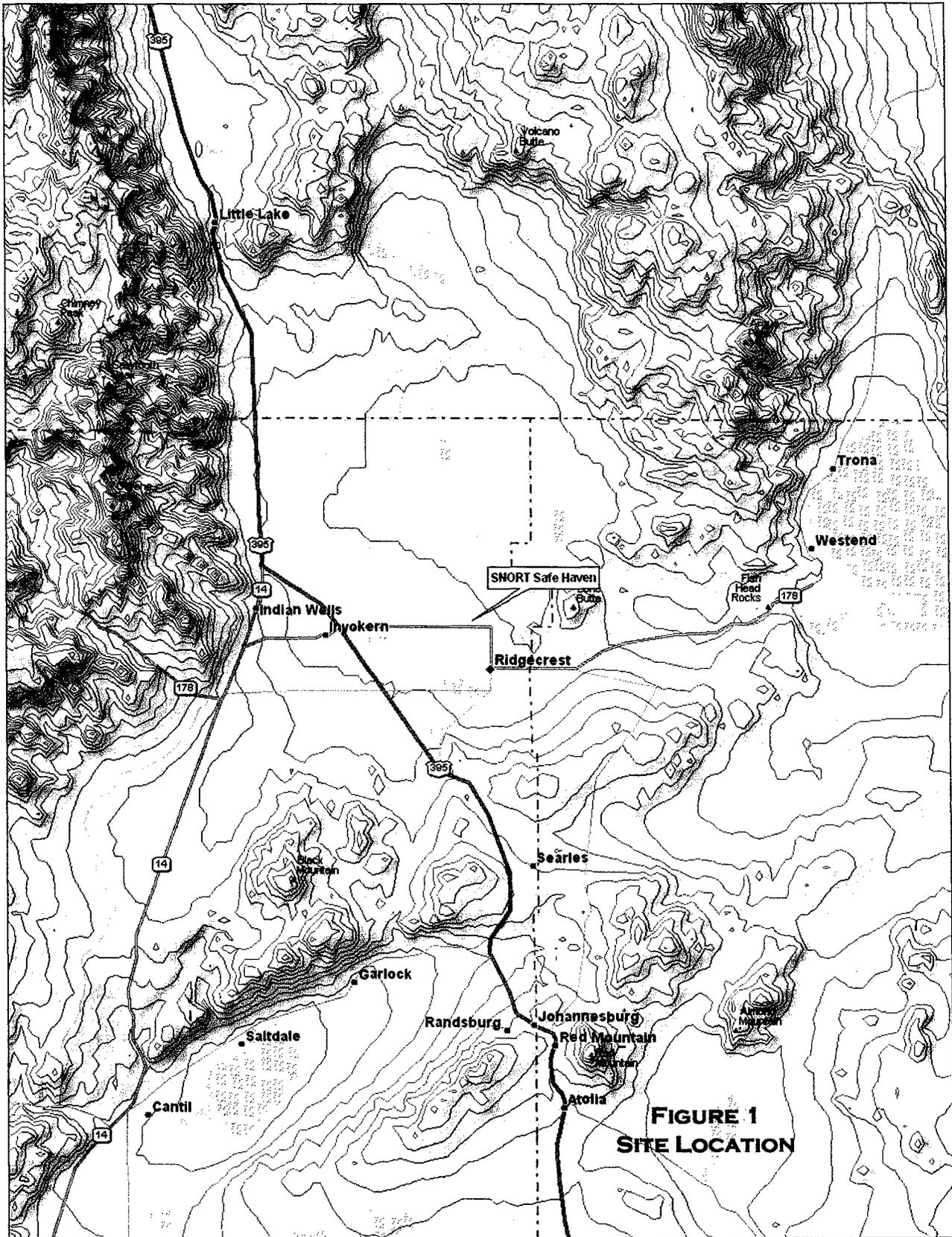
The site is located within Township 26S, Range 40E, Section 21 of the U.S. Geological Survey (USGS) Ridgecrest North 7.5-minute topographic quadrangle (Figure 1). Elevation on the project site is approximately 2,200 feet above mean sea level.

SECTION 2.0 – METHODS

Prior to performing the field survey, existing documentation relevant to the project site was reviewed. The most recent records of the California Natural Diversity Database (CNDDB 2006) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2006) were reviewed for the quadrangles relevant to the project site (i.e., Ridgecrest North and Ridgecrest South USGS 7.5 minute quadrangles). These databases contain records of reported occurrences of federal- and/or state-listed endangered or threatened or proposed endangered or threatened species, California Species of Special Concern (CSC), or otherwise special-status species or habitat that have a historical record of occurrence within or in the vicinity of the project site. Lists from the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) were also reviewed.

Reconnaissance-level biological surveys and focused surveys for desert tortoise presence were conducted by Epsilon System Solutions biologists Kent W. Hughes, Susan Williams, and Cara Lamoreux on April 5, 2006. These surveys consisted of walking linear transects, spaced a maximum of 10-meters apart on the areas that will be disturbed during construction. Additionally, desert tortoise zone of influence surveys were conducted April 7, 2006. These consisted of walking transects 100 feet, 300 feet, 600 feet, 1200 feet, and 2400 feet from the boundaries of the projects sites (Figure 2).

All plant and wildlife species observed were recorded in field notes. Plants of uncertain identity were collected and subsequently identified from vegetative keys or other identification tools. Plant nomenclature follows that of *The Jepson Manual, Higher Plants of California* (Hickman 1993). Plant communities have been identified and described following the vegetation community descriptions of *A Manual of California* (Sawyer and Keeler-Wolf, 1995). Secondary vegetation communities references may refer to *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986) or other applicable references.



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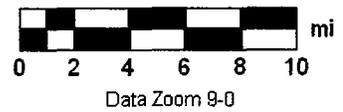
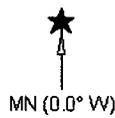
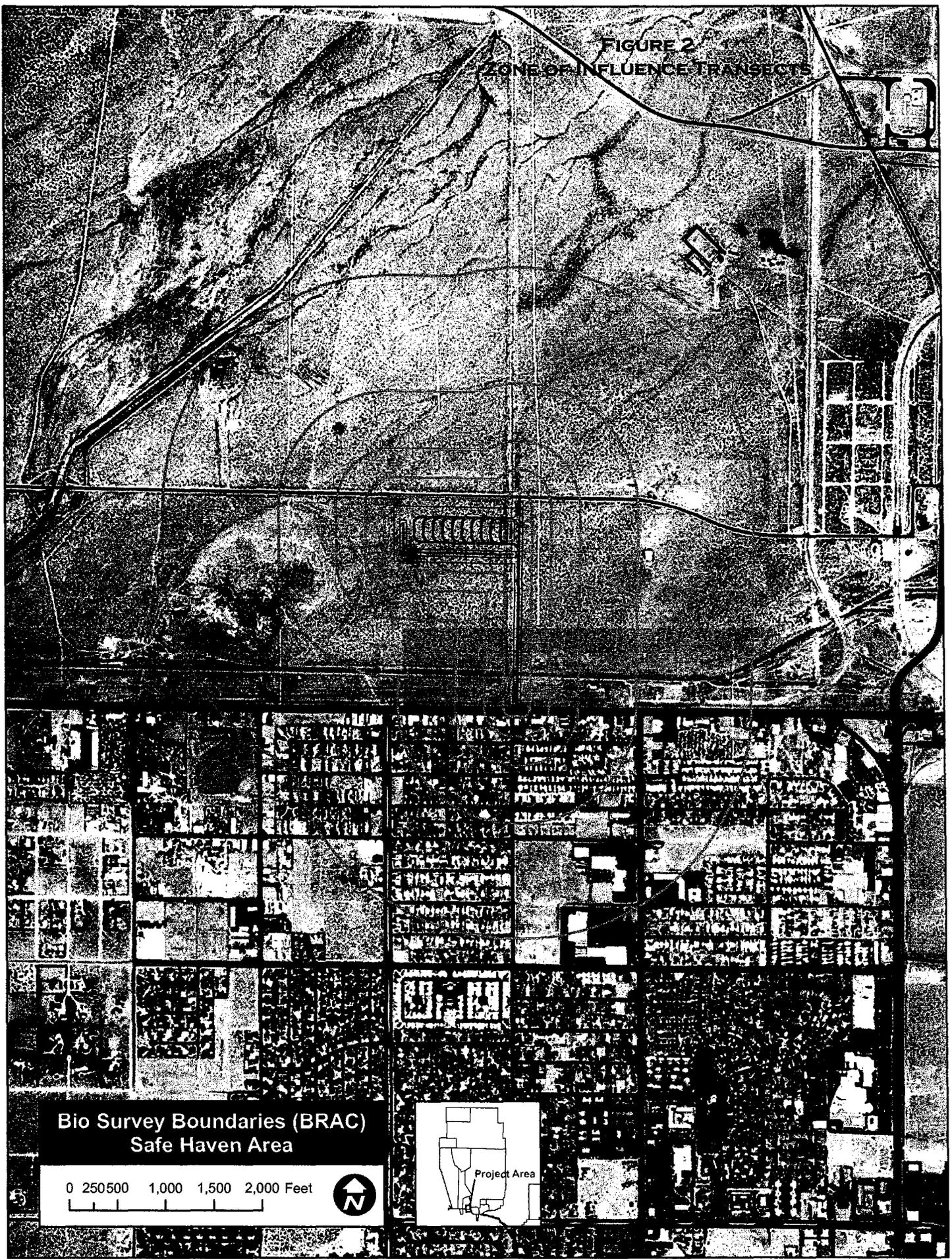
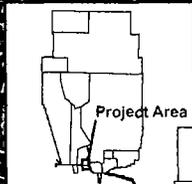


