**Finding Of No Significant Impact (FONSI)**
**for Construction of a**
**Base Civil Engineer Complex at Travis Air Force Base, California**

## Introduction

This Finding of No Significant Impact (FONSI) was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the President's Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations (CFR) 1500-1508); and the *Environmental Impact Analysis Process*, 32 CFR 989. The decision in this FONSI is based on information contained in the Environmental Assessment (EA) for the Construction of a Base Civil Engineer Complex, Travis Air Force Base (AFB), California, which is hereby incorporated by reference.

The purpose of the EA was to determine the extent of environmental impacts that might result from the construction and operation of a Base Civil Engineering (BCE) Complex and to evaluate whether those impacts, if any, would be significant. Currently, BCE functions are dispersed throughout fifty-five mostly outdated, difficult to maintain, substandard facilities. The purpose of the proposed action is to consolidate BCE functions into a modern, unified complex resulting in more efficient operations, lower maintenance costs and reduced energy consumption by design meeting Leadership in Energy and Environmental Design (LEED) Silver Standards.

### Description of the Proposed Action and Alternatives

The alternatives that have been analyzed include two possible locations for the BCE complex, analyzed in the EA as Alternative 1 and Alternative 2. The No Action Alternative was also analyzed in accordance with 32 CFR 989.8(d). Alternative 1 is located north of Ellis Drive across from the current RV parking lot. The approximate area available is 606,774 square feet (sf) with domestic water and sewer available in the area. The majority of the site can be described as open, manicured grassland with a developed area in the southwest corner where Building 755 was demolished in 2009. Alternative 2 is located on the west side of Dixon Street in the vicinity of Buildings 881 and 833. The approximate area that would be impacted by construction is 474,788 sf. Much of this site is currently situated within the ERP DP039 groundwater plume and remedial area. The southern half of the site is currently used as pasture land for horses, and the northern half of the site is used to stage maintenance materials on paved surfaces. The chosen alternative must meet or exceed state environmental requirements for building and parking lot construction, avoid or minimize impacts to sensitive habitat, species and other environmental issues, comply with Air Force, Department of Defense and Travis AFB planning and design manuals, design standards and safety requirements for airfield operations, meet minimum DoD antiterrorism/force protection requirements and provide operational flexibility for the various organizations that would use the complex.

### Decision

After review of the EA, the Air Force has decided on construction of the Proposed Action, with Alternative 1 as the preferred alternative site. The potential impacts to the human and

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natural environment were evaluated relative to the existing environment. For each environmental resource or issue, anticipated direct and indirect effects were assessed, considering both short-term and long-term project effects. During construction and operation, the Proposed Action would result in less than significant impacts or no effects to air quality, noise, hazardous materials, hazardous waste, stored fuels, water resources, biological resources, cultural resources, safety and occupational health, transportation and utilities and environmental justice. No impacts at the Alternative 1 site require mitigation to insignificance. An isolated wet meadow at the Alternative 2 site would require mitigation under the Executive Order 11990, "no net loss of wetlands" which the Air Force would accomplish by purchase of a requisite number of wetlands credits in an off-base wetlands mitigation bank. Construction related impacts to soils would be temporary and all areas that are not developed at either site would be restored to pre-construction condition upon project completion. Overall, the analysis for this EA indicates that the construction of a BCE Complex would not result in or contribute to significant negative cumulative or indirect impacts to the resources of the region.

**Finding of No Significant Impact**

In accordance with the CEQ regulations implementing NEPA and the Air Force Environmental Impact Analysis Process, the Air Force concludes that the Proposed Action will have no significant impact on the quality of the human environment and that the preparation of an environmental impact statement is not warranted.

After a public review period and consideration of comments received, the Proposed Action will be implemented upon approval. In accordance with Air Force policy, a notice of availability (NOA) for the EA and FONSI was published in local newspapers and posted on Travis AFB's public website. The NOA provided a 15 day public comment period for documents made available to interested parties in local libraries, on Travis AFB's public website and through the state clearing house and direct mailings.

**Conclusion**

On the basis of my review of the facts and analyses contained in the EA, I conclude that implementation of the Proposed Action will not have a significant impact either by itself or when considering cumulative impacts. Therefore, issuance of a **Finding of No Significant Impact** is warranted, and an Environmental Impact Statement is not required. The analysis fulfills the requirements of the NEPA and the implementing regulations promulgated by the CEQ, and 32 CFR 989.

Dwight C. Jones

Date 26 JAN 2012

**DWIGHT C. SONES, Colonel, USAF**
**Commander, 60th Air Mobility Wing**

# FINAL
# Environmental Assessment
# Construction of Base Civil Engineer Complex
# Travis Air Force Base,
# Fairfield, California

**Contract FA4427-06-D-0100**
**Delivery Order No. 5019**

**Submitted By:**

**Travis Air Force Base, California**

**November 2011**

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## Acronyms and Abbreviations

| | |
|---|---|
| ug/m3 | Micrograms per cubic meter |
| °F | Degrees Fahrenheit |
| 1,1-DCE | Dichloroethene |
| 1,2-DCE | Dichloroethane |
| 1,1,1-TCA | Trichloroethene |
| 1,1,2-TCA | Trichloroethane |
| 60 CES/CEA | 60th Civil Engineering Squadron/Asset Management Flight |
| 60 CES/CEANR | 60th Civil Engineering Squadron/Restoration Section of Asset |
| AAFES | Army/Air Force Exchange Service |
| ACHP | Advisory Council on Historic Preservation |
| AEI | Air Emissions Inventory |
| AFB | Air Force Base |
| AICUZ | Air Installation Compatible Use Zone |
| AIRFA | American Indian Religious Freedom Act |
| AF | U.S. Air Force |
| AFP | Appropriated fund personnel |
| AFM | AF Manual |
| AMC | Air Mobility Command |
| AMW | Air Mobility Wing |
| APE | Area of Potential Effect |
| APCD | Air Pollution Control Districts |
| AQCR | Air Quality Control Region |
| AST | Aboveground storage tank |
| AT/FP | Anti-Terrorism/Force Protection |
| ATW | Air Transport Wing |
| BA | Biological Assessment |
| BAAQMD | Bay Area Air Quality Management District |
| BACT | Best Available Control Technology |
| Base | Travis Air Force Base |
| Base RPM | Base Restoration Program Manager |
| Basin | San Francisco Bay Area Air Basin |
| BCE | Base Civil Engineering |
| bgs | Below ground surface |
| BMP | Best management practice |
| BO | Biological Opinion |
| C&D | Construction and demolition |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| CARB | California Air Resources Board |
| CEQ | President's Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFC | Chlorofluorocarbons |
| CFR | Code of Federal Regulations |

| | |
|---|---|
| CH4 | Methane |
| CNDDB | California Natural Diversity Database |
| CNEL | Community Noise Equivalent Level |
| CNPS | California Native Plant Society |
| CO | Carbon monoxide |
| CO2 | Carbon dioxide |
| CTS | California tiger salamander |
| CWA | Clean Water Act |
| CY | Calendar year |
| dB | Decibel(s) |
| dBA | A-weighted decibel |
| DDOC | Deployment Distribution and Operation Center |
| DGMC | David Grant Medical Center |
| DNL | Day-night sound level |
| DoD | Department of Defense |
| DWR | Department of Water Resources |
| EA | Environmental Assessment |
| EIAP | Environmental Impact Analysis Process |
| EIOU | East Industrial Operable Unit |
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| EOD | Explosive Ordinance |
| EPA | U.S. Environmental Protection Agency |
| ERP | Environmental Restoration Program |
| ESA | Endangered Species Act |
| FAA | Federal Aviation Administration |
| FEMA | Federal Emergency Management Agency |
| FFA | Federal Facilities Agreement |
| FICON | Federal Interagency Committee on Noise |
| FIRM | Flood Insurance Rate Maps |
| FONPA | Finding of No Practical Alternative |
| FONSI | Finding of No Significant Impacts |
| FS | Feasibility Study |
| FSSD | Fairfield-Suisun District |
| FY | Fiscal year |
| General Plan | General Plan for Travis Air Force Base, California |
| GHGs | Greenhouse gases |
| gpm | gallons per minute |
| GSA | Geological Society of America |
| H2S | Hydrogen sulfide |
| HAP | Hazardous air pollutants |
| HFC | Hydrochlorofluorocarbons |
| HQ | Head Quarters |
| HWMP | Hazardous Waste Management Plan |
| ICP | Installation Contingency Plan |
| ICRMP | Integrated Cultural Resources Management Plan |

| | |
|---|---|
| IICEP | Interagency and Intergovernmental Coordination for Environmental Planning |
| INRMP | Integrated Natural resources Management Plan |
| IRP | Installation Restoration Program |
| JD | Jurisdictional Determination |
| LANL | Los Alamos National Laboratory |
| lbs | Pounds |
| LEED | Leadership in Energy and Environmental Design |
| LID | Low Impact Development |
| LUC | Land Use Control |
| LUCP | Land Use Compatibility Plan |
| MAC | Military Airlift Command |
| MACT | Maximum Achievable Control Technology |
| MAJCOM | Major Command |
| MATS | Military Air Transport Service |
| MAW | Military Airlift Wing |
| mgd | Million gallons per day |
| MILCON | Military Construction |
| mph | Miles per hour |
| msl | Mean sea level |
| N2O | Nitrous oxide |
| NAAQS | National Ambient Air Quality Standards |
| NAF | Non-appropriated fund |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NEPA | National Environmental Policy Act |
| NEWIOU | North, East, West Industrial Operable Unit |
| NHPA | National Historical Preservation Act of 1966 |
| NO2 | Nitrogen dioxide |
| NOx | Nitrogen oxide |
| NOU | North Operable Unit |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| NRMU | Natural Resource Management Unit |
| $O_3$ | Ozone |
| OU | Operable Unit |
| P2MAP | *Travis Air Force Base Pollution Prevention Management Action Plan* |
| PAH | Polycyclic aromatic hydrocarbon |
| PCE | Tetrachloroethylene |
| Pb | Lead |
| PFC | Perfluoroxcarbons |
| PG&E | Pacific Gas & Electric Company |
| POCs | Precursor Organic Compounds |
| POL | Petroleum, Oil and Lubricant |
| PM10 | particulate matter less than 10 micrometers |
| PM2.5 | particulate matter less than 2.5 micrometers |
| PP | Proposed Plan |

| | |
|---|---|
| ppm | Parts per million |
| QD | Quantity Distance |
| RA | Remedial Action |
| RCRA | Resource Conservation and Recovery Act |
| RD | Remedial Design |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| ROGs | Reactive Organic Gases |
| RPW | Relatively permanent water |
| SDD | Sustainable Design and Development |
| Sf | Square feet |
| SF6 | Sulfur hexafluoride |
| SFBAAB | San Francisco Bay Area Air Basin |
| SHPO | State Historic Preservation Office |
| SIP | state implementation plan |
| $SO_2$ | sulfur dioxide |
| SPCCP | Spill prevention, control, and countermeasures |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TACs | Toxic Air Contaminants |
| TCE | Trichloroethylene |
| tpy | Tons per year |
| TNW | Traditionally Navigable Waters |
| UFC | United Facilities Criteria |
| USACE | U.S. Army Corps of Engineers |
| USAF | U.S. Air Force |
| USC | United States Code |
| USD | Unified School District |
| USFWS | U.S. Fish and Wildlife Service |
| UST | underground storage tank |
| VOC | volatile organic compound |
| VRPs | Visibility-reducing particles |
| VWTP | Vallejo Treatment Plant |
| UFC | Unified Facilities Criteria |
| USGBC | U.S. Green Building Council |
| WABOU | West/Anexes/Basewide Operable Unit |
| Water Board | Central Valley Regional Water Quality Control Board |
| WIOU | West Industrial Operable Unit |
| WWII | World War II |

# 1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

## 1.1 Introduction

The U.S. Air Force (AF) Travis Air Force Base proposes to construct a consolidated Base Civil Engineering (BCE) complex at Travis Air Force Base (AFB or Base) in Fairfield, California (**Figure 1-1)**; figures are located at the end of this document. The BCE complex would provide administrative space, indoor storage, maintenance spaces, and outdoor storage facilities where maintenance personnel can have safe and adequate work areas to maintain, repair, operate, and construct facilities and systems in support of Base missions. The current BCE complex buildings are dispersed throughout 55 different facilities on Travis AFB. The majority of these existing maintenance facilities are aging, crowded, and require constant maintenance and repair. Most of the existing buildings are outdated and do not meet current codes and safety standards, thus exposing occupants to unnecessary risks. Therefore, Travis AFB has prepared this Environmental Assessment (EA) in accordance with National Environmental Policy Act (NEPA) implementing regulations (40 Code of Federal Regulations [CFR] 1500 through 1508), Air Force Regulation 32 CFR 989, and Department of Defense (DoD) directives. The purpose of this EA is to determine whether the Proposed Action (construction and operation of the BCE complex) and two alternatives (construction of the BCE complex to the north of Ellis Street [Alternative 1] or west of Dixon Street [Alternative 2]) would have significant adverse effects on the quality of the environment, when compared to the No Action Alternative. The BCE complex is a part of the Travis AFB General Plan and in that document it is listed as part of the Southwest Area Development Plan. **Appendix A** contains AF Form 813 with the project area identified.

## 1.2 Need for the Action

The *need* for the action is driven by identified inefficiencies and capacity shortfalls in the existing engineering structures and offices, some of which were constructed over 60 years ago. The Proposed Action is also needed for operational consolidation and integration of the maintenance programs, and to supply the workspace necessary to accommodate future growth. Project implementation would enhance the ability of the Base's personnel to maintain and operate Base equipment and would ensure that affected systems are consistent with modern environmental and safety standards. Current maintenance staff operations employ over 500 personnel working in 55 buildings at multiple locations. Operating from separate locations hinders maintenance activities and creates operational inefficiency. Additionally, workspace in many facilities is limited and frequently substandard.

The Proposed Action would provide significant savings by bringing, over time, all engineering and maintenance components together in a single facility. Workplace consolidation would enable an overarching approach to configuration control, supply chain management, contract management, and financial management. Maintaining this highly interactive community in a single facility would streamline programmatic actions, thereby increasing responsiveness to Base needs. Consolidation of facilities would greatly reduce travel, shipment, duplication of support areas, and maintenance costs associated with the use of aging facilities. The purpose is to provide a contiguous facility to all BCE complex shops, offices, and warehouses for better utilization of land at Travis AFB. Construction of the proposed facilities will also eliminate

aging, high-maintenance buildings and replace them with high-efficiency, low-energy cost buildings. In addition, Travis AFB has plans to construct a new DDOC (Deployment Distribution and Operation Center) on "V" Street, bordered by Dixon Street and Ragsdale Street. This is at the location where a majority of the existing BCE complex facilities are currently located, also known as the 800 area; therefore those facilities will have to be relocated in order to move forward on the DDOC.

## 1.3 Objectives of the Action

The *objectives* of the Proposed Action are to improve efficiency, safety and working conditions for those dispersed in the 55 current BCE complex buildings at Travis AFB. Another objective is to use energy efficient designs, with emphasis on sustainable strategies to reduce energy usage and greenhouse gases. Supporting objectives for the BCE complex include the following:

- Eliminate facilities that have reached the end of their life cycle and replace with new, properly sited, designed, and constructed facilities as part of the consolidation effort.
- Design facilities at least to Leadership in Energy and Environmental Design (LEED) Silver Standards for energy, efficiency, and maintainability.
- Consolidate and integrate facilities using a "campus" concept.

## 1.4 Location of Proposed Action

Travis AFB is located approximately three miles east of the Central Business District of the City of Fairfield along the Interstate (I-) 80 corridor, approximately 35 miles southwest of Sacramento and 45 miles northeast of San Francisco (**Figure 1-1**). The Base encompasses approximately 6,400 acres and is home to approximately 7,250 active duty personnel, 4,250 reservists, and 3,750 civilians. The Base is also home to the David Grant Medical Center (DGMC), a 265-bed hospital and teaching facility.

Travis AFB's mission is to provide rapid, responsive, reliable airlift of forces to any worldwide location to fulfill the global logistics needs of the DoD. The Base is home to the largest Air Mobility Command (AMC) organization in the AF, the 60th Air Mobility Wing (AMW), whose mission is to deliver unrivaled strategic airlift and air refueling operations throughout the world.

The location of the Proposed Action within Travis AFB was chosen for its ability to avoid impacts to natural and environmental resources. Infrastructure such as water and sewer, and power are already in the area. **Figure 1-2** presents the Proposed Action site and alternative project locations within Travis AFB.

## 1.5 Scope of the Environmental Assessment

This EA considers three alternatives, including the Proposed Action sited at Alternative 1 or Alternative 2, and the No-Action Alternative. The EA identifies, evaluates, and documents the environmental impacts anticipated to result from implementation of each considered alternative. Along with information presented for the No-Action Alternative, these conditions compare the baseline against which potential effects of each alternative are assessed. Section 3, *Affected*

*Environment* presents baseline information on resources potentially impacted by implementation of the Proposed Action or a project alternative. Resources for which analyses will be conducted include:

- Air Quality
- Noise
- Wastes, Hazardous Materials, and Stored Fuels
- Water Resources
- Biological Resources
- Socioeconomic Resources
- Cultural Resources
- Land Use
- Transportation Systems
- Safety and Occupational Health
- Environmental Management
- Environmental Justice
- Utilities

Potential environmental impacts of the Proposed Action and each alternative are described in Section 4, *Environmental Consequences*. This analysis includes *direct* impacts (those caused by an action and occurring at the same time and location); *indirect* impacts (those caused by an action but occurring later or in a physically disconnected location, but within a reasonably foreseeable time or geographic area); and, any *cumulative* impacts of the action when considered in the context of other past, present, and reasonably foreseeable future actions, regardless of whether they are Federal or non-Federal. Mitigation measures and/or best management practices (BMPs) that could reduce identified impacts will be identified where appropriate.

## 1.6 Decision(s) that Must Be Made

The *purpose* of and *need* for the Proposed Action have been documented in the BCE Area Development and Concept report along with DD Form 1391 located in Appendix B. Important decisions that must be made before project implementation can commence include the identification of any mitigation measures or BMPs that may be necessary to avoid or minimize impacts to identified sensitive environmental resources (e.g., vernal pool resources and listed species). These decisions, which may ultimately involve modifying design details to further reduce impacts, or implement mitigation measures, will ensure that the action is implemented in a way such that all project objectives are accomplished while simultaneously allowing the AF to continue to achieve its environmental stewardship mission. The Environmental Impact Analysis Process (EIAP) is the process by which the AF ensures compliance with environmental regulations. The primary legislation affecting these agencies' decision-making process is the NEPA of 1969. This act and other facets of the EIAP are described in the subsequent pages.

## 1.7 Applicable Regulatory Requirements and Required Coordination

### 1.7.1 National Environmental Policy Act

In accordance with NEPA, Federal agencies are required to take into consideration potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508). These regulations specify that an EA be prepared to:

- briefly provide sufficient analysis and evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a finding of no significant impact;
- aid in an agency's compliance with NEPA when no EIS is necessary; and,
- facilitate preparation of an EIS when one is necessary.

To comply with NEPA and other pertinent environmental requirements, such as the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA), and to assess impacts on the environment, the decision-making process includes a study of baseline environmental conditions and an analysis of the potential impacts on these conditions that may result upon implementation of a proposed action. The AF's regulatory requirements with respect to NEPA are promulgated at 32 CFR 989.

### 1.7.2 Interagency and Intergovernmental Coordination for Environmental Planning

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is a federally-mandated process for informing and coordinating with other governmental agencies regarding proposed actions. As detailed in 40 CFR 1501.4(b), CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the IICEP process, the AF will notify relevant Federal, state, and local agencies and allow them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA.

### 1.7.3 Endangered Species Act

The ESA of 1973 (16 U.S. Code [USC] 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment (BA) and subsequent Biological Opinion (BO) and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA. Habitat conservation and protected species management at Travis AFB is directed by the Base's *Integrated Natural Resources Management Plan* (INRMP).

### 1.7.4 Clean Air Act and Conformity Requirements

The Clean Air Act (CAA) (42 USC 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (EPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, particulate matter, and lead. The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. The EPA has set forth regulations 40 CFR 51, Subpart W, that requires the proponent of a proposed action to perform an analysis to determine if its implementation would conform to the SIP.

### 1.7.5 Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC 1251 *et seq.*) regulates pollutant discharges that could affect aquatic life forms or human health and safety. The CWA and the *Comprehensive Environmental Response, Compensation and Liability Act* of 1980 (CERCLA) (42 USC 9621–9628, as amended) requires federal agencies to develop management plans for emergency response to spills of oil and hazardous substances for which they are responsible. Executive Order (EO) 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Additionally, Section 404 of the CWA also regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in waters of the United States. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains.

### 1.7.6 Cultural Resources Regulatory Requirements

The NHPA of 1966 (16 USC 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) which outlined procedures for the management of cultural resources on federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. NHPA requires federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of NHPA requires federal agencies to consult with the appropriate State Historic Preservation Office (SHPO) if their undertaking might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR 800 [1986]) provided an explicit set of procedures for federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with SHPO. Cultural resources management at Travis AFB is directed by the Base's *Integrated Cultural Resources Management Plan* (ICRMP). EO 13007, *Indian Sacred Sites*, directs federal land (any land or interests in land owned by the U.S., including leasehold interests held by the U.S., except Indian trust lands) managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site. The American Indian Religious Freedom Act (AIRFA) (42 USC 1996) established federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001–3013) requires consultation with Native American Tribes prior to excavation or removal of human remains and certain objects of cultural importance.

### 1.7.7 Other Executive Orders

Additional regulatory legislation that potentially applies to the implementation of this action includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children are considered under guidelines established by EO 13045, *Protection of Children from Environmental Health and Safety Risks*. Finally, in accordance with the AF Sustainable Design and Development (SDD) policy, 31 July 07, all AF construction projects, regardless of scope or funding source, shall endeavor to use the United States Green Building Council's (USGBC) LEED Green Building Rating Systems as their self-assessment metric. This is consistent with the Energy Policy Act of 2005 and EO 13423. Beginning in fiscal year 2009, 100 percent of each Major Command's (MAJCOM) Military Construction (MILCON) vertical construction projects, with climate control, shall be designed so that it is capable of achieving LEED Silver certification.

# 2.0 DESCRIPTION OF THE ALTERNATIVES, INCLUDING THE PROPOSED ACTION

## 2.1 Introduction

The NEPA requires the identification and evaluation of practical alternatives in order to demonstrate the proponent has a full knowledge prior to committing to a final decision. This chapter will compare the alternatives in terms of their consistency with the stated Purpose and Need as discussed in Section 2.2. Selection criteria used for determining alternatives that would be carried forward for further analysis will be described in Section 2.2. Alternatives considered but not carried forward for analysis will be presented in Section 2.3. A detailed description of alternatives carried forward for analysis will be provided in Section 2.4. **Figure 2-1** presents the identified project location from AF Form 813, the location of the Proposed Action (Alternative 1) and Alternative 2 project foot print boundaries at Travis AFB.

## 2.2 Selection Criteria for Alternatives

According to EIAP, 32 CFR Part 989.8, analysis of alternatives should include the Proposed Action, the No-Action Alternative and other reasonable alternatives that meet the Purpose and Need for the Proposed Action. The AF may eliminate alternatives from detailed analysis based on reasonable selection criteria such as operational, technical or environmental standards suitable to a particular project.

The Proposed Action and Alternatives must be consistent with the overall mission of Travis AFB, must meet the project's stated purpose and need, and must minimize impacts to the natural and human environment. The selection criteria described below were used for determining which alternatives will be carried forward for analysis.

- Meet or exceed state environmental requirements for building and parking lot construction.
- Avoid or minimize impacts to sensitive habitat areas, species and other environmental issues.
- Comply with AF, DoD and Travis AFB planning and design manuals.
- Comply with design standards, and safety requirements for airfield operations.
- Meet minimum DoD Anti-Terrorism/Force Protection (AT/FP) requirements.
- Provide operational flexibility for the various organizations that would use the complex.

## 2.3 Alternatives Considered but Eliminated from Analysis

All alternatives considered are included for analysis in this EA.

## 2.4 Description of the Proposed Alternatives

The AF proposes to construct a permanent facility, "the Proposed Action" which is the construction of the BCE complex in a contiguous location. Most aspects of the BCE complex including the number of buildings and size requirements, construction techniques, operation, maintenance, etc., would be common to both Alternative 1 and Alternative 2. The primary

difference between each alternative is the physical location; therefore, those common project elements are summarized below. Specific applications based on physical location are addressed in Sections 3.4.1 and 3.4.2. Additionally, details on the Area Development and Concept Report are also contained in **Appendix B**, identified on three separate AF Form 1391.

Common Project Elements:

- Phase 1: Construction of the BCE Maintenance Shops and Supply Wharehouse for a total of 40,968 square feet (sf), including a separate building for Entomology and Fuels Facility (3,105 sf)

- Phase II: Construction of the Base Engineering Administration building for a total of 29,050 sf

- Phase III: Construction of the Pavement and Ground Facility, Covered Storage Facility and Explosive Ordinance (EOD) for a total of 44,924 sf

The BCE complex would include four buildings; with areas of 37,863 sf, 3,105 sf, 29,050 sf and 44,925 sf, for a combined total of approximately 114,943 sf. The parking lots and shop yards would be contiguous to the facility. The parking lot and shop yards would contain approximately 258,600 sf for a total of approximately 373,543 sf. The parking lot design would include structural components for storm water management. The BCE complex would have the following general design features:

- Reinforced concrete footings
- Concrete masonry unit walls
- Exterior insulated finish system
- Free-standing, seam metal roof
- Metal doors and frames
- Aluminum windows
- Concrete hardener floor finishes
- Solid-core doors
- Fire and intrusion alarm system
- Seismic components
- AT/FP components

The BCE complex would also be used for shops and warehouse for bulk storage and bins of materials needed to support Base operations. Materials stored at the facility would include machinery, portable generators and lights, building and maintenance supplies, and some heavy equipment.

### 2.4.1 Alternative 1 – Proposed Action

Alternative 1 is the preferred location to construct the BCE complex within the project area identified in AF Form 813 in **Appendix A**. However, upon initial environmental assessments, the Action Area (limits of construction and operation) was determined to cover a smaller area than the initial area identified on AF Form 813 in order to avoid QD arcs and sensitive areas.

The initial boundary and the revised boundary are presented in **Figure 2-1**. It is located north of Ellis Drive across from the current location of the RV parking lot. No discrete drainage pathways exist on site, however most surface water sheds by sheet-flow down-slope toward the West Branch of Union Creek which runs the entire length of the northern property boundary. The approximate area available is 606,774 sf. Domestic water is available from a 10-inch water main located on and parallel to Ellis Drive. A second 10-inch water line runs diagonal on the north part of the site and may have to be moved as a consequence of the construction. An 8-inch sanitary waste sewer lateral line is located on Ellis Street, and a 15-inch sewer main is located just north of the site that parallels the west branch of Union Creek. Equipment and materials staging areas would occur within the BCE complex footprint and on previously paved areas located within the Alternative 2 location.

The southwest corner of the Proposed Action is located within the boundary of Environmental Restoration Program (ERP) DP039. Building 755, now demolished, was a battery and electrical shop, that was located on this site north of Ellis Drive and approximately 1,000 feet west of Dixon Avenue. In existence since at least 1963, historically the building tested rocket engines with liquid fuel until 1968 and then became a battery shop until the 2009. During that time, various contaminants, primarily chlorinated solvents were introduced into the soil and groundwater. Building 755 and associated equipment and sumps have been removed, and lead residue in the soil has been identified but determined to be low in concentration and does not pose a hazard or risk to local workers or ecological receptors. However, a significant groundwater plume exists under the footprint of the former building and has migrated down-gradient to the southeast. Current designs for the Proposed Action BCE complex avoid construction in the area where current groundwater remediation is underway. Details of the groundwater plume and treatment programs are located in Section 3.4.3.

### 2.4.2 Alternative 2

Alternative 2 is located on the west side of Dixon Street, partially in the area currently occupied by Buildings 881 and 833. The approximate area that will be impacted by construction is 474,788 sf. The south half of this site is currently used as pasture land for horses. The north half of the site is comprised of paved staging areas for sand, gravel and dirt used for various maintenance activities on Base. Equipment and materials would be staged in paved areas as previously mentioned and would occur within the BCE complex footprint.

Domestic water is available from a 10-inch water main located on and parallel to Dixon Drive. The closest sanitary waste line is an 8-inch sanitary waste sewer lateral line located on Ellis Drive. Groundwater beneath much of this site contains contaminates that are migrating from ERP DP039, which is located to the northwest just beyond Ellis Drive. A number of groundwater monitoring wells and remedial action wells are located in this area. Due to the ongoing remedial action in this area, Alternative 2 is not the Preferred Action. Should the BCE complex be constructed in this area, the building design would need to take into account potential vapor intrusion from the contaminated groundwater plume beneath the site. Additional details of the groundwater plume and treatment programs are located in Section 3.4.3.

### 2.4.3 No Action Alternative

If the No Action Alternative were selected, Travis AFB would not implement the Proposed Action, the BCE complex construction would not occur and the existing facilities would continue to be utilized. Personnel would continue to work throughout the 55 buildings dispersed throughout Travis AFB. Efficiencies and improved work conditions in the buildings would not be realized, including but not limited to, improvement of energy usage. However, because CEQ regulations require that the No Action Alternative be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented, this alternative will be carried forward for analysis in the EA.

## 2.5 Description of Past and Reasonably Foreseeable Future Actions Relevant to Cumulative Impacts

This EA identifies actions that have been conducted in the past, actions that are ongoing or in the planning stages, and future actions related to the Proposed Action. Actions that have the potential to interact with the Proposed Action are discussed in Section 4.15. Potential actions identified as reasonably foreseeable (i.e., within 2-3 years) at Travis AFB and proposed to be located within two miles of the proposed BCE complex include the fuel pipeline project, construction of a helipad to support the DGMC, replacement of gates and pavement repairs associated with the Base, and the South Gate project.

## 2.6 Identification of Preferred Alternative

Alternative 1, the Proposed Action, was chosen as the preferred location based on a thorough examination of feasible alternatives and consideration of anticipated environmental effects associated with the alternatives considered. These anticipated environmental effects for the alternatives are summarized in Section 4, **Table 4-1**.

# 3.0 AFFECTED ENVIRONMENT

## 3.1 Introduction

This section describes pertinent existing environmental conditions for resources potentially affected by the Proposed Action and identified alternatives (No Action Alternative and Alternative 1 and 2). In compliance with NEPA, CEQ regulations, and 32 CFR § 989, the description of the affected environment focuses on only those aspects potentially subject to impacts. In the case of the Proposed Action at Travis AFB, the affected environment description is limited primarily to the base and Solano County. The description may also specifically focus on adjacent area potentially affected by temporary construction activities (noted as the *Area of Potential Effect* [APE]) where relevant. Resource descriptions focus on the following areas: *air quality*; *noise*; *wastes, hazardous materials, and stored fuels*; *water resources*; *biological resources*; *socioeconomic resources*; *cultural resources*; *land use*; *transportation systems*; *safety and occupational health*; *environmental management*; and, *environmental justice*. Since *airspace and airfield operations* would not be affected by the Proposed Action, it was excluded from discussion to keep the analysis relevant and concise. Potential impacts resulting from the Proposed Action and alternatives are described in detail in Section 4.

## 3.2 Air Quality

Travis AFB is located in central Solano County, which is at the eastern edge of the San Francisco Bay Area Air Basin (Basin). The Basin extends from Napa County in the north to Santa Clara County in the South. The Basin encompasses 5,340 square miles and 19 percent of California's population. The Basin is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) pursuant to a mandate from the California Air Resources Board (CARB). Only the golf course at Travis AFB extends into a neighboring jurisdiction, the Yolo-Solano Air Pollution Control District. The purpose of this section is to provide an overview of regional air quality. The information presented in this section includes a discussion of applicable federal and state regulations, regional air quality management programs, and the current air quality conditions.

### 3.2.1 Air Quality Standards

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. NAAQS are established by the EPA for criteria pollutants, including: ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), particulate matter equal to or less than ten microns in diameter (PM10) or 2.5 microns in diameter (PM2.5), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. In addition, the CARB has established *California Ambient Air Quality Standards* (CAAQS) applicable within the state of California for these pollutants, as well as hydrogen sulfide (H2S), sulfates, vinyl chloride, and visibility-reducing particles (VRPs).

Hazardous air pollutants (HAPs) are air toxics for which Federal and state ambient air quality standards have not been established. However, the EPA regulates individual and total HAPs through *Maximum Achievable Control Technology* (MACT) which determines standards based

upon the maximum degree of emission reduction determined achievable. At the state level, CARB regulates toxic air contaminants (TACs), which include Federal HAPs and other pollutants. CARB requires the use of *Best Available Control Technology* (BACT) to limit TAC and HAP emissions.

#### 3.2.1.1 Greenhouse Gases and Global Climate Change

Global climate change is a transformation in the average weather of the earth which can be measured by changes in temperature, wind patterns, and precipitation. Scientific consensus has identified human-related emission of greenhouse gases (GHGs) above natural levels as a significant contributor to global climate change (U.S. Climate Change Science Program [USCCSP] 2007). GHGs trap heat in the atmosphere and regulate the earth's temperature. They include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), ground-level ozone (O3), and fluorinated gases such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HFCs). Total emissions of GHGs are the net balance of emission *sources* and *sinks*: sources include human-related combustion and fuel consumption, while sinks consist of natural geological and biological processes (e.g., photosynthesis) which remove emissions from the atmosphere. Industrial activities in the past 200 years have modified the emissions source-sink balance and significantly increased net GHG emissions (USCCSP 2007). In the U.S., sources produced approximately 7054 tons of GHG emissions in 2006, while sinks removed only approximately 884 tons during the same period, resulting in net GHG emissions of approximately 6170 tons. CO2 was the greatest emissions contributor (85 percent of 2006 total), followed by CH4 (7.9 percent), N2O (5.2 percent), and fluorinated gases such as HFCs, sulfur hexafluoride (SF6), and perfluorocarbons (PFCs) (2.1 percent) (EPA 2006). Primary activities associated with GHG emissions include utilities (e.g., power generation and transport), transportation, industrial/manufacturing, agriculture, and commercial and residential consumption. The top U.S. end-use sector sources of CO2 emissions in 2006 included transportation (33 percent), residential and commercial (20 and 18 percent, respectively) and industrial (28 percent). Electricity generation for the previously mentioned end-use sectors accounted for 41 percent of CO2 emissions in 2006 (EPA 2006). Primary human activity sources of increased GHG emissions include the combustion of fossil fuels and deforestation (CO2); land use and wetland depletion, and livestock and landfill emissions (CH4); the manufacturing and use of refrigeration and fire suppression systems (CFCs); and, the use of fertilizer for agricultural activities (N2O).

### 3.2.2 Regulatory Framework

The CAA Amendments of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. The state of California is geographically divided into Air Pollution Control Districts (APCDs), each of which is required to adopt strategies for achieving NAAQS, as well as the state's CAAQS. Each APCD must also adopt a SIP which is a compilation of goals, strategies, schedules, and enforcement actions designed to lead the state into compliance with all NAAQS. APCDs not in compliance with a standard can be declared *nonattainment* areas by the EPA or CARB. In order to reach *attainment*, NAAQS may not be exceeded more than once per year, except for 8-hour O3, for which the fourth-highest value in a year may not exceed NAAQS. A *nonattainment* area can reach *attainment* when NAAQS have been met for a

period of ten consecutive years. During this time period the area is in *transitional attainment*, also termed *maintenance*.

### 3.2.3 Local Air Quality

The western part of Solano County, including the part of Travis AFB relevant to this document, is located within the San Francisco Bay Area Air Basin (SFBAAB) and governed by the BAAQMD (USAF 2003b).; the eastern part is located within the Sacramento Valley Air Basin.

The SFBAAB is currently designated by the EPA as an NAAQS *attainment* area for CO, NO2, SO2, Annual PM2.5 and Pb; and nonattainment for 1-hour and 8-hour O3 and 24-hour PM2.5 standards. The basin is currently designated by BAAQMD as a CAAQS *attainment* area for CO, NO2, SO2, Pb, and sulfates, and a *non-attainment* area for PM2.5, PM10, H2S and state 1-hour and 8-hour O3 standards; Vinyl Chloride is still being determined (BAAQMD 2011). Current NAAQS and CAAQS and measured emission levels in Solano County in 2009 are presented in **Table 3-1.**

**Table 3-1**
**National and California Ambient Air Quality Standards, and Measured Emission Levels (2009) for Solano County, California**

| | | CAAQS | | NAAQS | |
|---|---|---|---|---|---|
| **Pollutant** | **Averaging Time** | **Standard** | **State Attainment Status** | **Standard** | **Federal Attainment Status** |
| $O_3$ | 8 Hour<br>1 Hour | 0.07 ppm<br>0.09 ppm | Nonattainment<br>Nonattainment | 0.075 ppm | Nonattainment (marginal) |
| CO | 8 Hour<br>1 Hour | 9.0 ppm<br>20.0 ppm | Attainment | 9.0 ppm<br>35.0 ppm | Attainment |
| $NO_2$ | Annual<br>1 Hour | 0.03 ppm<br>0.18 ppm | Attainment | 0.053 ppm<br>0.100 ppm<br>- | Attainment<br>Undetermined |
| $SO_2$ | 24 Hour<br>1 Hour | 0.04 ppm<br>0.25 ppm | Attainment<br>Attainment | 0.075 ppm<br>- | Attainment |
| $PM_{10}$ | Annual geometric mean<br>24 Hours | 20 µg/$m^3$<br>50 µg/$m^3$ | Nonattainment | -<br>150 µg/$m^3$ | Attainment |
| $PM_{2.5}$ | Annual arithmetic mean<br>24 Hours | 12 µg/$m^3$<br>- | Nonattainment | 15 µg/$m^3$<br>35 µg/$m^3$ | Attainment<br>Nonattainment |
| Lead | Calendar Quarter<br>30 Day Ave | 1.5 µg/$m^3$ | Attainment | 1.5 µg/$m^3$ | Attainment |
| $SO_3$ | 24 Hour | 25 µg/$m^3$ | Attainment | NA | NA |
| $H_2S$ | 1 Hour | 1.5 µg/$m^3$ | Attainment | NA | NA |
| Vinyl Chloride | 24 Hour | 0.010 | Undetermined | NA | NA |

Source: BAAQMD, 2010
Note:

| | | | | | |
|---|---|---|---|---|---|
| NA | = | not applicable | ppm | = | parts per million |
| µg/$m^3$ | = | micrograms per cubic meter | $SO_2$ | = | sulfur dioxide |
| CO | = | carbon monoxide | $SO_3$ | = | Sulfate |
| $NO_2$ | = | nitrogen dioxide | $H_2S$ | = | Hydrogen Sulfide |
| $O_3$ | = | ozone | | | |

#### 3.2.3.1 Emissions at Travis Air Force Base

Emissions Thresholds and Permitting

CAA Amendments *Title V* Operating Permit thresholds are defined as emissions from stationary sources in excess of 100 tons per year (tpy) of any of the criteria pollutants, or 10 to 25 tpy of any single or combination of HAPs, respectively (BAAQMD 2001). Since Travis AFB emissions are below *Title V* thresholds, it is considered a minor source for air emissions (USAF 2003b).

Travis AFB operates under a BAAQMD *Synthetic Minor Facilities Permit*, which contains provisions to limit the base's potential emission levels to below defined thresholds. As part of the base-requested and BAAQMD-approved revision to *Condition 19843 of the BAAQMD Permit to Operate for Plant #770*, allowable 12-month rolling emissions of precursor organic compounds (POCs), including NOx and reactive organic gasses (ROGs), were reduced from 95 tpy to 34 tpy (USAF 2009b).

Air Emissions Inventory

The current Travis AFB *Air Emissions Inventory* (AEI) (USAF 2003b) evaluated actual emissions from on-base stationary, mobile, area and event (e.g., pesticide applications), and portable sources. Actual emissions were measured separately for the BASE and Army/Air Force Exchange Service (AAFES) Gas Station since those sources operate under separate air emissions permits from the base's permit. The AEI also evaluated potential emissions from on-base stationary sources, the BASE, and AAFES Gas Station. Data are for calendar year (CY) 2003 and include emissions for CO, NOx, PM10, SO2, VOCs, and HAPs. Emissions from stationary combustion sources at Travis AFB totaled roughly 72.1 tons in CY 2003, well within the BAAQMD *Synthetic Minor Facilities Permit* threshold. Respective emissions from mobile and portable sources at the base were approximately 4,433.9 lbs and 91.4 tons during the same period (USAF 2003b). Mobile source emissions are not considered when determining if the base would require a Major Source, or *Title V*, Operating Permit.

Storage Tanks and Fuel Dispensing Operations Emissions

The Travis AFB AEI included the measurement of VOC emissions related to storage tanks and fuel dispensing operations. Emissions calculations were based upon an inventory of 97 tanks, including: 82 aboveground storage tanks (ASTs) (58 diesel, 14 JP-8 fuel, 5 gasoline, 3 fuel oil, and 2 aviation gasoline [avgas] tanks); and 15 underground storage tanks (USTs) (7 JP-8, 5 gasoline, and 3 diesel tanks) (USAF 2003b). Total actual emissions for the inventory of storage tanks were 2.1 tons in CY 2003, including 1.8 tons for ASTs and 0.3 tons for USTs. Total potential emissions for the calculated inventory of storage tanks were approximately 8.2 tons during the same time period (USAF 2003b). In 2003, fuel dispensing emissions at Travis AFB totaled approximately 1.05 tons including 0.06 tons of HAPs and 0.99 tons of VOCs. Of total VOC emissions, approximately 69.7 percent were from avgas or JP-8; the remaining emissions were unrelated to aircraft fueling activities (USAF 2003b).

## 3.3 Noise

The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In 1974, EPA provided information on negative effects of noise, identifying indoor and outdoor noise limits that protect public health and welfare (e.g., prevent hearing damage, sleep disturbance, and communication disruption). In addition, sound quality criteria promulgated by EPA, the U.S. Department of Housing and Urban Development, and DoD have identified noise levels to protect public health and welfare with an adequate margin of safety. These levels are considered acceptable guidelines for assessing noise conditions in an environmental setting. Sound levels are generally described in terms of "A-weighted decibels," meaning that the response of a sound-level meter has been adjusted to simulate the response of the human ear. Noise levels below 65 decibels are considered to be normally acceptable in suitable living environments.

Sound measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to the human ear. Day-night sound level (DNL) is a noise metric that averages dBA sound levels over a 24-hour period, with an additional 10-dB penalty added to noise events occurring between 10:00 PM and 7:00 AM. DNL is the preferred noise metric of the DoD, DOT, Federal Aviation Administration (FAA), and other Federal agencies. In California, community noise exposure level (CNEL) is used instead of DNL for airfield noise measurements and is approved by the DoD and other Federal agencies. Aircraft noise exposure around DoD facilities is assessed by the NOISEMAP model which overlays a regularly spaced "grid" containing DNL or CNEL noise contours onto a base vicinity map. These noise contours are used to determine the compatibility of aircraft operations, other base operations, and construction activities with local land use. The AF typically uses the Air Installation Compatible Use Zone (AICUZ) guidelines to promote compatible land use development. Noise is one consideration to be addressed under those guidelines.

### 3.3.1 Local Noise Distribution

Land use around Travis AFB is divided into two distinct noise environments. Areas to the west of the base are comprised of a low-density suburban setting where noise is typically limited to vehicles on local highways or light industrial activities (Solano County 2002). According to Federal Interagency Committee on Noise (FICON), this type of land use has a maximum acceptable outdoor noise level of 45 to 55 CNEL (FICON 1992). Areas to the north, east, and south of the base are comprised of agricultural and rural residential uses where noise is typically associated with operation of farming equipment or occasional vehicle use (Solano County 2002). FICON's maximum acceptable noise level for this type of land use is 60 to 70 CNEL (FICON 1992).

### 3.3.2 Noise Generating Activities

Aircraft activity is the primary noise generator at Travis AFB. Aircraft noise exposure associated with the base was calculated in the 2002 *Travis AFB Land Use Compatibility Plan* (LUCP) (Solano County 2002). 65 CNEL to 85 CNEL noise contours surrounding the airfield are generally aligned with the base's two runways and typical aircraft approach patterns; these

contours are mostly within Travis AFB boundaries or undeveloped areas adjacent to the base. Ground-based activity also contributes to the noise environment at Travis AFB. Major transportation corridors in the vicinity of the base, including Air Base Parkway, Walters Road, and Peabody Road, are the primary source of ground based noise. On-base vehicle and aircraft maintenance activities also contribute to the noise environment at Travis AFB.

## 3.4 Wastes, Hazardous Materials, Environmental Restoration Program Sites and Stored Fuels

This section provides a description of the hazardous materials and hazardous waste, solid wastes, ERP sites, and stored fuels at Travis AFB. **Figure 3-1** presents hazardous materials, stored fuels and ERPs in the vicinity of the Proposed Action. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes which pose a potential hazard to human health or the environment. The storage, handling, recycling, and disposal of hazardous wastes is subject to regulations under the *Resource Conservation and Recovery Act* (RCRA), Subtitle C (40 CFR §§ 260-270) which are administered by the EPA. To prevent inadvertent and potentially harmful releases of hazardous wastes, the DoD has directed that all facilities develop and implement *Hazardous Waste Management Plans* (HWMPs) which establish procedures to achieve and maintain regulatory compliance regarding accumulation, transportation, and disposal of hazardous waste. Hazardous materials are defined in *CERCLA* as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity which may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. The management of hazardous materials at U.S. Air Force (USAF) installations is established by AFI 32-7080, *Pollution Prevention Program*, which directs that installations prepare *ICPs for Oil and Hazardous Substance Spill Prevention and Response* to address training, response, and reporting procedures in the event of a hazardous materials release. The management of hazardous materials and wastes typically centers on the delivery, storage, transfer, containment, and disposal of bulk fuel and Petroleum , oil and Lubricant (POL). To this end, installations prepare *Spill Prevention, Control and Countermeasures Plans* (SPCCPs), as well as Installation Contingency Plan (ICPs), which outline spill histories, training procedures, inspections, and facility improvement projects.

### 3.4.1 Hazardous Materials and Hazardous Waste

Hazardous waste generated on Travis AFB includes flammable solvents, contaminated fuels and lubricants, stripping chemicals, waste oils, waste paint, absorbent materials, outdated materials, and asbestos. There are four types of activities that generate the vast majority of hazardous waste at Travis AFB: 1) aircraft maintenance, 2) transportation maintenance, 3) equipment, and 4) facilities maintenance. These activities generate approximately 95 percent of the total volume of hazardous wastes on base. The base's *ICP for Oil and Hazardous Substance Spill Prevention and Response* (USAF 2008a) outlines procedures to prepare for and respond to inadvertent releases of hazardous materials and petroleum substances at the base, as well as contingency plans to address unauthorized releases. Hazardous materials use at Travis AFB is tracked by the USAF *Environmental Management Information System* using information obtained on USAF Form 3952 (USAF 2008b).

Hazardous waste generation, accumulation, transport, and disposal at Travis AFB is managed under the Basewide HWMP (USAF 2005) in accordance with all Federal, state, and local regulations. The base is classified as a *large quantity generator* of hazardous waste under the federal Resource Conservation and Recovery Act (RCRA) and California regulations since over 1,000 kilograms of hazardous waste is generated in a calendar month (Travis AFB, 2006). Hazardous materials are ordered, stored, and used in accordance with AFI 32-7086, AMC Supplement 1. The Base maintains and implements a hazardous waste management plan to comply with RCRA, state, and AF regulations. The hazardous waste management plan establishes the procedures, training requirements, inspections, and record management processes for hazardous waste (Travis AFB, 1999). One facility, Building 1365, is permitted for long-term storage of hazardous waste. Building 1365 is managed by the 60th Civil Engineering Squadron/ Asset Management Flight (60 CES/CEA) and operated by contractors (Travis AFB, 2006).

There are three hazardous waste storage facilities (HWSFs) at Travis AFB, including two 90-day hazardous waste accumulation sites (HWASs) and the *Treatment Storage and Disposal Facility* (TSDF). The TSDF is used primarily for the storage of waste petroleum products and spent solvents (USAF 2003c). All Base-generated waste is eventually transported by a contractor to an approved off-base disposal site (USAF 2005, 2008a).

### 3.4.2 Solid Waste

Non-hazardous waste generated at Travis AFB during Fiscal Year (FY) 2010 totaled 25.5 tons per day (9,3125 tons per year [tpy]), including both recycled waste and waste sent to a disposal facility. The amount of diverted waste (including green waste, manure, recycled and reused materials) averaged 11.82 tons per day (4,304 tpy). The amount of non-hazardous waste sent to the disposal facility averaged 16.73 tons per day (6,107 tpy) (Travis AFB, 2010). Travis AFB personnel recycle an average of 0.95 tons per month of aluminum, glass, and plastics at the Solano Recyclables Buy-Back Center facility located off-Base, outside the main gate. Construction and demolition (C&D) debris disposal is cyclic by nature; however, much of the C&D debris is recycled, reused, or otherwise diverted from landfills. By weight, concrete comprises the largest percentage of C&D debris generated by most projects. In FY 2010, 76,839 tons of C&D debris, such as concrete, wood, and metal were recycled. (Travis AFB, 2010) Non-hazardous solid wastes and refuse, excluding scrap metal and electronic waste, at Travis AFB are collected and disposed of by Republic Service Garbage Company. An on-Base facility, the Defense Reutilization Marketing Office, recycles all scrap metal. The Potrero Hill Landfill is used for solid waste disposal. A Basewide recycling program is administered by the 60th Civil Engineering Squadron/Asset Management Flight (60 CES/CEA) Recycling Program Manager. The program includes education, briefings, and teaching tools available to all squadrons. All solid waste is disposed of in accordance with the *Travis Air Force Base Integrated Solid Waste Management Plan* (Travis AFB, 2007).

### 3.4.3 Environmental Restoration Program Sites

The 60th Civil Engineering Squadron/ Asset Management Flight Restoration Section (60 CES/CEANR) implements the ERP to remediate threats to human health and welfare or the

environment. ERP sites include landfills, spill areas, waste disposal sites, drum storage areas, UST and piping, oil/water separators, waste treatment plants, and munitions disposal sites. Some groundwater ERP sites have had extraction/remediation systems installed to facilitate cleanup (Travis AFB, 2003b, USAF 2006b).

Initially, Travis AFB was treated as a single entity with one comprehensive cleanup schedule. In May 1993, the Federal Facilities agreement (FFA) was amended, and the Base was divided into four operable units (OUs) to facilitate the overall cleanup program. They are the East Industrial Operable Unit (EIOU), the West Industrial Operable Unit (WIOU), the North Operable Unit (NOU), and the West/Anexes/Basewide Operable Unit (WABOU). The ERP as described in CERCLA includes the following phases: Remedial Investigation (RI); Feasibility Study (FS); Proposed Plan (PP); Record of Decision (ROD); Remedial Design (RD); and Remedial Action (RA). Remedial investigations for the NOU, EIOU, and WIOU were completed in the 1990s. Based on the similar contamination types and concentrations in the local soil and groundwater in these three OUs, they have been combined into the North, East, West Industrial Operable Unit (NEWIOU). To date, a total of 34 ERP sites have been identified on-base.

The Proposed Action (Alternative 1) and Alternative 2 are located within the WABOU where there are two ERPs within 0.25 miles: ERP DP039 and ERP LF044 (**Figure 3-1)**. ERP DP039 is the location of the old battery testing and rocket testing and fuels handling area and is located at the southwest corner of the Proposed Action (Alternative 1). Surface soil around the edges of the former sump area contains lead residue. Since the lead-acid solution entered the former sump through a subsurface pipe, the presence of lead in the surface soil is attributed to the deposition of small amounts of lead-contaminated subsurface soil during the 1993 sump removal action. The Human Health and Ecological risk assessments for Building 755 concluded that the lead residue does not pose unacceptable risk to local workers or ecological receptors. Groundwater is currently undergoing remediation for elevated levels of Trichloroethylene (TCE), Dicholoroethene (1,1-DCE), Dichloroethane (1,2-DCA), Trichloroethane (1,1,1-TCA), Trichloroethane (1,1,2-TCA), Tetrachloroethylane (PCE), methylene chloride; bromodichloromethane; and acetone. TCE is currently used to track the plume as seen in **Figure 3-1**.

ERP LF044 is located northwest of the Proposed Action (Alternative 1) and is a site where asphalt and construction debris had been staged. Soil is contaminated from the stock piling of this type debris and land use restrictions are imposed in that area.

### 3.4.4 Stored Fuels and Petroleum Products

The fuel storage and distribution system at Travis AFB is comprised of a network of storage tanks, pipelines, and dispensing systems which primarily support aircraft and vehicle operations. The system also handles oils, lubricants, and other petroleum products utilized for facilities and equipment maintenance, and for emergency power generation (USAF 2003c). The Travis AFB *ICP for Oil and Hazardous Substance Spill Prevention and Response* (USAF 2008a) outlines procedures to prepare for and respond to inadvertent spills of fuels and other petroleum products at the base, and provides summaries of spill histories, inspection and training procedures, and facility improvement projects. The ICP also provides information on spill prevention, control,

and countermeasures (SPCCs), including inspection, maintenance, testing, and training procedures. Storage tank containment and drainages are also described in the ICP.

Fuels and other petroleum products at Travis AFB are primarily stored in ASTs, USTs, and fuel transfer and pipeline systems. Portable equipment, emergency USTs, and electrical transformers provide additional storage.

Major oil and hazardous substance storage/handling areas include:

1) Bulk Fuel Storage Area (Area F)
2) Area B Hydrant Fueling System
3) Area C Hydrant Fueling System
4) Area H Hydrant Fueling System
5) Area G Hydrant Fueling System
6) Automated Fuel Service Station (AFSS) (Bldg. 133)
7) Aerospace Ground Equipment Fueling Operation (Bldg. 565)
8) AAFES Service Stations (Bldg. 172)
9) Medical Center Power Plant (Bldg. 779)
10) Cryogenics Storage Site
11) Hazardous Material Central Distribution Centers
12) Aerial Port Facility (Bldg. 971)
13) Hazardous Waste Storage Facility (HWSF)
14) 90-Day Hazardous Waste Storage Sites, B831 and DGMC B793
15) Aerial Port Squadron Fuel Tanks (Bldg 981)

Underground Storage Tanks

USTs are used at Travis AFB for the storage of JP-8, gasoline, biodiesel, and diesel fuels. There are currently 14 active normal operation USTs at the base, with a combined total storage capacity of 199,000 gallons; the storage of gasoline represents approximately 60 percent (120,000 gallons) of on-base normal operation UST capacity (USAF 2008a, 2008c, 2008d). Seven non-regulated USTs are reserved for potential emergency spills, emergency spill including fuel, hydraulic fluid and waste oil. Total emergency spill tank capacity is approximately 9,600 gallons (USAF 2008a, 2008c, 2008d). One 1,000-gallons emergency spill waste oil UST is located at the *Bulk Fuels Receiving Area* (USAF 2008a, 2008c, 2008d).

Aboveground Storage Tanks

Travis AFB currently has 105 active ASTs representing a storage capacity in excess of 16 million gallons. JP-8 storage represents 98.7 percent of total on-base capacity. The *Bulk Fuels Storage Area* contains four large ASTs with a combined total capacity in excess of 13 million gallons. This site is located north of the Proposed Action (Alternative 1) location.

Diesel fuel storage utilizes the greatest number of on-base ASTs (74 total), but represents only about 0.5 percent of total on-base AST capacity. Diesel is primarily used for emergency power generation (USAF 2008a, 2008c, 2008e).

Other Fuel Storage

Four *Flight Line Hydrant Systems* also represent a significant portion of on-base fuel storage, with a combined capacity in excess of 2.9 million gallons (USAF 2008a).

## 3.5 Water Resources

Water resources presented in this section include groundwater, surfacewater, floodplains and wetlands. The quality and availability of surface and groundwater, potential for flooding and definition of wetlands are addressed in this section. Other issues relevant to water resources include watershed areas affected by existing and potential runoff and hazards associated with the 100-year floodplains.

### 3.5.1 Groundwater

Groundwater comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. There are four major groundwater basins in Solano County. The Suisun-Fairfield Valley Basin is the second-largest, encompassing an approximate area of 133,600 acres underlying the central portion of the county, including beneath Travis AFB. Thick sequences of highly-impermeable marine sedimentary rock underlying the basin are classified as non-water-bearing. Water yields from the basin are generally low and of poor quality; consequently, the majority of water supplied to the cities of Fairfield and Suisun City is imported from Lake Berryessa Reservoir, located approximately 20 miles northwest of Travis AFB in nearby Napa County (Geological Society of America [GSA] 1999; Solano County 2006a, 2007). In the general vicinity of Travis AFB, California Department of Water Resources (DWR) monitoring wells have recorded average depth to groundwater from approximately 5 to 30 feet below ground surface (bgs) (DWR 2008). Groundwater recharge occurs from infiltration of rainfall and through surface water runoff (Solano County 2006a). Groundwater occurs at the Base in shallow deposits and flows south of the Base into the Suisun Marsh, to Suisun Bay, and ultimately into the San Francisco Bay, generally following the surface topography (Travis AFB, 2003c). Groundwater deposits in the vicinity of Travis AFB consist primarily of coarse sand and gravel within alluvial sediments. Bedrock beneath these sediments do not hold significant quantities of groundwater. The quantity and quality of groundwater near Travis AFB is generally limited; therefore, the on-base water supply is obtained from off-base wells or through municipal sources (USAF 2003c).

### 3.5.2 Surface Water

Surface water resources comprise lakes, rivers, streams, and wetlands and are important for a variety of reasons including economic, ecological, recreational, and human health. Solano County has an extensive network of creeks, sloughs, bays, and marshes that flow into one of two drainage provinces, both of which eventually flow into the Pacific Ocean. Surface water from eastern Solano County flows into the *Delta Drainage Province*. This province is associated with the Sacramento/San Joaquin River Delta, a 1,100-square mile inland river delta and estuary

formed by the confluence of the Sacramento and San Joaquin Rivers. Solano County has over 150 miles of delta sloughs, channels, and bays, including the Suisun and Montezuma Sloughs; the Suisun, Honker, and Grizzly Bays; and, Suisun Marsh, a brackish-water estuary totaling over 116,000 acres (Solano County 2006a). Travis AFB is located in the northeastern portion of the Fairfield-Suisun Hydrologic Basin. Within this basin, water generally flows south to southeast toward Suisun Marsh, an 85,000-acre tidal marsh that is both the largest contiguous estuarine marsh and the largest wetland in the continental United States (CH2M HILL 2001). Suisun Marsh drains into Grizzly and Suisun Bays. Water from these bays flows through the Carquinez Strait to San Pablo Bay and San Francisco Bay, and ultimately discharges into the Pacific Ocean near the city of San Francisco. Travis AFB lies in the southern portion of the Union Creek watershed. The headwaters of Union Creek are located approximately 1 mile north of the Base, near the Vaca Mountains, where the creek is an intermittent stream. Union Creek splits into two branches north of the Base. On Base, the main (eastern) branch is impounded into a recreational pond designated as the Duck Pond. At the exit from the Duck Pond, the creek is routed through an underground storm drainage system to the southeastern Base boundary, where it empties into an open creek channel. The west branch flows in a southerly direction and is located to the north and northeast of the Alternative 1 Site. A second watershed associated with Denverton Creek is primarily located east of the base; this watershed flows southeast into Denverton Slough. Hill and Denverton Sloughs are both part of the Suisun Marsh estuary system (Solano County 2006a; USAF 2003a).

The storm drain system on Travis AFB consists of a series of underground storm drains and open ditches, which, for most of the Base, may be divided into six drainage areas (Sites I through VI) based on the Storm Water Permit. Storm water on the western portion of the Base primarily infiltrates into the soil because of the flat topography of the area. Travis AFB's storm water permit number is 248I000808. The Base manages stormwater runoff on base with its Stormwater Pollution Prevention Plan (SWPPP) prepared in accordance with SWRCB WQO 97-03-DWQ, NPDES General Permit CAS 000001 which outlines engineering and management strategies designed to enhance the quality of the Base's storm water discharges, especially releases related to industrial and construction activities.

Alternative 1 and Alternative 2 are located within Drainage Areas II and VI where rainwater from high rain events shed off of parking areas and roads that flow into road side ditches and then into the West Branch of Union Creek. This branch eventually exits at Outfall 2 into the main portion of Union Creek at the south end of the Base (**Figure 3-2**).

### 3.5.3 Floodplains

Floodplains are belts of low, level ground present on one or both sides of a stream channel and are subject to either periodic or infrequent inundation by flood water. Inundation dangers associated with floodplains have prompted Federal, state, and local legislation that limit development in these areas largely to recreation and preservation activities. Federal Emergency Management Agency (FEMA) *Flood Insurance Rate Maps* (FIRMs) indicate that the majority of the 100-year floodplains in Solano County are associated with the Suisun Marsh and Sacramento/San Joaquin River Delta areas. Additional floodplains, associated with the flooding of creeks and streams, are found in low-lying valley areas throughout the northeast portion of the

county (Solano County 2007). Most of the Base is within a 500-year floodplain, having a 0.2 percent annual chance of flooding. A small portion of the Base near the main gate is associated with the western branch of Union Creek and is within the 100-year floodplain. This area has a 1 percent chance of annual flooding (Federal Emergency Management Agency, 2009). The eastern branch and the remainder of the western branch of Union Creek (see Section 3.5.2) are located within the 500-year floodplain (approximately 8.6 acres of the western branch) and approximately 25 acres of the eastern branch (Travis AFB, 2003b). The eastern branch of Union Creek includes the Duck Pond and associated riparian areas.

### 3.5.4 Wetlands and Waters of the U.S.

Wetlands are areas that "are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987 and 2006). Wetlands and other Waters of the United States are ecological habitats that are protected by federal and state laws and regulations. The CWA is the primary statute providing protection of aquatic resources and is administered primarily by the USACE and the Regional Water Quality Control Boards (Water Board). Any actions that involve the placement of fill material into jurisdictional waters and wetlands must comply with Sections 404 and 401 of the CWA. USACE regulates the discharge of dredge and fill material into Waters of the United States (including wetlands) under Section 404 of the CWA. Waters of the United States are defined as all navigable waters, including the following:

- All tidal waters
- All interstate waters and wetlands
- All other waters, such as lakes, rivers, streams (perennial or intermittent), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, that the use, degradation, or destruction of which could affect interstate commerce
- All impoundments of water previously listed
- All tributaries to waters previously listed
- Territorial seas
- All wetlands adjacent to waters previously listed

The West Branch of Union Creek is adjacent to the Proposed Action area and would be subject to regulation as a Waters of the United States under Section 404 of the CWA. Wetlands may include seasonal wetlands and vernal pools in the vicinity of the Proposed Action. Section 401 of the federal CWA specifies that states must certify that any activity subject to a federal permit (such as a USACE permit) meet all state water quality standards. In California, the State Water Resources Control Board and the regional boards are responsible for taking certification actions for activities subject to permits issued by USACE. Wetlands and waters in the vicinity of the Proposed Action are subject to the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (Region 5) (Water Board). Under state regulatory authority, any wetlands or other waters of the state, including isolated wetlands, are potentially subject to the jurisdiction of the Water Board.

#### 3.5.4.1 Wetland and Waters of the U.S Survey

Wetlands and Waters of the U.S. surveys were conducted during September and November of 2010 at both Alternative 1 and Alternative 2 site locations. These surveys were conducted in accordance with USACE's 1987 Wetland Delineation Manual (USACE, 1987) and the Arid West Regional Supplement (USACE, 2006). **Figures 3-3** and **3-4** present the wetlands and Waters of the U.S. in the vicinity of the Proposed Action (Alternative 1) and Alternative 2 respectively.

## 3.6 Biological Resources

The Proposed Action (Alternative 1) and Alternative 2 would occupy open grassland that is routinely maintained (mowed) or grazed and are located within Natural Resources Management Unit (NRMU) C and B respectively. The 2003 INRMP describes the NRMU B area as primarily used for grazing, open space, horseback riding and for skeet range activity. According to the INRMP, natural resources to be managed in these areas include upland grasslands and vernal pools. NMRU C is predominately cantonment use that encompasses air operations, industrial and maintenance activities. Natural resources to be managed in NMRU C are urban and landscape vegetation. A description of grasslands and vernal pools that occur in the following sections.

### 3.6.1 Vegetation and Wildlife

The vegetation community in the vicinity of the Alternative 1 is best described as upland grasslands. However, seasonal wetlands are located within 250-feet of the action area boundary. Grasslands in this area are comprised of winter annuals. The vegetation community in Alternative 2 location is best described as a combination of upland grassland and wet meadow that is used as a horse pasture. The vernal pool/grassland community types are described in the following sections.

#### 3.6.1.1 Annual Grassland Community

The annual grassland community occurs in uplands dominated by introduced annual grasses that are associated with agricultural practices, along with occurrences of non-native and native wildflowers and weedy forbs. The annual grasses germinate with the onset of fall rains, and grow throughout the winter to flower throughout the spring. By summer, the annual grasses have set seed and are desiccated. Most areas within the action area are dominated by grass species such as slender wild oat (*Avena barbata),* ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus),* saltgrass (*Distichlis spicata*), Mediterranean barley (*Hordeum marinum),* and Italian ryegrass (*Lolium multiflorum*).

Wildlife typically encountered within the area of the Proposed Action includes jack rabbits (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*) and a variety of birds including tricolored blackbird (*Agelaius tricolor*), house sparrow (*Passer domesticus*), red wing black bird (*Agelaius phoeniceus*) and ring necked pheasants (*Phasianus clochicus*).

#### 3.6.1.2 Vernal Pool Community

Vernal pools are vegetated by native annual plants characteristic of northern claypan soil (Sawyer and Keeler-Wolf, 1995) and are comprised of shallow depressions or small, shallow pools that fill with water during the winter rainy season. Vernal pools begin drying out during the spring and are completely dry during the summer. Most vernal pools at the Base are northern claypan vernal pools that occur on deep alluvial soils. Vernal swales, which are ecologically and floristically similar to vernal pools, also occur at the Base. Vernal swales consist of drainways or poorly defined depressions that are seasonally inundated for relatively short periods (Travis AFB, 2003). Vernal pools have developed an ecologically unique flora that has evolved to tolerate the wetting and drying cycle. A large population of the federally endangered Contra Costa goldfields (*Lasthenia conjugens*) was observed in areas several hundred feet north of the Proposed Action area. Other species include ripgut brome, wild oat, Italian ryegrass, filaree, annual hairgrass (*Deschampsia danthonioides*), maroonspot calicoflower (*Downingia concolor*), and stalked popcornflower (*Plagiobothrys stipitatus*).

### 3.6.2 Special Status Species

Special-status species are defined as follows:

- Any species officially listed as endangered or threatened, or any species that is a candidate for listing as endangered or threatened under the Federal Endangered Species Act
- California-listed threatened, endangered, or rare species
- California Department of Fish and Game fully protected species or species of concern

A list of species that potentially occur in the area of the Proposed Action has been compiled from the results of previous studies conducted at the Base (see **Table 3-2)**, the California Natural Diversity Database (2010), and the California Native Plant Society (CNPS) (2010). Preliminary database searches included four U.S. Geological Survey Quadrangles: Fairfield North, Elmira, Fairfield South, and Denverton. Information on federally listed species for the Elmira Quadrangle, which includes the Proposed Action area, was also obtained from the USFWS, Sacramento Field Office. Sixteen special-status species including six plants and ten animals were identified as having potential to occur on base (see **Table 3-3**).

**Table 3-2**
**List of Previous Environmental Studies Reviewed**

| |
|---|
| Basewide Ecological Habitat Assessment for Travis Air Force Base, California. Roy F. Weston, Inc. 1994 |
| Assessment of Special-Status Plant and Animal Species at Travis Air Force Base, Solano County, California, Phase II Surveys Biosystems Analysis, Inc. 1993 |
| California Tiger Salamander Habitat Assessment at Travis Air Force Base, Solano County, California. Rana Resources 2005 |
| Results of First Year Special-Status Vernal Pool Invertebrate Surveys at Travis Air Force Base – Winter/Spring 2004/2005 EcoAnalysts, Inc. 2005 |
| Results of Special-Status Vernal Pool Invertebrate Surveys at Travis Air Force Base EcoAnalysts, Inc. 2006 |
| Travis Air Force Base – Final Natural Resource Liability and Assessment Management Report. CH2M HILL 2006 |
| Travis Air Force Base – Final Summary of Rare, Threatened, and Endangered Species Associated with Seasonal Wetlands CH2M HILL 2006 |
| Biological Opinion for the Proposed Travis AFB JP-8 Pipeline and Terminal Project, Solano County, California, USFWS October 29, 2009 |
| Biological Assessment of the Taxiway M Bypass Road Travis Air Force Base, Solano County, California CH2M HILL2010 |
| Conservation and Management of California Tiger Salamanders *(Ambystoma californiense*) at Travis Air Force Base (Johnson and Shaffer, in press), 2010 |

**Table 3-3**
**List of Protected Species and Species of Concern that May be Located within or near the Project Area**

| Scientific Name | Common name | Protection Status | Presence | Critical Habitat Present? |
|---|---|---|---|---|
| **Plants** | | | | |
| *Gratiola heterosepala* | Boggs Lake hedge-hyssop | CE/CNPS 1B.2 | No: Alt 1 and 2 | NA |
| *Neostapfia colusana* | Colusa grass | FT/CE/CNPS 1B.1 | No: Site 1 and 2 | No |
| *Lasthenia conjugens* | Contra Costa goldfields | FE/CNPS 1B.1 | No :Alt 1 and 2 | No |
| *Tuctoria mucronata* | Crampton's tuctoria | FE/CE/CNPS 1B.1 | No: Alt 1 and 2 | No |
| *Orcuttia inaqualis* | San Joaquin Valley Orcutt Grass | FT/CE/CNPS 1B.1 | No: Alt 1 and 2 | No |
| *Trifolium amoenum* | Showy Indian clover | FE/CNPS 1B.1 | No: Alt 1 and 2 | No |
| **Animals** | | | | |
| *Athene cunicularia* | Burrowing owl | CSC | Potential: Alt 1 and 2 | NA |
| *Rana aurora draytonii* | California red-legged frog | FT | No: Alt 1 and 2 | No |
| *Ambysoma californiense* | California tiger salamander | FT | No: Alt 1 and 2 | No |
| *Brachinecta conservatio* | Conservancy fairy shrimp | FE | No: Alt 1 and 2 | No |
| *Elaphrus viridis* | Delta green ground beetle | FT | No: Alt 1 and 2 | No |
| *Emys marmorata* | Western pond turtle | CSC | No: Alt 1 and 2 | NA |
| *Thamnophis couchi gigas* | Giant garter snake | FT/ST | No: Alt 1 and 2 | No |
| *Desmocerus californicus dimorphus* | Valley elderberry longhorn beetle | FT | No: Alt 1 and 2 | No |
| *Branchinecta lynchi* | Vernal pool fairy shrimp | FT | No: Alt 1 and 2 | No |
| *Lepidurus packardi* | Vernal pool tadpole shrimp | FE | No: Alt 1 and 2 | No |

NA = Not Applicable
CE = California Endangered
CNPS = California Native Plants Ranking System
CSC = California Species of Concern
FE = Federal Endangered
FT = Federal Threatened
ST = Special Status
1B.1 = Rare or endangered in California and elsewhere; seriously threatened in California
1B.2 = Rare or endangered in California and elsewhere; fairly threatened in California

### 3.6.3 Protected Species Habitat Assessment

A BA for protected species (federal and state) that included field inspections and review of previous biological assessments was conducted at both Alternative 1 and Alternative 2 locations during the Fall of 2010. The assessment revealed that there are no federal or state listed species

located within the Alternative 1 boundary. The following are the results of the BA and are also referenced in Appendix C.

### 3.6.3.1 Alternative 1

The Proposed Action location is comprised primarily of open manicured grass; however, the southwestern portion of the site was historically used for building 755 and associated parking lots and fences (**Figure 3-5**). The building was demolished in November 2009 and the area is being used to site a groundwater remediation system. This location is comprised of mowed vegetation that may include slender wild oat, ripgut brome, soft brome, yellowstar thistle (*Centaurea solstitialis*), purplestar thistle (*Centaurea calcitrapa*), medusa head (*Taeniatherum caputmedusae*), coyote baccharis (*Baccharis pilularis*), valley gum plant (*Grindelia camporum*), Italian thistle (*Carduus tenuiflorus*) and various other weed species; however, no California tiger salamanders were found within the upland areas. Wildlife identified on-site included the ground squirrel and jack rabbits (*Lepus californicus*). No protected species or species of concern were encountered within this project site during the field surveys conducted monthly from October 2010 through August 2011 by AEROSTAR biologists or Travis AFB Natural Resources Manager. In addition a review of base-wide biological studies conducted over the past two decades (refer to Table 3-2) have not revealed that federal or state protected species occur within the boundary of Alternative 1.