FIGURE 2
ZONE OF INFLUENCE TRANSECTS



Bio Survey Boundaries (BRAC)
Safe Haven Area

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



SECTION 3.0 – RESULTS

3.1 VEGETATION

3.1.1 Vegetation Communities

3.1.1.1 Creosote Bush Series

The vegetation community present on the SNORT access road construction sites is a Creosote Bush Series. This series may be considered part of the creosote bush scrub (Holland, 1986) which itself can be considered a collection of series. This is an open canopy community with creosote bush (*Larrea tridentata*) the sole or dominant shrub in this community. The ground layer is open and annuals may be seasonally present. This community occurs on alluvial fans, bajadas, and upland slopes with well-drained soils that may or may not have a pavement surface. Vegetation encountered on the SNORT access road site typical of this community includes creosote bush (*Larrea tridentata*), four-wing saltbush (*Atriplex canescens*), teddy-bear cholla (*Opuntia bigloveii*), indigo bush (*Psoralea schottii*), and white bursage (*Ambrosia dumosa*).

A plant list of species encountered during the surveys is available in Appendix A.

3.1.1 Special Status Plant Species

The literature review showed no plant species that are either federal- or state-listed or are CNPS List 1A, 1B, or 2, that have a previous record of occurrence on or within the vicinity of the project site.

3.2 WILDLIFE

3.2.1 Sensitive Wildlife Species Potential for Occurrence Criteria

A sensitive species was considered as a potential inhabitant of the project site if its known geographical distribution encompassed part of the project site or if its distribution was near the site and general habitat requirements of the species were present (such as the presence of roosting, nesting, or foraging habitat, or a permanent water source). Furthermore, the potential for each species to occur within the project site was also assessed. The potential for occurrence (PFO) ranking is based on the following criteria:

- **Absent** – Species is restricted to habitats that do not occur within the project site or a focused survey failed to detect the species.
- **Low** – No recent or historical records exist of the species occurring within the project site or its immediate vicinity, and/or the habitats needed to support the species on the site are of poor quality.
- **Moderate** – Either a historical record exists of the species within the immediate vicinity of the project site and/or the habitat requirements associated with the species occur within the project site.
- **High** – There is either a recent historical record of the species occurring within the project site or its immediate vicinity and/or the diagnostic habitat requirements strongly associated with the species occur within the project site or its immediate vicinity.
- **Present** – The species was observed within the project site at the time of the survey.

3.2.2 Sensitive Wildlife

A literature review determined that 3 federal- or state listed sensitive wildlife species have historical records of occurrence within the project vicinity. Table 1 provides a list of these and gives their potential to occur on the SNORT access road site. Further information regarding these species follows the table.

**Table 1
Sensitive Wildlife Species Potentially Occurring Within the SNORT Access Road Project Site**

Scientific Name	Common Name	Status Listing	Occurrence	PFO
THREATENED OR ENDANGERED SPECIES				
CLASS OSTEICTHYES	BONY FISH			
<i>Gila bicolor mohavensis</i>	Mojave tui chub	FE SE	Occurs in various desert areas of California.	ABSENT
CLASS REPTILIA	REPTILES			
<i>Gopherus agassizii</i>	desert tortoise	FT ST	Occurs in northeastern Los Angeles, eastern Kern and southeastern Inyo counties, and most of San Bernardino, Riverside, and Imperial counties.	ABSENT
CLASS MAMMALIA	MAMMALS			
RODENTIA	MICE, SQUIRRELS, RATS, BATS, and WOODCHUCKS			
<i>Spermophilus movahensis</i>	Mojave ground squirrel	ST	Occurs in various desert scrubs of the western Mojave Desert in southwestern Inyo, eastern Kern, northeastern San Bernardino, and extreme northeastern Los Angeles counties.	LOW
Status Codes				
Federal				
FE = Federal-listed; Endangered				
FT = Federal-listed; Threatened				
FC = Federal candidate				
State				
ST = State-listed; Threatened				
SE = State-listed; Endangered				
CSC = California Special Concern Species				
Source:				
California Natural Diversity Data Base (CNDDDB), California Native Plant Society Electronic Inventory Ridgecrest North and Ridgecrest South 7.5 USGS Quads				

3.2.2.1 Threatened, Endangered, and Candidate Species Descriptions

This section provides a brief description of the biology of the threatened, endangered, and candidate wildlife species that have a potential to occur on the project site or were found to occur within the project vicinity. All three of these species are listed as federal and/or state endangered or threatened or candidate species.

The **desert tortoise** (*Gopherus agassizii*) is a federal- and state list threatened species that inhabits river washes, rocky hillsides, and flat desert having sandy or gravelly soils. Creosote bush, burrobush (white bursage), saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs and grasses. The site is essentially flat and has sandy, gravelly soil, and is populated many of the plant species associated with tortoise occurrence, however evidence of tortoise presence; including burrows, scat, and/or pellets, was not encountered during protocol focused and zone of influence surveys. Therefore, the desert tortoise may be considered absent from the site.

The **Mojave ground squirrel** (*Spermophilus mohavensis*) is a California state threatened species that inhabits various desert scrub communities, frequently in association with winter fat (*Krascheninnikovia lanata*), desert thorn (*Lycium* sp.), and spiny hopsage (*Grayia spinosa*). Habitat historically associated with Mojave ground squirrel occurrence is absent on the Magazine site but there are 7 recorded occurrences of the species within 5 miles of the site, including 3 within 2 miles of the site, therefore, there is a low potential for this species to occur on the SNORT access road site.

The **Mojave tui chub** (*Gila bicolor mohavensis*) is a federal- and state –listed endangered species. The chub prefers a Lacustrine habitat. It was introduced into Lark Seep in 1971 as a refuge site. Since that time the chub have migrated into the adjoining channels. It has been found that they prefer deep pools and slow moving water. The Lark Seep System has approximately 5 miles of channel with ponds of water at the beginning and end of the system. Within that system there are three areas that have a viable population: the George Road Channel, the G1 Channel and the North Channel. No open water occurs on the project site; therefore the Mojave tui chub is considered to be absent from the Magazine site.

SECTION 4.0 – SUMMARY

Focused desert tortoise surveys did not detect evidence of desert tortoise presence on the SNORT access road site or in the vicinity therefore desert tortoise may be considered absent from the site.

Vegetation historically associated with a significant probability of occurrence of Mojave ground squirrel, i.e., winterfat (*Krascheninnikova lanata*), desert thorn (*Lycium* sp.), and spiny hopsage (*Grayia spinosa*), does not occur on the SNORT Safe Haven site, however, occurrences have been recorded as close as 2 miles from the site, thus there is a low potential for occurrence for this species on the SNORT access road site.

In as much as Mojave ground squirrel is a state special concern species the California Department of Fish and Game should be consulted regarding further action regarding this species prior to or during construction.