Located just north and northeast of the Proposed Action Area boundary adjacent to the west branch of Union Creek are several small seasonal wetlands (**Figure 3-5**). The morphology of these wetlands can be described as very shallow oval depressions. The vegetation was primarily comprised of mowed grass species, yellowstar thistle, common bindweed (*Convovulus arvensis*), slimaster (*Aster subulatus*), valley gum plant, Fitch spike weed (*Hemizonia fittchii*), coyote thistle (*Eryngium vaseyi*), curley leaved dock (*Rumex crispus*), inland salt grass and *Geranium spp.* These seasonal wetlands were assessed for a variety of special status species, including the Boggs Lake hedge-hissop, Colusa grass, Contra Costa goldfields, Cramptons tuctoria, San Joaquin Valley orcutt grass, the fairy shrimp, the tadpole shrimp, the conservancy shrimp, the vernal pool fairy shrimp, the California tiger salamander, the California red-legged frog and the delta green ground beetle; however, no protected species or species of concern were encountered.

### 3.6.3.2 Alternative 2

Alternative 2 location is comprised of buildings 881, and 833; a staging area for construction consisting of dirt, gravel and parking; and a horse pasture that can be partially characterized as a seasonally wet pasture/meadow (**Figure 3-6**). There are several rutted up areas, and mounds within this site due to vehicle, horse trails, and routine horse grazing activity. Fitch spike weed, curley leaved dock, common bindweed, geranium spp., slimaster, yellowstar thistle, medusa head, inland salt grass and various grazed grass species were present in the wet meadow area. Grasses that typically occur in these habitats include: Italian rye grass, popcorn flower, dowingia (*Dowingia spp*.), pacific meadow foxtail (*Alopecurus saccatus*), filaree (*Erodium botrys*), ripgut brome, and wild oat (*Avena spp*.) The drier upland areas were comprised of grazed grass and herb species that may include slender wild oat, ripgut brome, soft brome, Fitch spike weed, and

yellowstar thistle. The wet meadow area could potentially provide habitat for the showy Indian clover and Contra Costa goldfields; however, these plants were not found at this site during field surveys. Habitat was not suitable within this site for brachiopods or California tiger salamanders due to grazing activity. In addition, no upland burrows were located within the Alternative 2 location.

#### 3.6.3.3 Historical Data Review - Alternative 1

According to the CNDDB 2008 review, Alternative 1 is located near conservancy shrimp and vernal pool fairy shrimp occurrences, but not within a 250-foot buffer zone for either species **(**CH2M HILL 2009). In this same review, Alternative 1 is not located within the 1.3-mile buffer zone for the California tiger salamander. Additionally, a 2010 compilation of survey and assessment results conducted within the last 17 years, including a 2010 CNDDB review, **(**CH2M HILL 2010b**)** revealed that Contra Costa goldfields have been located north and northwest of Alternative 1; no California tiger salamander buffer zones are located within Alternative 1; and vernal pool fairy shrimp are recorded within 250 feet of the west border of Alternative 1. Presented in **Figures 3-7, 3-8,** and **3-9** are the updated locations for vernal pool fairy shrimp, California tiger salamanders, and Contra Costa goldfields, respectively, in the vicinity of Alternative 1. There are no California tiger salamander upland habitat zones within Alternative 1; the 250-foot habitat buffer zone for the vernal pool fairy shrimp just reaches the west boundary of Alternative 1; and there is a recorded occurrence of Contra Costa goldfields 220 feet north of the Alternative 1 boundary.

#### 3.6.3.4 Historical Data Review – Alternative 2

According to the CNDDB 2008 review, Alternative 2 is not located within a 250-foot habitat buffer zone for the vernal pool fairy shrimp; and there are no California tiger salamander upland habitat buffer zones within Alternative 2 **(**CH2M HILL 2009). No Contra Costa goldfields are located within or near Alternative 2. Additionally, a 2010 compilation of survey and assessment results was conducted within the last 17 years, including a 2010 CNDDB review **(**CH2M HILL 2010a**)**. This data shows that brachiopod and California tiger salamander buffers are not located within Alternative 2; however, a more recent 2010 CNDDB review for the BA for the Taxiway M. Bypass Road (CH2M HILL 2010b) revealed that California tiger salamander occur just south of the southwest end of the airfield runway. This puts the south boundary of Alternative 2 within the 1.3-mile upland habitat buffer zone for the salamander. This compilation revealed that there are no vernal pool brachiopod 250-foot habitat buffers within Alternative 2 and no Contra Costa goldfields located near Alternative 2. Presented in **Figures 3-7, 3-8,** and **3-9** are the updated locations for vernal pool fairy shrimp, California tiger salamanders, and Contra Costa goldfields, respectively, within the vicinity of Alternative 2.

## 3.7 Socioeconomic Resources

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Economic activity typically includes employment, personal income, and industrial growth. Impacts on these two fundamental socioeconomic indicators can also influence other components such as housing

availability and provision of public services. Socioeconomic data in this section are presented at the county and state level to analyze baseline socioeconomic conditions in the context of regional, and state, trends. Data have been collected from previously published documents issued by Federal, state, and local agencies (e.g., U.S. Census Bureau) and from state and national databases (e.g., U.S. Bureau of Economic Analysis' [BEA] *Regional Economic Information System*).

Travis AFB is located within the city of Fairfield in Solano County, California. Suisun City is also located near the base. The affected environment examined with regard to socioeconomics includes Solano County and, where appropriate, the cities of Fairfield and Suisun City.

### 3.7.1. Population

Solano County is one of 58 counties in California, and ranks 46th in total land area. Solano County is California's 20th most populous county with a population, based on a 2009 estimate, of approximately 407,234 (U.S. Census Bureau, 2010). The overall impact of Travis AFB on the county and surrounding area is estimated to be in excess of $1,554 million (Travis AFB, 2008). The Base is located in a growing part of the San Francisco Bay Area. By 2025, the population of Solano County is expected to grow by more than 30 percent (Association of Bay Area Governments Projections, 2002). Fairfield is the second most populated city in Solano County, with a 2009 population of 103,305 while Suisun City, with a 2009 population of 26,737 ranks fifth. Together, Fairfield and Suisun City comprised approximately 31.0 percent of the county's total population in 2009. **Table 3-4** summarizes local, state, and national population trends for 1990, 2000 and 2009.

**Table 3-4**
**Population Overview (1990-2009)**

| YEAR | Solano County | California | USA |
|---|---|---|---|
| 1990 | 340,421 | 29,760,021 | 248,709,873 |
| 2000 | 394,542 | 33,871,648 | 281,421,906 |
| 2009 | 407,234 | 36,961,664 | 307,006,550 |

www.census.gov

### 3.7.2 Employment

Table 3-5 summarizes employment, per capita personal income and average earnings per job for the region and nationally. Employment levels in Solano County have increased over 9 years, experiencing a cumulative gain of 12,828 jobs (a 6.3 percent increase) between 2000 and 2009. In contrast, the county's military sector experienced a net loss of 2,024 jobs (a 30.4 percent decrease) during the same period. Overall job growth in Solano County between 2000 and 2009 was less than the nation (10.5 percent) and less than the state of California (13.2 percent) during the same period.

Per capita personal income in Solano County in 2009 was $28,288, 2.5 percent less than per capita personal income for the state of California ($29,020) and 4.4 percent higher than the national average ($27,041). 2009 per capita personal income in Solano County increased (23.2

percent) from the 2000 level, a slightly higher growth rate than California (21.7 percent) and the nation (21.4 percent) for the same period.

Average earnings per job increased by 22.8 percent in Solano County between 2000 and 2009, a higher rate than California of 22.0 percent, and the nation (20.5 percent) for the same period.

**Table 3-5**
**Job Growth and Earnings for Solano County, California, and the United States from 2000 to 2009**

| | 2000 | 2009 | Difference | Percentage |
|---|---|---|---|---|
| *Employment* | | | | |
| Solano County | 190,243 | 203,071 | 12,828 | > 6.3 |
| Military | 6,648 | 4,624 | 2,024 | <30.4 |
| California | 15,977,879 | 18,100,948 | 2,123,069 | >13.2 |
| Nation | 138,820,935 | 153,407,584 | 14,586,649 | >10.5 |
| | | | | |
| *Per Capita Personal Income* | | | | |
| Solano County | $21,731 | $28,288 | $6,557 | >23.2 |
| California | $22,711 | $29,020 | $6,309 | >21.7 |
| Nation | $21,257 | $27,041 | $5,784 | >21.4 |
| | | | | |
| *Average Earnings Per Job* | | | | |
| Solano County | $62,932 | $81,551 | $18,619 | >22.8 |
| California | $64,725 | $82,989 | $18,264 | >22.0 |
| Nation | $56,604 | $71,159 | $14,555 | >20.5 |

From http:factfinder.census.gov

### 3.7.3 Work Force and Unemployment

Employment data for Solano County show a large increase in unemployment between March 2008 and March 2009, from 6.2 to 10.9 percent. However, similar increases were experienced in Fairfield (6.9 to 11.9 percent), Suisun City (6.4 to 11.3 percent), California (6.4 to 11.2 percent), and the U.S. (5.1 to 8.5 percent) during the same period (U.S. BLS 2008b, 2008c, 2009a, 2009b).

### 3.7.4 Travis Air Force Base

Travis AFB is the largest employer in Solano County with a total work force of approximately 14,267, including: 7,304 *active duty*; 3,152 *Air Force/Army Reserve*; 2,247 *appropriated fund personnel (AFP)*; and, 1,564 *non-appropriated fund (NAF), AAFES*, and *contractor/private business personnel* (Solano Economic Development Corporation [EDC] 2007, 2008). Approximately 2,357 employees, or 16.5 percent of total personnel, reside at the base. Total payroll in FY 2007 exceeded $685 million, with $436 million for *active duty*, $78.7 million for *Air Force/Army Reserve*, $131 million for *AFP*, and $39.4 million for *NAF, AAFES*, and

*contractor/private business personnel*. Total Travis AFB economic impacts to Solano County are estimated at over $2 billion (USAF 2007d).

## 3.8 Cultural Resources

Cultural resources represent activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups. Archaeological resources comprise areas where prehistoric or historic activity measurably altered the environment or deposits of physical remains (e.g., arrowheads, bottles) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the NRHP, an inventory of culturally significant resources identified in the U.S.; however, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture. Cultural resources on AF installations are managed in accordance with environmental laws and regulations which include: AFI 32-7065, *Cultural Resources Management*; 32 CFR § 989; EO 11593 of 1971; the NHPA of 1966, as amended; Archaeological and Historic Preservation Act of 1974 (PL 93-291); the Archaeological Resources Protection Act of 1979 (PL 96-95); the AIRFA of 1978 (PL 95-341); the NAGPRA of 1990 (PL 101-601); and, DoD Instruction 4710.02, *DoD Interactions with Federally-Recognized Tribes* (14 September 2006). The principal Federal law addressing cultural resources is the NHPA of 1966, as amended (16 USC § 470), and its implementing regulations (36 CFR § 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the SHPO. The term "historic properties" refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties need not be formally listed on the NRHP. Section 106 does not require the preservation of historic properties, but ensures that the decisions of Federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The Proposed Action and project alternatives are an undertaking as defined by 36 CFR § 800.3 and are therefore subject to requirements outlined in Section 106. The DoD *American Indian and Alaska Native Policy* governs the department's interactions with Federally-recognized tribes. The policy outlines DoD trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy requires consultation with Federally-recognized tribes for proposed activities that could significantly affect tribal resources or interests.

### 3.8.1 Cultural History

Travis AFB is located in a region that was once inhabited by the Southern Patwin (or Wintun) tribe of Native Americans. The early inhabitants of the region established tribelets (i.e., villages) adjacent to freshwater marshes where they hunted, gathered, and fished for subsistence. The primary tribelets in the region were the Suisun and Talenas. When the Spanish missionaries arrived circa A.D. 1750 a proto-agriculture culture existed in the region (Travis AFB, 2003b). The Southern Patwin were adversely affected by mission activities, abandoned the area prior to epidemics of malaria and smallpox in 1833 and 1837.

### 3.8.2 Cultural History of Travis Air Force Base

Present-day Travis AFB was originally established in 1942 as a temporary bomber base to assist World War II (WWII) efforts in the Pacific. The 945-acre site was activated as *Fairfield-Suisun Army Air Base* in May 1943 and developed into the largest West Coast air terminal by the end of WWII. Establishment of the USAF and construction of a new 10,000-foot runway led to the creation of *Fairfield-Suisun AFB* in 1947; the base was later renamed *Travis* AFB in 1951 to honor Brigadier General Robert F. Travis. Strategic Air Command (SAC) commenced operational control in 1949, and base missions during the next nine years focused on the operation and maintenance of WWII vintage aircraft. Consequently, a number of hangars, maintenance facilities, on-base fuel storage, and a second runway were constructed, as well as barracks and family living quarters. The base also housed an Atomic Energy Commission weapons storage facility from 1955 to 1962, for which approximately 50 buildings were constructed (USAF 2003f).

Command of Travis AFB shifted in 1958 from SAC to the Military Air Transport Service (MATS), and the 1501st Air Transport Wing (ATW) was activated. The 1501st ATW flew a wide variety of transport aircraft, and base missions focused on rapid cargo and equipment transport. In 1966, MATS was re-designated as the Military Airlift Command (MAC), and 1501st ATW equipment and personnel were organized into the 60th Military Airlift Wing (MAW). Operation of the largest USAF airlift aircraft, the C-5 Galaxy, began in 1970, and the base aided numerous military and humanitarian missions during the next thirty years. Command of the base shifted again in 1992, from MAC to the AMC, and the 60th MAW was re-designated as the 60th AMW (USAF 2003f). Today, the mission of Travis AFB is to provide rapid, responsive, reliable airlift of forces to any worldwide location to fulfill the global logistics needs of the AMC.

### 3.8.3 Cultural Resource Investigations and Resources

Since 1909, 16 cultural resource studies have been conducted at Travis AFB and surrounding areas. These studies identified 10 archeological sites and 27 structures on Base property that were potentially significant (USAF 2003f). The archeological sites consisted of three prehistoric archaeological sites and seven historical archaeological sites. None of the seven historical archaeological sites are eligible for the NRHP and none require further investigation. No other Native American resources have been identified within the boundaries of Travis AFB since this study was conducted. (Travis AFB, 2006). None of these sites are located within the Proposed

Action Area or Alternative locations (Personal Communication with Raymond Hasey, CES/CEAN).

Historic Archaeological Resources

Travis AFB contracted with Argonne National Laboratories to conduct a comprehensive survey of Travis AFB in compliance with Section 110 of NHPA (HQ AMC 1995). The field team surveyed all undisturbed portions of Travis AFB. Five historical archeological sites were identified during the survey. None of these sites are located within the Proposed Action (Alternative 1) or Alternative 2 locations (personal communication Raymond Hasey, CES/CEAN).

Historic Buildings and Structures

In 1994, Head Quarters (HQ) AMC began a reconnaissance inventory of Cold War resources and related material culture at eight selected AFBs throughout the U.S. The overall goal of the study was to comply with Section 110 of the NHPA and to provide cultural resources managers with a tool for determining the NRHP eligibility of Cold War-era properties. Travis AFB was included in the survey and the results are presented in *Travis AFB, California: Inventory of Cold War Properties* (HQ AMC 1996).

The study selected 71 structures at Travis AFB for inventory based on the base's Cold War mission. Of these, 32 structures were evaluated as potentially eligible for the NRHP under *Criterion C* and *Criteria Consideration G*. None of these structures are located within the Proposed Action or alternative locations (HQ AMC 1996; USAF 2003f).

Native American Interests

Native American resources can include, but are not limited to, archaeological sites, burial sites, ceremonial areas, caves, mountains, water sources, trails, plant habitat or gathering areas, or any other natural area important to a culture for religious or heritage reasons. NRHP-eligible traditional sites are subject to the same regulations, and afforded the same protection, as other types of historic properties. The APE, as defined in Section 3.8.2.3, *Area of Potential Effect (APE)*, also applies as the APE for Native American traditional resources. Early and effective participation of Native American tribes and groups is an integral component to the successful completion of the Section 106 process. As part of the preparation of the Travis AFB 2010 *ICRMP*, the USAF contacted Native American groups in July 2002 to request background information regarding prehistoric, historic, and ethnographic land use, as well as information regarding contemporary Native American values or concerns on Travis AFB property. No responses were received, and there is no evidence that any Native American burial grounds or sacred areas are located on-base that would be subject to the provisions of AIRFA or NAGPRA (USAF 2003f). Two Federally-recognized Native American Tribes that could have interest in the Proposed Action or project alternatives at Travis AFB were identified by the California Native American Heritage Commission: the *Cortina Band of Indians* and the *Rumsey Rancheria*. At this time, it is not expected that cultural issues would arise for the proposed action since previous studies have shown that there are no resources within the APE. However, when cultural resources are discovered, as lead Federal agency, the USAF would notify the identified Native American Tribes, pursuant to 36 CFR § 800.2, to ensure that any sites of traditional cultural value are identified and adequately considered under the Proposed Action or project

alternatives. The USAF would send correspondence to the tribes announcing the action and requesting comments regarding the Proposed Action or project alternatives

## 3.9 Land Use

Land use comprises natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, agricultural, institutional, recreational, communications, utilities, and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect environmentally sensitive or other specially designated areas. The USAF has established siting criteria in AFI 32-1026, *Planning and Design of Airfields Facilities Excellence Guide*, and AF Manual (AFM) 32-1013, *Airfield and Heliport Planning Criteria*, for land development at USAF installations, including safety zones relative to runways and munitions storage. Additional criteria in UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, establish setbacks and other security measures to protect DoD facilities from potentially non-secure adjacent uses (e.g., parking lots, off-base areas, etc.).

### 3.9.1 Regional Land Use

Travis AFB is located in central Solano County, near the Sacramento-San Joaquin Delta Region of Northern California. To the east of the County is the flat agriculturally-productive Central Valley Region and California's capitol city of Sacramento. Coast Range foothills lie to the north and west of the County, and the San Francisco Bay Area Metropolitan Area and City of San Francisco are located to the southwest. Solano County's topography is varied, with inland river delta and estuary areas in the southern portion, foothills in the northern and western portions, and flat agricultural and open space areas in the central and eastern portions of the County (Solano County 2006c). Agricultural activities are the predominant land use in Solano County, with over 56 percent of County land in use as rangeland or cropland. Water, watershed, and marsh areas comprise over 26 percent of County land use. Residential, commercial, and industrial uses are primarily concentrated in the incorporated cities of Fairfield, Vacaville, Vallejo, Benicia, Dixon, Rio Vista, and Suisun City. The vast majority of County population growth between 1990 and 2005 took place within these incorporated cities (Solano County 2006c, 2006d).

### 3.9.2 Local Land Use

Travis AFB is comprised of approximately 6,883 acres of land located mostly within the city of Fairfield, approximately 5 miles west of the city's central business district (USAF 2003a). Suisun City is located approximately 0.5 miles southwest of the base. Fairfield and Suisun City are the population centers closest to the base. Land use west of the base is comprised of low- and medium density housing, parks, and intermittent commercial uses (Fairfield 2007a; Suisun City 1992). Areas to the north, east, and south of the base are part of the 7,890-acre *Travis Reserve Area*, an open space and agricultural preserve established by the city of Fairfield in 2002 to prevent development from encroaching onto Travis AFB (USAF 2006a). Land use objectives, policies, and regulations in the vicinity of Travis AFB are outlined in the Solano County, Suisun City, and Fairfield *General Plans* (Fairfield 2003; Solano County 2006e; Suisun City 1992).

### 3.9.2.1 Travis Air Force Base

Historical and proposed land use development at Travis AFB is presented in the base's *General Plan*, most recently updated in 2006. This plan establishes goals, policies, and criteria that drive decisions regarding timing, placement, and priority of identified development needs. An overarching goal of the plan is to outline expansion and redevelopment opportunities to accommodate future mission growth and/or reorganization (USAF 2006a). Travis AFB is comprised of approximately 6,883 acres of land divided by the USAF into eight classifications. There are approximately 1,752 buildings on base, totaling roughly 10,207,406 sq. Aircraft and vehicle maintenance and storage facilities are located adjacent to the runways and aircraft parking ramps. Community and administration facilities are situated at the center of the base. Residential uses include 1,107 family housing units, 16 dormitories, and 17 temporary quarters located in the northern part of the base. Open space and preservation areas are concentrated in the western and southern parts of the base (USAF 2006a and Travis AFB GeoBase 2010).

The Base is located less than 5 miles east of downtown Fairfield and approximately 8 miles south of downtown Vacaville (see **Figure 1-2**). Land uses at Travis AFB are grouped into 12 functional categories, as follows:

- **Administrative** – Personnel, family services, police and security, wing/group headquarters, legal services, communications, gate and visitor management, and other support facilities.
- **Aircraft Operations and Maintenance** – Aircraft operations, aircraft maintenance, aircrew and maintenance training facilities, and passenger and freight terminal facilities.
- **Airfield** – Pavement system, related open space, navigational aids, and airfield and airway clearance surfaces.
- **Community (commercial)** – Exchange, commissary, banking, dining facilities, eating establishments, indoor recreation facilities, and service stations; supports the needs of personnel and their families.
- **Community (service)** – Schools, education centers, library, chapel, post office, and child development facilities; supports the needs of personnel and families.
- **Housing (accompanied)** – Family housing, mobile home parks, and temporary lodging facilities.
- **Housing (unaccompanied)** – Dormitories for bachelors and quarters for visiting personnel.
- **Industrial** – Fire stations, base supply and equipment complex, fuel facilities, vehicle maintenance, civil engineer complex, open storage, utilities infrastructure, emergency response, ordinance and weapons storage, and other industrial uses.
- **Medical** – Medical, dental, and Veterans Administration clinics; veterinary clinics; and bioenvironmental engineering facilities.
- **Open Space** – Conservation and preservation areas; and safety, security, and buffer zones, including spaces that are unsuitable for development.
- **Outdoor Recreation** – Activities such as golf and swimming, park and picnic facilities, and recreation equipment checkout and storage.
- **Water** – Open space and outdoor recreation activities, buffer space between incompatible uses; generally includes ponds, streams, lakes, shorefronts, and oceans.

According to the General Plan, the Proposed Action or alternative locations are situated within open space.

### 3.9.3 Travis AFB Land Use Restrictions

Land use restrictions and controls establish buffers around certain facilities to protect human health from potential adverse effects. For example, protective buffer zones are designated around the munitions storage areas for protection in the event of accidental explosions. In some parts of the Base, land use controls protect human and environmental health from contaminated soils and water. Travis AFB has also agreed to adhere to land use control procedures for certain sites with groundwater contamination. Land use controls are established for the ERP sites, as required by the RODs for the WABOU and NEWIOU areas.

### 3.9.4 Land Use Surrounding Travis Air Force Base

The land surrounding Travis AFB on the northeast and east are primarily used for ranching and grazing. Areas to the south are a combination of agricultural and marshland. A few commercial/ light industrial areas are located north of the Base. The area west of Travis AFB is predominantly residential.

## 3.10 Transportation Systems

Transportation systems facilitate the movement of vehicles and transportation of goods and materials through a network of roads and highways. Primary roads are principal arterials, such as major highways, designed to move traffic but not necessarily provide access to adjacent areas. Secondary roads are arterials such as rural highways and major surface streets that provide access to residential and commercial areas, hospitals, and schools.

### 3.10.1. Regional Transportation Systems

Travis AFB is located in the city of Fairfield, Solano County, California. Fairfield is served by I-80, located approximately 5 miles west of the base, a major regional highway which connects Fairfield with San Francisco (located 45 miles to the southwest) and California's capitol city of Sacramento (located 35 miles to the northeast). I-680, traveling about 10 miles southwest of the base, provides a link to the southern and eastern portions of the San Francisco Bay Metropolitan Area. I-505, located about 10 miles northwest of the base near the City of Vacaville, provides a regional connection to I-5, a major north-south highway which serves the entire West Coast. California State Route (SR-) 12 also serves Fairfield; the highway runs to the south of Fairfield and Travis AFB, and provides a link to California's Central Valley Region (USAF 2003a).

Mass transit in the region is provided by airline, rail, and motor transportation systems. International airports serving the cities of Oakland, Sacramento, and San Francisco are located within 50 miles of the base. The Nut Tree and Rio Vista Municipal Airports are both located within 15 miles of the base. Amtrak's *Capitol Corridor* provides daily passenger rail service to Solano County via the Suisun/ Fairfield Train Station, located approximately 5 miles southwest

of the base. Passenger bus service in Solano County is available through city and regional transit systems which provide links to transit systems in several nearby counties (Solano County 2006f).

### 3.10.2 Local Transportation Systems

Local access to Travis AFB is provided by a number of roadways. Primary access to the base is via Air Base Parkway, a four-lane divided expressway which begins at I-80 and runs east approximately 5 miles to the Main Entrance Gate. Several regional roadways connect to Air Base Parkway at various locations: Peabody Road, which begins near downtown Vacaville; Waters Road, which begins at SR-12 east of Suisun City; and, North Texas Street, which provides a link to I-80 (USAF 2003a). Passenger bus service to the base is available via Fairfield Transit Route 2; the route serves publicly-accessible on-base areas, including the Air Museum and DGMC (Fairfield 2007b).

### 3.10.3 Travis Air Force Base

Primary access to Travis AFB is through the Main Entrance Gate at the terminus of Air Base Parkway. The nearby Hospital Gate provides convenient access to the hospital, and the North and South Gates respectively provide additional access along the northern and southern perimeters of the Base. Travis Avenue, which begins at the Main Entrance Gate at the terminus of Air Base Parkway, provides primary east-west circulation on the base. Hickman and Hangar Avenues, both located to the south of Travis Avenue, provide additional east-west circulation. North-south circulation is primarily provided by Burgan Boulevard and Ragsdale Street, which respectively provide access to the North and South Gates. Parker Road provides access to the hospital via the Hospital Gate. Cannon Drive provides primary access and circulation to residential areas in the northern part of the base. Numerous auxiliary streets and roadways provide additional circulation throughout the Base (USAF 2003a). Access to Alternative Site 1 is from Ragsdale Street and Ellis Drive. Access to Alternative 2 is from Dixon Avenue.

Information regarding the transportation system has been summarized from the General Plan (Travis AFB, 2006). Transportation facilities at Travis AFB include parking areas, sidewalks, bicycle paths, mass transit, a passenger/cargo terminal, and a railhead.

## 3.11 Safety and Occupational Health

The primary safety issues affecting DoD petroleum fuel facilities are security, the prevention of spills, and fire protection. UFC 3-460-01, *Petroleum Fuel Facilities*, outlines specific criteria for the siting, design, construction materials, operations, monitoring, and protection of DoD petroleum fuel facilities. Additionally, UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, outlines various planning, construction, and operational standards to address potential terrorism threats. These AT/FP standards focus on the establishment of setbacks and other security measures to protect DoD facilities from potentially non-secure adjacent uses (e.g., parking lots, off-Base areas, etc.).

AFM 91-201, *Explosives Safety Standards*, requires that defined quantity distance (QD) arcs be maintained between explosive materials storage (e.g., munitions) and handling facilities and

various other uses. QD arcs are determined by the type and quantity of explosive materials stored; within QD arcs, development is either restricted or altogether prohibited in order to maintain personnel safety and minimize the potential for damage in the event of an accident. All petroleum fuel facilities must be located outside of QD arcs. Additional site-specific safety and occupational health standards may also apply to DoD petroleum fuel facilities based on facility location and type, or historical site environmental conditions. These standards may be implemented through site-specific management plans, use restrictions, or other measures.

### 3.11.1 Petroleum Storage

A total of four active ASTs are located within 0.25 miles of the Proposed Action Area that located within the *Bulk Fuels Storage Area* in Area F depicted in **Figure 3-1** These ASTs store up to 13 million gallons of JP-8 jet fuel (USAF 2008a, 2008c, 2008d).

### 3.11.2 Explosives Safety

QD arcs at Travis AFB are associated with multiple munitions storage areas in the southern and western parts of the Base. QD arc radii vary from 1,250 to 2,100 feet, depending on the type(s) of explosives stored. The Proposed Action and alternatives are not located within a QD arc as depicted in **Figure 3-10**. The closest QD Arc just west of the Proposed Action (Alternative 1) is associated with the Base skeet range.

### 3.11.3 Other Safety Considerations

The Proposed Action area would be partially located within ERP DP039. Access and use restrictions have been instituted at this site to protect safety and occupational health (USAF 2002). Refer to Section 3.12.2., *Environmental Restoration Program*, for additional information on this site. The Proposed Action would however, avoid the remedial area in the southwest corner that encompasses the contaminated soil, the bioreactor and monitoring wells. Additionally, the Proposed Action would avoid constructing the building over the plume to avoid installing costly vapor intrusion barriers.

## 3.12 Environmental Management

Environmental management addresses contamination of soils, groundwater, and other hydrogeologic resources through the implementation of preventative measures to avoid contamination, as well as the administration of investigation and remediation procedures to address existing contamination. The *Pollution Prevention Act* of 1990 was enacted to focus industry, government, and the public on pollution reduction through the use of preventative measures, as opposed to treatment and disposal. AFI 32-7080, *Pollution Prevention Program*, provides guidance for reducing and/or eliminating hazardous substances at installations, and developing and implementing recycling and waste diversion programs. USAF installations often develop *Pollution Prevention Management Action Plans* (P2 MAPs) that incorporate management strategies for implementing recycling and other pollution prevention programs. P2 MAPs also typically address energy conservation, solid and hazardous waste management, and the reduction and/or elimination of industrial toxins.

The DoD *Installation Restoration Program* (IRP) (now the ERP) was established in 1983 to address the cleanup of abandoned or inactive sites where spills or releases of hazardous substances may pose a hazard to human health or the environment. ERP site investigation and remediation procedures are developed in accordance with CERCLA requirements and are documented in ROD documents which characterize site conditions and remediation strategies. The AF typically coordinates with the EPA and other Federal, state, and local agencies to address site investigation and remediation, and *Community Involvement Plans* may be developed to inform the public of ERP activities. ERP sites where remediation has been successfully completed are deemed "closed" once the AF and all applicable regulatory agencies sign a site closure report.

### 3.12.1 Pollution Prevention

The current *Travis Air Force Base Pollution Prevention Management Action Plan* AFB (*P2 MAP)* outlines strategies to minimize hazardous materials use at the Base and eliminate potential releases of pollution into the environment. Recycling and other waste diversion strategies are also discussed, and the document details training and awareness programs, health-based risk assessments, management of contracts and facilities, energy conservation, and pollution prevention technologies, all of which are intended to reduce or eliminate pollution at the Base (USAF 2003c).

### 3.12.2 Environmental Restoration Program

ERP activities at Travis AFB began in 1983 upon establishment of the DoD IRP. Potential ERP sites were initially identified through records searches, personnel interviews, and preliminary reconnaissance. To date, a total of 34 ERP sites have been identified on-Base. Contamination at these sites resulted from a variety of past activities, including operations and maintenance, solid waste disposal, fire training, and leaking USTs (USAF 2006b).

Management of ERP sites at Travis AFB are divided into two geographical units: developed central areas (*North/East/West Industrial Operable Unit* [NEWIOU]) and undeveloped peripheral areas (*West/Annexes/Basewide Operable Unit* [WABOU]). Both the NEWIOU and WABOU were subject to groundwater and soil RIs and RODs. RODs have been signed that document the interim remedies for groundwater sites and final remedies for soil, surface water and sediment sites. Following these RIs, a number of remediation activities were initiated, including: UST and solid waste removal; the treatment of soil, surface water, and groundwater; and, land use controls to restrict site access and use. Remediation of soil and/or groundwater is ongoing at over 25 on-Base ERP sites. ERP DP039 *Building 755,* is partially located within the Proposed Action area (Alternative 1) and Alternative 2, and an additional identified site, ERP LF044, *Landfill X,* is located within 0.25 miles of the Proposed Action (Alternative 1) area. **Figure 3-1** depicts the location of ERPs LF044 and DP039.

<u>ERP LF044</u>
Alternative 1 is southeast to ERP LF044, Landfill X, but not contiguous with it. The site was not an actual landfill; rather, it was used from the early 1960s to the late 1990s to stockpile

construction debris such as asphalt and concrete. Polycyclic aromatic hydrocarbon (PAH) constituents from these materials have been found in site soils and may pose a risk to human health and the environment (USAF 2002). The site is currently being used for a new fuel transfer facility owned and operated by Kinder Morgan.

A 1996 RI determined that ERP LF044 does not require active remedial action because levels of metals and PAHs do not exceed industrial cleanup levels. Groundwater monitoring wells installed at the site during the RI failed to detect contamination resulting from former activities at *Landfill X* (USAF 1997). The 2002 *Soil ROD for the WABOU* selected the institution of land use and access restrictions at the site to prevent unauthorized entry or soil disturbance, as well as development of non-industrial uses at the site (USAF 2002). Most of the surface contamination at ERP LF044 was disposed of during the construction of the fuel storage facility in 2010. The current footprint of the Land Use Control (LUC) area is unknown until construction is complete at the site. It is anticipated that the footprint of the LUC area will be very small after construction is complete. The estimated hazard to human health from soil contamination at ERP LF044 is considered low as long as site workers wear appropriate protective equipment (USAF 2002).

ERP DP039, Building 755

ERP DP039 consists of a former rock-filled acid neutralization sump approximately 65 feet west of Building 755, in the northern portion of the WABOU. Until 1978, a pipeline ran from the sink drain within Building 755 to the sump. Based on preliminary assessment data, Building 755 was used to test rocket engines, but only petroleum-based liquid was used at the site as part of rocket engine testing. Since 1968, Building 755 has been the location of the Battery and Electric Shop until 1993 when the sump was removed. Before 1978, battery acid solutions and chlorinated solvents reportedly were discharged into the Building 755 sink and drained to the sump. This practice was discontinued in 1978, when the pipeline was dismantled and reconnected to the sanitary sewer line. In July of 1993, the sump was removed and disposed of on-base. The sump was 8-feet long, 8 feet wide, and 4 feet deep. The sump area was lined with visqueen and backfilled with clean soil. The old sump area is now the site of a solar powered bioreactor. As of November 2009, Building 755 was demolished.

Contaminated soils at this site are concentrated where the sump area was located on the west side of Building 755 in the southwest corner of Alternative 1 location. The soil in this area contains Pb residue. Since the Pb-acid solution entered the former sump through a subsurface pipe, the presence of Pb in the surface soil is attributed to the deposition of small amounts of Pb-contaminated subsurface soil during the 1993 sump removal action. The Human Health and Ecological risk assessments for Building 755 concluded that the Pb residue does not pose an unacceptable risk to local workers or ecological receptors (HH2M Hill 1997). The WABOU soil ROD states that Land Use Alternative S2 is the selected remedial action for area with the Pb residue. This requires the AF to restrict residential development and unauthorized disturbance and relocation of soil at this site.

Contaminated groundwater is currently being monitored and remedy selection is in progress. The plume is located within both Proposed Action (Alternative 1) and Alternative 2 locations; however, the majority of the contaminated groundwater plume is located within the Alternative 2

location. This plume contains TCE, 1,1-DCE, 1,2-DCA, 1,1,1-TCA, 1,1,2-TCA, PCE, methylene chloride; bromodichloromethane; and acetone. TCE is currently used to track the plume as seen in **Figure 3-1**.

ERP DP039 also has several ongoing demonstration projects; a solar powered bioreactor near the west side of original building 755 footprint, a phytostabilization project down-gradient from the bioreactor and an emulsified vegetable oil bio-barrier at the toe end of the plume.

### 3.12.3 Geological Resources

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors affecting the ability to support structural development include soil stability, structure, elasticity, shrink-swell potential, and erodibility. Soils are typically described in terms of their permeability, slope, composition of types, and relative compatibility or constraining properties with regard to particular construction activities and types of land use. Topography is the change in elevation over the surface of a land area. Topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically includes a description of surface elevations, slope, and distinct physiographic features (e.g., mountains), and their influence on human activities.

Travis AFB

The topography of Travis AFB slopes upward to the north, with elevations varying from 15 feet above mean sea level (msl) in the southwest corner to approximately 200 feet above msl along the northern boundary. Geologically, the Base is situated on Quaternary sediments consisting of unconsolidated silty clays at the surface, and silts and fine sands at 15 to 20 feet below ground surface (bgs) (USAF 2003a). Soils at Travis AFB generally consist of low permeable sandy clay loams from the San Ysidro or Antioch-San Ysidro complexes. The western part of the Base has large areas of Altamont-San Ysidro-San Benito Complex soils, characterized as moderately well-drained silty clays with slow permeability. Soils in the northern part of the Base are mostly of the well-drained, highly impermeable Corning Gravelly Loam and Diablo-Los Osos Loam complexes (USAF 2003a).

Soils within Travis AFB are included within the low alluvial plains, fans and low terraces geomorphic unit. Most of the landscapes have been formed since the Pleistocene age. This geomorphic unit was formed as streams eroded the adjacent Coast Ranges, low hills, and dissected terraces. The streams continually shifted their drainage courses as they deposited their sediments. The older alluvium was left as low terraces, which were surrounded by areas of younger alluvium. In places, the difference in relief between the two is slight. Soils in this geomorphic unit include the Brentwood, Conejo, Reiff, Sycamore and Yolo soils, which formed in younger alluvium. Antioch, Rincon, San Ysidro, and Solano formed in older alluvium. **Figure 3-11** presents the soil series map for the Proposed Action (Alternative 1) and Alternative 2.

According to the Solano County Soil Survey, the Alternative 1 location is comprised of Antioch-San Ysidro Complex, 0 to 2 percent slopes on the eastern half of the site; and Altamont-San

Ysidro-San Benito Complex, 2 to 9 percent slopes on the western half of the site. Antioch-San Ysidro is considered partially hydric where at least one component of the series is hydric.

The Alternative 2 location is comprised entirely of Antioch-San Ysidro Complex, 0 to 2 percent slopes. Antioch-San Ysidro is considered partially hydric where at least one component of the series is hydric.

## 3.13 Environmental Justice

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* was issued to focus attention of Federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately adverse human health or environmental effects on these communities are identified and addressed. Because children may suffer disproportionately from environmental health and safety risks, EO 13045, *Protection of Children from Environmental Health and Safety Risks,* was introduced in 1997 to prioritize the identification and assessment of environmental health and safety risks that may affect children and to ensure that Federal agencies' policies, programs, and activities address environmental health and safety risks to children. Data used for this analysis were collected from the 2005 – 2009 *American Community 5-Year Survey Estimate (*www.factfinder.census.gov*)* which address population distribution and income.

Environmental justice data are provided for Solano County and the cities of Fairfield and Suisun City. All three of these regions have populations that could potentially be affected by implementation of the Proposed Action or a project alternative.

### 3.13.1 Minority and Low-Income Populations

In order to comply with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* ethnicity and poverty status in Solano County, Fairfield, and Suisun City were compared to state and national data to determine if any minority or low-income communities could potentially be disproportionately affected by the Proposed Action or a project alternative.

Minority Populations

The percentage of minority residents in Suisun City (62.7 percent) was the highest among the five geographic areas examined in this analysis (**Table 3-6**). By comparison, minority residents made up a somewhat lower percentage of the total population in Fairfield (51.2 percent), Solano County (52.9 percent), and the state of California (38.7 percent). The nation had the lowest percentage of minority residents (38.7 percent) (www.factfinder.census.gov 2011).

**Table 3-6**
**2005-2009 Minority Population Estimate**

| Population Study Area | Percent Minorities |
|---|---|
| Suisun City | 62.7 |
| Fairfield | 51.2 |
| Solano County | 52.9 |
| California | 38.7 |
| U.S.A. | 25.5 |

www.factfinder.census.gov

Low-Income Populations

The 2005 – 2009 estimate of the percentage of Solano County's population living below the poverty level was 9.9 percent (**Table 3-7**). Fairfield reported the same poverty level (9.9 percent). Suisun City reported a slightly higher poverty level (10.3 percent). California reported the same poverty level as that for the nation (www.factfinder.census.go 2011).

**Table 3-7**
**2005-2009 Estimate of the Population Living Below Poverty Level**

| Population Study Area | Percent Living Below Poverty Level |
|---|---|
| Suisun City | 10.3 |
| Fairfield | 9.9 |
| Solano County | 9.9 |
| California | 13.2 |
| U.S.A. | 13.5 |

www.factfinder.census.gov

### 3.13.2 Protection of Children from Environmental Health and Safety Risks

In order to comply with EO 13045, *Protection of Children from Environmental Health and Safety Risks*, the percentages of children under age 18 in Solano County and the cities of Fairfield and Suisun City were examined and compared to state and national levels. Additionally, on-base and off-base locations where populations of children may be concentrated (e.g., schools, parks, hospitals) were identified within 2 miles of the Proposed Action Area. The purpose of this analysis is to address potential disproportionate health and safety risks to children that may result from the Proposed Action or a project alternative.

Age Distribution

The percentage of the total population represented by children under age 18 in Fairfield (29.1 percent) was the highest among the five geographic areas examined in this analysis (**Table 3-8**). By comparison, children under 18 made up a slightly lower percentage of the total population in Suisun City (28.6 percent), Solano County (25.9 percent), and California (26 percent). The nation had the lowest percentage of children under 18 (24.6 percent) (www.factfinder.census.gov 2011).

**Table 3-8 2005-2009 Estimate of Children Under 18**

| Population Study Area | Percent of Population Under 18 |
|---|---|
| Suisun City | 28.6 |
| Fairfield | 29.1 |
| Solano County | 25.9 |
| California | 26 |
| U.S.A. | 24.6 |

www.factfinder.census.gov

Schools, Parks and Recreational Facilities, and Hospitals

Travis Unified School District (USD) serves Travis AFB and off-base areas to the north. There are seven on-base district facilities, all of which are within 2 miles of the three elementary schools, one middle school, one high school, and two alternative high schools (Travis USD 2008). District-wide enrollment exceeded 5,300 students in the 2007-08 academic year (California Department of Education [CDE] 2008). Fairfield and Suisun City are served by the Fairfield-Suisun (USD), a district with EO 12898 (1994) requires each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations." A minority population is composed of people who identify themselves to the U.S. Census Bureau as American Indian or Alaskan Native, Asian or Pacific Islander, Black or African American, or Hispanic, and where such population exceeds 50 percent of the population in an area or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (President's Council on Environmental Quality [CEQ], 1997). Each year, the U.S. Census Bureau defines the national poverty thresholds, which are measured in terms of household income and the number of people within the household. In 2009, the poverty threshold was $22,050 for a household of four (U.S. Census Bureau, 2011). Solano County is a large, demographically diverse county, with communities ranging from the urban areas of Vallejo and Fairfield in the southwest to small rural towns, such as Dixon and Rio Vista. The estimated population of Solano County in 2009 was 407,234, with 52.9 percent White; 14.4 percent African American; and 22.0 percent Hispanic (U.S. Census Bureau 2009). The city of Vallejo, the largest city in Solano County, had an estimated population of 115,073 in 2009. Vallejo is more diverse than the county as a whole; its population was 35.7 percent White, 21.3 percent African American, and 20.8 percent Hispanic. Approximately 13.3 percent of the population in Vallejo is at or below the poverty level. Fairfield is the second largest city in the county, with an estimated population of 103,305 in 2009. Fairfield is the closest city to Travis AFB. Fairfield more closely reflects the cultural composition of the county. The greater part of the population in Fairfield is White (48.4 percent), with lower percentages of Hispanic (24.7 percent) and African American (15.8 percent). Approximately 9.9 percent of individuals live at or below the poverty level (U.S. Census Bureau, 2011). Travis AFB employs approximately 14,267 people. In 2006 the Travis AFB population consisted of approximately 7,304 active duty personnel; 3,384 AF, Army Reserve, and National Guard personnel; and 9,225 active duty dependents. In addition, the Base population included 1,892 appropriated fund civilian personnel and 1,662 non-appropriated fund civilians, contractors, and private business people (Travis AFB, 2006). Although demographic data for Travis AFB was not available, the racial composition of the AF serves as an approximation of the racial composition of the Base. In

2008, the AF was 70.3 percent White, 11.9 percent African American, and the remaining 6.4 percent comprised other races (U.S. Census Bureau, 2008). Children are present on Travis AFB in family housing, child development centers, the Travis AFB youth center, schools, and playgrounds (Travis AFB, 2006).

## 3.14 Utilities

Existing utilities and connections in the vicinity of the Proposed Action (Alternative 1) and Alternative 2 locations is presented in **Figure 3-12**. Power, gas, sewer, potable water and telecommunication cables are existing with or near the Proposed Action (Alternative 1) and Alternative 2 locations.

### 3.14.1 Potable Water

Water is supplied to Travis AFB by the City of Vallejo. Water is supplied by the North Bay Aqueduct to the City–owned and operated Vallejo Treatment Plant (VWTP) which has capacity of 6 million gallons per day (mgd). The source of water is from the Sacramento River Delta, and the amount of water which may be drawn from this source may be limited in dry years to protect the spawning habitat of the Delta smelt, a federal and state listed endangered species.

In addition to the contract supply of water, the Base has three permitted, active wells designated 2029, 2038, 2037, and two currently unpermitted, inactive wells designated 2040, and 2041 located in a well field at the Cypress lakes Golf Course, A Travis AFB 200 acre annex approximately four miles north of the Base. The three permitted wells have the ability to deliver 2,800 gpm. Wells 2040 and 2041 may have the ability to deliver approximately 1,000 gpm once permitted and operating.

Distribution to the Base is made by a 24, 16, 12 and 10-inch mains. Potable water storage capacity at the VWTP is provided by reservoirs 1, 2, 2A and 3, which have a combined capacity of 6.2 million gallons. An additional a 600,000 gallon storage tank is located at David Grant Medical Center. Four deluge tanks are located near the hangars to provide a dedicated supply for the aircraft hangar fire sprinkler systems. These deluge tanks have a combined capacity of 1.45 million gallons.

Potable water is available for the Proposed Action (Alternative 1) from an existing 10-inch water main located on and parallel to Ellis Drive. There is also another 10-inch abandoned water line which runs diagonal on the Alternative 1 location. Additionally 10-inch water lines are located on and parallel to Dixon Avenue that would be available to Alternative 2.

### 3.14.2 Wastewater (Sewer)

Domestic sewage wastes are discharged to the sanitary sewer system consisting of over 41 miles of VCP, steel, asbestos, concrete and plastic gravity sewers and force mains ranging in size from 4-inch to 21-inch. There are 10 pump stations in the collection system. Sewage flows to the Fairfield-Suisun District (FSSD) sewage treatment facilities via a main adjacent to the south gate. The contract between the base and the FSSD is based upon an average flow.

The base uses a sewage overflow facility at the former wastewater treatment plant in the southwest corner of the Base. The overflow facility consists of a rubber and concrete lined basin capable of collecting excess waste water in the event of an emergency where the final lift station cannot handle the volume of flow. Three of the basins are used to avoid excess discharge from the system to the FSSD treatment plant during wet weather conditions. After being lifted by a pump station located in Building 1150, excess flows are diverted in a diversion box to the storage basin and are stored until peak influent recedes and stored wastewater is returned to the pump station for discharge to the treatment plant. A 90,000-gallon sewage holding tank is located at David Grant Medical Center.

There is an 8-inch sewer main that is located on and parallel to Ellis Drive, and there is a 15-inch sewer line that is located parallel to the west branch of Union Creek. An 8-inch sewer main runs on and parallel to Dixon Avenue, but does not run parallel to Alternative Site 2.

### 3.14.3 Storm Water

Existing storm drainage structures cannot be found close to the Proposed Action (Alternative 1) and Alternative 2 locations. The nearest storm water conveyance is located near the intersection of V Street and Dixon Avenue. See Section 3.4.2 for more details about the storm water system at Travis AFB.

### 3.14.4 Electrical and Gas

Electricity and gas is supplied to the Base by Pacific Gas & Electric Company (PG&E). Underground and overhead electrical services are readily available around both Alternative 1 and Alternative 2 sites. Gas service is required for the BCE complex; a new natural gas line can be connected to an existing 2-inch natural gas line at the intersection of Ragsdale Street and Ellis Drive. At Alternative Site 2, gas service is available via a 3-inch and 2-inch natural gas pipe which runs on and parallel to Dixon Avenue.

### 3.14.5 Communications

Telecommunication lines are already available along Dixon Avenue within the right-of-way originating from Building 902/918 veering north to the intersection of Ellis Drive and Ragsdale Street. New communications lines would need to be installed along Ellis Drive to service the BCE complex. The communications cable will be connected at the northwest corner of Ragsdale Street and Ellis Drive.

# 4.0 ENVIRONMENTAL CONSEQUENCES

## 4.1 Introduction

Environmental impacts that would result from construction and operation of the consolidated BCE complex at Travis AFB are evaluated in this section. Impacts analyses are presented by resource area, as described in Section 3, *Affected Environment.* Analyses for the Proposed Action are presented for Alternative 1 (the preferred site), Alternative 2, and the No Action Alternative. A summary of environmental impacts for Alternative 1, Alternative 2 and the No Action Alternative is presented in **Table 4-1.** Indirect and cumulative impacts for each resource are presented in Section 4.15. Section 4.16 presents Unavoidable Adverse Impacts; Section 4.17 presents Relationship between Short-term Uses and Enhancement of Long-term Productivity; and Section 4.18 presents Irreversible and Irretrievable Commitment of Resources.

## 4.2 Air Quality

Impacts to air quality in attainment areas would be considered significant if emissions associated with implementation of a Proposed Action or alternatives caused or contributed to a violation of any Federal, state, or local ambient air quality standard; represented an emissions inventory increase of 10 percent or more in the affected Air Quality Control Region (AQCR); exposed sensitive receptors to substantially increased concentrations of emissions; or, exceeded any significance criteria established by the SIP. With respect to the EPA *General Conformity Rule*, impacts to air quality would be considered significant if emissions increased a non-attainment or maintenance area's emissions inventory by 10 percent or more for individual non-attainment pollutants; or exceeded *de minimis* threshold levels established in 40 CFR § 93.153(b) for individual non-attainment pollutants or pollutants for which an area has been re-designated as a maintenance area. See Section 3.2 for discussions on air quality within the proposed action area.

### 4.2.1 Local Regulatory Setting

Travis AFB is located in a geographical area governed by the BAAQMD. In addition to the EPA NAAQS, emissions within BAAQMD jurisdiction are regulated by the CARB CAAQS. A conformity review would be required in BAAQMD jurisdiction when a proposed project generates emissions in an AQCR designated as a non-attainment or maintenance area for one or more NAAQS or CAAQS. Thresholds of significance to assess potential emissions associated with a proposed project have been established by the BAAQMD (BAAQMD 1999) and are described below. BAAQMD thresholds of significance are used to assess construction and operational emissions for the proposed BCE complex. In addition, construction and operational emissions for the BCE complex are assessed separately for the Proposed Action and each project alternative.

#### 4.2.1.1 Thresholds of Significance

Construction Emissions

The BAAQMD approach for determining the threshold of significance for construction-related fugitive dust is based on the implementation of effective and comprehensive control measures

rather than a detailed quantification of potential dust emissions (BAAQMD 1999). However, construction related emissions were calculated and are presented in **Appendix D**. The calculations would apply to both Alternative 1 and 2 sites as the area of disturbance is the same for the design of the BCE complex. None of the air quality standards were exceeded by ten percent and were well below established threshold limits. BMPs to control fugitive dust will be employed as required during construction, and may include some or all of the following:

- Water all active construction areas at least twice daily;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Pave, apply water three times daily, or apply soil stabilizers on all unpaved access roads and parking and staging areas at construction sites;
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites; and,
- Sweep daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

The following *Enhanced Control Measures* are to be implemented at construction sites greater than 4 acres (BAAQMD 1999):

- All *Basic Control Measures* outlined above;
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more);
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unimproved surfaces to 15 miles per hour (mph);
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways; and,
- Replant vegetation in disturbed areas as quickly as possible.

In addition, the following *Optional Control Measures* are strongly encouraged for implementation at large or sensitive construction sites (BAAQMD 1999):

- Install wheel washers for all exiting trucks, or wash off tires or tracks of all trucks and equipment leaving the site;
- Install wind breaks, or plant trees/vegetative windbreaks at windward side(s) of construction areas;
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph; and,
- Limit the area subject to excavation, grading and other construction activity at any one time.

Operational Emissions

The BAAQMD provides quantitative thresholds of significance levels to evaluate ongoing operation of proposed projects. These thresholds must consider both direct emissions associated with ongoing project operations, as well as indirect emissions sources such as motor vehicles traveling to and from the project site (BAAQMD 1999).

In addition to the significance thresholds above, there are several other pertinent requirements for evaluating operational emissions under BAAQMD:

- Project must evaluate localized CO levels of CO emissions from vehicles that would exceed 550 pounds (lbs)/day;
- Projects should evaluate the potential for odor impacts;
- TACs should not have a probability of cancer risk of greater than ten in one million nor a hazard index greater than one for the maximum exposed individual;
- Acutely hazardous materials should be evaluated for accidental releases; and,
- Cumulative impacts should be assessed.

#### 4.2.1.2 Emissions Thresholds and Permitting

Travis AFB operates under a BAAQMD *Synthetic Minor Facilities Permit* (under *Plant #770*) which contains provisions to limit the base's potential emission levels to below defined thresholds, notably 34 tpy for emissions of POCs [i.e., nitrogen oxide (NOx) and ROGs]. Some facilities at the Base (e.g., the hospital) operate under separate BAAQMD permits containing provisions specific to those facilities (USAF 2003b, 2009b). If the Proposed Action or project alternative emissions would exceed emission thresholds, the Proposed Action and or a project alternative would be subject to a separate BAAQMD permit granted specifically to Travis AFB for operation of the proposed project components.

### 4.2.2 Alternative 1

Construction

Emissions resulting from construction would be temporary and transient, and the short-term exposure levels would be minimal. Further, the BAAQMD does not consider combustion emissions when determining thresholds of significance for a proposed project as long as they do not impede attainment or maintenance of standards within the AQCR. None of the air quality standards were exceeded by ten percent and were well below established threshold limits (see **Appendix D** for details on construction emissions). With implementation of BAAQMD's control measures outlined above, fugitive dust emissions would be well below thresholds of significance. Accordingly, impacts to air quality associated with construction of the BCE complex would be less than significant.

Operation

Emissions resulting from operation of the BCE complex would be well below BAAQMD operational thresholds and much less than 10 percent of the 100 tpy for Federal conformity. Fugitive operational emissions would be negligible. Additionally, automobile emissions would be reduced as a result of concentrating engineering facilities at the proposed BCE complex. Consequently, impacts to air quality associated with construction of the BCE complex would be less than significant and there would be no net loss in air quality as a result of operation.

### 4.2.3 Alternative 2

Construction
Combustion emissions resulting from construction of the BCE complex under Alternative 2 would be temporary and would not impede attainment or maintenance of AQCR standards. None of the air quality standards were exceeded by ten percent and were well below established threshold limits (see **Appendix D** for details on construction emissions). Implementation of BAAQMD's control measures would reduce fugitive dust emissions well below thresholds of significance. Consequently, impacts to air quality associated with construction of the BCE complex under Alternative 2 would be the same as for Alternative 1, less than significant.

Operation
Under Alternative 2, the operation of the BCE complex would be the same as that for Alternative 1; no operational emissions or air quality impacts would result.

### 4.2.4 No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would remain as described in Section 3.2, Air Quality.

## 4.3 Noise

Noise impact analyses typically evaluate potential changes to existing noise environments which are instigated by implementation of a Proposed Action or project alternative. Impacts would be considered to be significant if they would result in increased noise exposure to unacceptable noise levels. An increase in noise levels due to a new noise source can create an impact on the surrounding environment Noise associated with a Proposed Action or project alternative is compared with existing noise to determine the magnitude of potential impacts. See Section 3.3 for discussion on noise sources within the proposed action area.

### 4.3.1 Alternative 1

Construction
Construction of the BCE complex would have minor, temporary impacts on the noise environment in the vicinity of proposed construction activities. Use of heavy equipment for site preparation, excavation, and facility construction may potentially generate noise exposure above typical ambient levels in the vicinity of the BCE complex footprint. However, noise generation would be typical of construction activities, would last only the duration of construction activities (i.e., one year), and could be reduced through the use of equipment sound mufflers and restriction of construction activity to normal working hours (i.e., between 7:00 AM and 5:00 PM). Furthermore, the closest noise-sensitive receptor, Travis Elementary School, is located over 0.80 miles from proposed construction activities. Therefore, noise produced by construction of the BCE complex would not significantly impact the surrounding noise environment.

Operational Noise
Operation of the BCE complex would not generate noise above typical ambient levels in surrounding areas. According to the ACUIZ, the west half of Alternative 1 is located within the 65 CNEL noise contour and the east half of the site is located within the 70 CNEL noise contour. Therefore, no operational noise impacts would be expected.

### 4.3.2 Alternative 2

Construction
Noise produced by construction of the BCE complex under Alternative 2, would not significantly impact the surrounding noise environment.

Operation
Operation of the BCE complex would not generate noise above typical ambient levels in surrounding areas. According to the ACUIZ, Alternative 2 is located within the 70 CNEL noise contour. Therefore, no operational noise impacts would be expected.

### 4.3.3 No Action Alternative

Under the No Action Alternative, construction of the BCE complex would not occur, therefore, no temporary periodic increases in noise levels would occur. No impacts from noise levels are expected.

## 4.4 Wastes, Hazardous Materials, and Stored Fuels

Impacts to hazardous wastes and materials management would be considered significant if implementation of a Proposed Action or project alternative resulted in noncompliance with applicable Federal and state regulations, or increased the amount of waste and/or materials generated or procured beyond current waste management procedures and capacities at Travis AFB. Impacts to fuels management would be significant if the established management policies, procedures, and handling capacities could not accommodate the activities associated with implementation of the Proposed Action or a project alternative. See Section 3.4 for discussion on wastes, hazardous materials and stored fuels with the proposed action area.

### 4.4.1 Hazardous Waste and Materials

#### 4.4.1.1 Alternative 1

*Construction*
Construction of the BCE complex is expected to utilize a negligible quantity of hazardous waste; however, increases would be temporary and would not result in any long-term impacts. The construction contractor would maintain records of all hazardous waste potentially generated by construction activities, and storage, transport, and disposal would follow all applicable Federal, state, and local regulations. During construction, all potentially hazardous materials associated with construction (e.g., oils, lubricants, etc.) would be stored at the contractors' staging yard in accordance with applicable hazardous and flammable storage regulations. Refueling and

lubrication of construction equipment would occur at the construction contractors' staging yard or onsite in a designated and closely monitored temporary staging area. Equipment would also be regularly checked for leakage, and no refueling or lubrication of equipment would occur within 250 feet of identified sensitive habitat areas. In the event of a spill of any type or amount of hazardous waste or materials, immediate action would be taken by the construction contractor to contain and clean up the spill. The contractor would be responsible for the proper removal, transport, and disposal of all waste and associated clean up material; cleanup, removal, transport, and disposal would be conducted according to all applicable Federal, state, and local regulations. With implementation of the procedures outlined above, any impacts associated with hazardous waste and materials due to construction would be less than significant.

*Operation*
Operation of the BCE complex is expected to utilize negligible quantities of hazardous waste; however, since the proposed action is a consolidation of existing Base activities, no net gain in hazardous waste is anticipated. Storage, transport, and disposal of hazardous waste would follow all applicable regulations, and impacts would be less than significant. All potentially hazardous materials associated with operation would be stored in accordance with applicable hazardous and flammable storage regulations. With implementation of the components and procedures outlined above, any impacts associated with hazardous waste and materials due to operation of the BCE complex would be less than significant.

#### 4.4.1.2 Alternative 2

*Construction*
With implementation of the procedures outlined in Section 4.4.1.1 above, any impacts associated with hazardous waste and materials due to construction would be less than significant.

*Operation*
With implementation of the components and procedures outlined in Section 4.4.1.1, any impacts associated with hazardous waste and materials due to operation of the BCE complex would be less than significant.

#### 4.4.1.3 No Action Alternative

The construction and operation of the proposed BCE complex would not occur, therefore, the temporary increase in the use and storage of hazardous wastes and materials would not occur. In addition, the use and storage of hazardous wastes and materials would stay the same for the current design of the Base Engineering resources. Therefore, no impacts would be expected.

### 4.4.2 Solid Waste

#### 4.4.2.1 Alternative 1

*Construction*
Construction of the BCE complex is expected to generate a negligible quantity of solid waste; however, increases would be temporary and would not result in any long-term impacts. The

construction contractor would transport, and dispose solid waste in accordance with applicable Federal, state, and local regulations. During construction, all solid waste materials associated with construction (e.g., concrete, wood, plastic etc.) would be stored at the contractors' staging yard in accordance with applicable solid waste storage regulations. The contractor would be responsible for the proper removal, transport, and disposal of all solid waste, and would be conducted according to all applicable Federal, state, and local regulations. With implementation of the procedures outlined above, any impacts associated with solid waste due to construction would be less than significant.

*Operation*
Operation of the BCE complex is expected to generate negligible quantities of solid waste; however, since the proposed action is a consolidation of existing Base activities, no net gain in solid waste is anticipated. Storage, transport, and disposal of solid waste would follow all applicable regulations, and impacts would be less than significant. All solid waste materials associated with operation would be stored in accordance with applicable solid waste storage regulations. With implementation of the components and procedures outlined above, any impacts associated with solid waste and materials due to operation of the BCE complex would be less than significant.

#### 4.4.2.2 Alternative 2

*Construction*
With implementation of the procedures outlined in Section 4.4.2.1 above, any impacts associated with solid waste and materials due to construction would be less than significant.

*Operation*
With implementation of the procedures outlined in Section 4.4.2.1, operation of the BCE complex would not impact existing solid storage, distribution, and containment facilities at Travis AFB.

#### 4.4.2.3 No Action Alternative

The construction and operation of the proposed BCE complex would not occur, therefore, the temporary increase in the creation and storage of solid wastes and materials would not occur. In addition, creation and temporary storage of solid wastes and materials would stay the same for the current design of the Base Engineering resources. Therefore, no impacts would be expected.

### 4.4.3 Environmental Restoration

#### 4.4.3.1 Alternative 1

Construction
Construction of the BCE complex would not occur within the foot print of the ERP DP039 remedial management area located in the southwest corner of the Action Area comprised of contaminated soil, bioreactor and monitor wells. Therefore, no impacts to the management of ERP DP039 would occur.

Operation
Operation of the BCE complex, when constructed, is not expected to impact the management of ERP DP039, nor will the nearby presence of the site's contaminated groundwater plume impact the operations of the BCE complex.

#### 4.4.3.2 Alternative 2

Construction
Construction of the BCE complex would occur almost entirely on top of the contaminated groundwater plume. Therefore, a significant impact to the management of wastes and restoration of ERP DP039 would occur if this action is selected resulting in an increase in cost to remediate.

Operation
Operation activities of the BCE complex are not expected to affect the groundwater plume or ERP DP039; however, operation activities could impact accessibility to the site to properly monitor contamination and remedial efforts. A management plan would be implemented for accessibility to monitoring wells so that remedial efforts are not impacted. Therefore, impacts to management of wastes associated with ERP DP039 would result in less than significant impacts.

#### 4.4.3.3 No Action Alternative

The construction and operation of the proposed BCE complex would not occur; therefore, ERP DP039 would remain in its current condition described in Section 3.4.3. Therefore, no impacts are expected.

### 4.4.4 Fuel Storage, Distribution, and Containment

#### 4.4.4.1 Alternative 1

*Construction*
Construction would not impact existing fuel storage, distribution, and containment facilities at Travis AFB, and any temporary increases in the procurement, storage, handling, and use of fuels and petroleum products due to construction activities would be insignificant.

*Operation*
Operation would not impact existing fuel storage, distribution, and containment facilities at Travis AFB. Procurement, storage, handling, and use of fuels and petroleum products is not expected to increase significantly due to the operation of the BCE complex, consequently, no significant impacts with regard to fuel storage, distribution, and containment would result.

#### 4.4.4.2 Alternative 2

Construction
Construction for Alternative 2 would not impact existing fuel storage, distribution, and containment facilities at Travis AFB, and any temporary increases in the procurement, storage,

handling, and use of fuels and petroleum products due to construction activities would be insignificant

*Operation*
As with Alternative 1, operations would not impact existing fuel storage, distribution, and containment facilities at Travis AFB. Procurement, storage, handling, and use of fuels and petroleum products is not expected to increase significantly due to the operation of the BCE complex, consequently, no significant impacts with regard to fuel storage, distribution, and containment would result.

#### 4.4.4.3 No Action Alternative

The construction and operation of the proposed BCE complex would not occur; therefore, fuel storage, distribution and containment would not temporarily increase, and would stay the same for the current fuel storage, distribution and containment associated with the current Base Engineering resource design. Therefore, no impacts are expected.

## 4.5 Water Resources

An impact to water resources would be significant if implementation of a Proposed Action or project alternative would: 1) reduce water availability to or interfere with the supply of existing users; 2) create or contribute to the overdraft of groundwater basins or exceed the safe annual yield of water supply sources; 3) adversely affect water quality or endanger human health or the environment by creating or worsening adverse health hazard conditions; 4) threaten or damage unique hydrologic characteristics; or, 5) violate established laws or regulations that have been adopted to protect or manage water resources. This section also provides a broad overview of potential impacts related to wetlands. Further, because FEMA FIRMs do not indicate the presence of 100-year floodplains within the project area at Travis AFB, impacts related to floodplains and potential flooding were excluded from discussion to keep the analysis relevant and concise. See Section 3.5 for discussion on water resources within proposed action area.

### 4.5.1 Groundwater

#### 4.5.1.1 Alternative 1

Construction
Construction of the BCE complex would not involve excavating areas within the ERP DP039 contamination area. Should the construction of the BCE complex involve preparing foundation that would enter the groundwater (outside of the plume), engineering designs would meet military, state and federal regulations. Adherence to the hazardous waste management outlined in Section 3.4 during construction would avoid impacts to groundwater resources in the area. Therefore, no significant impacts to groundwater are expected to occur.

Operation
Alternative 1 would not affect the quantity of water available to the installations or to the surrounding areas, nor would it increase the amount of water withdrawn from

groundwater resources. Adherence to the SPCCP, P2 MAP and ICP during BCE complex operations will avoid impacts to groundwater in the area. Therefore, no significant impacts to groundwater are expected to occur during operations.

#### 4.5.1.2 Alternative 2

Construction

Significant temporary impacts to groundwater may occur, should the construction of the BCE complex involve preparing foundation that would enter the groundwater plume. De-watering, containment, and off-site disposal of contaminated water may be necessary. Additionally, monitoring and injection wells may need to be re-positioned (while properly decommissioning old wells) to accommodate the design footprint of the complex. This may also temporarily impact groundwater quality. Engineering designs would be implemented in accordance with military, state and federal regulations; the ICP and SPCCP would be strictly adhered to and waste management would be implemented as outlined in Section 3.4 of the EA. Significant impacts to groundwater would be temporary.

Operation

As with Alternative 1, Alternative 2 will not affect the quantity of water available to the installations or to the surrounding areas, nor will it increase the amount of water withdrawn from groundwater resources. Adherence the SPCCP, P2 MAP and ICP during BCE operations will avoid impacts to groundwater in the area. Therefore, no significant impacts to groundwater are expected to occur during operations.

#### 4.5.1.3 No Action Alternative

The BCE complex would not be built; therefore, no negative impacts to groundwater would occur.

### 4.5.2 Surface Water

#### 4.5.2.1 Alternative 1

Construction

Construction could potentially produce short-term impacts to surface water quality caused by erosion during construction activities. A Construction Storm Water Permit would be required by the State Water Resources Control Board (SWRCB). Additionally, the Base would require a dig permit and a storm water permit in conformance with the current Travis AFB SWPPP. During construction, BMPs would be implemented in accordance with the permits to reduce potential impacts to adjacent open fields and the west branch of Union Creek. Impacts to surface waters caused by construction activities would be less than significant.

Operation

There are no surface drainages currently at the Proposed Action site (Alternative 1); however, storm water drainage would need to be designed to shed rainwater from proposed parking areas and buildings. The SWPPP outlines engineering and management strategies designed to enhance

the quality of the Base's storm water discharges, especially releases related to industrial and construction activities. In addition, the BCE complex storm water design will conform to Section 438 guidance of EO 13514 (October 2009) that requires DoD installations under the Unified Facilities Criteria ((UFC) 3-210-0) to use Low Impact Development (LID) techniques that would reduce impacts to surface waters. Impacts to surface waters would be less than significant with implementation of the above stated measures.

#### 4.5.2.2 Alternative 2

Construction

Construction could potentially produce short-term impacts to surface water quality caused by erosion during construction activities. Construction equipment would access unpaved areas from Dixon Avenue. Construction of the BCE complex would require extensive soil excavation, storage, and backfill which could potentially result in increased erosion and sedimentation that could potentially enter the west branch of Union Creek via the ditch located 200 feet south of the site. Additionally, there is a small surface drainage ditch located in the north section of this site. As with Alternative 1, implementation of Alternative 2 would require implementation of BMPs as required by the construction storm water permit, and would comply with engineering and management strategies for design of storm water discharge as required by the SWPPP and NPDES permit. Therefore, implementation of Alternative 2 would not significantly impact surface waters.

Operation

Any alterations planned for storm water drainage would comply with the facility's engineering specifications as required by the Base SWPPP and UFC 3-210-0 to use LID techniques. Therefore, implementation of Alternative 2 would not significantly impact surface waters within or outside of the project boundary.

### 4.5.2. No Action Alternative

The BCE complex would not be built, therefore changes to current storm water designs would not occur, and there would be no impacts to surface waters.

### 4.5.3 Floodplains

#### 4.5.3.1 Alternative 1

Implementation of Alternative 1 would not occur within the 100-year floodplain. Therefore no impacts as a result of the Proposed Action would occur.

#### 4.5.3.2 Alternative 2

Implementation of Alternative 2 would not occur within the 100-year floodplain. Therefore no impacts as a result of the Proposed Action would occur.

#### 4.5.3.3 No Action Alternative

The Proposed Action would not occur; therefore no impacts associated with floodplains would occur.

### 4.5.4 Wetlands and Waters of the U.S.

A USACE Section 404 permit would be required if the Proposed Action or Alternatives involve dredge or fill material activities in a jurisdictional water of the US. In addition EO 11990, Protection of Wetlands, requires federal agencies to avoid new construction in wetlands, whether jurisdictional or not, unless there is no practicable alternative to such construction and all practicable measures to minimize harm to wetlands have been included. Construction activities in wetlands would be considered significant if the loss of wetlands could not be mitigated.

#### 4.5.4.1 Alternative 1

A Wetland and Waters of the U.S. survey was conducted at Alternative Site 1 during September and November of 2010. The survey revealed that this site does not contain jurisdictional wetlands or "Waters of the U.S."; however, isolated seasonal wetlands (vernal pools) were surveyed outside the project boundary and may be considered jurisdictional under the CWA because they are adjacent to a relatively permanent water (RPW) of the U.S. This RPW is the west branch of Union Creek. A total of 0.63 acres of seasonal wetlands were delineated north and northeast of the proposed BCE complex site (see **Figure 3-3**). The Cowardin Classification for these wetlands would fall under Palustrine Emergent Seasonally Flooded (PEM2C).

Construction
The preferred alternative does not involve construction in any wetlands. With the implementation of construction SWPPP BMPs, significant impacts to wetlands located outside the project boundary would be avoided.

Operation
Operation of the BCE complex will not involve dredge or fill activities in wetlands. With implementation of the base's industrial SWPPP BMPs, significant impacts to wetlands located outside the project boundary would be avoided.

#### 4.5.4.2 Alternative 2

A Wetland and Waters of the U.S. survey was conducted at Alternative 2 during September and November of 2010. The survey revealed that this site contains an isolated seasonal wet meadow and may not be considered jurisdictional wetlands because it is not adjacent to an RPW or a Non-RPW. However, a formal jurisdictional determination (JD) would need to be acquired from the USACE to verify jurisdictional status.

Construction
Construction of the BCE complex may result in construction activities in the wet pasture/meadow identified within Alternative 2 and the drainage ditch located north of the

materials staging area. The wet meadow can be classified according to Cowardin Classification as Palustrine Emergent Temporarily Flooded (PEM2A). The drainage feature (0.06 acres) that sheds rainwater from the staging area is considered an ephemeral excavated ditch (Non-RPW) located within an upland area. These two features, the wet pasture and the shallow ditch (see **Figure 3-4**) may not be considered jurisdictional wetlands or "Waters of the U.S." as these two features are not connected to, or adjacent to Non-RPWs, RPWs or Traditionally Navigable Waters (TNWs). In addition, the ditch is a man-made feature in an upland. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water, are non-jurisdictional. The jurisdictional status of these two features would require a USACE JD.