SECTION 7.0 – REFERENCES

- Abrams, L. and R.S. Ferris
1960 *Illustrated Flora of the Pacific States*, Volume IV. Stanford University Press, Stanford, California.
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Appendix A

SNORT Access Road Observed Species Plant List

**SNORT Safe Haven Plant List
April 2006**

Scientific Name

Common Name

ANGIOSPERMS (DICOTYLEDONS)

ASTERACEAE

Ambrosia dumosa
Chaenactis fremontii
Chrysothamnus nauseosus
Eriophyllum pringlei
Hymenoclea salsola
Malacothrix glabrata

SUNFLOWER FAMILY

Burro bush
desert pincushion

Pringle's woolly daisy
cheesebush

desert dandelion

BORAGINACEAE

Amsinckia tessellata
Cryptantha sp.
Pectocarya platycarpa

BORAGE FAMILY

devil's lettuce
cryptantha
broad-nutted comb bur

CACTACEAE

Opuntia bigloveii

CACTUS FAMILY

teddybear cholla

EUPHORBIACEAE

Eremocarpus setigerus

SPURGE FAMILY

dove weed

FABACEAE

Astragalus lentiginosus
Senna armata

LEGUME FAMILY

freckled milkvetch
spiny senna

GERANIACEAE

*Erodium cicutarium**

GERANIUM FAMILY

red-stemmed filaree

ONAGRACEAE

Camissonia palida
Camissonia strigulosa

EVENING PRIMROSE FAMILY

pale yellow suncup
field evening primrose

PAPAVERACEAE

Eschscholzia minutiflora

POPPY FAMILY

small-flowered desert poppy

POLYGONACEAE

Chorizanthe brevicornu
Chorizanthe rigida
Eriogonum gracillimum

BUCKWHEAT FAMILY

brittle spineflower
spiny-herb
annual buckwheat

ZYGOPHYLLACEAE

Larrea tridentata

CALTROP FAMILY

creosote bush

ANGIOSPERMS (MONOCOTYLEDONS)

POACEAE

*Schismus barbatus**

GRASS FAMILY

Mediterranean schismus

**Weapons Survivability BRAC
Biological Reconnaissance
And
Desert Tortoise
Survey Report**

**Epsilon Systems Solutions, Inc.
901 N. Heritage Drive
Ridgecrest, CA 93555**

December 2005

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Appendices

Appendix A. Site Photographs

Appendix B. List of Plants Present on Site

SECTION 1.0 – INTRODUCTION

Epsilon Systems was retained by the NAWS Environmental Planning and Management Department (EPMD) to conduct a literature review, a reconnaissance-level biological survey, focused surveys for desert tortoise presence, and to prepare a biological technical report of findings for a 3.2-acre site and a 1.2-acre site at the Weapons Survivability range on the Naval Air Weapons Station China Lake (Figure 2). This study is being conducted to provide necessary data required for a NEPA analysis relating to renovation of existing facility and the construction of new facilities. The purpose of this report is to summarize the results of the literature review and surveys and document the existing natural resources at the project site.

The two sites are within 100 meters of each other and can be located within Township 28S, Range 41E, Section 28 of the U.S. Geological Survey (USGS) Lone Butte 7.5-minute topographic quadrangle. Elevation on the project site is approximately 2,200 feet above mean sea level.

SECTION 2.0 – METHODS

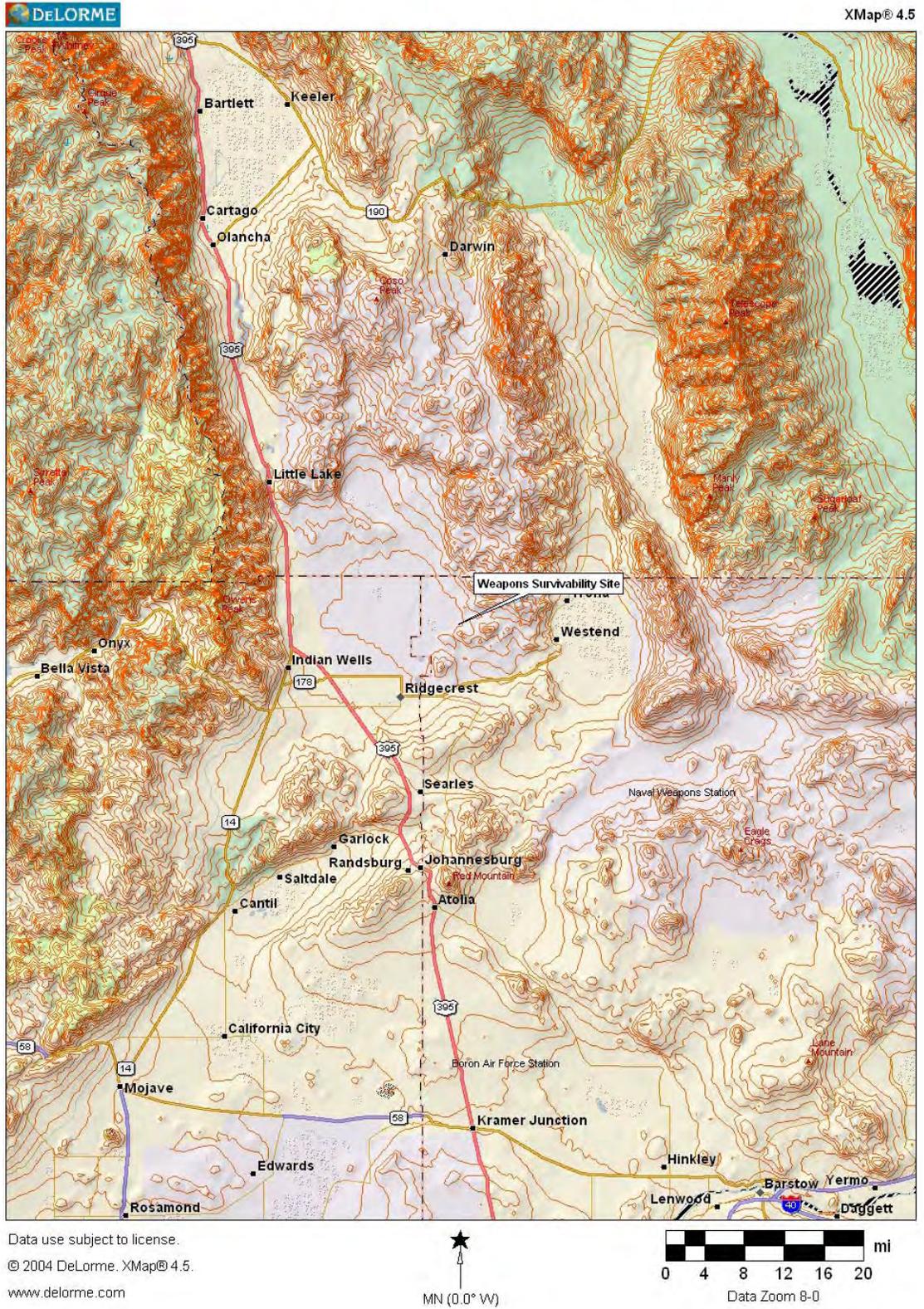
Prior to performing the field survey, existing documentation relevant to the project site was reviewed. The most recent records of the California Natural Diversity Database (CNDDDB 2005) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2005) were reviewed for the quadrangles relevant to the project site (i.e., Lone Butte and Burro Canyon USGS 7.5 minute quadrangles). These databases contain records of reported occurrences of federal- and/or state-listed endangered or threatened or proposed endangered or threatened species, California Species of Special Concern (CSC), or otherwise special-status species or habitat that have a historical record of occurrence within or in the vicinity of the project site. Lists from the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) were also reviewed.

The 1.2 acre site is a developed site, covered in concrete and structures and supporting no vegetation. Biological surveys were not necessary on this site.

At the 3.2-acre site reconnaissance-level biological surveys and focused surveys for desert tortoise presence were conducted by Epsilon System Solutions biologists Kent W. Hughes and Susan Williams on November 18, 2005. These surveys consisted of walking linear transects, spaced 10-meters apart across the project site. Tortoise Zone of Influence surveys were conducted November 30, 2005 at the sites. The zone of influences surveys consisted of walking transects along lines spaced at 100 feet, 300 feet, 600 feet, 1200 feet, and 2400 feet from the boundaries of the projects sites (Figure 3). Photos of the 3.2-acre site may be found in Appendix A. Due to security restrictions no photos were taken of the 1.2-acre site.

All plant and wildlife species observed were recorded in field notes. Plants of uncertain identity were collected and subsequently identified from vegetative keys or other identification tools. Plant nomenclature follows that of The Jepson Manual, Higher Plants of California (Hickman 1993). Plant communities have been identified and described following the vegetation community descriptions of *A Manual of California* (Sawyer and Keeler-Wolf, 1995). Secondary vegetation communities references may refer to *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986). A list of plant and wildlife species observed during the survey is presented in Appendix B.