Whether jurisdictional or not, construction activities in this wetland would be considered significant if the loss of wetlands could not be mitigated.

Operation
Operation of the BCE complex will not involve dredge or fill activities in wetlands. With implementation of the base's industrial SWPPP BMPs, significant impacts to wetlands located outside the project boundary would be avoided.

#### 4.5.1.3 No Action Alternative

As with the implementation of the Proposed Action (Alternative 1), no impacts to wetlands would occur if the BCE complex were not built.

## 4.6 Biological Resources

This section analyzes the potential for adverse impacts on biological resources, such as habitat loss, from implementation of any of the alternatives. Impacts to protected species habitats would be considered significant if the impact could not be mitigated. A Biological Assessment was conducted and is presented in **Appendix C**.

### 4.6.1 Effects on Vernal Pool Brachiopods and Contra Costa Goldfields

#### 4.6.1.1 Alternative 1

Construction and Operation
Construction will not impact vernal pool fairy shrimp located 250 feet west of the Proposed Action boundary and Contra Costa goldfields located 220 feet north of the Proposed Action boundary. BMPs implemented according to current SWPPP, and the BAAQMD CEQ guidelines would be used to keep equipment, construction workers and sediment from migrating out of the Proposed Action Area. Refer to Section 7.2 of **Appendix C** for details of BMPs presented as conservation measures that would be implemented. Operational activities would not occur outside of the BCE complex site; therefore, no impacts to vernal pool brachiopods or Contra Costa goldfields are expected to occur.

#### 4.6.1.2 Alternative 2

Construction and Operation
Alternative 2 is not located within a brachiopod habitat buffer and Contra Costa goldfields have not been located within the vicinity of Alternative 2; therefore, construction and operation of the BCE complex would have no impact on vernal pool brachiopods or Contra Costa goldfields.

#### 4.6.1.3 No Action Alternative

The BCE complex would not be built; therefore, no impacts to vernal pool brachiopods and Contra Costa goldfields would occur.

### 4.6.2 Effects on the California Tiger Salamander

An assessment of potential California tiger salamander breeding and estivation habitat was conducted on Travis AFB, during April and May, 2005 (Rana Resources 2005). All potential ponded areas at Travis AFB that held water for a minimum of 90 days were examined and photographed, as well as other ponded areas that could be used by this species. Small mammal burrows in the vicinity of the preceding ponded areas were also examined. Survey results showed that potential breeding habitat is largely restricted to only 8 of 27 surveyed sites, with the most likely salamander breeding habitat (a medium habitat assessment rating) to be present at the extreme northern part of Travis AFB adjacent to the recently constructed housing units in the Burke Tract. All other breeding sites could be excluded due to shallow water depth, small size of pools, eutrophication, and the presence of fish (*Gasterosteus aculeatus* and *Gambusia affinis*) or crayfish (*Procambarus clarkii*) in pools. Therefore, according to the 2005 assessment, the seasonally ponded areas in the vicinity of Alternative 1 and Alternative 2 would not be suitable breeding sites for the California tiger salamander. The U.C. Davis study that was conducted 2008 through 2010, confirms that these ponded areas are not California tiger salamander breeding pools (Johnson and Shaffer, 2010).

#### 4.6.2.1 Alternative 1

Construction and Operation
According to the 2005 and 2010 California Tiger Salamander assessments, the seasonally ponded areas in the vicinity of Alternative 1 would not be suitable breeding sites for the California Tiger Salamander. In addition, there are no California Tiger Salamander breeding ponds within 1.3 miles of the Alternative site 1. Therefore no impacts to California tiger salamander or their upland habitat are expected.

#### 4.6.2.2 Alternative 2

Construction and Operation
According to the 2005 and 2010 California Tiger Salamander assessments, the seasonally ponded areas in the vicinity of Alternative 2 would not be suitable breeding sites for the California Tiger Salamander. The California tiger salamander buffer zone just reaches the south boundary of Alternative 2. It is not likely however, that this site would provide suitable burrow

habitat for the salamander, as there were no burrows found during the assessment, and the site is continually grazed by horses. Therefore, minor impacts to the California tiger salamander and its habitat would be expected.

#### 4.6.2.3 No Action Alternative

The BCE complex would not be built, therefore, no impacts to California tiger salamander habitat would occur.

### 4.6.3 Effects on the Burrowing Owl

Burrowing owls are listed as a California species of special concern.

#### 4.6.3.1 Alternative 1

Construction and Operation
No burrowing owls were found at the Alternative 1 site during habitat surveys from October 2010 through August 2011. Several ground squirrels were found within this site, presenting potential habitat for the burrowing owl. However, a pre-construction survey for the burrowing owl will be conducted. Should there be active nesting on site, re-location of the nest (s) would occur in accordance with mitigation guidelines in the California Environmental Quality Act (CEQA) Section 15380. No impacts to the burrowing owl are expected to occur during construction and operation.

#### 4.6.3.2 Alternative 2

Construction and Operation
No burrowing owls were found at the Alternative 2 site during habitat surveys from October 2010 through August 2011 and no fossorial burrows were found within this site. However, a pre-construction survey for the burrowing owl will be conducted. Should there be active nesting on site, re-location of the nest (s) would occur in accordance with mitigation guidelines in the CEQA Section 15380. No impacts to the burrowing owl are expected to occur during construction and operation.

#### 4.6.3.3 No Action Alternative

The BCE complex would not be built; therefore, no impacts to the Burrowing Owl would occur.

## 4.7 Socioeconomic Resources

Significance of population and expenditure impacts are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary depending on the location of a Proposed Action or project alternative; for example, implementation of an action that creates 20 employment positions may be unnoticed in an urban area, but may have significant impacts in a more rural region. Socioeconomic impacts would be considered significant if they result in substantial shifts

in population trends, or adversely affect regional spending and earning patterns. See Section 3.7 discussion on Socioeconomic Resources within the Proposed Action area.

### 4.7.1 Alternative 1

Construction
Construction of the BCE complex would result in short-term economic activity associated with the hiring of temporary construction personnel and purchasing of materials. However, impacts resulting from construction payrolls and materials purchased would last only for the duration of construction activities (i.e., one year) and would be negligible on a regional scale. Accordingly, less than significant impacts to socioeconomic resources would result.

Operation
Operation of the BCE complex would not expect to significantly increase the number of personnel that would be needed for operations and maintenance activities, as this complex is expected to consolidate activities, not increase number of personnel necessarily. Any socioeconomic impacts would be negligible or positive on a regional scale.

### 4.7.2 Alternative 2

Construction
Similar to Alternative 1, if Alternative 2 were selected, less than significant impacts to socioeconomic resources would result.

Operation
Similar to Alternative 1, any socioeconomic impacts would be negligible or positive on a regional scale.

### 4.7.3 No-Action Alternative

If the No-Action Alternative were selected, the ability of Base personnel to conduct mission activities would not be enhanced, and positive socioeconomic stability might not be realized.

## 4.8 Cultural Resources

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the NHPA of 1966 empowers the ACHP to comment on Federally-initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the NRHP. Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the NHPA. Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or

alter its setting; or 4) neglecting the resource to the extent that it is deteriorated or destroyed. Direct impacts can be assessed by identifying the type and location of a Proposed Action or project alternative and determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources. Discussions on cultural resources within the Proposed Action area is presented in Section 3.8, Cultural Resources.

### 4.8.1 Alternative 1

Construction

Construction of the BCE complex under Alternative 1 would occur in a previously-disturbed area. The APE in the vicinity of the Alternative 1 was previously subject to an archaeological survey, and no NRHP-eligible resources were identified (personal communication with Raymond Hasey CES/CEAN). The site is previously disturbed as a result of former maintenance and activities associated with Building 755. Therefore construction of the BCE complex would not result in impacts to cultural resources.

Operation

Operational activities associated with the BCE complex would occur in a previously-disturbed area. The APE in the vicinity of Alternative 1 was previously subject to an archaeological survey, and no NRHP-eligible resources were identified. Therefore, operation of the BCE complex would have no impact on cultural resources.

### 4.8.2 Alternative 2

Construction

Similar to Alternative 1, construction of the BCE complex under Alternative 2 would occur in a previously-disturbed area, and no buildings or structures would be demolished or altered. The APE in the vicinity of Alternative 2 was previously subject to an archaeological survey, and no NRHP-eligible resources were identified. The site is continually disturbed by horses and has been the site of remediation activities. Therefore, construction of the BCE complex at Alternative Site 2 would have no impacts to cultural resources.

Operation

Similarly to Alternative 1, activities associated with the BCE complex would occur in a previously-disturbed area, and no buildings or structures would be demolished or altered. The APE in the vicinity of Alternative 2 was previously subject to an archaeological survey, and no NRHP-eligible resources were identified. Therefore, operation of the BCE complex would have no impact on cultural resources.

### 4.8.3 No Action Alternative

Implementing the No Action Alternative would not result in impacts to cultural resources. Essentially the same as if Alternative 1 or 2 were implemented.

## 4.9 Land Use

Significance of potential land use impacts is based on the level of land use sensitivity in areas affected by implementation of a Proposed Action or project alternative. In general, land use impacts would be considered significant if they: (1) conflict with applicable ordinances and/or permit requirements; (2) are in nonconformance with applicable land use plans; (3) preclude continued activities on adjacent or nearby properties; and/or, (4) conflict with established uses of an area. Refer to Section 3.12, Environmental Management, for information on potential construction-related impacts to land use and access restrictions instituted at ERP DP039.

### 4.9.1 Alternative 1

Construction
Construction of the BCE complex would be compatible with adjacent and nearby land use, and no significant impacts would result.

Operation
Under the Proposed Action, operation of the BCE complex would be compatible with adjacent and nearby Travis AFB and off-base property land use, and no significant impacts would result.

### 4.9.2 Alternative 2

Construction
As with Alternative 1, the BCE complex under Alternative 2 would be compatible with adjacent and nearby land use, and no significant impacts would result.

Operation
Under Alternative 2, operation of the BCE complex would be compatible with adjacent and nearby Travis AFB and off-base property land use, and no significant impacts would result.

### 4.9.5 No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would remain as described in Section 3.9, Land Use.

## 4.10 Transportation Systems

Potential impacts to transportation systems are assessed with respect to anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service; and changes in existing levels of transportation safety. Beneficial or adverse impacts may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes resulting from installation workforce or population changes. Adverse impacts on roadway capacities would be significant if roads with no history of exceeding capacity were forced to operate at or above their full design capacity. See Section 3.10 for discussion on Transportation Systems within the Proposed Action area.

### 4.10.1 Alternative 1

Construction

Construction of the BCE complex would require the delivery of equipment and materials to the project site, and personnel would commute to/from the site. However, construction traffic would make up only a small portion of the total existing traffic volume in the region and a majority of equipment would be driven to and kept at the contractors' staging yard for the duration of construction activities. Further, any increases in traffic volume associated with construction activities would be short-term. Upon completion of construction, no long-term impacts to on-base or nearby transportation systems would occur. Therefore, impacts to traffic would be less than significant.

Operation

Operation of the BCE complex is not expected to significantly increase the number of personnel over and beyond the number currently employed to operate current engineering and maintenance facilities. Any increases in traffic volume associated with operations would be negligible and would not be expected to impact on-base or nearby transportation systems. Ragsdale Street and Ellis Drive would receive the majority of the traffic associated with personnel operating the BCE complex. Due to the availability of road space on Ellis Drive, traffic would not be significantly affected as Ragsdale Street serves as the main thoroughfare, while Ellis Drive is utilized by those going to the munitions area. Therefore, impacts to transportation would be less than significant.

### 4.10.2 Alternative 2

Construction

Construction of the BCE complex under Alternative 2 would require the delivery of equipment and materials to the project site, and personnel would commute to/from the site. However, construction traffic would make up only a small portion of the total existing traffic volume in the region and a majority of equipment would be driven to and kept at the contractors' staging yard for the duration of construction activities. Further, any increases in traffic volume associated with construction activities would be short-term. Upon completion of construction, no long-term impacts to on-base or nearby transportation systems would occur. Therefore, impacts to traffic would be less than significant.

Operation

Operation of the BCE complex under Alternative 2 is not expected to significantly increase the number of personnel over and beyond the number currently employed to operate current engineering and maintenance facilities. Any increases in traffic volume associated with operations would be negligible and would not be expected to impact nearby transportation systems. However, a slight bottle neck with traffic could occur along Dixon Avenue during the start and end of the work hours (8 am and 5 pm). Therefore, impacts to transportation would be minor.

### 4.10.3 No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would remain as described in Section 3.10, Transportation Systems.

## 4.11 Safety and Occupational Health

Potential impacts to safety and occupational health are assessed with respect to established criteria on facilities siting and design, security, and contingency planning. If implementation of a Proposed Action or project alternative would substantially increase risks associated with the storage of petroleum fuels or explosives, or would result in incompatible land use with regard to safety criteria such as AT/FP standards or QD arcs, impacts would be considered significant. Further, if an action was incompatible with site-specific safety and occupational health standards, management plans, use restrictions, or other measures, impacts would be considered significant. See Section 3.11 for discussion on Safety and Occupation Health associated with the Proposed Action area.

### 4.11.1 Alternative 1

*Construction and Operation*

Explosives Safety

Alternative Site 1 would be located outside of on-base QD arcs associated with munitions storage areas and the skeet range; therefore, no impacts due to explosive safety associated with QD arcs would occur.

Other sources of explosives include stored fuels in Area F, located 700 feet north of the Proposed Action site, which can store up to 13 million gallons of JP-8 fuel; and the Kinder Morgan fuel transfer station just west of Area F. Additionally, there would be small quantities of stored fuels at the complex site used for construction and maintenance activities that would be associated with implementing the Proposed Action. The Base strictly implements the 2008 ICP and the SPCCP for construction which outlines handling of spills and containment, and regulates storage, distribution and handling of fuels on Base. Therefore, impacts to safety during construction and operation would be less than significant.

Other Occupational Health and Safety Considerations

Construction of the BCE complex would avoid construction of the buildings over the groundwater plume and operation of the BCE complex would not occur within the remedial area of ERP DP039 that is comprised of the contaminated soil, bioreactor and monitor wells; therefore, no impacts to occupational health and safety would occur.

### 4.11.2 Alternative 2

*Construction and Operation*

Explosives Safety
Alternative 2 would be located outside of on-base QD arcs associated with munitions storage areas and the skeet range; therefore, no impacts due to explosive safety associated with QD arcs would occur.

Other sources of explosives include stored fuels in Area F, located 0.25 miles north of Alternative 2, which can store up to 13 million gallons of JP-8 fuel; and Kinder Morgan fuel transfer station just west of Area F. Additionally, there would be small quantities of stored fuels at the complex site used for construction and maintenance activities that would be associated with implementing the Proposed Action. The Base strictly implements the 2008 ICP and SPCCP for construction which outlines handling of spills and containment, and regulates storage, distribution and handling of fuels on Base. Therefore, impacts to safety during construction and operation would be less than significant.

Other Safety Considerations
Implementation of Alternative 2 will require special ventilation systems installed in closed buildings to protect personnel from vapor intrusion that may result from VOCs in contaminated groundwater. Personnel operating in this complex would adhere to the BCE Health and Safety Plan prepared specifically for this facility. Therefore, implementation of Alternative 2 could result in less than to moderate impacts to personal safety during construction and operation.

### 4.11.3 No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would remain as described in Section 3.11, *Safety and Occupational Health*.

## 4.12 Environmental Management

Impacts to pollution prevention would be considered significant if implementation of a Proposed Action or project alternative generated, utilized, or released quantities of hazardous materials, waste, toxins, and/or other pollutive elements above established Travis AFB P2 MAP directives. Impacts to identified DoD ERP sites would be considered significant if the Proposed Action or project alternative disturbed or created contaminated sites resulting in adverse effects to human health or the environment. An impact to geological resources would be considered significant if implementation of a Proposed Action or project alternative would result in one or more of the following: (1) exposure of people and/or structures to major geological hazards; (2) occurrence of substantial landsliding; (3) occurrence of substantial erosion and/or siltation; and/or, (4) use of structural engineering and/or construction techniques which do not adequately address potential geologic hazards. See Section 3.12 for a discussion on Environmental Management issues associated with the Proposed Action.

### 4.12.1 Pollution Prevention

#### 4.12.1.1 Alternative 1

*Construction*
Construction of the BCE complex would not use a significant quantity of hazardous materials, or generate waste, toxins, and/or other pollutive elements. During construction, BMPs would be implemented to reduce potential environmental contamination, including soil stabilization and erosion control, and collection and containment of excavated materials. Additional hazardous materials and waste BMPs would also be implemented (refer to Section 3.4, Wastes, Hazardous Materials, and Stored Fuels). All construction activities would comply with established Travis AFB P2 MAP directives; therefore, construction related impacts to pollution prevention would be less than significant.

*Operation*
Operation of the BCE complex is expected to generate a negligible quantity of pollution elements, however, there would be no net gain from current Base operations. Storage, transport, and disposal of pollution elements would follow all applicable regulations (refer to Section 3.4). Therefore, operation of the BCE complex would not result in significant pollution impacts.

#### 4.12.1.2 Alternative 2

Construction
Under Alternative 2, construction of the BCE complex could use a significant quantity of hazardous materials, or generate waste, toxins, and/or other pollutive elements associated with re-locating monitoring and injection wells. During construction, BMPs would be implemented to reduce potential environmental contamination, including soil stabilization and erosion control, and collection and containment of excavated materials and water. Additional hazardous materials and waste BMPs would also be implemented (refer to Section 3.4, Wastes, Hazardous Materials, and Stored Fuels). Similar to Alternative 1, BMPs would be incorporated under Alternative 2 to reduce potential environmental contamination, and all construction activities would comply with Travis AFB P2 MAP directives; therefore, construction-related impacts to pollution prevention would be minor.

Operation
Operation of the BCE complex is expected to generate a negligible quantity of pollution elements, however, there would be no net gain from current Base operations. Storage, transport, and disposal of pollution elements would follow all applicable regulations (refer to Section 3.4). Therefore, operation of the BCE complex would not result in significant pollution impacts.

#### 4.12.1.3 No Action Alternative

Implementing the No Action Alternative would not result in temporary increase in pollution preventative measures; therefore no minor impacts to pollution prevention would occur.

### 4.12.2 Environmental Restoration Program (ERP)

ERP DP039 is the only ERP site located within the Proposed Action area.

#### 4.12.2.1 Alternative 1

*Construction*
Prior to construction of the BCE complex, any remaining debris such as asphalt and concrete associated with the demolished Building 755 would be removed from the site. A construction plan would establish a set of accepted procedures for the sampling, analyzing, segregating, transporting, and disposing of any on-site debris in accordance with Travis AFB P2 MAP directives. Contaminated soil, monitoring wells and the bioreactor located in the southeast corner at the site are not encompassed in the Action Area and will therefore be avoided. Accordingly, construction-related impacts to management of ERP DP039 would be less than significant.
*Operation*
Operation of the BCE complex, when constructed, is not expected to impact the management ERP DP039, nor will the nearby presence of the site's contaminated groundwater plume impact the operations of the BCE complex. In the event that maintenance activities or emergency scenarios would require excavation of soils, personnel working on-site would be subject to a Health and Safety Plan which would outline required protective clothing and other operating procedures to ensure personnel safety. Implementation of this plan would reduce potential impacts to management of ERP DP039 to less than significant levels.

#### 4.12.2.2 Alternative 2

The BCE complex would be located almost entirely on top of contaminated groundwater plume identified as WABOU ERP DP039. This plume contains elevated levels of TCE; 1,1-DCE; 1,2-DCA; 1,1,1-TCA; 1,1,2-TCA; PCE; methylene chloride; bromodichloromethane; and acetone associated with the former battery and rocket engine testing facility site located several hundred feet north of this site (FINAL GSAP 2010 Report).

Construction
Operation of the BCE complex, when constructed, is not expected to impact the management ERP DP039, nor will the nearby presence of the site's contaminated groundwater plume impact the operations of the BCE complex. Relocation of monitoring and injection wells would be accomplished in accordance with applicable work plans developed and approved in accordance with ROD requirements and the Travis' Federal Facility Agreement with the EPA and state regulatory agencies. In accordance with state and federal regulations, a work plan would establish a set of accepted procedures for the sampling, analyzing, segregating, transporting, and disposing of any on-site debris and contaminated water within ERP Site DP039 including all reporting requirements, to ensure that the WABOU Interim Groundwater ROD are met. Additionally, the building design and construction plans would need to take into account potential vapor intrusion from the contaminated groundwater plume beneath the site. Monitoring and injection wells would need to be marked and protected (if not relocating) from construction equipment. The design of the BCE complex should include avoiding the well monitoring and

injection well areas. In addition, implementation of Health and Safety Plans would be implemented to direct personal safety. Implementation of the plans would reduce any impacts to ERP DP039 due to removal, transport, and disposal of debris or contaminated groundwater, however, significant impact to the environmental management of ERP DP039 would occur resulting in increased remediation cost.

Operation
After construction, normal operations of the BCE complex would not be expected to further impact ERP DP039, or the management of that site. In the event that maintenance activities or emergency scenarios would require excavation of soils, personnel working on-site would be subject to a Health and Safety Plan which would outline required protective clothing and other operating procedures to ensure personnel safety. Implementation of this plan would reduce potential impacts to less than significant levels. No other significant impacts would be expected.

#### 4.12.2.3 No Action Alternative

If the No Action Alternative were selected, no impacts to ERPs would be expected.

### 4.12.3 Geological Resources

#### 4.12.3.1 Alternative 1

Construction
Construction of the BCE complex would require extensive soil excavation, storage of soil, and backfill. During construction, BMPs would be incorporated to reduce potential impacts to the soils; BMPs would include soil stabilization and erosion control, collection and containment of excavated materials, and backfilling all excavated soils to their original location where feasible. The Action Area does not encompass monitoring wells and the bioreactor area; therefore, it would not be necessary to relocate them.

Construction would be designed to prevent land sliding, erosion, and other potential exposure to geological hazards. Maintenance activities or emergency scenarios involving soil excavation would follow the same BMPs as construction activities, thereby reducing potential impacts to soils and surrounding areas to less than significant levels.

Operation
All BCE complex activity will occur within the complex; therefore, no significant impacts to geological resources would result from operation of the BCE complex.

#### 4.12.4.2 Alternative 2

Construction
Construction of the BCE complex may require extensive soil excavation, storage of soil, and backfill. During construction, BMPs would be incorporated to reduce potential impacts to the soils; BMPs would include soil stabilization and erosion control, collection and containment of excavated materials, and backfilling all excavated soils to their original location where feasible.

Construction would be designed to prevent land sliding, erosion, and other potential exposure to geological hazards. As discussed previously, siting of the BCE complex footprint may involve avoidance and/or relocating monitoring and injection wells. Should relocation of monitoring wells be required, old wells would be properly decommissioned and new wells created. Therefore, waste management would be implemented as outlined in Section 3.4. Maintenance activities or emergency scenarios involving soil excavation would follow the same BMPs as construction activities, thereby reducing potential impacts to soils and surrounding areas. With implementation of BMPs and waste management, impacts to soils would be less than significant.

Operation

All BCE complex activity would stay within the complex; therefore, no significant impacts to geological resources would result from operation of the BCE complex.

### 4.12.5 No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would remain as described in Section 3.12, Environmental Management.

## 4.13 Environmental Justice

In order to comply with EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, ethnicity and poverty status in Solano County and the cities of Fairfield and Suisun City were compared to state and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action or project alternatives. Similarly, to comply with EO 13045, Protection of Children from Environmental Health and Safety Risks, the distribution of children and locations where populations of children may be concentrated were identified within two miles of the Proposed Action area to ensure that any environmental health and safety risks to children would be addressed. See Section 3.13 for discussion on environmental justice issues within the Proposed Action area.

### 4.13.1 Alternative 1

*Construction and Operation*

Minority and Low-Income Populations

No minority or low-income populations are disproportionately located in the vicinity of Alternative 1, and the closest residential areas are at least 1.0 miles away. Potential short-term construction-related impacts would be confined to the Alternative 1 location, and no significant adverse impacts to on-base or off-base minority or low-income populations would result. Once operational, impacts associated with Alternative 1 would not result in any significant adverse impacts to minority or low-income populations.

Protection of Children From Environmental Health and Safety Risks

The percentage of the population represented by children under 18 is not disproportionately higher in the vicinity of Alternative 1. Multiple locations where concentrations of children may

gather, including Travis Elementary School and the hospital, are located over 0.8 miles from the proposed facility. However, potential construction and operational health and safety risks would be confined to the Alternative 1 area, and children would not have access to any portion of the BCE complex. Therefore, no significant adverse impacts to the protection of children from environmental health and safety risks would result.

### 4.13.2 Alternative 2

*Construction and Operation*

Minority and Low-Income Populations

No minority or low-income populations are disproportionately located in the vicinity of Alternative 2, and the closest residential areas are over 1.0 miles away. Potential short-term construction-related impacts would be confined to the Alternative 2 area, and no significant adverse impacts to on-base or off-base minority or low-income populations would result. Once operational, impacts associated with Alternative 2 would not result in any significant adverse impacts to minority or low-income populations.

Protection of Children From Environmental Health and Safety Risks

The percentage of the population represented by children under 18 is not disproportionately higher in the vicinity of the BCE complex. Multiple locations where concentrations of children may gather, including Travis Elementary School and the hospital, are located over 0.8 miles from the proposed facility. However, potential construction and operational health and safety risks would be confined to the BCE complex area, and children would not have access to any portion of the BCE complex. Therefore, no significant adverse impacts to the protection of children from environmental health and safety risks would result.

### 4.13.3 No-Action Alternative

If the No-Action Alternative were selected, baseline conditions would be as described in Section 3.13, Environmental Justice.

## 4.14 Utilities

### 4.14.1 Alternative 1

#### 4.14.1.1 Potable Water

Operations

The Proposed Action would not adversely impact the supply of potable water at Travis AFB or the ability for VWTP to supply the new facility. Potable water at Travis AFB is provided through the off-base and on-base supply and distribution system mentioned previously. Increased consumption of water may increase temporarily due to the construction of the facility, but is not expected to increase due to operations as the number of personnel basewide is not expected to increase significantly. It is expected that water conservation would be enhanced due to new bathroom facility and water distribution equipment and appurtenances.

Construction
Waterlines are already available along Ellis Street within the right-of-way. Therefore minimal ground disturbance may occur within the road right-of-way. No impacts are expected to occur to potable water resources, or as a result of installation of potable water lines.

#### 4.14.1.2 Wastewater (Sewer)

Operations
Alternative 1 would not adversely impact the sanitary sewer system at Travis AFB. The current wastewater treatment capacity is adequate for the proposed new facilities and would not be expected to treat more sewage than is already being treated basewide, as the number of personnel is not expected to increase as a result of the BCE complex. There are on-going improvements to sewer lines within Travis AFB, and a new facility such as the BCE complex where it would concentrate the engineering and maintenance activities and decommission older facilities would elicit a positive effect due to the installation of new sewer lines and the discontinued use of sewer lines that are in disrepair throughout the Base.

Construction
Sewer lines are already available along Ellis Drive and along the west branch of Union Creek and project engineers will determine the best course for sewage treatment. To avoid impacts to the ERP DP039 plume, the sewer main would be hooked up to the BCE complex main just east of the plume along Ellis Drive. If the point of connection along the west branch of Union Creek was chosen, a sewer main would be directionally bored under the wetlands, or around the wetlands to connect to the main from the BCE complex to avoid impacts to seasonal wetlands adjacent to the west branch of Union Creek. No impacts as a result of installation of the sewer main is expected.

#### 4.14.1.3 Storm Water

Operation and Construction
Alternative 1 would not adversely affect the storm water system at Travis AFB. Storm water facilities are typically site-dependent and stand apart from adjacent parcels. As such, each facility stands on its own and does not affect the larger Base negatively. Due to the inherent site-specificity of storm water treatment and attenuation, the Travis AFB CEPM, CEAN and contracting officer will evaluate the design and determine if the facility will be appropriate based on permit stipulations. The evaluation results would then be incorporated into the construction.

#### 4.14.1.4 Electrical and Gas

Operations
Alternative 1 would not adversely affect the electrical supply system at Travis AFB. The construction of the new facilities will require the installation of on-site electrical systems based on current electrical standards and specific needs. The sizing and placement of electrical systems will require site-specific evaluation at the time of development. The Proposed Action would not adversely affect the gas supply system at Travis AFB. The construction of the new facilities will

require the installation of on-site heating and cooling systems based on heating and cooling unit specifications and the facility requirements. Gas main connection would occur just south of the intersection of Ragsdale Street and Ellis Drive.

Construction
Electrical lines are existing along Ellis Drive and can be tapped into from the BCE complex. Gas lines are already available along Dixon Avenue within the right-of-way and would be installed along the Ellis Drive right-of-way after connecting at the intersection of Ragsdale Street and Ellis Drive. This activity would occur in previously disturbed road right-of-ways. Therefore, no impacts as a result of power line and gas line installation is expected.

#### 4.14.1.5 Communications

Operations and Construction
Alternative 1 would not adversely affect the communications system at Travis AFB. The construction of the new facilities will require the installation of on-site communications systems based on facility needs. The main communication connection would occur at the intersection of Ragsdale Street and Ellis Drive. The sizing and placement of the communication systems will require facility-specific evaluation prior to installation.

Communication lines are already available along Dixon Avenue within the right-of-way and would be installed along the Ellis Drive right-of-way with minimal ground disturbance; therefore, no impacts are expected to occur to communications resources, or as a result of installation of communication lines.

### 4.14.2 Alternative 2

#### 4.14.2.1 Potable Water

Operations
Implementing Alternative 2 would not adversely impact the supply of potable water at Travis AFB or the ability for VWTP to supply the new facility. Potable water at Travis AFB is provided through the off-base and on-base supply and distribution system mentioned previously. Increased consumption of water may increase temporarily due to the construction of the facility, but is not expected to increase due to operations as the number of personnel Basewide is not expected to increase significantly. It is expected that water conservation would be enhanced due to new bathroom facility and water distribution equipment and appurtenances.

Construction
Waterlines are already available along Dixon Avenue within the right-of-way. No impacts are expected to occur to potable water resources, or as a result of installation of potable water lines.

#### 4.14.2.2 Wastewater (Sewer)

Operations

Alternative 2 would not adversely impact the sanitary sewer system at Travis AFB. The current wastewater treatment capacity is adequate for the proposed new facilities and would not be expected to treat more sewage than is already being treated Basewide, as the number of personnel is not expected to increase as a result of the BCE complex. There are on-going improvements to sewer lines within Travis AFB, and a new facility such as the BCE complex where it would concentrate the engineering and maintenance activities and decommission older facilities would elicit a positive effect due to the installation of new sewer lines and the discontinued use of sewer lines that are in dis-repair throughout the Base.

Construction

Sewer lines are already available along the north portion of Dixon Avenue, however is not available directly adjacent to the site. Sewer main would need to be installed within the road right-of-way; however, no impacts as a result of installation of sewer main would be expected.

#### 4.14.2.3 Storm Water

Operation and Construction

Alternative 2 would not adversely affect the storm water system at Travis AFB. Storm water facilities are typically site-dependent and stand apart from adjacent parcels. As such, each facility stands on its own and does not affect the larger Base negatively. Due to the inherent site-specificity of storm water treatment and attenuation, the Travis AFB CEPM and CEAN will evaluate the design and determine if the facility will be appropriate based on permit stipulations. The evaluation results would then be incorporated into the construction.

#### 4.14.2.4 Electrical and Gas

Operations

Alternative 2 would not adversely affect the electrical supply system at Travis AFB. The construction of the new facilities will require the installation of on-site electrical systems based on current electrical standards and specific needs. The sizing and placement of electrical systems will require site-specific evaluation at the time of development. The Proposed Action would not adversely affect the gas supply system at Travis AFB. The construction of the new facilities will require the installation of on-site heating and cooling systems based on heating and cooling unit specifications and the facility requirements.

Construction

Electrical lines exist along Dixon Avenue and can be tapped into from the BCE complex. Gas lines are already available along Dixon Avenue within the right-of-way; therefore no new ground disturbance is expected and no impacts as a result of power line and gas line installation are expected.

#### 4.14.2.5 Communications

Operations and Construction

Alternative 2 would not adversely affect the communications system at Travis AFB. The construction of the new facilities will require the installation of on-site communications systems based on facility needs. The sizing and placement of the communication systems will require facility-specific evaluation prior to installation.

Telecommunication lines are already available along Dixon Avenue within the right-of-way and can be easily accessed with minimal ground disturbance in the road right-of-way; therefore, no impacts are expected to occur to communications resources, or as a result of installation of communication lines.

### 4.14.3 No Action Alternative

If the No-Action Alternative were selected, baseline conditions would be as described in Section 3.14, Utilities.

**Table 4-1**
**Summary of Environmental Impacts for Alternative 1 (Proposed Action), Alternative 2, and No Action Alternative**

| Resource | Alternative 1 (Proposed Action) | Alternative 2 | No Action Alternative |
|---|---|---|---|
| ***Air Quality*** | The Proposed Action would result in short-term construction that would not impede the attainment or maintenance of air quality standards. Probable positive impact would be realized with current heating/cooling designs and reduced automobile travel between facilities. No negative impacts from the operation of the BCE complex is expected to occur. | Alternative 2 would result in short-term construction that would not impede the attainment or maintenance of air quality standards. Probable positive impact would be realized with current heating/cooling designs and reduced automobile travel between facilities. No negative impacts from the operation of the BCE complex is expected to occur. | Emissions would remain unchanged from baseline conditions. |
| ***Noise*** | The Proposed Action would result in temporary construction noise that would not significantly impact the surrounding noise environment. Operational noise would not be above typical ambient levels in the surrounding area. | Alternative 2 would result in temporary construction noise that would not significantly impact the surrounding noise environment. Operational noise would not be above typical ambient levels in the surrounding area. | Ambient noise would remain unchanged from baseline conditions. |
| ***Waste, Hazardous Materials, and Stored Fuels*** | The Proposed Action would not use significant quantities of hazardous materials, or generate significant wastes during construction or operation. Incorporation of maintenance and monitoring systems during operation would reduce the likelihood of accidental releases of hazardous substances. | Alternative 2 would not use significant quantities of hazardous material or generate significant waste during construction or operation. Incorporation of maintenance and monitoring systems during operation would reduce the likelihood of accidental releases of hazardous substances. | The quantity of hazardous wastes and materials generated, and the likelihood of accidental releases, would remain unchanged from baseline conditions. |

| Resource | Alternative 1 (Preferred Alternative) | Alternative 2 | No Action Alternative |
|---|---|---|---|
| ***Biological Resources*** | Alternative 1 would not impact potential special-status species. The Construction and Operation of the BCE complex would not impact federally or state protected species. BMPs would be implemented to keep equipment, construction workers and sediment from leaving the site. All temporarily impacted areas would be restored to pre-construction condition upon project completion, and no permanent impacts would result. | Alternative 2 would not impact potential special-status species. The Construction and Operation of the BCE complex could illicit minor impacts to California tiger salamander habitat. No other protected species would be affected. BMPs would be implemented to keep equipment, construction workers and sediment from leaving the site. All temporarily impacted areas would be restored to pre-construction condition upon project completion, and no permanent impacts would result. | Biological resources would remain unchanged from baseline conditions. No impacts to special-status species or habitat areas would result. |
| ***Water Resources*** | Alternative 1 is not located within wetlands or the 100-yr floodplain and would not impact water resources, or wetlands. | Alternative 2 would impact an isolated wet meadow. Alternative 2 is not located within the 100-year floodplain. | Water resources would remain unchanged from the baseline conditions. |
| ***Socioeconomics*** | Economic activity generated from the Proposed Action would be negligible on a regional scale and would not impact socioeconomic resources. | Economic activity generated from Alternative 2 would be negligible on a regional scale and would not impact socioeconomic resources. | Socioeconomic conditions would remain unchanged from baseline conditions. |
| ***Cultural Resources*** | The APE associated with Alternative 1 contains no NRHP-eligible cultural resources. Therefore, the Proposed Action would not impact cultural resources. | The APE associated with Alternative 2 contains no NRHP-eligible cultural resources. Therefore, Alternative 2 would not impact cultural resources. | Cultural resources would remain unchanged from baseline conditions. |
| ***Land Use*** | All project components under Alternative 1 would be sited to enhance the operational efficiency of Travis AFB while remaining compatible with existing land use. No impacts to land use are expected. | All project components under Alternative 2 would be sited to enhance the operational efficiency of Travis AFB while remaining compatible with existing land use. No impacts to land use are expected. | Existing land use would remain unchanged from baseline conditions. |

| Resource | Alternative 1 (Preferred Alternative) | Alternative 2 | No Action Alternative |
|---|---|---|---|
| ***Transportation Systems*** | Neither construction activities nor project operations under the Alternative 1 would substantially increase Basewide patterns. No impacts are expected. | Neither construction activities nor project operations under Alternative 2 would substantially increase Basewide patterns. Less than significant impacts are expected. | Traffic volumes would remain unchanged from baseline conditions. |
| ***Safety and Occupational Health*** | Under Alternative 1, the siting, construction, and operation of project components would comply with all applicable safety and occupational health standards. No significant impacts are expected. | Under Alternative 2, the siting, construction, and operation of project components would comply with all applicable safety and occupational health standards. Potential human health hazards from low levels of groundwater contamination in part of the project footprint would be addressed in a Health and Safety Plan. May result in moderate impacts to Health and Safety. | Conditions related to safety and occupational health would remain unchanged from baseline conditions. |
| ***Environmental Management*** | Alternative 1 would be consistent with established pollution prevention directives. Construction-related impacts to soils would be temporary, and all impacted areas would be restored to pre-construction condition upon project completion. Current site design lay-out plans will not impact on-going assessment and remedial objectives for the ERP DP039. | Alternative 2 would be consistent with established pollution prevention directives. Construction-related impacts to soils would be temporary, and all impacted areas would be restored to pre-construction condition upon project completion. However, construction and placement of the BCE complex on Alternative 2 will impact on-going assessment and remedial objectives for the groundwater plume from ERP DP039. | Conditions related to environmental management would remain unchanged from baseline conditions. |

| Resource | Alternative Site 1 (Preferred Alternative) | Alternative Site 2 | No-Action Alternative |
|---|---|---|---|
| ***Environmental Justice*** | Activities associated with Alternative 1 would not result in significant adverse impacts to environmental justice populations or significant adverse health and safety risks to children. | Activities associated with Alternative 2 would not result in significant adverse impacts to environmental justice populations or significant adverse health and safety risks to children. | Conditions related to environmental justice would remain unchanged from baseline conditions. |
| ***Utilities*** | No impacts are expected as a result of installation of utilities or as a result of overuse of utilities. | No impacts as a result of installation of utilities or as a result of overuse of utilities. | Utilities would remain unchanged from the baseline conditions. |

## 4.15 Indirect and Cumulative Impacts

This section presents Indirect and cumulative impacts that would result from implementation of the Proposed Action (Alternative 1) or Alternative 2. Only resources with potential impacts are presented.

### 4.15.1 Air Quality

**Alternative 1**
No significant impacts to air quality are expected to result from implementation of Alternative 1. Construction and operational emissions (consolidation of the Base Engineering resources) resulting from implementation of the Proposed Action would not impede attainment or maintenance of standards within the AQCR. Operation emissions would not increase over current emissions associated with engineering and maintenance activities, and would result in a decrease in car emissions and power usage. The amount of emissions associated with all project components (construction and operation) would not significantly impede the emission cap. Accordingly, construction and operational emissions resulting from the Proposed Action would not cumulatively impact air quality at Travis AFB or within the AQCR.

**Alternative 2**
No significant impacts to air quality are expected to result from implementation of Alternative 2. Construction and operational emissions resulting from Alternative 2 would not impede attainment or maintenance of standards within the AQCR. Operation emissions would not increase over current emissions associated with engineering and maintenance activities, and would result in a decrease in car emissions and power usage. The amount of emissions associated with all project components (construction and operation) would not significantly impede the emission cap. Accordingly, construction and operational emissions resulting from Alternative 2 would not cumulatively impact air quality at Travis AFB or within the AQCR.

### 4.15.2 Noise

**Alternative 1**

No significant noise-related impacts would result from Alternative 1. Travis AFB is an active military installation, and significant portions of the base are located within 65+ CNEL noise contours associated with aircraft activity. Ground-based activity (e.g., vehicle travel on Ellis Drive and Ragsdale Street and other major transportation corridors) in the vicinity of the proposed project footprint further contribute to ambient noise levels; but would be temporary during construction. In addition, noise associated with consolidation of the Base Engineering activities would not be significantly higher than the current noise levels contributed by the current design of Base Engineering activities. Consequently, construction and operational activities under the Proposed Action would not cumulatively impact ambient noise levels at Travis AFB or in the vicinity of the project footprint.

**Alternative 2**

Similarly, there are no noise related impacts expected at Alternative 2. Consequently, construction and operational activities under Alternative 2 would not cumulatively impact ambient noise levels at Travis AFB or in the vicinity of the project footprint.

### 4.15.3 Wastes, Hazardous Materials, and Stored Fuels

**Alternative 1**

No significant impacts associated with hazardous materials and wastes, fuel storage, distribution, handling and containment would be expected to result from the implementation of Alternative 1. Implementation of Alternative 1 would not result in the generation of significant quantities of hazardous waste and require the use of hazardous materials over and beyond what is currently generated with current engineering and maintenance activity. Therefore, no cumulative impacts would occur. Implementing Alternative 1 would not result in a long term cumulative impacts to fuel storage, distribution and containment facilities at Travis AFB.

**Alternative 2**

As with the Alternative 1, no significant impacts associated with hazardous materials and wastes, fuel storage, distribution, handling and containment would be expected to result from Alternative 2.

### 4.15.4 Water Resources

**Alternative 1**

*Groundwater and Surface Water*

No significant impacts to groundwater or surface waters would occur as a result of implementing Alternative 1. Any planned cleanup of contaminated soils in the area would be beneficial to groundwater and surface water resources in the area. Implementing Alternative 1 would not result in an overall increase in the use of groundwater, or impact groundwater, or illicit long term impacts to surface waters; therefore; no cumulative effects are expected to occur.

*Wetlands and Waters of the U.S.*
Implementing Alternative 1 would not impact wetlands; therefore, no mitigation would be needed and would not result in cumulative impacts to wetlands.

**Alternative 2**

*Groundwater and Surface Water*
Significant temporary impacts to groundwater may occur due to repositioning monitoring and injection wells and construction. No significant impacts to surface water would occur as a result of implementing Alternative 2. Implementing Alternative 2 would not result in an overall increase in the use of groundwater, or impact groundwater and surface water on a long term basis; therefore, no cumulative effects are expected to occur.

*Wetlands and Waters of the U.S.*
Whether jurisdictional or not, construction activities in this wetland would be considered significant if the loss of wetlands could not be mitigated. If mitigated, there would be no cumulative impacts to wetlands.

### 4.15.5 Biological Resources

**Alternative 1**

*Vernal Pool Brachiopods and Contra Costa Goldfields*
No impacts to vernal pool brachiopods and Contra Costa goldfields are expected to occur; therefore, cumulative impacts to vernal pool brachiopods and Contra Costa goldfields are not expected to occur.

*California Tiger Salamander*
No impacts to the California tiger salamander are expected to occur. Therefore, no cumulative impacts are expected to occur.

*Burrowing Owl*
No impacts to the burrowing owl are expected to occur. Therefore, no cumulative impacts are expected to occur.

**Alternative 2**

*Vernal Pool Brachiopods and Contra Costa Goldfields*
No impacts to vernal pool brachiopods and Contra Costa goldfields are expected to occur; therefore, cumulative impacts to vernal pool brachiopods and Contra Costa goldfields are not expected to occur.

*California Tiger Salamander*
Minor impacts to salamander habitat are expected to occur. Implementation of Alternative 2 would not result in cumulative impacts to the California tiger salamander if impacts to salamander habitat were mitigated.

*Burrowing Owl*
No impacts to the burrowing owl are expected to occur. Therefore, no cumulative impacts are expected to occur.

### 4.15.6 Socioeconomic Resources

**Alternative 1**
No significant impacts to socioeconomic resources would be expected to result from implementing Alternative 1. Travis AFB is the largest employer in Solano County, with a work force of approximately 14,267 and payroll exceeding $685 million. The Base's indirect economic impacts to the County are estimated at over $2 billion (USAF 2007d). Alternative 1 would sustain economic stability in the area and potentially increase economic viability in the area.

**Alternative 2**
Similar to Alternative 1, no significant impacts to socioeconomic resources would be expected to result from implementation of Alternative 2. Implementation of Alternative 2 would substantially increase economic stability in the area and potentially increase economic viability in the area.

### 4.15.7 Cultural Resources

**Alternative 1**
No impacts would occur to cultural resources; therefore, no cumulative impacts would result.

**Alternative 2**
No impacts would occur to cultural resources; therefore, no cumulative impacts would result.

### 4.15.8 Land Use

**Alternative 1**
No significant impacts to Travis AFB or off-Base property land use would be expected to result from implementing Alternative 1. Therefore, no mitigation would be required. All project components under the Proposed Action (Alternative 1) would be sited to enhance the operational efficiency of Travis AFB while remaining compatible with existing on- and off-Base land use. Consequently, no cumulative impacts to land use would be expected.

**Alternative 2**
For the reasons stated for Alternative 1, Alternative 2 would result in no significant impacts to Travis AFB or off-Base property land use. Consequently, no cumulative impacts to land use would be expected.

### 4.15.9 Transportation Systems

**Alternative 1**

No significant impacts to transportation systems would be expected to result from implementation of Alternative 1. Any traffic generated from the implementation of Alternative 1 would be negligible when compared to existing traffic volumes associated with current engineering and maintenance activities and would not cumulatively impact on-Base or nearby transportation systems.

**Alternative 2**

Minor impacts to transportation systems would be expected to result from implementation of Alternative 2. Possible traffic congestion may occur during peak morning traffic and evening times. However, implementation of Alternative 2 would be negligible when compared to existing traffic volumes associated with the current engineering and maintenance activities and would not cumulatively impact on-Base or nearby transportation systems.

### 4.15.10 Safety and Occupational Health

**Alternative 1**

No significant impacts to safety and occupational health would be expected to result from implementation of Alternative 1. Alternative 1 would remain in compliance with applicable standards for petroleum distribution, storage and handling, and strictly adhere to the BCE complex Health and Safety Plan. This activity would not significantly increase over baseline conditions. Therefore, construction and operation of the BCE complex would result in less than significant cumulative impacts.

**Alternative 2**

Mitigative designs for the buildings would be required for Alternative 2 to address vapor intrusion. Air quality monitoring and strict adherence to the BCE complex Health and Safety Plan would be required as part of the mitigative measures. Alternative 2 would remain in compliance with applicable standards for petroleum distribution, storage and handling, and strictly adhere to the BCE Health and Safety Plan. Petroleum distribution, storage and handling would not significantly increase over baseline conditions; however, continual strict adherence to the BCE complex Health and Safety Plan and air quality monitoring would cause an increase in safety precautions over baseline conditions. Therefore, construction and operation of the BCE complex would result in moderate to significant cumulative impacts.

### 4.15.11 Environmental Management

**Alternative 1**

*Pollution Prevention*

No significant impacts to pollution prevention would occur; therefore no cumulative impacts are expected.

*Environmental Restoration Program*

Mitigating impacts to ERP DP039 would be accomplished through preparation and adherence to detailed construction plans outlining procedures to manage contaminated soil, water and debris. Cumulative impacts would not result to Environmental Management of ERP DP039 if mitigative measures were accomplished.

*Geological Resources*
No significant impacts are expected; therefore, no cumulative impacts would occur.

**Alternative 2**

*Pollution Prevention*
Mitigative measures to offset impacts to pollution prevention would involve those details in plans (P2 MAP, ICP, SPCCP and detailed construction plans) addressed in Section 4.12.2.2. Cumulative impacts to pollution prevention would not occur if mitigative measures are implemented.

*Environmental Restoration Program*
Mitigating impacts to ERP DP039 would be accomplished through preparation and adherence to detailed construction plans outlining procedures to manage contaminated soil, water and debris. Cumulative impacts would result due to an in increase management effort of ERP DP039 during construction and operation.

*Geological Resources*
Less than significant impacts are expected; therefore, no cumulative impacts would be expected.

### 4.15.12 Environmental Justice

**Alternative 1**
No significant impacts with regard to environmental justice or protection of children would result from implementation of Alternative 1. All construction and operational activities under the Proposed Action would be designed to avoid health and safety risks and conducted in accordance with Health and Safety Plans, ICP, SPCCP as required by USAF, federal and state regulations. Therefore, there would be no disproportionate impacts to minority and low-income populations, and no impacts to populations of children and locations where concentrations of children may gather. Accordingly, implementation of Alternative 1, construction and operation would not cumulatively contribute to significant adverse impacts with regard to environmental justice and protection of children.

**Alternative 2**
Similarly, no significant impacts with regard to environmental justice or protection of children would be expected to result from implementation of Alternative 2. Accordingly, implementation of Alternative 2 would not cumulatively contribute to significant adverse impacts with regard to environmental justice and protection of children.

## 4.16 Unavoidable Adverse Impacts

This section presents unavoidable adverse impacts that would result from implementation of the Proposed Action (Alternative 1) or Alternative 2. Only resources with potential impacts are presented.

Air Quality

The emission of air pollutants associated with construction and operation of the proposed facilities under the Proposed Action (Alternative 1) and Alternative 2 would be an unavoidable condition, but would not be considered significant and would not impede attainment or maintenance of standards within the AQCR. Further, while emissions of the proposed facilities would not be subject to the emission cap currently permitted for Travis AFB by the BAAQMD, the amount of emissions associated with the proposed BCE complex would not significantly impede the emission cap.

Wastes, Hazardous Materials, and Stored Fuels

The potential for accidents or spills at the proposed facilities, and the use of hazardous wastes would be unavoidable conditions associated with the Proposed Action (Alternative 1) and Alternative 2. However, the potential for these unavoidable situations would not significantly increase over baseline conditions, and therefore would not be considered significant.

Water Resources

No impacts to water resources would result from implementing Alternative 1. However, should Alternative 2 be implemented, impacts to the wet meadow would be an unavoidable condition. However, this impact would be mitigated through appropriate authorized USACE Section 404 permitting. Therefore, impacts to the wet meadow would not be considered a significant impact to water resources.

Biological Resources

No impacts would occur to protected species under Alternative 1. However, Alternative 2 would result in minor impacts to California tiger salamander habitat and would be mitigated if this site were chosen. Therefore, no significant impacts would occur to protected species.

Safety and Occupational Health

The potential for accidents or spills at the proposed facilities and the use of hazardous wastes would be unavoidable conditions associated with the Proposed Action (Alternative 1) and Alternative 2. If Alternative 1 were implemented, the potential for these unavoidable situations would not significantly increase over baseline conditions, and therefore would not be considered significant.

If Alternative 2 were implemented, the potential for exposure to elevated levels of VOCs in groundwater at the BCE complex would be an additional unavoidable condition. However, contamination of the groundwater is considered low and potential safety and occupational health hazards during BCE complex construction and operation would be addressed in a Health and Safety Plan. Additionally, strict ventilation plans would be incorporated in the BCE complex

building design construction plans to protect personnel from vapor intrusion of VOCs; therefore, impacts to health and safety could be significant.

Environmental Management

The potential for accidents or spills at the proposed facilities, and the use of hazardous wastes would be unavoidable conditions associated with the Proposed Action (Alternative 1) and Alternative 2. Under Alternative 1; however, the potential for these unavoidable situations would not significantly increase over baseline conditions, and therefore would not be considered significant. Under Alternative 2, the potential for these unavoidable situations would increase over baseline conditions significantly.

## 4.17 Relationship Between Short-Term Uses and Enhancement of Long Term Productivity

Neither the Proposed Action (Alternative 1) nor Alternative 2 would result in intensification of land use in the area surrounding Travis AFB. Development of the Proposed Action (Alternative 1) or Alternative 2 would not represent a significant loss of open space. Each project component would be installed in a location designated for such uses which was not planned for use as open space. Therefore, it is not anticipated that the Proposed Action (Alternative 1) or Alternative 2 would result in any cumulative land use or aesthetic impacts. Long-term productivity of the sites upon which each project component would be installed would be increased by development of the Proposed Action (Alternative 1) or Alternative 2.

## 4.18 Irreversible and Irretrievable Commitment of Resources

This section presents the irreversible environmental changes that would result from implementation of the Proposed Action (Alternative 1) or Alternative 2 involve consumption of material resources, energy resources, land, water resources, biological habitat, and human resources. The use of these resources is considered to be permanent.

Material Resources

Building materials, concrete and asphalt, and various material supplies would be used for development of the Proposed Action (Alternative 1) or Alternative 2. Most of these materials are not in short supply and are readily available from suppliers in the region. Use of these materials would not limit other unrelated construction activities.

Energy Resources

Energy resources such as petroleum-based products (i.e., gasoline, diesel fuel, etc.), natural gas, and electricity would be used for development of the Proposed Action (Alternative 1) or Alternative 2 and would be irretrievably lost. Gasoline and diesel would be used for operation of construction vehicles, and natural gas and electricity would be used to operate the project components. Consumption of these energy resources would not place a significant demand on their supply systems or within the region. There would be a net drop in energy use since older technology would be replaced with newer technologies.

Land

Implementation of the Proposed Action (Alternative 1) or Alternative 2 would result in the loss of open land due to construction of the project components. However, each project component would be installed in a location designated for such uses, and long-term productivity of the sites upon which each project component would be installed would be increased.

Water Resources

Implementation of the Proposed Action (Alternative 1) or Alternative 2 would result in the alteration of storm water drainage in the vicinity of the BCE complex. However, drainage design would comply with the Travis AFB NPDES permit, SWPPP specifications and UFC 3-210-0 that use LID techniques, therefore, would not significantly affect surface water quality.

Implementation of Alternative 2 would result in permanent impacts to the wet meadow.

Biological Resources

Implementing the Proposed Action (Alternative 1) or Alternative 2 would result in the permanent loss of grasslands that would provide foraging areas for birds, birds of prey and small mammals. However, the BCE complex footprint design would not extend beyond the area needed for construction. Therefore, the resources surrounding the BCE complex would be left in tact and foraging areas for these animals would be available and contiguous with surrounding grasslands.

Human Resources

The use of human resources for construction and operation of the project components is considered an irretrievable loss only in that it would preclude the affected personnel from engaging in other work activities. However, the use of human resources for the Proposed Action (Alternative 1) or Alternative 2 represents employment opportunities, and would therefore be beneficial.

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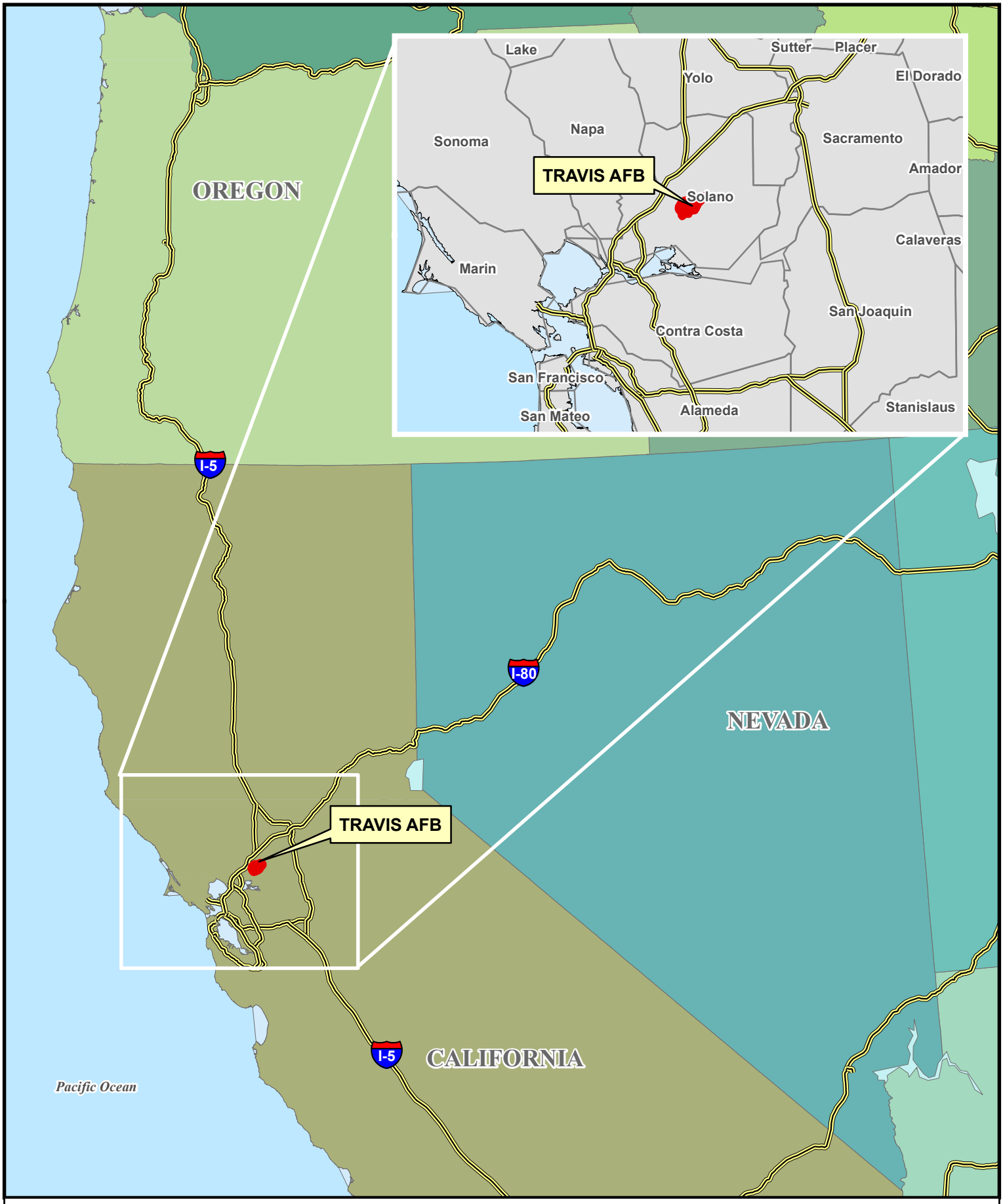



**FIGURE 1-1: REGIONAL MAP OF TRAVIS AFB**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

0 15 30 60 90 120 Miles

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**

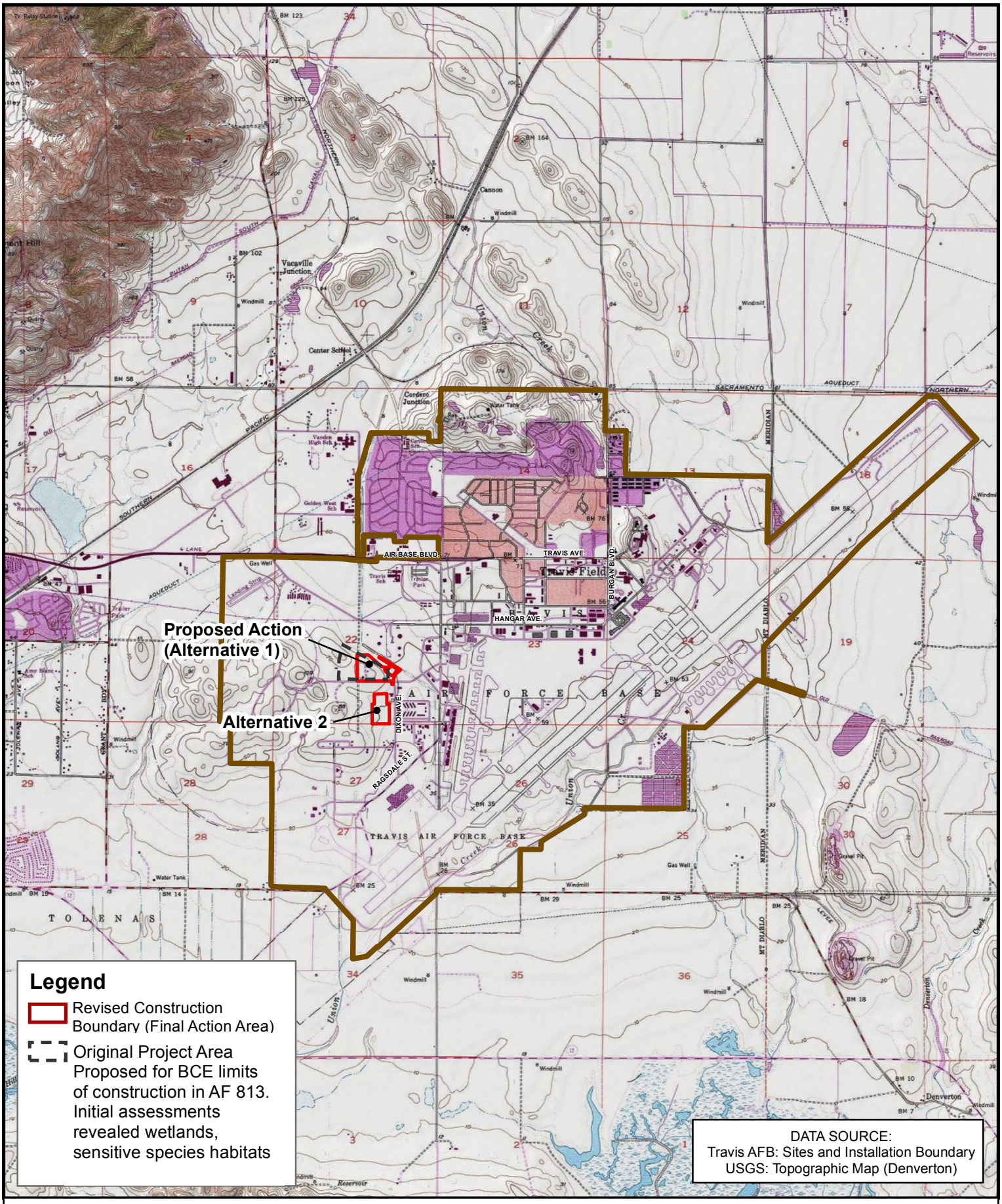



**FIGURE 1-2: LOCATION MAP OF PROJECT AREA**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 0.25 0.5 1 Miles

**Base Civil Engineering Complex**
**Envrionmental Assesment**
**Travis Air Force Base, California**

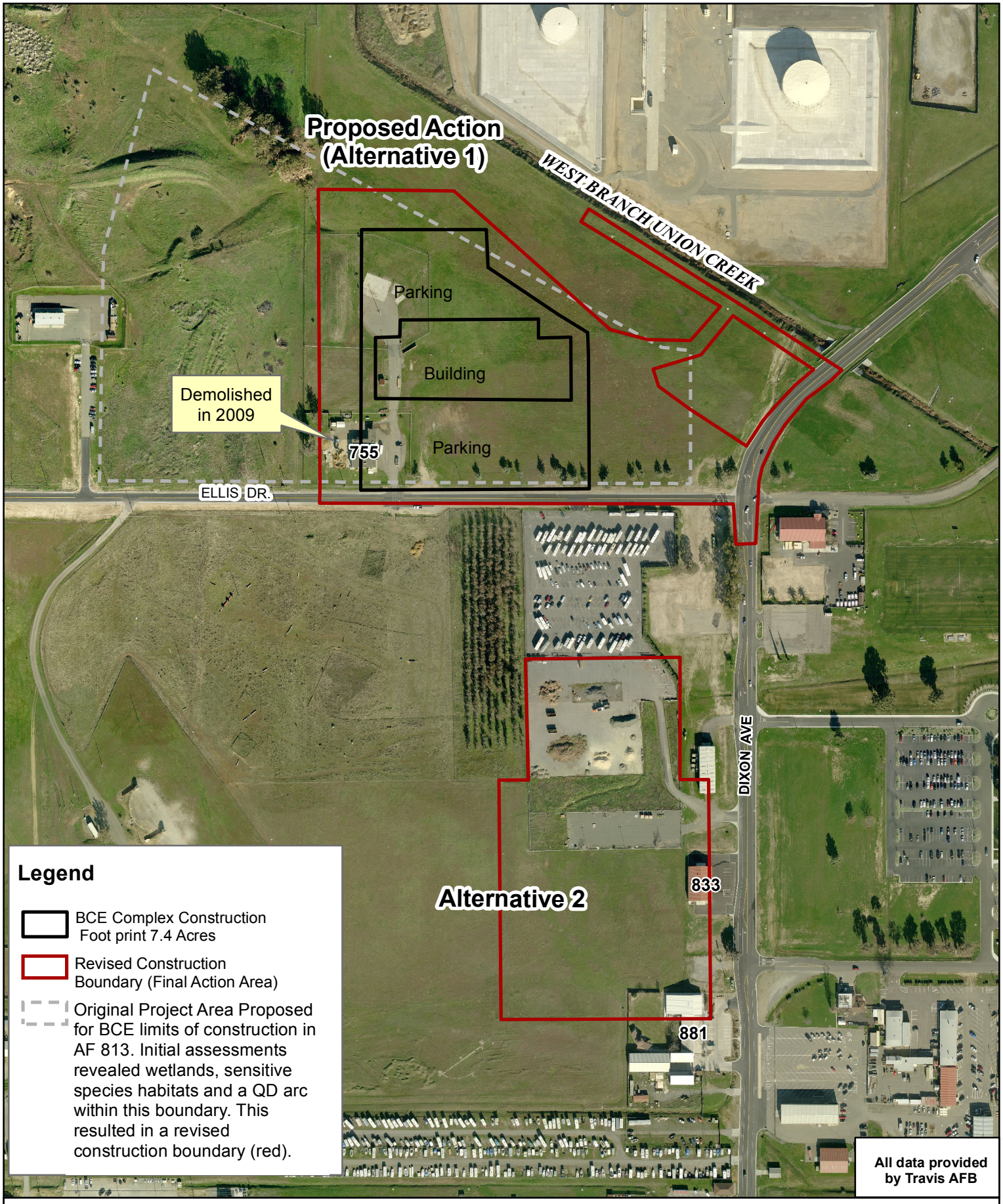



**FIGURE 2-1: LOCATION OF PROPOSED ACTION AND ALTERNATIVES**

AEROSTAR
ENVIRONMENTAL SERVICES, INC.

N

0 150 300 600 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**

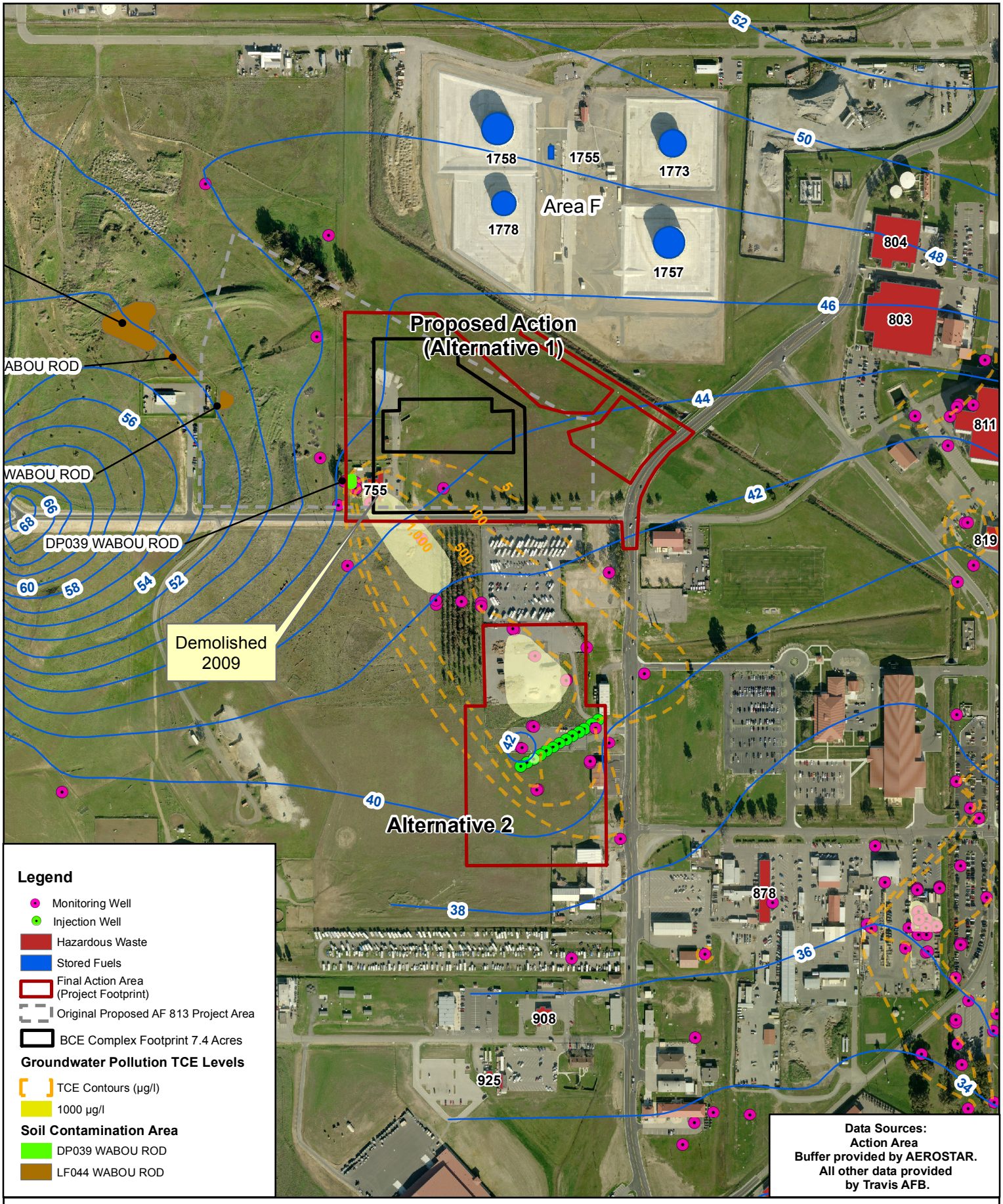



**FIGURE 3-1: HAZARDOUS WASTE, STORED FUELS, AND ERPS IN THE VICINITY OF THE PROPOSED ACTION**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 187.5 375 750 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**

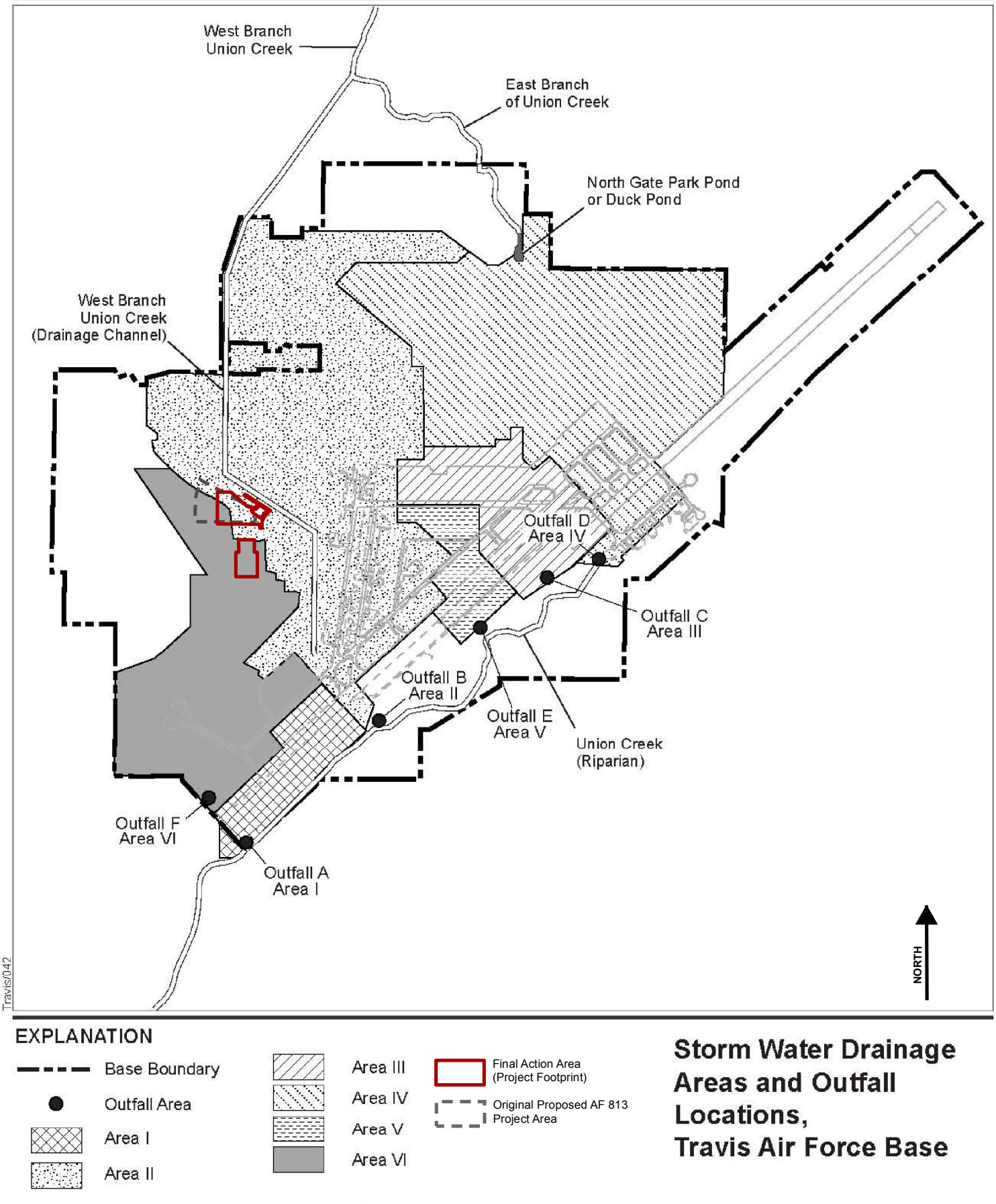



**FIGURE 3-2: View of Storm Water Drainage from Travis AFB INRMP**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

2000 0 2000 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**




**FIGURE 3-3: WETLANDS AND WATERS OF THE U.S. IN THE VICINITY OF THE PROPOSED ACTION (ALTERNATIVE 1)**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