Figure 1- Location of Site



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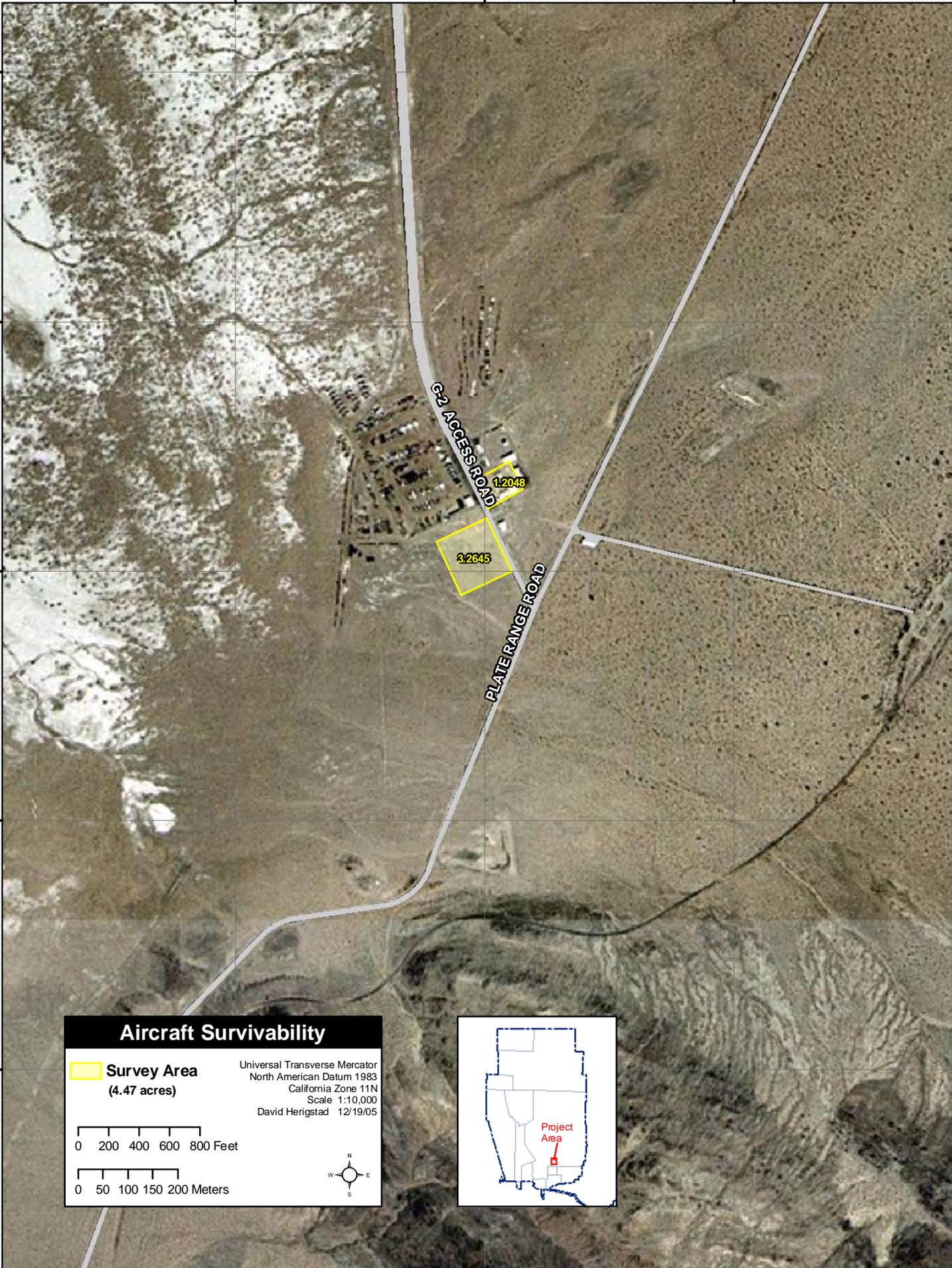
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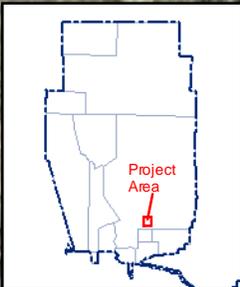
Aircraft Survivability

Survey Area
(4.47 acres)

Universal Transverse Mercator
North American Datum 1983
California Zone 11N
Scale 1:10,000
David Herigstad 12/19/05

0 200 400 600 800 Feet

0 50 100 150 200 Meters



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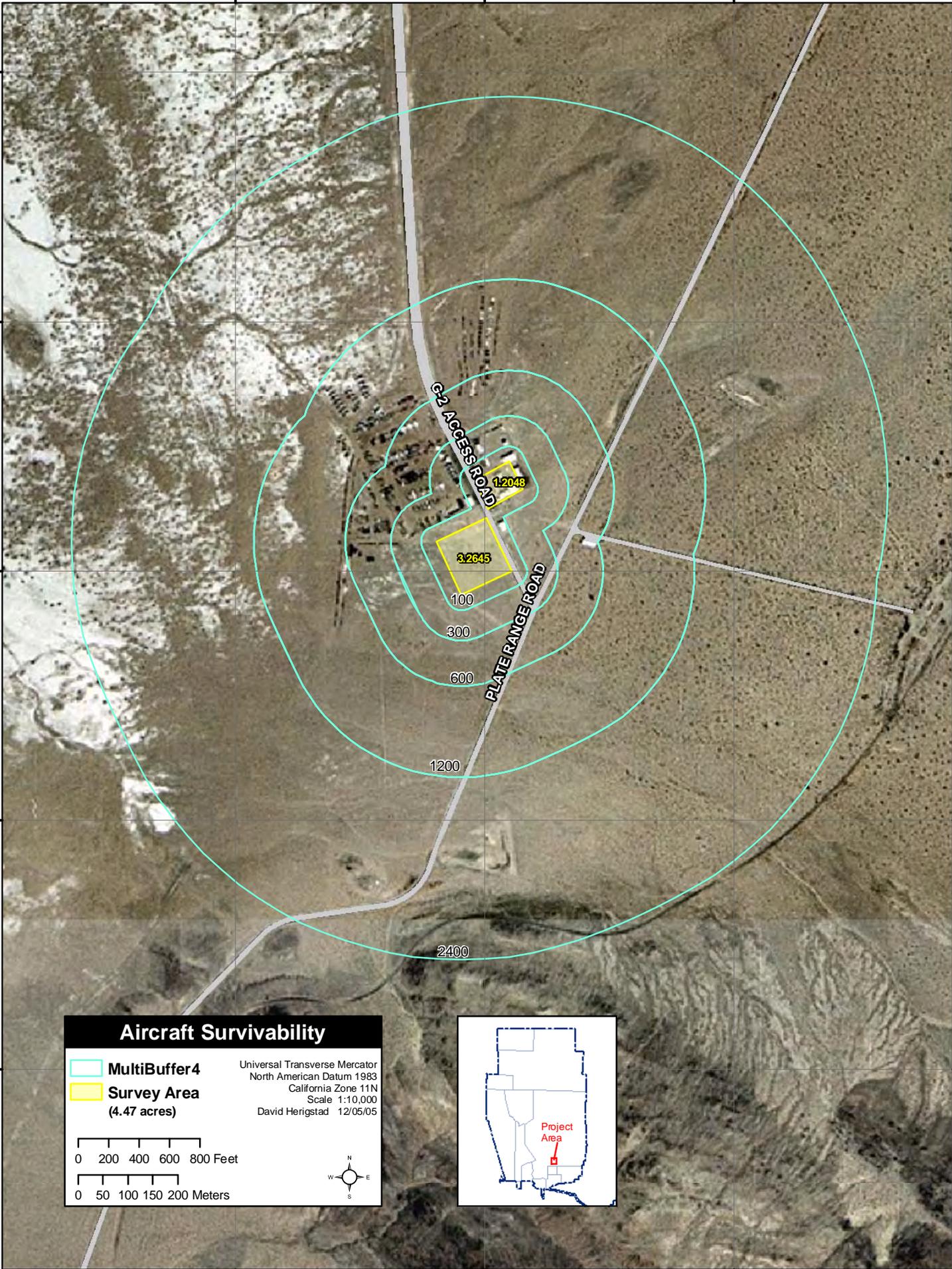
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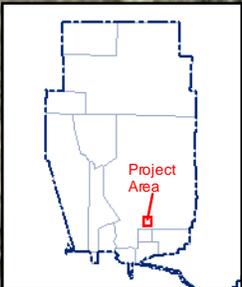


Aircraft Survivability

MultiBuffer4
 Survey Area
 (4.47 acres)

Universal Transverse Mercator
 North American Datum 1983
 California Zone 11N
 Scale 1:10,000
 David Herigstad 12/05/05

0 200 400 600 800 Feet
 0 50 100 150 200 Meters



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SECTION 3.0 – RESULTS

3.1 VEGETATION

3.1.1 Vegetation Community – 3.2 acre site

Disturbed Mixed Saltbush Series

The Mixed Saltbush Series is a community of various saltbushes (*Atriplex* sp.) that is found on bajadas, flats, lower slopes, playas, and valleys. The canopy is made up of shrubs less than 3 meters tall and may be continuous, intermittent, or open. Soils may be carbonate rich. The 3.2-acre Weapons Survivability site is an impoverished alkaline playa that supports a very sparse growth of desert holly (*Atriplex hymenelytra*) and shadscale (*A. confertifolia*). There is no other vegetation on the site.