0 112.5 225 450 Feet

Base Civil Engineering Complex
Environmental Assesment
Travis Air Force Base, California

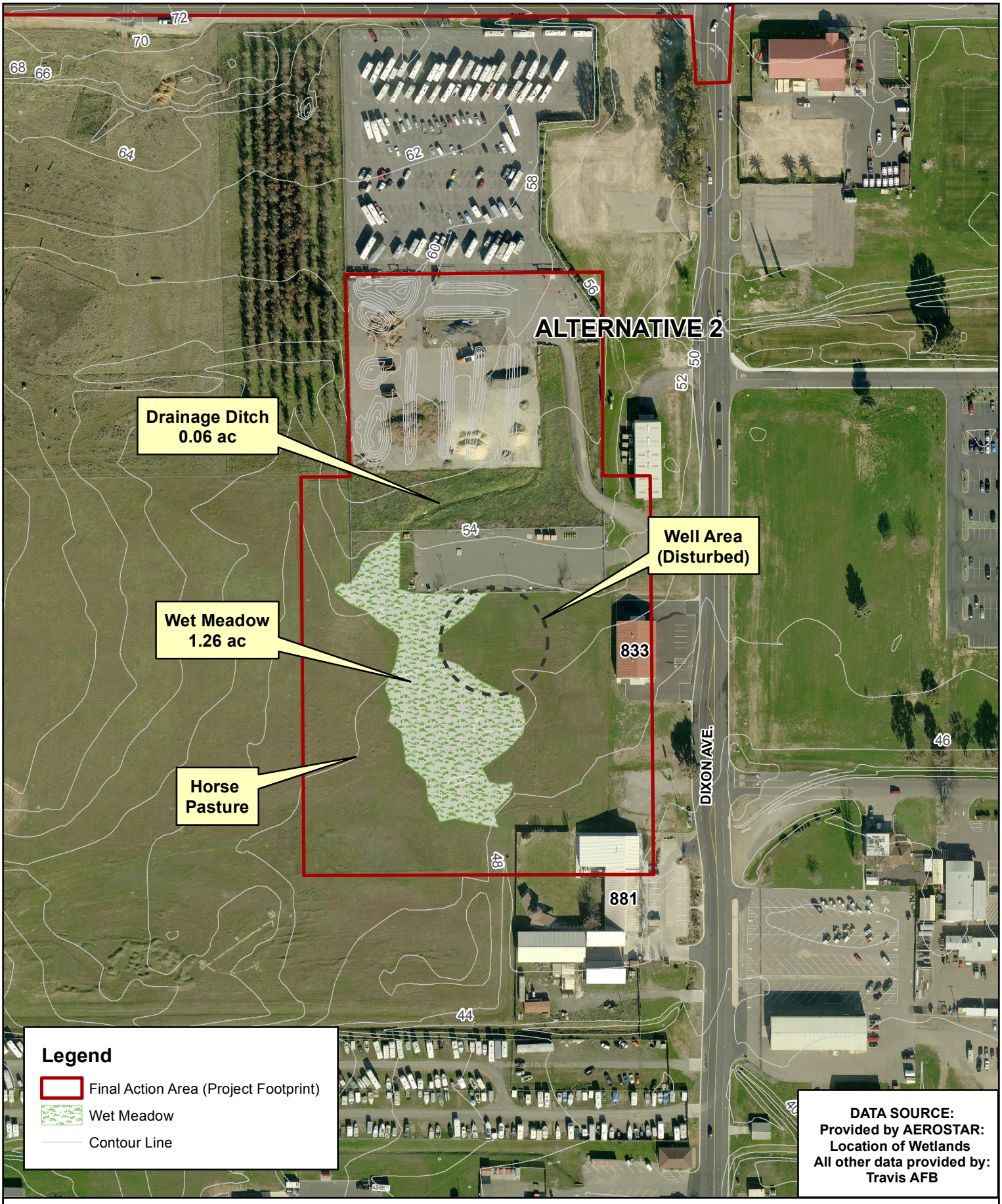



**FIGURE 3-4: WETLANDS AND WATERS OF THE U.S. IN THE VICINITY OF ALTERNATIVE 2**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 75 150 300 Feet

Base Civil Engineering Complex
Environmental Assesment
Travis Air Force Base, California

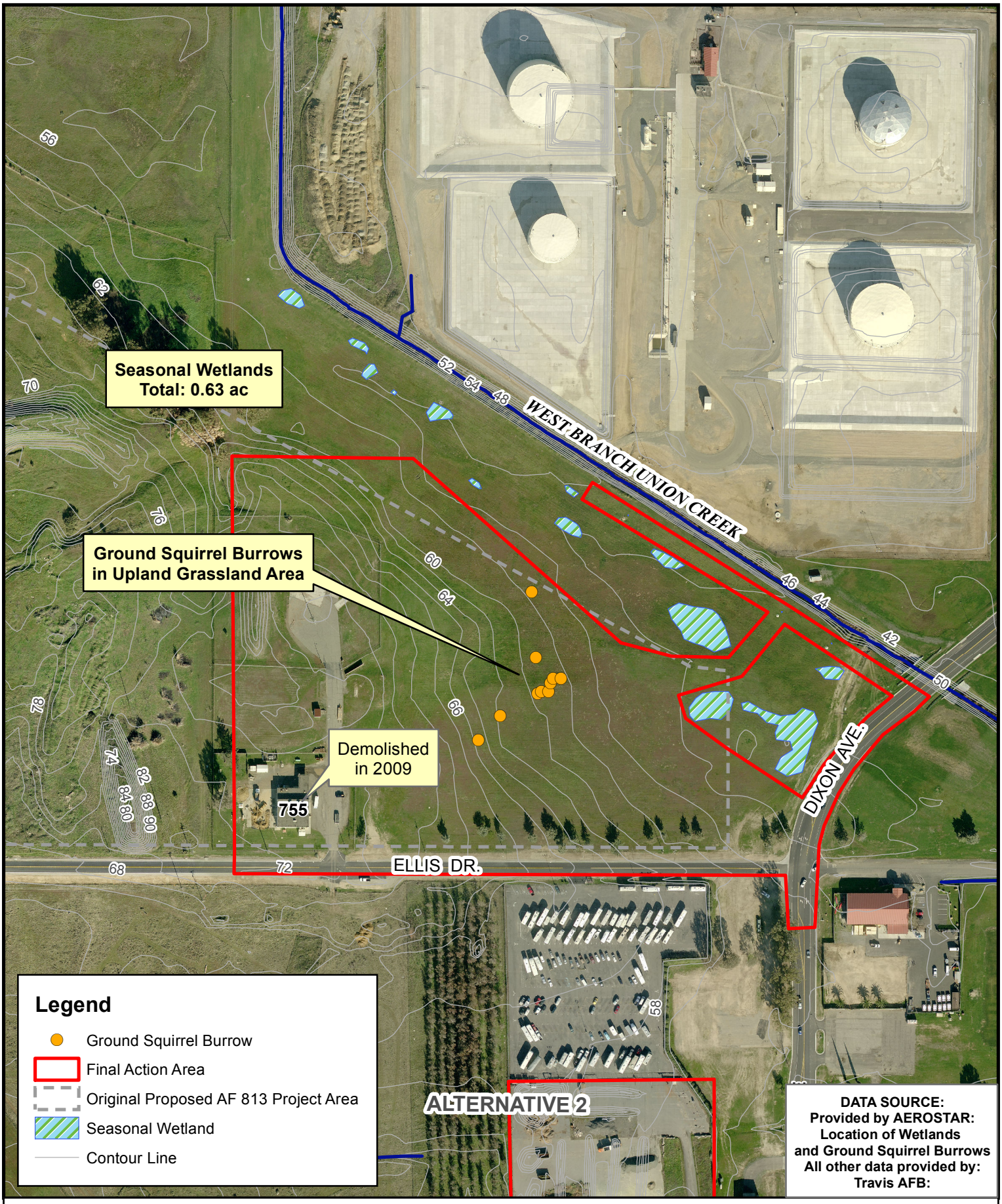



**FIGURE 3-5: BIOLOGICAL RESOURCES IN THE VICINITY OF THE PROPOSED ACTION (ALTERNATIVE 1)**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

0 112.5 225 450 Feet

Base Civil Engineering Complex
Environmental Assesment
Travis Air Force Base, California

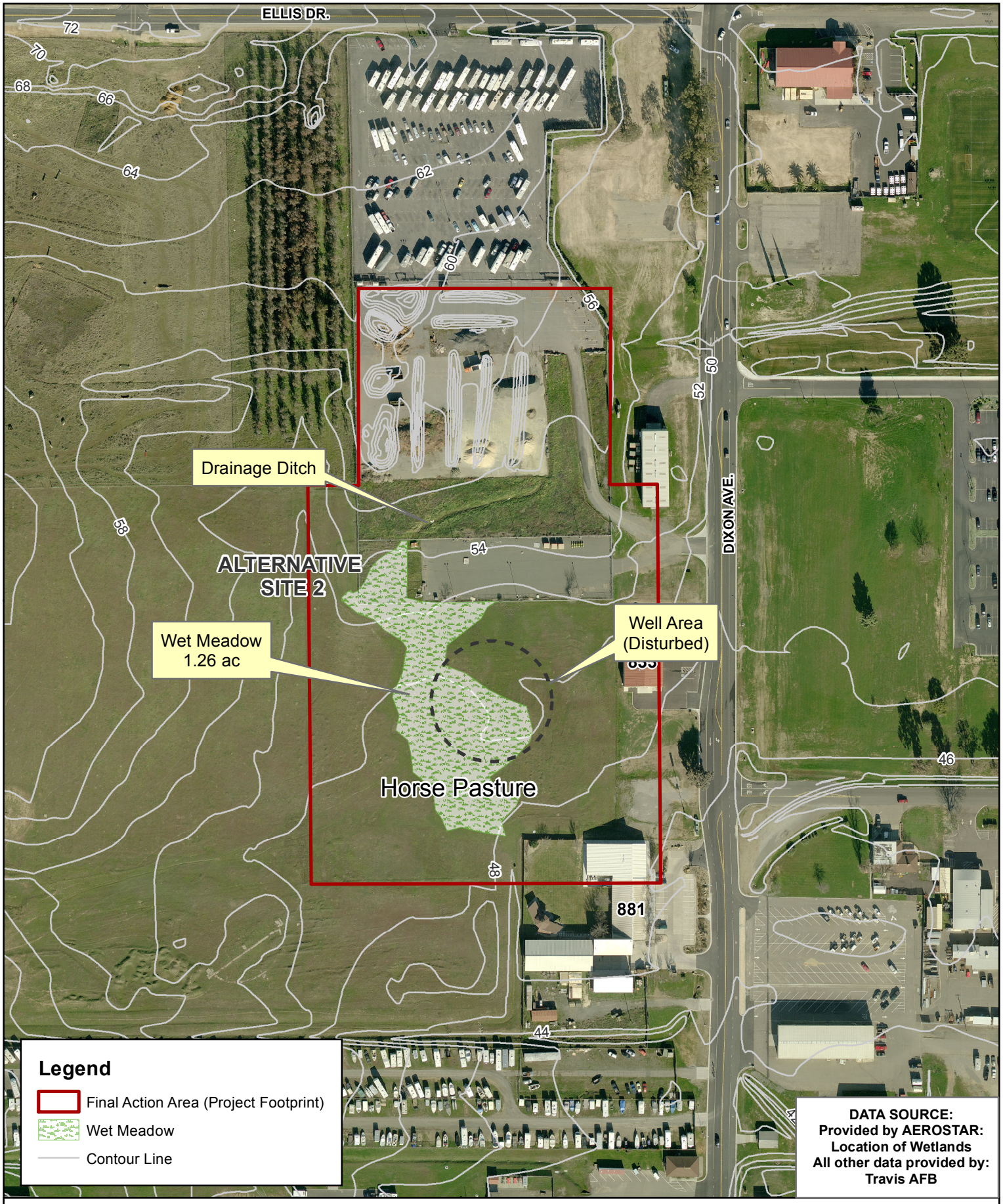



**FIGURE 3-6: BIOLOGICAL RESOURCES IN THE VICINITY OF ALTERNATIVE 2**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 75 150 300 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**




**FIGURE 3-7: DISTRIBUTION OF VERNAL POOL FAIRY SHRIMP**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 500 1,000 2,000 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**




**FIGURE 3-8: DISTRIBUTION OF CALIFORNIA TIGER SALAMANDER**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 1,000 2,000 4,000 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**

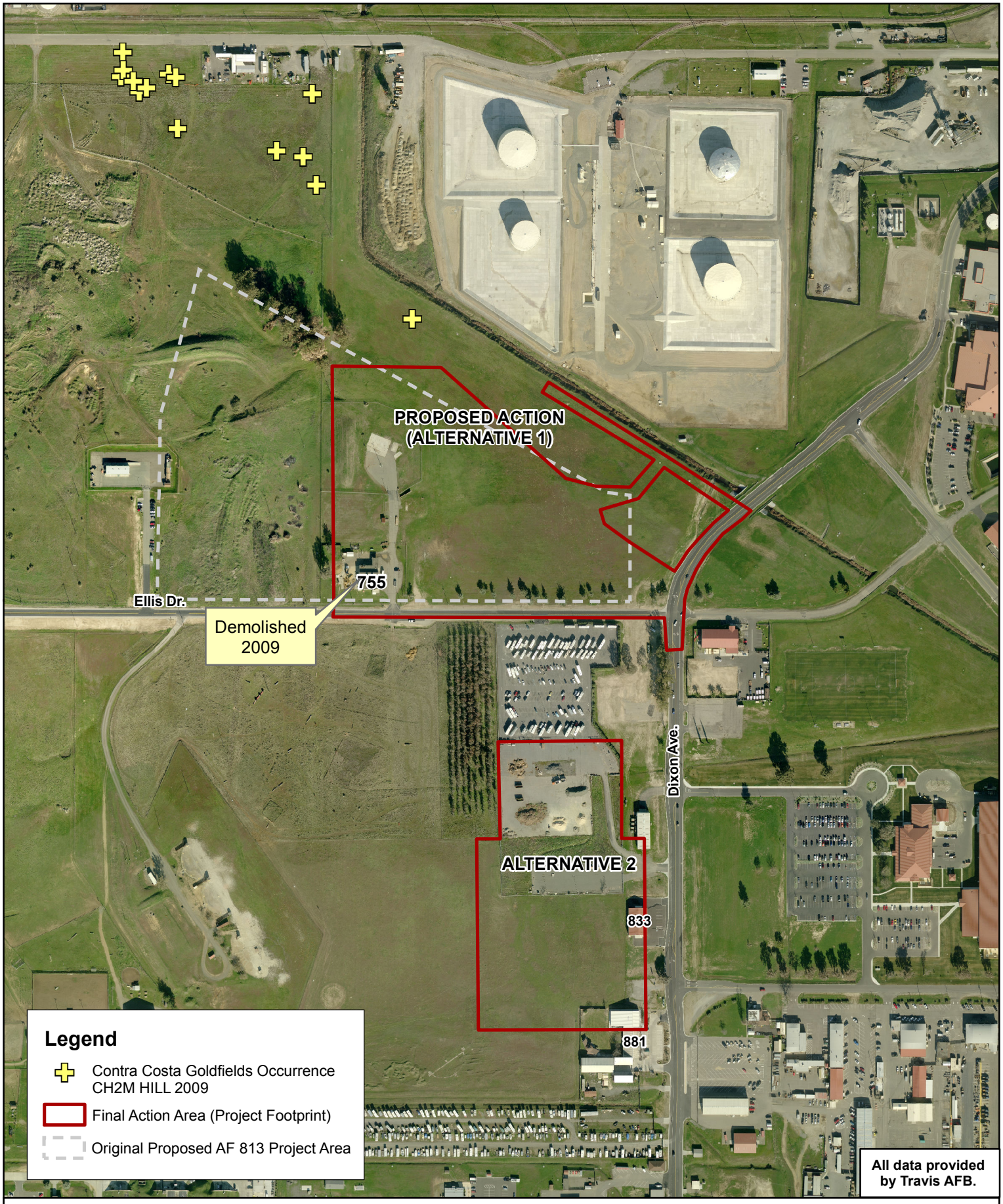



**FIGURE 3-9: DISTRIBUTION OF CONTRA COSTA GOLDFIELDS**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 162.5 325 650 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**

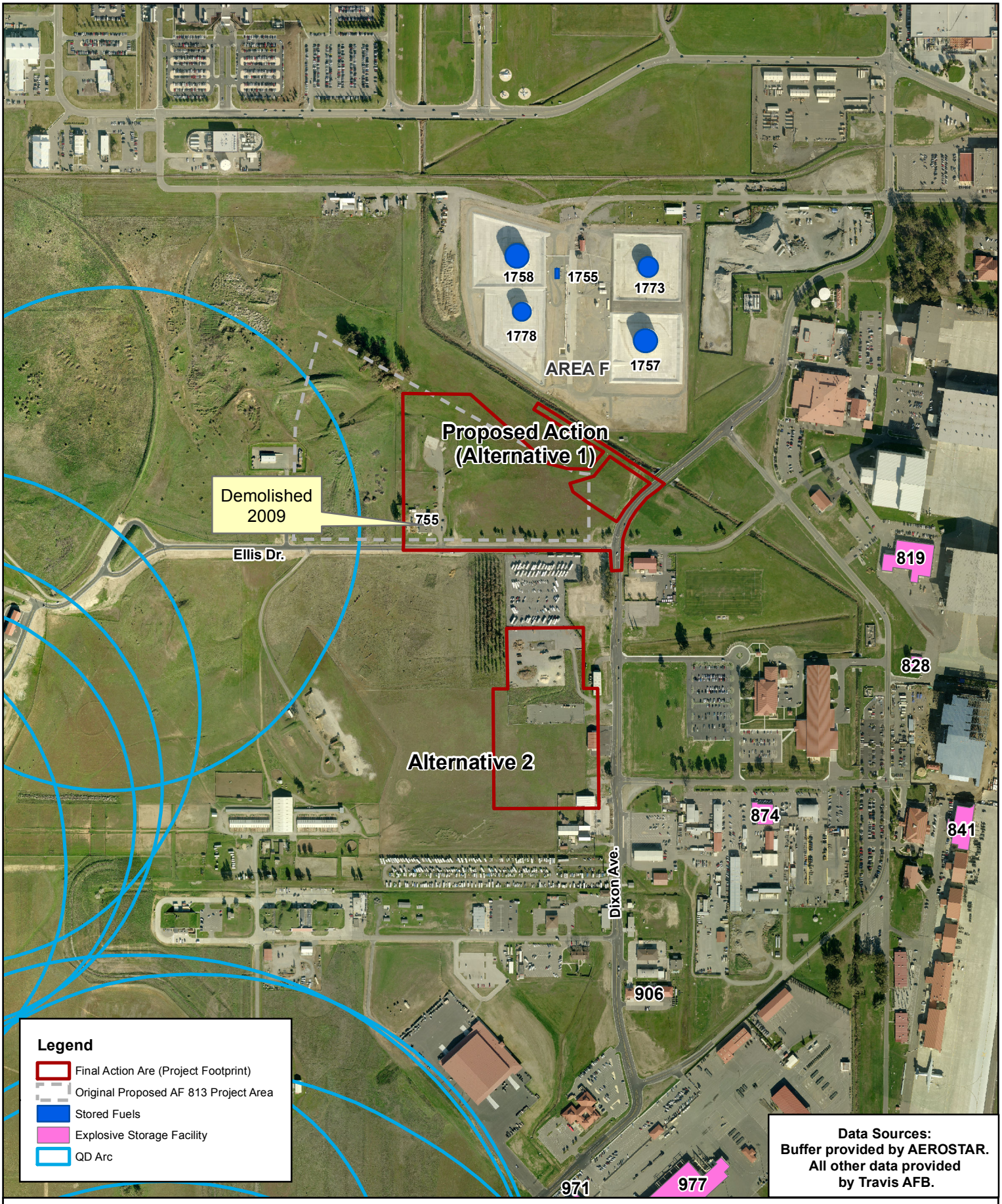



**FIGURE 3-10: LOCATION OF QD ARCS AND EXPLOSIVE STORAGE AREAS IN THE VICINITY OF THE PROPOSED**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 250 500 1,000 Feet

**Base Civil Engineering Complex**
**Environmental Assesment**
**Travis Air Force Base, California**

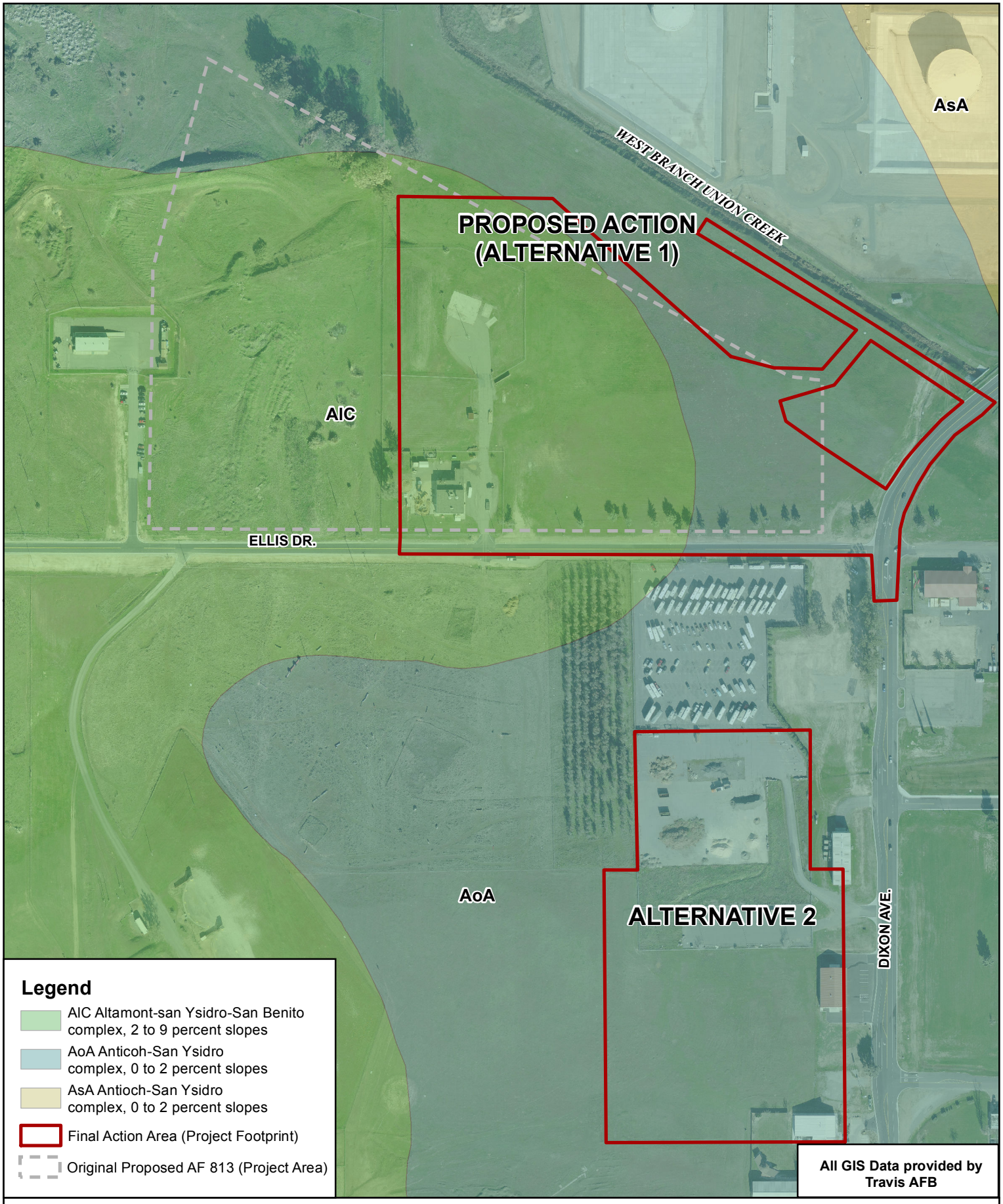



**FIGURE 3-11: SOIL SERIES IN THE VICINITY OF THE PROPOSED ACTION (ALTERNATIVE 1) AND ALTERNATIVE 2**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

0 112.5 225 450 Feet

Base Civil Engineering Complex
Environmental Assesment
Travis Air Force Base, California

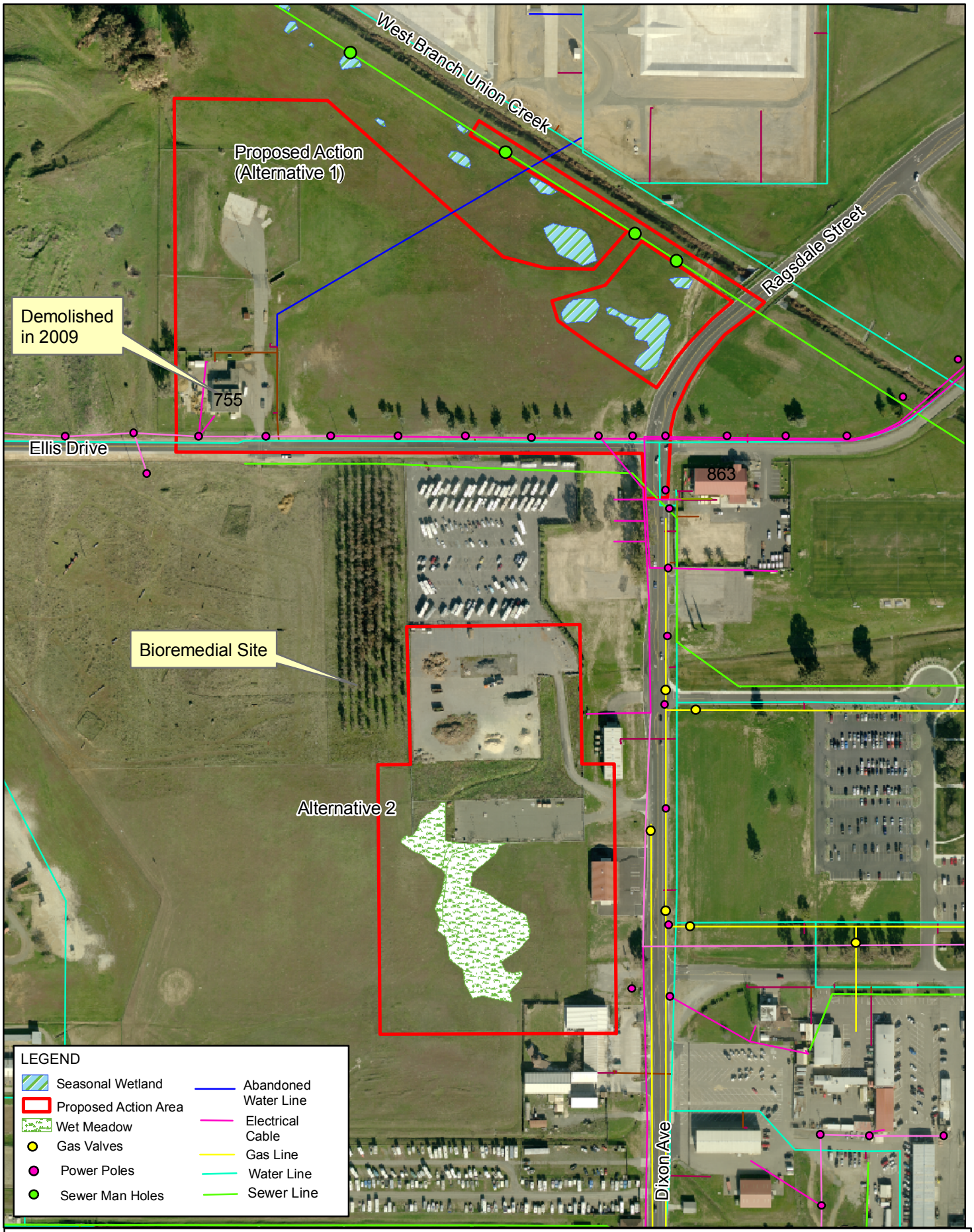



**FIGURE 3-12: UTILITIES IN THE PROPOSED ACTION (ALTERNATIVE 1) AND ALTERNATIVE 2**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

180 90 0 180 360 540 720 Feet

Base Civil Engineering Complex
Environmental Assessment
Travis Air Force Base, California

# APPENDIX A

# Air Force Form 813

# REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

Report Control Symbol
RCS: 10-0139

INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).

SECTION I - PROPONENT INFORMATION — LOG ID #: 189531

| 1. TO (Environmental Planning Function) | 2. FROM (Proponent organization and functional address symbol) | 2a. TELEPHONE NO. |
|---|---|---|
| 60 CES | PONTEMAYOR, RODOLFO YD-02 null | 707-424-7517 |

3. TITLE OF PROPOSED ACTION
Construct Base Civil Engineer (BCE) Maintenance Shops

4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date)
The purpose and need is to provide a contiguous facilityto all BCE Maintenance Shops and Warehouses for better utilization of scarce spaces at TAFB in order to provide better customer service. Constructing a BCE Complex in a contiguous location conserves space and saves energy.

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.)
The preferred alternative is to construct the BCE Complex north of Ellis Drive approximately across from the RV parking lot. This location avoids wetlands, impacts to wetlands and possibly impacts to the endangered fairy shrimp and lasthenia conjugens.

| 6. PROPONENT APPROVAL (Name and Grade) | 6a. SIGNATURE | 6b. DATE |
|---|---|---|
| PONTEMAYOR,RODOLFO null | PONTEMAYOR.RODOLFO.M.1184400916 | Aug 30, 2010 |

| SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect;= adverse effect; U= unknown effect) | + | 0 | - | U |
|---|---|---|---|---|
| 7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE(Noise, accident potential, encroachment, etc.) | ☐ | ☐ | ☐ | ☐ |
| 8. AIR QUALITY(Emissions, attainment status, state implementation plan, etc.) | ☐ | ☒ | ☐ | ☐ |
| 9. WATER RESOURCES (Quality, quantity, source, etc.) | ☐ | ☒ | ☐ | ☐ |
| 10. SAFETY AND OCCUPATIONAL HEALTH(Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.) | ☐ | ☐ | ☐ | ☐ |
| 11. HAZARDOUS MATERIALS/WASTE(Use/storage/generation, solid waste, etc.) | ☐ | ☒ | ☐ | ☐ |
| 12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.) | ☐ | ☐ | ☒ | ☐ |
| 13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.) | ☐ | ☒ | ☐ | ☐ |
| 14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.) | ☐ | ☐ | ☒ | ☐ |
| 15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.) | ☐ | ☐ | ☐ | ☐ |
| 16. OTHER (Potential impacts not addressed above.) | ☐ | ☐ | ☐ | ☐ |

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17. ☐ PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) #; OR
☒ PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS
Project will place dredge or fill material (this can include but is not limited to digging, disking, grading and removing material) into a wetland or water of the U.S. (this includes but is not limited to vernal pools, other seasonal wetlands, drainage ditches and Union Creek). Therefore further analysis (EA)is required.
JA concurs that an EA is required.

| 19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) | 19a. SIGNATURE | 19b. DATE |
|---|---|---|
| MUSSELWHITE, DAVID YC-02 | MUSSELWHITE.DAVID.H.1229745596 | Oct 20, 2010 |

4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date)

The purpose and need is to provide a contiguous facilityto all BCE Maintenance Shops and Warehouses for better utilization of scarce spaces at TAFB in order to provide better customer service. Constructing a BCE Complex in a contiguous location conserves space and saves energy.

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.)

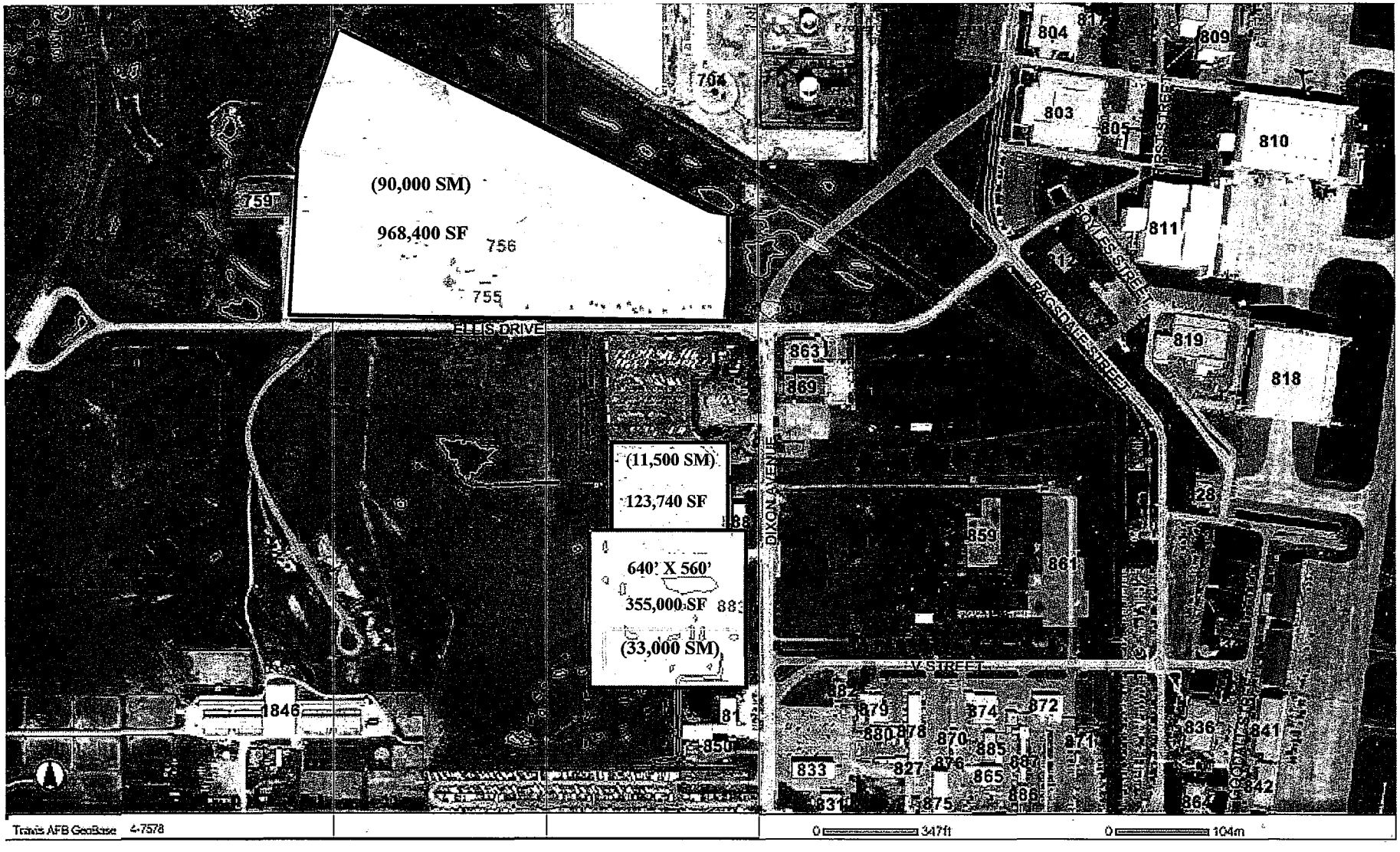
The preferred alternative is to construct the BCE Complex north of Ellis Drive approximately across from the RV parking lot. This location avoids wetlands, impacts to wetlands and possibly impacts to the endangered fairy shrimp and lasthenia conjugens.