3.1.1 Special Status Plant Species

The literature review showed no plant species that are either federal- or state-listed or are CNPS List 1A, 1B, or 2, that have a previous record of occurrence on or within the vicinity of the project site.

3.2 WILDLIFE

3.2.1 Sensitive Wildlife Species Potential for Occurrence Criteria

A sensitive species was considered as a potential inhabitant of the project site if its known geographical distribution encompassed part of the project site or if its distribution was near the site and general habitat requirements of the species were present (such as the presence of roosting, nesting, or foraging habitat, or a permanent water source). Furthermore, the potential for each species to occur within the project site was also assessed. The “potential for occurrence” ranking is based on the following criteria:

- Species absent – Species is restricted to habitats that do not occur within the project site or a focused survey failed to detect the species.
- Low potential for occurrence – No recent or historical records exist of the species occurring within the project site or its immediate vicinity, and/or the habitats needed to support the species on the site are of poor quality.
- Moderate potential for occurrence – Either a historical record exists of the species within the immediate vicinity of the project site and/or the habitat requirements associated with the species occur within the project site.

- High potential for occurrence – There is either a recent historical record of the species occurring within the project site or its immediate vicinity and/or the diagnostic habitat requirements strongly associated with the species occur within the project site or its immediate vicinity.
- Species present – The species was observed within the project site at the time of the survey.

3.2.2 Sensitive Wildlife

A literature review determined that 3 federal- or state listed sensitive wildlife species and 2 CDFG species of concern have historical records of occurrence within the project vicinity. Table 1 provides a list of these and gives their potential to occur on the 3.2-acre Weapons Survivability site. Further information regarding these species follows the table.

**Table 1
Sensitive Wildlife Species Potentially Occurring Within the Armitage Project Site**

Scientific Name	Common Name	Status Listing	Occurrence	Potential for Occurrence Within the Weapons Survivability Site
THREATENED OR ENDANGERED SPECIES				
CLASS OSTEICHTHYES	BONY FISH			
<i>Gila bicolor mohavensis</i>	Mojave tui chub	FE FE	Occurs in various desert areas of California.	ABSENT
CLASS MAMMALIA	MAMMALS			
RODENTIA	MICE, SQUIRRELS, RATS, BATS, and WOODCHUCKS			
<i>Spermophilus movahensis</i>	Mojave ground squirrel	ST	Occurs in various desert scrubs of the western Mojave Desert in southwestern Inyo, eastern Kern, northeastern San Bernardino, and extreme northeastern Los Angeles counties.	ABSENT
EMBERIZIDAE	EMBERIZINE SPARROWS AND THEIR ALLIES			
<i>Pipilo crissalis eremophilus</i>	Inyo California towhee	FE ST	An isolated subspecies of the California towhee in the southern Argus Mountains of Inyo County.	ABSENT
OTHER SENSITIVE SPECIES				
CLASS AVES	BIRDS			
MIMIDAE	MOCKINGBIRDS			
<i>Toxostoma lecontei</i>	Le Conte's thrasher	CSC	Occurs from Inyo County south to the Mexican border and in western and southern San Joaquin Valley.	ABSENT
FALOCNIDAE	DIURNAL RAPTORS			
<i>Falco mexicanus</i>	prairie falcon	CSC	Throughout the American west from Canada to Mexico.	ABSENT
Status Codes				
Federal FE = Federal-listed; Endangered FT = Federal-listed; Threatened FC = Federal candidate (FSC) = Federal Species of Concern; not an active term, and is provided for informational purposes only State ST = State-listed; Threatened SE = State-listed; Endangered CSC = California Special Concern Species				
Source: California Natural Diversity Data Base (CNDDB), Corona North, Corona South, Lake Mathews, Riverside West, USGS quads.				

3.2.2.1 Threatened, Endangered, and Candidate Species Descriptions

This section provides a brief description of the biology of the threatened, endangered, and candidate wildlife species that have a potential to occur on the project site or were found to occur within the project vicinity.

The **Mojave ground squirrel** (*Spermophilus mohavensis*) is a California state threatened species that inhabits various desert scrub communities, frequently in association with winter fat (*Krascheninnikovia lanata*), desert thorn (*Lycium* sp.), and spiny hopsage (*Grayia spinosa*). Habitat historically associated with Mojave ground squirrel occurrence does not occur on the Weapons Survivability site and the vegetation that does exist on the site is extremely sparse. Thus, though there are 6 recorded occurrences of Mojave ground squirrel within 10 miles of the site this species may be considered to be absent from the site.

The **Mojave tui chub** (*Gila bicolor mohavensis*) is a federal- and state-listed endangered species. The chub prefers a Lacustrine habitat. It was introduced into Lark Seep in 1971 as a refuge site. Since that time the chub have migrated into the adjoining channels. It has been found that they prefer deep pools and slow moving water. The Lark Seep System has approximately 5 miles of channel with ponds of water at the beginning and end of the system. Within that system there are three areas that have a viable population: the George Road Channel, the G1 Channel and the North Channel. No open water occurs on the project site; therefore the Mojave tui chub is considered to be absent from the site.

The **Inyo California Towhee** (*Pipilo crissalis eremophilus*) is a federal-listed threatened, state-listed endangered species historically found to be restricted to the vicinity of dense riparian vegetation for foraging and nesting. It also forages on desert hillsides adjacent to the riparian areas. No riparian areas exist on the Weapons Survivability site nor in the vicinity; therefore, this species may be considered absent from the site.

3.2.2.2 Other Sensitive Wildlife Species Descriptions

Le Conte's thrasher (*Toxostoma lecontei*) is a California special concern species that historically is known to occur primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub vegetation communities; as well as Joshua tree communities with scattered shrubs. The alkali desert scrub (Mixed Saltbush Series) on the site is degraded to the point of non-existence; therefore, this species may be considered absent from the site.

The **prairie falcon** (*Falco mexicanus*) is a California state special concern species that occurs in open, dry countryside and uses grasslands, canyon lands, deserts, foothills and dry mountain valleys for breeding and foraging. It nests on cliff sides and home range estimates for the prairie falcon range from 10 to 50 square miles but the core foraging area is likely to be 10 to 15 square miles for many pairs. This species is known in the vicinity of the Weapons Survivability site from one occurrence in Burro Canyon. The vegetation on the site is degraded and does not provide the forage opportunities preferred by the prairie falcon; therefore this species may be considered absent from the site.

SECTION 4.0 – CONCLUSIONS AND RECOMMENDATIONS

Neither of the Weapons Survivability sites support vegetation communities that create habitat for any of the 5 special status species wildlife determined to have historical occurrences in the vicinity and there are no records of special status plant species

occurring in the area. No further surveys or mitigation for impacts to special status will be necessary prior to construction.

SECTION 5.0 – REFERENCES

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Appendix A

Site Photographs



Photo 1. Weapons Survivability 3.2-acre Site: near north boundary



Photo 2. Weapons Survivability 3.2-acre Site: center looking southeast



Photo 3. Weapons Survivability 3.2-acre Site: desert holly.



Photo 4. Weapons Survivability 3.2-acre Site: shadscale

Appendix B
List of Plants Present on Site

Weapons Survivability Plant List

Scientific Name

Common Name

VASCULAR PLANTS

ANGIOSPERMS (DICOTYLEDONS)

CHENOPODIACEAE

GOOSEFOOT FAMILY

Atriplex confertifolia

shadscale

Atriplex hymenelytra

desert holly

C

Air Quality Calculations

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APPENDIX C

**AIR EMISSIONS ASSESSMENT
REALIGNMENT AND DEVELOPMENT OF A WEAPONS SURVIVABILITY COMPLEX
NAVAL AIR WEAPONS STATION (NAWS) CHINA LAKE, CALIFORNIA**

CALCULATION OF EMISSIONS: YEAR 2009

C.1 2009 Construction Emissions: Vehicle Engine Exhaust from Grading and Material Hauling Activities

Input Parameters/Assumptions:	
Total Construction Area:	123,983 ft ²
Total Paved Area:	0.00 ft ²
Total Disturbed Area:	5.91 acres
Construction Duration:	1.00 years
Annual Construction Activity:	250 days/yr
Total Demolition:	4,745 ft ²

Table C-1 Emission Factors For Vehicle Engine Exhaust From Construction Activities

Activity	SMAQMD Emission Factor									
	ROG ¹		NO _x		SO ₂ ²		CO ²		PM ₁₀	
Grading Equipment ³	2.91E-01	lbs/acre/day	2.75E+00	lbs/acre/day	0.18	lbs/acre/day	0.60	lbs/acre/day	2.32E-01	lbs/acre/day
Material Hauling ⁴	4.20E-01	lbs/acre/day	6.07E+00	lbs/acre/day	0.40	lbs/acre/day	1.31	lbs/acre/day	4.30E-01	lbs/acre/day

Reference: *Air Quality Thresholds of Significance*, Sacramento Metropolitan Air Quality Management District (SMAQMD), 1994 and *Compilation of Air Pollutant Emission Factors* (USEPA AP-42).

- 1 ROG = VOC.
- 2 Factors for grading equipment are calculated from AP-42 for diesel engines using ratios with the NO_x factors.
- 3 Grading Activities assumes the use of one tracked loader, one wheeled loader, and one motor grader for each 10 acres of disturbed area, used 8 hours per day.
- 4 Material Hauling Activities assumes the use of one loader and one haul truck for each 10 acres of disturbed area, used 8 hours per day.

Table C-2 Total Daily Vehicle Engine Exhaust Emissions From Construction Activities¹

	ROG	NO _x	SO ₂	CO	PM ₁₀
Grading Equipment	1.7	16.3	1.1	3.5	1.4
Material Hauling	2.5	35.9	2.4	7.8	2.5
Total Emissions (lbs/day):	4.2	52.2	3.5	11.3	3.9

1 Total emissions (lbs/day) = Emission Factor * Affected Acres

Table C-3 Total Vehicle Engine Exhaust Emissions from Construction Activities¹

	ROG	NO _x	SO ₂	CO	PM ₁₀
Grading Equipment	0.22	2.03	0.14	0.44	0.17
Material Hauling	0.31	4.48	0.30	0.97	0.32
Fugitive Emissions (from page 2)					3.05
Total Emissions (tons/yr)	0.53	6.52	0.43	1.41	3.53

1 Total emissions (TPY) = Total emissions (lbs/day) * days of construction / 2000 lbs per ton

C.2 2009 Construction Emissions: Fugitive Emissions From Construction Activities

Input Parameters / Assumptions	
Acres affected:	5.9 acres/yr
Grading days/yr:	21 days/yr
Exposed days/yr:	21 days/yr graded area is exposed
Grading Hours/day:	8 hr/day
Soil percent silt, s:	15 %
Soil percent moisture, M:	2 %
Fraction of TSP, J:	0.5 (SCAQMD recommendation)
Mean vehicle speed, S:	5 mi/hr (On-site)
Dozer path width:	5 ft
Qty construction vehicles:	3 vehicles
On-site VMT/vehicle/day:	5 mi/veh/day (Excluding bulldozer VMT during grading)

Reference: CEQA Air Quality Handbook, SCAQMD, April 1993.

Table C-4 Equation Used To Calculate Operation Parameters

Operation Parameter	Emission		Equation
	Factor	Units	
Grading duration per acre	28.4 hr/acre		Grading days * hours per day / acres affected
Bulldozer mileage per acre	1.7 VMT/acre		Miles traveled by bulldozer, based on dozer path width
Construction VMT per day	15 VMT/day		Number of vehicle * VMT per vehicle per day
Construction VMT per acre	53.3 VMT/acre		Construction VMT * days of construction / acres affected (Travel on unpaved surfaces within site)

Table C-5 Equations Used To Calculate Mass/Unit Emission Factors (Corrected for PM₁₀)

Operation	Empirical Equation	Units	AP-42 Section (4th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	8.24, Overburden
Grading	$(0.60)(0.051)S^{2.0}$	lbs/VMT	8.24, Overburden
Vehicle Traffic	$(3.72/(M^{4.3}))^{*}0.6$	lbs/VMT	8.24, Overburden

Reference: *Compilation of Air Pollutant Emission Factors*, USEPA AP-42:

Section 8.24, Western Surface Coal Mining (4th Edition)

Table C-6 Emission Factors For Fugitive Emissions From Construction Activities¹

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/acre)
Bulldozing	16.51 lbs/hr	28.4 hr/acre	468.9 lbs/acre
Grading	0.77 lbs/VMT	1.7 VMT/acre	1.3 lbs/acre
Vehicle Traffic	0.11 lbs/VMT	53.30 VMT/acre	5.9 lbs/acre

¹ Emission Factor (lbs/acre) = Emission Factor (lbs per hour or VMT) * Operation Parameter (hours of VMT per acre)

Table C-7 Calculation of Annual Fugitive Emissions from Construction Activities

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing ¹	468.9 lbs/acre	5.91	NA	2,771	1.39
Grading ¹	1.3 lbs/acre	5.91	NA	8	0.00
Vehicle Traffic ¹	5.9 lbs/acre	5.91	NA	35	0.02
Erosion of Graded Surface ²	26.4 lbs/acre/day ³	5.91	21	3,277	1.64
TOTAL				6,091	3.05

¹ Total annual emissions (TPY) = Emission Factor (lbs/acre) * affected acres * 2000 lbs per ton

² Total annual emissions (TPY) from erosion = Emission Factor (lbs/acre) * days of construction * 2000 lbs per ton

³ Reference: CEQA Air Quality Handbook, SCAQMD, April 1993.

APPENDIX C

**AIR EMISSIONS ASSESSMENT
REALIGNMENT AND DEVELOPMENT OF A WEAPONS SURVIVABILITY COMPLEX
NAVAL AIR WEAPONS STATION (NAWS) CHINA LAKE, CALIFORNIA**

CALCULATION OF EMISSIONS: YEAR 2010

C.3 2010 Construction Emissions: Vehicle Engine Exhaust From Grading and Material Hauling Activities

Input Parameters/Assumptions:	
Total Construction Area:	29,689 ft ²
Total Paved Area:	294,802 ft ²
Total Disturbed Area:	7.45 acres
Construction Duration:	1.00 years
Annual Construction Activity:	250 days/yr
Total Demolition:	0 ft ²

Table C-8 Emission Factors For Vehicle Engine Exhaust From Construction Activities

Activity	SMAQMD Emission Factor									
	ROG ¹		NO _x		SO ₂ ²		CO ²		PM ₁₀	
Grading Equipment ³	2.91E-01	lbs/acre/day	2.75E+00	lbs/acre/day	0.18	lbs/acre/day	0.60	lbs/acre/day	2.32E-01	lbs/acre/day
Material Hauling ⁴	4.20E-01	lbs/acre/day	6.07E+00	lbs/acre/day	0.40	lbs/acre/day	1.31	lbs/acre/day	4.30E-01	lbs/acre/day

Reference: *Air Quality Thresholds of Significance*, Sacramento Metropolitan Air Quality Management District (SMAQMD), 1994 and *Compilation of Air Pollutant Emission Factors* (USEPA AP-42).

1 ROG = VOC.

2 Factors for grading equipment are calculated from AP-42 for diesel engines using ratios with the NO_x factors.

3 Grading Activities assumes the use of one tracked loader, one wheeled loader, and one motor grader for each 10 acres of disturbed area, used 8 hours per day.

4 Material Hauling Activities assumes the use of one loader and one haul truck for each 10 acres of disturbed area, used 8 hours per day.

Table C-9 Total Daily Vehicle Engine Exhaust Emissions From Construction Activities¹

	ROG	NO _x	SO ₂	CO	PM ₁₀
Grading Equipment	2.2	20.5	1.4	4.4	1.7
Material Hauling	3.1	45.2	3.0	9.8	3.2
Total Emissions (lbs/day):	5.3	65.7	4.4	14.2	4.9

1 Total Emissions (lbs/day) = Emission Factor * Affected Acres

Table C-10 Total Vehicle Engine Exhaust Emissions from Construction Activities¹

	ROG	NO _x	SO ₂	CO	PM ₁₀
Grading Equipment	0.27	2.56	0.17	0.56	0.22
Material Hauling	0.39	5.65	0.38	1.22	0.40
Fugitive Emissions (from page 2)					3.48
Total Emissions (tons/yr)	0.66	8.22	0.55	1.78	4.09

1 Total emissions (TPY) = Total emissions (lbs/day) * days of construction / 2000 lbs per ton

C.4 2010 Construction Emissions: Fugitive Emissions From Construction Activities

Input Parameters / Assumptions	
Acres affected:	7.4 acres/yr
Grading days/yr:	21 days/yr
Exposed days/yr:	21 days/yr graded area is exposed
Grading Hours/day:	8 hr/day
Soil percent silt, s:	15 %
Soil percent moisture, M:	2 %
Fraction of TSP, J:	0.5 (SCAQMD recommendation)
Mean vehicle speed, S:	5 mi/hr (On-site)
Dozer path width:	5 ft
Qty construction vehicles:	3 vehicles
On-site VMT/vehicle/day:	5 mi/veh/day (Excluding bulldozer VMT during grading)

Reference: CEQA Air Quality Handbook, SCAQMD, April 1993.

Table C-11 Equation Used To Calculate Operation Parameters

Operation Parameter	Emission		Equation
	Factor	Units	
Grading duration per acre	22.6 hr/acre		Grading days * hours per day / acres affected
Bulldozer mileage per acre	1.7 VMT/acre		Miles traveled by bulldozer, based on dozer path width
Construction VMT per day	15 VMT/day		Number of vehicle * VMT per vehicle per day
Construction VMT per acre	42.3 VMT/acre		Construction VMT * days of construction / acres affected (Travel on unpaved surfaces within site)

Table C-12 Equations Used To Calculate Mass/Unit Emission Factors (Corrected for PM₁₀)

Operation	Empirical Equation	Units	AP-42 Section (4th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	8.24, Overburden
Grading	$(0.60)(0.051)S^{2.0}$	lbs/VMT	8.24, Overburden
Vehicle Traffic	$(3.72/(M^{4.3}))^{*}.6$	lbs/VMT	8.24, Overburden

Reference: *Compilation of Air Pollutant Emission Factors*, USEPA AP-42: Section 8.24, Western Surface Coal Mining (4th Edition)

Table C-13 Emission Factors For Fugitive Emissions From Construction Activities¹

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/acre)
Bulldozing	16.51 lbs/hr	22.6 hr/acre	373.1 lbs/acre
Grading	0.77 lbs/VMT	1.7 VMT/acre	1.3 lbs/acre
Vehicle Traffic	0.11 lbs/VMT	42.30 VMT/acre	4.7 lbs/acre

¹ Emission Factor (lbs/acre) = Emission Factor (lbs per hour or VMT) * Operation Parameter (hours of VMT per acre)

Table C-14 Calculation of Annual Fugitive Emissions from Construction Activities

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing ¹	373.1 lbs/acre	7.45	NA	2,779	1.39
Grading ¹	1.3 lbs/acre	7.45	NA	10	0.00
Vehicle Traffic ¹	4.7 lbs/acre	7.45	NA	35	0.02
Erosion of Graded Surface ²	26.4 lbs/acre/day ³	7.45	21	4,130	2.06
Total				6,954	3.48

¹ Total annual emissions (TPY) = Emission Factor (lbs/acre) * affected acres * 2000 lbs per ton

² Total annual emissions (TPY) from erosion = Emission Factor (lbs/acre) * days of construction * 2000 lbs per ton

³ Reference: CEQA Air Quality Handbook, SCAQMD, April 1993.

C.5 Projected increase in Annual Emissions from Increased Privately Owned Vehicles (POV)

Table C-15 POV Emission Factors

Fleet Year	Vehicle Type	EPA Category	Emission Factor (g/mile)			
			NOx	CO	PM	VOC
1995	Cars	LDGV	1.22	13.2	0.022	1.12
	Pickups	LDGT1	1.63	18.49	0.022	1.63
	Trucks (5 axles)	HDDV	10.81	11.22	1.652	2.16
	Trucks (3 axles)	LDDT	1.21	1.52	0.26	0.6

Note:

Emission factors from Calculation Methods for Criteria Air Pollutant Emission Inventories (Armstrong Laboratory, 1994).

Key:

LDGV = Light-duty gasoline-fueled vehicles designated for transport of up to 12 people.

LDGT1 = Light-duty gasoline-fueled trucks with a gross vehicle weight (GVW) rating of 6,000 pounds or less.

LDDT = Light-duty diesel-powered trucks with a GVW of 8,500 pounds or less.

HDDV = Heavy-duty diesel-powered vehicles with a GVW exceeding 8,500 pounds.

Table C-16 Projected Criteria Air Pollutant Emissions From Privately Owner Vehicles

Group	Vehicle Type	Daily Vehicles (/day)	Daily Travel - Per Vehicle			Travel Days (days/yr)	Annual Travel (VMT/yr)	Annual Emissions (lb/yr)		
			On-Base (VMT)	Off-Base (VMT)	Total (VMT)			PM	NOx	VOC
Increase in Personnel 17	Cars	11.9	6.0	10.0	16.0	247.0	47,028.8	2.3	126.5	116.1
	Pickups/Light Trucks	5.1	6.0	10.0	16.0	247.0	20,155.2	1.0	72.4	72.4
	Pickups/Light Trucks	0.0	6.0	10.0	16.0	247.0	0.0	0.0	0.0	0.0
	Heavy Trucks	0.0	6.0	10.0	16.0	247.0	0.0	0.0	0.0	0.0
	Total	17.0	-	-	-	-	-	-	3.3	198.9
TOTAL TPY								0.0016	0.099	0.094

Increase in Personnel from Table 4-1 of NAWS China Lake BRAC EA Traffic Impact Analysis November 2006
Average Daily Travel estimated based on location of residential areas surrounding NAWS China Lake

C.6 Projected Increase in Annual Emissions from Built Space Use

Table C-17 Emissions from Space Heating and Cooling Use

Total sq ft new habitable space	12,012		
ft ¹	43		
new built space	516,516.00		
Total in 10 ⁶ ft nat gas	0.517		
Criteria Pollutants ²	Emission Factors (lb/10 ⁶ ft ³ nat fuel)	Emissions (lbs/year)	Emissions from new built space (TPY)
NO _x	94.00	48.55	0.024
VOC	5.50	2.84	0.0014
CO	40.00	20.66	0.010
SO ₂	0.60	0.31	0.00015
PM _{2.5}	7.60	3.93	0.0020
PM ₁₀	7.60	3.93	0.0020
PM	7.60	3.93	0.0020

Notes:

- 1 Average value for all buildings, *Energy Information Administration 2003 Commercial Buildings Energy Consumption Survey: Consumption and Expenditures Tables* http://www.eia.doe.gov/emew/cbecs/cbecs2003/detailed_tables_2003/2003set11/2003pdf/c24.pdf
- 2 Emission factors for natural gas from AP-42, 5th Edition, Section 1.4, Tables 1.4-1 and 1.4-2.

D

Record of Non-Applicability

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**DEPARTMENT OF DEFENSE
DEPARTMENT OF THE NAVY**

**CLEAN AIR ACT - GENERAL CONFORMITY RULE
RECORD OF NON-APPLICABILITY (RONA)**

**For
REALIGNMENT AND DEVELOPMENT OF A WEAPONS SURVIVABILITY
COMPLEX**

**NAVAL AIR WEAPONS STATION (NAWS)
CHINA LAKE, CALIFORNIA**

Summary

Projected air emissions associated with the proposed action are below *de minimis* levels, are not regionally significant, and do not require further conformity analysis.

1.0 Introduction

The Clean Air Act (CAA) as amended requires federal actions to conform to an approved state implementation plan (SIP). The SIP is designed to achieve or maintain an attainment designation for air pollutants as defined by the National Ambient Air Quality Standards (NAAQSs). The General Conformity Rule (40 CFR Parts 51 and 93) implements these requirements for Federal actions occurring in air quality non-attainment and maintenance areas.

The CAA designates six pollutants as criteria pollutants for which NAAQSs have been promulgated to protect public health and welfare: particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), lead (Pb), and ozone (O₃). Areas that do not meet NAAQSs are designated as “non-attainment” for those criteria pollutants exceeding their respective NAAQS. Non-attainment status is further classified by the extent to which the standard is exceeded. There are six classifications of ozone non-attainment status—transitional, marginal, moderate, serious, severe, and extreme; and two classifications of CO and PM₁₀ non-attainment status—moderate and serious. An area which has been redesignated from non-attainment to attainment is referred to as a “maintenance” area.

The activities proposed under this action at NAWS are located in Kern County and San Bernardino County, California, within the Kern County Air Pollution Control District (APCD), and the Mojave Desert Air Quality Management District (AQMD), respectively. The Mojave Desert AQMD portion of NAWS has been designated by the United States Environmental Protection Agency (USEPA) as attainment for the PM_{2.5} and 8-hour O₃ standards, and non-attainment for the PM₁₀ standard. The Kern County APCD portion of NAWS is also in attainment for the PM_{2.5} and 8-hour O₃ standards, and is a maintenance area for the PM₁₀ standard. While the NAWS is in attainment for the 8-

hour O₃ standard, it was previously a maintenance area with respect to the 1-hour O₃ standard. Therefore, this analysis will include the O₃ precursors of NO_x and VOCs to ensure this action will not interfere with statewide O₃ standard implementation efforts.

A Federal action is exempt from applicability of the General Conformity Rule requirements if the action's total net emissions are below the *de minimis* levels specified in the rule (see Table 1) and are not regionally significant (i.e., the emissions represent 10 percent or less of a non-attainment or maintenance area's total emission inventory of that pollutant), that are not otherwise exempt per 40 CFR 51.153. Total net emissions include direct and indirect emissions from all stationary point and area sources, construction sources, and/or mobile sources caused by the federal action that are not covered by another permitting program. To determine if an exemption is applicable to this action, emissions of PM₁₀ were evaluated.

Table 1 De Minimis Levels for Exemption from General Conformity Rule Requirements for Ozone and Particulate Matter (Tons/Year)

Pollutant	Tons/Year
O₃ (Volatile organic compounds [VOCs] or Nitrogen oxides [NO_x])	
Serious non-attainment areas	50
Severe non-attainment areas	25
Extreme non-attainment areas	10
Marginal and moderate O₃ non-attainment and O₃ maintenance areas outside an O₃ transport region	
VOCs	100
NO _x	100
Marginal and moderate O₃ non-attainment and O₃ maintenance areas inside an O₃ transport region	
VOCs	50
NO _x	100
Particulate Matter	
Moderate non-attainment and maintenance areas	100
Serious non-attainment areas	70

Source: 40 CFR 51.

¹ Ozone does not occur directly from any source, but results from a series of reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in sunlight. Therefore, *de minimis* levels of NO_x and VOCs are used to determine exemption from the General Conformity Rule for emissions that would affect ozone levels in an area of non-attainment for ozone.

2.0 Proposed Action

The Proposed Action is in response to the BRAC Commission of 2005 recommendations for the realignment of fixed-wing related Live Fire Testing & Evaluation (LFT&E) to NAWS China Lake. This recommendation would result in the realignment of the following activity to NAWS China Lake:

- Wright Patterson AFB Ohio, LFT&E.

This action is specific to construction and operation of facilities on NAWS China Lake.

3.0 Projected Air Emissions

Air emissions from the Proposed Action would be those associated with construction of the facilities and then operation of the buildings, increased privately owned vehicle (POV) use, ordnance detonation, and aircraft testing. Construction activities for BRACON P-700V are expected to begin in FY 2009 and continue through FY 2010. Construction activity will include demolition, site preparation, road widening, new buildings, new parking lots, new sidewalks, and a test pad. These emissions were calculated for each year of planned construction. The annual emissions estimates for construction and the final estimated annual emissions are provided in Table 2. The sources of emissions are described below, and detailed emission calculation information is provided in Appendix C of the EA. Although the Proposed Action will result in different emissions in Kern County and San Bernardino County, the total estimated worst-case emissions are treated as one area for comparison with the *de minimis* limits. No indirect emissions would be associated with this action.

3.1 FY 2009

For purposes of this emissions evaluation, it is assumed that site preparation, demolition, and construction of the Fabrication Assembly Facility, Test Control Building, and Test Pad will occur in FY 2009. It is assumed that 9,849 square meters (105,975 square feet) of excavation and grading will occur, 1,673 square meters (18,008 square feet) of space (including the test pad) will be constructed, 441 square meters (4,745 square feet) will be demolished, and 2.39 total hectares (5.9 total acres) will be disturbed. Appendix C provides detailed breakdown and assumptions related to the assessment of air emissions from the construction of these facilities. Emission totals are summarized in Table 2.

3.2 FY 2010

It is assumed that in FY 2010 the Laboratory Office will be constructed, road widening and paving, parking lot paving, and concrete and sidewalk work will be done. It is assumed that 372 square meters (4,004 square feet) of space will be constructed, 27,398 square meters (294,802 square feet) will be paved or surfaced, 2,387 square meters (25,685 square feet) of sidewalks and concrete will be laid, and 3.01 total hectares (7.5 total acres) will be disturbed. Appendix C provides detailed breakdown and assumptions related to the assessment of air emissions from the construction of these facilities. Emission totals are summarized in Table 2.

3.3 Final Annual Emissions

The permanent changes that will result in increased air emissions include the operation of POVs, heating and cooling of new built space, ordnance detonation, and aircraft testing. Emissions from automobiles were calculated using data collected for the NAWS China Lake Traffic Impact Study (U.S. Navy 2006), and built space emissions estimates were based on new built space, average natural gas use for built space, and USEPA emission factors (See Appendix C). The potential emissions from ordnance detonation and aircraft testing have already been analyzed and approved in the facility-wide permits issued by the Mojave Desert AQMD and therefore are not included in this annual estimate. The final annual emissions are summarized in Table 2. Since the full implementation of the

relocation would not occur until after construction activities are complete, this increase in emissions will occur annually after 2010.

Table 2 Annual Emissions

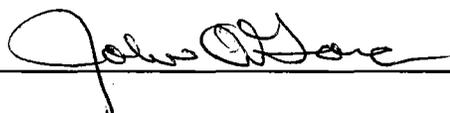
Activity	PM₁₀ (TPY)
Grading Equipment	0.17
Material Hauling	0.32
Fugitive Emissions	3.05
2009 Total Emissions	3.54
Grading Equipment	0.22
Material Handling	0.40
Fugitive Emissions	3.48
2010 Total Emissions	4.10
POV operation increase	0.0016
Heating and Cooling of new buildings	0.0020
Final Annual Emissions	0.0036

Key:
TPY = Tons per year.

4.0 Conclusion

Total direct and indirect emissions of PM₁₀ for all years evaluated are below the *de minimis* threshold of 100 tons per year for PM₁₀ moderate non-attainment and maintenance areas. These emission levels are also less than 10% of the air district's total inventory of PM₁₀ emissions; thus, they are not regionally significant. Therefore, the proposed federal action is exempt from further analysis under the General Conformity Rule.

To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that implementation of the proposed action will conform to the SIP.


 _____ Date 9 July 2007.

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SHPO Consultation Letter

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Ser N45NCW/447
November 1, 2006

Mr. Milford Wayne Donaldson
Office of Historic Preservation, California Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001
Attn: Mr. David Byrd

Dear Mr. Donaldson:

In compliance with Section 106 of the National Historic Preservation Act, we are sending the enclosed *Summary Report and Data Recovery Plan for Cultural Resources Survey and Evaluation Testing at Six Prehistoric Archeological Sites at the Survivability Tech-0006 Proposed Project Area, NAWS China Lake* for your review and concurrence. The archaeological survey and evaluation efforts described in the report meet the requirements set forth in 36 CFR 800.

The Navy proposes to upgrade and add facilities at the Weapons Survivability Lab (WSL) on the NAWS China Lake North Range pursuant to 2005 Base Realignment and Closure (BRAC) statutory requirements. In support of the proposed action, ASM Affiliates, Inc. completed a 112-acre cultural resources survey and limited evaluation-level testing at six prehistoric archeological sites identified in the WSL BRAC project area. The survey and testing indicated that four of the sites meet the criterion of eligibility for listing in the National Register of Historic Places under 36 CFR 60.4 (d). The Navy finds that the information contained in these sites is “likely to yield, information important in prehistory.” All of the sites appear to represent human activity during the early Holocene or terminal Pleistocene. These sites will need to be treated through the enclosed archeological data recovery in order to mitigate for potential impacts from the proposed BRAC projects at WSL. The enclosed Report and Data Recovery Plan details the eligibility of those sites, and provides an appropriate plan to mitigate effects to those eligible sites. Please review the enclosed report and provide comments and concurrence on the eligibility of the four sites, and the adequacy of the proposed data recovery plan.

Please direct any questions or comments regarding the determination of eligibility and the adequacy of the data recovery plan for the four sites to be impacted by the proposed BRAC actions at WSL to Mr. Russell Kaldenberg, Archeologist, Environmental Planning and

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Management Department (Code N45NCW). He can be reached at (760) 939-1350 or via e-mail at russell.kaldenberg@navy.mil.

Sincerely,

CAROLYN A. SHEPHERD
Head, Environmental Planning & Mgmt. Dept.
By direction of
the Commanding Officer

Enclosure: 1. *Summary Report and Data Recovery Plan for Cultural Resources Survey and Evaluation Testing at Six Prehistoric Archeological Sites at the Survivability Tech-0006 Propose Project Area, NAWS, China Lake*

Blind copy to (w/o encl):
N03NS-1004 (Janrhatt)
N45NCW-4014 (file, Pennix, Kaldenberg, O'Gara)

Writer: R. Kaldenberg, 939-1350, N45NCW
Typist: L. Esmeralda, 939-2750 1 Nov 06

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