18. REMARKS

Project will place dredge or fill material (this can include but is not limited to digging, disking, grading and removing material) into a wetland or water of the U.S. (this includes but is not limited to vernal pools, other seasonal wetlands, drainage ditches and Union Creek). Therefore further analysis (EA)is required.
JA concurs that an EA is required.

## Document Coordination

| | | |
|---|---|---|
| Coordinating Agency: | Safety | Comment: |
| User: | KERNEN, MATTHEW GS-12 | Approved: Ensure wing safety reviews all building designs to actively address any and all safety concerns prior to commencment of project. |
| Comment Date: | 9/21/10 5:10 PM | |
| Coordinating Agency: | Bio-Environmental | Comment: |
| User: | DEVINE, TIMOTHY Lt Col | Approved |
| Comment Date: | 9/24/10 6:29 PM | |
| Coordinating Agency: | Working Group Leader | Comment: |
| User: | KRETTECOS, | See attached AF 813 review comments. |
| Comment Date: | 10/18/10 2:58 PM | |




Maintenance Shops = 3,809 SM = 41,000 SF

Pavements Parking Area = 20,000 SM = 215,200 SF

Administration = 2,786 SM = 30,000 SF (Includes Ops Admin)

## REQUIREMENTS:

Storage Facilities = 2,637 SM = 28,375 SF

Outside Storage Areas = 2,500 SM = 26,900 SF

Pavement & Grounds = 831 SM = 8,940 SF + 10,000 SM = 107,600 SF Stockpile Area

Total Area = 42,563 SM = 457,977 SF

# Contract Specifications for Environmental Compliance

AICUZ
Spec #1: A "Data Worksheet for Cranes and Other Construction in the Vicinity of the Airfield" must be filled out and submitted to the Community Planner by the Project Manager at least 45 days prior to the start of construction. The Community Planner will use that worksheet to determine if a temporary airfield construction waiver or FAA Notice of Proposed Construction (FAA Form 7460-1) is required. If it is, the PM is responsible for meeting the requirement(s). POC Community Planner, 424-0873

AIR QUALITY
Spec #1: Project must comply with air permit requirements. Contractor must complete/submit air permit application, fee and source specifications to 60 CES/CEAN and obtain air district approval prior to install or modify existing air source. Contractor must comply with BAAQMD Regulation 2-1. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #3: Project must comply with particulate matter requirements. Contractor must control visible emissions. There shall be no visible emissions. Contractor must comply with BAAQMD Regulation 6. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #5: Project must comply with facility coating requirements. Contractor must comply with BAAQMD Regulation 8-3. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #7: Project must comply with gasoline storage requirements. For gasoline storage tank with a capacity of 250 gallons or more, contractor must complete/submit air permit application, fee and source specifications to 60 CES/CEAN and obtain air district approval prior to source installation. Contractor must comply with BAAQMD Regulations 2-1 and 8-7. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #8: Project must comply with solvent cleaning operation requirements. Contractor must complete/submit air permit application, fee and source specifications to 60 CES/CEAN and obtain air district approval prior to source installation. Contractor must comply with BAAQMD Regulations 2-1 and 8-16. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #15: Project must comply with aerosol paint product requirements. Contractor must comply with BAAQMD Regulation 8-29. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #17: Project must comply with adhesive and sealant product requirements. Contractor must comply with BAAQMD Regulation 8-51. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #18: Project must comply with industrial/commercial boilers. Contractor must complete/submit air permit application, fee and source specifications to 60 CES/CEAN and obtain air district approval prior to source installation. Contractor must comply with BAAQMD Regulations 2-1 and 9-7. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #19: Project must comply with stationary internal combustion engine rated at 50 hp or higher requirements. Contractor must complete/submit air permit application, fee and source specifications to

60 CES/CEAN and obtain air district approval prior to source installation. Contractor must comply with BAAQMD Regulation 2-1. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #20: Project must comply with portable internal combustion engine rated at 50 hp or higher requirements. Contractor must register the source(s) with the California Air Resources Board (ARB) prior to operation on base. Contractor must comply with ARB Statewide Portable Equipment Registration Program and registration operation conditions. POC Environmental Engineer, 424-5103

AIR QUALITY
Spec #21:
Project manager shall ensure that activities comply with asbestos and lead based paint (LBP) requirements prior to disturbing, renovating or demotion of existing building/facility. Asbestos abatement project records must be maintained for a minimum of 30 years. Ensure that contractor complies with the following:

a. Asbestos and lead based paint survey/abatement requirements. Survey/abatement must be performed by a certified contractor.
b. BAAQMD notification at least ten working days prior to commencing an asbestos abatement job or building demolition requirement.
c. Asbestos abatement, abatement site-specific procedure/method and perimeter air monitoring must be prepared /performed certified asbestos consultant (CAC).
d. Perimeter air monitoring samples use transmission electronic microscopy (TEM) analytical method.
e. Cal-OSHA notification at least 24 hours prior to commencing asbestos/LBP work requirement.
f. Contractor/project manager notify building occupants and other contractors working in area adjacent to the abatement area. Notification shall be made prior to asbestos abatement and upon competition of project requirement.
g. Final air clearance for asbestos and/or LBP analytical results must be submitted to Bioenvironmental Engineering (423-5490) for review and approval prior to removing warning signs, critical barriers and containment for re-occupation.
h. The CAC performing perimeter air monitoring, overseeing asbestos abatement project and performing final air clearance samples is independent from the asbestos abatement contractor (no conflict of interest).
i. Contractor/project manager must control visible emissions. There shall be no visible emissions.
j. Contractors and in-house labor performing renovation activities, LBP abatement, in target (pre-1978) housing or child-occupied facilities must provide the EPA's lead hazard information pamphlet "Renovate Right" to the owners and occupants of the building before beginning work.
k. Renovation activities in target (pre-1978) housing and child-occupied facilities must be conducted by certified renovators or firms.
l. Contractors and in-house labor performing renovation activities in target (pre-1978) housing and child-occupied facilities must be certified and follow the lead-safe work practices required by EPA's Renovation, Repair and Remodeling rule.

Contractor must comply with:
<u>Asbestos:</u>

- 40 CFR 61 Subpart M National Emission Standard for Hazardous Air Pollutants.
- 29 CFR 1910.1001 General Industry Standard for Asbestos.
- 29 CFR 1926.1101 Construction Industry Standard for Asbestos.
- 29 CFR 1910.134 Respiratory Protection Standard.
- 8 CCR Section 5208 General Industry Asbestos Standard.
- 8 CCR Section 1529 Construction Industry Asbestos Standard.

- 8 CCR Section 341.6 - 341.14 Yearly Registration Requirements.
- 8 CCR Section 5144 Respiratory Protection Requirements.
- Bay Area Air Quality Management District (BAQQMD) Reg. 11-1.
- Travis AFB Asbestos Management Plan.

LBP:

- 40 CFR 745 Lead; Renovation, Repair, and Painting Program; Lead Hazard Information Pamphlet; Notice of Availability; Final Rule
- 29 CFR 1910.1025 General Industry Standard for Lead Exposure
- 29 CFR 1926.62 Construction Industry Standard for Lead Exposure
- 29 CFR 1910.1200 Hazard Communication Standard
- 17 CCR 35001 Accreditation, Certification, and Work Practices in Lead-Related Construction
- 22 CCR 66261.24 Hazardous Wastes/Characteristic of Toxicity
- 8 CCR Section 1532.1 Construction Safety Orders—Lead
- Bay Area Air Quality Management District (BAQQMD) Reg. 11-2.
- Travis AFB Lead Based Paint Management Plan.

POC Environmental Engineer, 424-5103

WATER RESOURCES
Spec #1: Project qualifies as construction of 1 acre or more. Contractor must complete and provide appropriate Notice of Intent, SWPPP, and fee to 60 CES/CEAN thirty days prior to construction and implement appropriate Best Management Practices to prevent storm water contamination associated with construction activities. POC Water Engineer, 424-3587.

WATER RESOURCES
Spec #3: Project will include the installation of new equipment or processes that are among the 6 Metal Finishing Operations or 40 Ancillary Process Operations described in 40 CFR Part 433.10. Wastewater discharge permit #SIU-07/Zero 433-02 prohibits the discharge of waste water generated from these processes to the sanitary sewer. In addition, the proponent must provide a complete description of equipment and process to 60 CES/CEAN at least 90 days before installation and operation. POC Water Engineer, 424-3587.

WATER RESOURCES
Spec #5: Contractor must comply with 60 AMW Storm Water Pollution Prevention Plan and implement appropriate Best Management Practices to prevent storm water contamination associated with construction activities. POC Water Engineer, 424-3587.

WATER RESOURCES
Spec #6: Safe Drinking Water Act requires a reduced pressure backflow prevention device to be installed at the connection to the potable water source if one does not already exist. POC Water Engineer, 424-3587.

HAZARDOUS MATERIALS
Spec #1: Contractor must authorize, track, and manage hazardous material use in accordance with AFI 32-7086, AMC Supplement 1, 2.5.5. POC Hazardous Materials Manager 424-7514.

HAZARDOUS MATERIALS
Spec #2: Contractor must manage and characterize soil in accordance with Section 01560, 3.9. Submit a completed TAFB Form 124 and analysis results to 60 CES/CEAN prior to reusing soil or transporting it to another location. POC Hazardous Materials Manager, 424-7514.

HAZARDOUS WASTE
Spec #1: Project is using materials that may result in hazardous waste. Common materials leading to hazardous waste include florescent lamps, aerosols, batteries, paints, solvents, and lubricants. Contact the Hazardous Waste Manager at 424-4321 to register into the Hazardous Waste Program.

NATURAL RESOURCES
Spec #1: The project manager must contact the Natural Resources Manager who will determine whether or not further studies and/or coordination of any impacts with the US Fish and Wildlife Service is required. All coordination must be complete prior to project commencement/contract award. POC Natural & Cultural Resources Manager, 424-5126

NATURAL RESOURCES
Spec #2: The project manager should look for alternatives that avoid filling wetlands. If avoidance is not possible, the wetlands will require delineation and the amount of impact assessed. The delineation must be submitted to the US Army Corps of Engineers for a jurisdictional determination. Regardless of whether or not the wetland is under the USACE jurisdiction, mitigation for wetland loss/fill must occur under the AF No Net Loss policy and a FONPA must be prepared as part of the EIAP process. In all cases, the project manager must contact the Natural Resources Manager who will coordinate any impacts with the US Army Corps of Engineers. All coordination must be complete prior project commencement/contract award. POC Natural & Cultural Resources Manager, 424-5126

NATURAL RESOURCES Additional Instructions:
Project will place dredge or fill material (this can include but is not limited to digging, disking, grading and removing material) into a wetland or water of the U.S. (this includes but is not limited to vernal pools, other seasonal wetlands, drainage ditches and Union Creek" therefore further analysis (EA) is required

GEOLOGY & SOILS
Spec #2: The building is intended to be used for continuous occupation. A passive vapor ventilation system is required. POC Physical Scientist 424-7520

GEOLOGY & SOILS Additional Instructions:
Alternate location 1 is located above a ground water contaminant source and includes an existing ground water treatment system. Buildings must be located clear of this equipment. Alternate location 2 is located down gradient where the contaminant plume is spread out larger, potentially impacting a larger percentage of the proposed project area. The site encompasses a recently installed bio barrier to contaminant migration and multiple injection and monitoring wells. Continued access to alternate location 2 is required to maintain monitoring and treatment systems.

POL/TANKS
Spec #4: Work with POL/Tanks program manager to make sure the AST system is in compliance with 40 CFR 112, NEPA 30, BAAQMD, AFI 23 and 60 AMW ICP. The examples are 2nd containment and overfill prevention measures etc. POC POL/Tanks Manager, 424-3885

SOLID WASTE & RECYCLING
Spec #1: Environmental General Requirements, section 01560 states that contractor is responsible for collecting and disposing all solid waste generated under the scope of this contract and for providing weight receipts to contracting officer as proof of proper disposition. These actions are in accordance with Travis AFB Integrated solid Waste Management Plan (current version) and AFI32-7042. Types of waste include: cardboard, various paper products, construction and demolition debris such as copper piping, asphalt, concrete, lumber, plastics, ceiling tiles, scrap metal, tires, furniture, electronic waste, etc. POC

Solid Waste & Recycling Specialist, 424-5127

*Other references:*
CFR 246.200-1, Part 201-1, and Part 202-1.
Executive Order 13423 "Strengthening Federal Environmental, Energy, and Transportation Management."
CCR Title 14, Division 7, Chapter 3.0, Article 5.9.
California Integrated Waste Management Act (IWMA) of 1989 (CA AB 939).

SOLID WASTE & RECYCLING
Spec #3: Environmental General Requirements, section 01560 states that non-recyclable solid waste generated under the scope of this contract shall be taken to an approved landfill. POC Solid Waste & Recycling Specialist, 424-5127

SOLID WASTE & RECYCLING
Spec #4: In accordance with the Travis AFB Affirmative Procurement Program (APP) Plan and EPA's Comprehensive Procurement Guideline (CPG) Program, contractor (procurement originator) or Air Force project manager must sign/submit one or more of the following forms for compliant or non-compliant purchases to the contracting officer:

a. For Non-Construction Products: a "Recovered Materials Determination Form (Appendix D,D-1).
b. For Construction Products: a "Recovered Materials Determination Form (Appendix E, E1).
c. For claiming an exemption to EPA's standard-for non compliant purchases over $3000: an "Exemption Determination Form" (Appendix C).

The Travis APP Plan may be found at: https://eim.amc.af.mil/org/60ces/assetmanagement/ ; click on current management plans. The current list of CPG Recovered Materials Advisory Notices is found at: http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm. If a conflict exists between material specifications elsewhere and affirmative procurement requirements, complete Appendix C.

POC Solid Waste & Recycling Specialist, 424-5127

*Template Revised 14 October 2010*

# APPENDIX B

## Air Force Form 1391

| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

Requirements were determined through AFH 32-1084 Tables 7.2a and 7.2b. As directed in AFH 32-1084, adjustments were made based on local conditions:

| Facility and functional areas | $m^2$ | sf | Category Code |
|---|---|---|---|
| Consolidated CE Admin Facility (610-127, BSE ENGR ADMIN) | | | |
| Squadron Commander Office | 19 | 200 | 610-127 |
| Deputy Base Civil Engineer Office | 14 | 150 | 610-127 |
| Commander Secretary/Administration (2 people) | 22 | 240 | 610-127 |
| Commander Conference Room (12-15 people) | 21 | 225 | 610-127 |
| Squadron Section Commander Office | 11 | 120 | 610-127 |
| First Sergeant Office | 11 | 120 | 610-127 |
| Orderly Room (3 people) | 33 | 360 | 610-127 |
| Operations Flight Chief Office | 14 | 150 | 610-127 |
| Operations Secretary/Administration (2) | 22 | 240 | 610-127 |
| Ops Deputy Flight Chief Office | 11 | 120 | 610-127 |
| Facilities Manager | 11 | 120 | 610-127 |
| Infrastructure Superintendent Office | 11 | 120 | 610-127 |
| Heavy Repair Superintendent Office | 11 | 120 | 610-127 |
| Utility Maintenance Suprintendent Office | 11 | 120 | 610-127 |
| Maintenance Engineering Superintendent Office | 11 | 120 | 610-127 |
| Maintenance Engineering Workspaces (19 people) | 212 | 2,282 | 610-127 |
| Customer Service/Work Controller Office | 14 | 150 | 610-127 |
| Planning | 11 | 120 | 610-127 |
| Production Control | 67 | 721 | 610-127 |
| EMCS | 28 | 300 | 219-944 |
| Operations Vault/Storage Room | 28 | 300 | 610-127 |
| Damage Control Center (DCC) | 28 | 300 | 610-127 |
| Engineer Flight Chief Office | 14 | 150 | 610-127 |
| Engineer Secretary/Administration (2) | 22 | 240 | 610-127 |
| Conference Room (12-15 people) | 21 | 225 | 610-127 |
| Construction Manager Workspaces (20 people) | 224 | 2,411 | 610-127 |
| SABER Workspaces (4 people) | 44 | 474 | 610-127 |
| Programmer Workspaces (2) | 22 | 240 | 610-127 |
| Environmental Flight Chief Office | 14 | 150 | 610-127 |
| Environmental Program Manager Workspaces (8 people) | 269 | 2,896 | 610-127 |
| Environmental Secretary/Administraton (2) | 22 | 240 | 610-127 |
| Library | 70 | 753 | 610-127 |
| Resources File Storage Room | 9 | 100 | 610-127 |
| Resources Flight Chief Office | 14 | 150 | 610-127 |
| Resources Working Area | 11 | 120 | 610-127 |
| Real Estate Management's Workspaces (2 people) | 22 | 240 | 610-127 |
| Financial Management's Workspaces (4) | 44 | 474 | 610-127 |
| Computer Room | 23 | 250 | 610-127 |
| Information Systems Management Workspaces (3 people) | 33 | 355 | 610-127 |

FOR OFFICIAL USE ONLY

| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

| Facility and functional areas (cont) | $m^2$ | sf | Category Code |
|---|---|---|---|
| Readiness Flight Chief Office | 14 | 150 | 610-127 |
| HAZMAT Centralization Room (12-15 people) | 37 | 400 | 610-127 |
| Training Classroom (2 classrooms) | 130 | 1,400 | 610-127 |
| Projection Room | 11 | 120 | 610-127 |
| Inside Demonstration Room | 47 | 500 | 610-127 |
| Student Break Room | 37 | 400 | 610-127 |
| Readiness Logistics Office | 11 | 120 | 610-127 |
| Readiness Staff Workspaces (10 people) | 112 | 1,200 | 610-127 |
| Readiness Secretary/Administration | 11 | 120 | 610-127 |
| NBC Control Center | 28 | 300 | 610-127 |
| Training NCO Office | 11 | 120 | 610-127 |
| Squadron Main Conference Room (30-35 people) | 49 | 525 | 610-127 |
| Break Areas | 38 | 400 | 610-127 |
| Copy Machine Room(s) | 18 | 200 | 610-127 |
| Janitor Closets | 25 | 250 | 610-127 |
| Mechanical Rooms | 153 | 1,650 | 610-127 |
| Restrooms | 185 | 1,175 | 610-127 |
| Walls and Circulation (15%) | 370 | 3,854 | 610-127 |
| | **2,786** | **29,050** | |
| Consolidated Zonal Maintenance Facility (219-944, BE MAINT SHP) | | | |
| Facility Maintenance | 929 | 10,000 | 219-944 |
| Consolidated Storage (.46m2/m2 of zone facility) | 427 | 4,600 | 219-946 |
| Restrooms | 56 | 600 | 219-944 |
| Mechanical Room | 38 | 400 | 219-944 |
| Walls and Circulation (15%) | 217 | 2,340 | 219-944 |
| | **1,667** | **17,940** | |
| Electrical Facility (219-944, BE MAINT SHP) | | | |
| Electrical Distribution Zone | 112 | 1,200 | 219-944 |
| Consolidated Storage (.46m2/m2 of zone facility) | 51 | 552 | 219-946 |
| Restrooms | 28 | 300 | 219-944 |
| Mechanical Room | 19 | 200 | 219-944 |
| Walls and Circulation (15%) | 31 | 338 | 219-944 |
| | **241** | **2,590** | |
| Entomology & Liquid Fuels Facility (219-944, BE MAINT SHP) | | | |
| Entomology | 167 | 1800 | 219-944 |
| Liquid Fuels | 37 | 400 | 219-944 |

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

| Facility and functional areas (cont) | $m^2$ | sf | Category Code |
|---|---|---|---|
| Mechanical Room | 19 | 200 | 219-944 |
| Walls and Circulation (15%) | 38 | 405 | 219-944 |
| | **289** | **3,105** | |
| Horizontal Facility (219-943, BE PAV GRND FCLT) | | | |
| Horizontal Zone (28) | 475 | 5,112 | 219-943 |
| Vehicle Control Officer Office | 11 | 120 | 610-127 |
| Consolidated Storage (.46m2/m2 of zone facility) | 218 | 2,351 | 219-946 |
| Restrooms | 28 | 300 | 219-943 |
| Mechanical Room | 19 | 200 | 219-943 |
| Walls and Circulation (15%) | 80 | 860 | 219-943 |
| | **831** | **8,943** | |
| Mat Control Warehouse (219-946, BE STOR CV FCLT) | | | |
| Material Control Section | 179 | 1,927 | 219-946 |
| Stock Storage Area (GOCESS/COCESS) | 1,487 | 16,000 | 219-946 |
| Restrooms | 28 | 300 | 219-946 |
| Mechanical Room | 19 | 200 | 219-946 |
| Walls and Circulation (15%) | 250 | 2,689 | 219-946 |
| | **1,963** | **21,116** | |
| Power Pro Facility (219-944, BE MAINT SHP) | | | |
| Power Production Zone | 139 | 1,500 | 219-944 |
| Consolidated Storage (.46m2/m2 of zone facility) | 64 | 690 | 219-946 |
| Restrooms | 28 | 300 | 219-944 |
| Mechanical Room | 19 | 200 | 219-944 |
| Walls and Circulation (15%) | 37 | 400 | 219-944 |
| | **287** | **3,090** | |
| Readiness Warehouse (219-946, BE STOR CV FCLT) | | | |
| Vehicle Storage | 28 | 300 | 219-946 |
| Warehouse Storage and Mobility Processing | 465 | 5,000 | 219-946 |
| Secure Storage Area | 46 | 500 | 219-946 |
| Restrooms | 28 | 300 | 219-946 |
| Mechanical Room | 19 | 200 | 219-946 |
| Walls and Circulation (15%) | 88 | 945 | 219-946 |
| | **674** | **7245** | |

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

| Facility and functional areas (cont) | $m^2$ | sf | Category Code |
|---|---|---|---|
| Vertical Facility (219-944, BE MAINT SHP) | | | |
| Vertical Zone (20) | 883 | 9,500 | 219-944 |
| Consolidated Storage (.46m2/m2 of zone facility) | 82 | 883 | 219-946 |
| Restrooms | 28 | 300 | 219-944 |
| Mechanical Room | 19 | 200 | 219-944 |
| Walls and Circulation (15%) | 151 | 1,630 | 219-944 |
| | **1,163** | **12,513** | |
| Water Facility (219-944, BE MAINT SHP) | | | |
| Water | 94 | 1,005 | 219-944 |
| Restrooms | 28 | 300 | 219-944 |
| Mechanical Room | 19 | 200 | 219-944 |
| Walls and Circulation (15%) | 21 | 225 | 219-944 |
| | **162** | **1,730** | |
| EOD Facility (141-165, EOD FCLT) | | | |
| EOD Flight Chief Office | 14 | 150 | 141-165 |
| EOD Staff Workspaces (13 people) | 145 | 1,560 | 141-165 |
| Training Room | 42 | 450 | 141-165 |
| Physical Fitness Room | 23 | 250 | 141-165 |
| Maintenance and Secure Storage Area | 176 | 1,900 | 141-165 |
| Vehicle Storage Bays | 229 | 2,460 | 141-165 |
| Primary Weapon Vault | 14 | 150 | 141-165 |
| Laundry | 7 | 75 | 141-165 |
| Restrooms | 28 | 300 | 141-165 |
| Janitor Closet | 2 | 25 | 141-165 |
| Mechanical Room | 28 | 300 | 141-165 |
| Walls and Circulation (15%) | 106 | 1,140 | 141-165 |
| | **814** | **7,620** | |

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DEFICIENCY DETAIL DATA SHEET

SCOPE OF FY04 REQUEST: 981 SM EOD FCLT

REQUIREMENTS/ASSETS

REQUIREMENTS COMPUTATIONS (141-165)

Mission: Air Mobility Command base, primary mission as an Aerial Port (Air Freight and Air Passenger Terminal Operations), with 37 C-5B, and 27 KC-10A aircraft assigned; 15th Air Force Headquarters; Aeromedical Airlift Detachment; 60th Medical Group; 349th Air Mobility Wing (Reserve Associate). Personnel strengths consist of 7,136 assigned permanent party military (includes 15th Air Force and other tenants), 2,877 assigned DOD civilians. Associate Reserve strength, including permanent personnel (Air Reserve Technicians and civilians) and reservists consists of 3,580. (Personnel data as of SEP 00 from Travis AFB's Economic Impact Analysis.

| | SCOPE ( SM ) | NO. OF BLDGS |
|---|---|---|
| a. Total Requirement | 981 | 1 |
| b. Existing Substandard | 877 | 3 |
| c. Existing Adequate | 0 | 0 |
| d. Funded, Not in Inventory | 0 | 0 |
| e. Adequate Assets (c+d) | 0 | 0 |
| f. Unfunded Prior Authorization | 0 | 0 |
| g. Deficiency (a-e-f) | 981 | 1 |

Requirement: AFH 32-1084 Para 7.35
Functional breakout of proposed scope: AFH 32-1084, Table 7.12

| **b. Existing Substandard:** | | **877 SM** | | | |
|---|---|---|---|---|---|
| 141-165 | EOD FCLT / 903 | 290 SM | 290 SM | 1953 / 3 / Brick | Demolition, this MILCON |
| 141-165 | EOD FCLT / 906 | 582 SM | 582 SM | 1956 / 3 / Conc | Return to base |
| 141-165 | EOD FCLT / 1760 | 5 SM | 5 SM | 1985 / 3 /Mtl | Return to base |
| | Total Substandard: | 877 SM | | | |

| **c. Existing Adequate:** | | **None** | | | |
|---|---|---|---|---|---|
| 141-165 | EOD FCLT | None | | N/A | |
| | Total Adequate: | None | | | |

| **g. Deficiency** | | **981 SM** | | | |
|---|---|---|---|---|---|
| 141-165 | *** EOD FCLT | 981 SM | | | This MILCON |
| | Total Deficiency: | 981 SM | | | |

*** Includes 167 SM to support 22 AFRC EOD personnel

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DEFICIENCY DETAIL DATA SHEET

SCOPE OF FY04 REQUEST: 831 SM BE PAV GRND FCLT

REQUIREMENTS/ASSETS

REQUIREMENTS COMPUTATIONS (219-943)

Mission: Air Mobility Command base, primary mission as an Aerial Port (Air Freight and Air Passenger Terminal Operations), with 37 C-5B, and 27 KC-10A aircraft assigned; 15th Air Force Headquarters; Aeromedical Airlift Detachment; 60th Medical Group; 349th Air Mobility Wing (Reserve Associate). Personnel strengths consist of 7,136 assigned permanent party military (includes 15th Air Force and other tenants), 2,877 assigned DOD civilians. Associate Reserve strength, including permanent personnel (Air Reserve Technicians and civilians) and reservists consists of 3,580. (Personnel data as of SEP 00 from Travis AFB's Economic Impact Analysis).

| | SCOPE ( SM ) | NO. OF BLDGS |
|---|---|---|
| a. Total Requirement | 831 | 1 |
| b. Existing Substandard | 506 | 2 |
| c. Existing Adequate | 0 | 0 |
| d. Funded, Not in Inventory | 0 | 0 |
| e. Adequate Assets (c+d) | 0 | 0 |
| f. Unfunded Prior Authorization | 0 | 0 |
| g. Deficiency (a-e-f) | 831 | 1 |

Requirement: AFH 32-1084 Para 7.35
Functional breakout of proposed scope: AFH 32-1084, Table 7.12

| CAT CODE | Nomenclature/ Facility No. | Scope Used (SM) | Scope Total Fac (SM) | Cond Type Year/Code/Const | Remarks |
|---|---|---|---|---|---|
| **b. Existing Substandard:** | | **506 SM** | | | |
| 219-943 | BE Pav Grnd Fclt / 781 | 36 SM | 36 SM | 1988 / 3 / Mtl | Return to base |
| 219-943 | BE Pav Grnd Fclt /872 | 470 SM | 470 SM | 1988 / 3 / Conc | Demolition, this MILCON |
| | Total Substandard: | 506 SM | | | |
| **c. Existing Adequate:** | | **None** | | | |
| 219-943 | BE Pav Grnd Fclt | None | | | |
| | Total Adequate: | None | | | |
| **g. Deficiency** | | **831 SM** | | | |
| 219-943 | BE Pav Grnd Fclt | 831 SM | | | This MILCON |

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DEFICIENCY DETAIL DATA SHEET

SCOPE OF FY04 REQUEST: 3809 SM BE MAINT SHP

REQUIREMENTS/ASSETS

REQUIREMENTS COMPUTATIONS (219-944)

| | | SCOPE ( SM ) | NO. OF BLDGS |
|---|---|---|---|
| Mission: Air Mobility Command base, primary mission as an Aerial Port (Air Freight and Air Passenger Terminal Operations), with 37 C-5B, and 27 KC-10A aircraft assigned; 15th Air Force Headquarters; Aeromedical Airlift Detachment; 60th Medical Group; 349th Air Mobility Wing (Reserve Associate). Personnel strengths consist of 7,136 assigned permanent party military | a. Total Requirement | 3809 | 6 |
| | b. Existing Substandard | 5717 | 14 |
| | c. Existing Adequate | 0 | 0 |
| | d. Funded, Not in Inventory | 0 | 0 |
| | e. Adequate Assets (c+d) | 0 | 0 |
| | f. Unfunded Prior Authorization | 0 | 0 |
| | g. Deficiency (a-e-f) | 3809 | 6 |

(includes 15th Air Force and other tenants), 2,877 assigned DOD civilians. Associate Reserve strength, including permanent personnel (Air Reserve Technicians and civilians) and reservists consists of 3,580. (Personnel data as of SEP 00 from Travis AFB's Economic Impact Analysis..

Requirement: AFH 32-1084 Para 7.36
Functional breakout of proposed scope: AFH 32-1084, Table 7.12

Continued on next page

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DETAILED DEFICIENCY DATA SHEET (CONT)

| CAT CODE | Nomenclature/ Facility No. | Scope Used (SM) | Scope Total Fac (SM) | Cond Type Year/Code/Const | Remarks |
|---|---|---|---|---|---|
| **b. Existing Substandard:** | | **5,717 SM** | | | |
| 219-944 | BE Maint Shp / 381 | 749 SM | 17,937 SM | 1995 / *2 / Conc | Return to base |
| 219-944 | BE Maint Shp / 382 | 238 SM | 742 SM | 1949 / 3 /Conc | Demolition, this MILCON |
| 219-944 | BE Maint Shp / 570 | 767 SM | 1,050 SM | 1994 / * 3 / Wood | Return to base |
| 219-944 | BE Maint Shp / 806 | 311 SM | 486 SM | 1954 / 3 / Conc | Demo XDAT 971147 |
| 219-944 | BE Maint Shp / 861 | 139 SM | 1,559 SM | 1952 / 3 / Conc | Demo XDAT 971106 |
| 219-944 | BE Maint Shp / 871 | 16 SM | 16 SM | 1953 / *3 / Conc | Demolition, this MILCON |
| 219-944 | BE Maint Shp / 873 | 154 SM | 154 SM | 1957 / 3 / Wdfr | Demolition, this MILCON |
| 219-944 | BE Maint Shp / 874 | 717 SM | 829 SM | 1953 / *3 / Conc | Return to base |
| 219-944 | BE Maint Shp / 876 | 16 SM | 16 SM | 1953 / 3 / Conc | Demolition, this MILCON |
| 219-944 | BE Maint Shp / 877 | 223 SM | 394 SM | 1987 / 3 / Mtl | Return to base |
| 219-944 | BE Maint Shp / 879 | 637 SM | 637 SM | 1953 / 3 / Conc | Demolition,this MILCON |
| 219-944 | BE Maint Shp / 882 | 261 SM | 261 SM | 1957 / 3 / Conc | Demolition,this MILCON |
| 219-944 | BE Maint Shp / 884 | 96 SM | 96 SM | 1968 / 2 / Mtl | Return to base |
| 219-944 | BE Maint Shp / 905 | 408 SM | 408 SM | 1953 / 3 / Conc | Demolition,this MILCON |
| 219-944 | BE Maint Shp / 908 | 334 SM | 334 SM | 1954 / *3 / Conc | Demolition, this MILCON |
| 219-944 | BE Maint Shp / 930 | 89 SM | 89 SM | 1953 / 2 / Conc | Return to base |
| 219-944 | BE Maint Shp / 931 | 194 SM | 194 SM | 1953 / *3 / Conc | Return to base |
| 219-944 | BE Maint Shp / 936 | 368 SM | 461 SM | 1953 / 2 / Conc | Return to base |
| | Total Substandard: | 5,717 SM | | | |
| **c. Existing Adequate:** | | **None** | | | |
| 219-944 | BE Maint Shp | None | | N/A | |
| **g. Deficiency** | | **3,809 SF** | | | |
| 219-944 | BE Maint Shp / 867 | 3,809 SF | | | This MILCON |

*The Real Property records will be adjusted to reflect these condition codes prior to the next reporting period.

FOR OFFICIAL USE ONLY

| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DEFICIENCY DETAIL DATA SHEET

SCOPE OF FY04 REQUEST: 2637 SM BE STOR CV FCLTY

REQUIREMENTS/ASSETS

REQUIREMENTS COMPUTATIONS (219-946)

| | | SCOPE ( SM ) | NO. OF BLDGS |
|---|---|---|---|
| Mission: Air Mobility Command base, primary mission as an Aerial Port (Air Freight and Air Passenger Terminal Operations), with 37 C-5B, and 27 KC-10A aircraft assigned; 15th Air Force Headquarters; Aeromedical Airlift Detachment; 60th Medical Group; 349th Air Mobility Wing (Reserve Associate). Personnel strengths consist of 7,136 assigned permanent party military | a. Total Requirement | 2637 | 1 |
| | b. Existing Substandard | 7592 | 23 |
| | c. Existing Adequate | 0 | 0 |
| | d. Funded, Not in Inventory | 0 | 0 |
| | e. Adequate Assets (c+d) | 0 | 0 |
| | f. Unfunded Prior Authorization | 0 | 0 |
| | g. Deficiency (a-e-f) | 2637 | 1 |

(includes 15th Air Force and other tenants), 2,877 assigned DOD civilians. Associate Reserve strength, including permanent personnel (Air Reserve Technicians and civilians) and reservists consists of 3,580. (Personnel data as of SEP 00 from Travis AFB's Economic Impact Analysis.).

Requirement: AFH 32-1084 Para 7.38
Functional breakout of proposed scope: AFH 32-1084, Table 7.12

Continued on next page

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DETAILED DEFICIENCY DATA SHEET (CONT)

| CAT CODE | Nomenclature/ Facility No. | Scope Used (SM) | Scope Total Fac (SM) | Cond Type Year/Code/Const | Remarks |
|---|---|---|---|---|---|
| **b. Existing Substandard:** | | **7592 SM** | | | |
| 219-946 | BE Stor Cv Fclty / 176 | 697 SM | 697 SM | 1987 / *2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 833 | 813 SM | 813 SM | 1990 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 865 | 545 SM | 545 SM | 1975 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 866 | 224 SM | 224 SM | 1981 / *3 / Mtl | Demo XDAT 971127 |
| 219-946 | BE Stor Cv Fclty / 870 | 90 SM | 90 SM | 1977 / 3 / Mtl | Demolition,this MILCON |
| 219-946 | BE Stor Cv Fclty / 872 | 304 SM | 775 SM | 1953 / *2 / Conc | Return to base |
| 219-946 | BE Stor Cv Fclty / 874 | 112 SM | 829 SM | 1953 / *2 / Conc | Return to base |
| 219-946 | BE Stor Cv Fclty / 875 | 1096 SM | 1355 SM | 1987 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 885 | 390 SM | 390 SM | 1969 / 3 / WdFr | Demolition, this MILCON |
| 219-946 | BE Stor Cv Fclty / 887 | 74 SM | 74 SM | 1984 / 3 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 899 | 194 SM | 194 SM | 1987 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 909 | 56 SM | 56 SM | 1957 / 2 / Conc | Return to base |
| 219-946 | BE Stor Cv Fclty / 910 | 62 SM | 62 SM | 1984 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 929 | 11 SM | 11 SM | 1979 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 935 | 156 SM | 365 SM | 1953 / 2 / Conc | Return to base |
| 219-946 | BE Stor Cv Fclty / 936 | 93 SM | 461 SM | 1953 / 2 / Conc | Return to base |
| 219-946 | BE Stor Cv Fclty / 938 | 178 SM | 178 SM | 1959 / 2 / Mtl | Return to base |
| 219-946 | BE Stor Cv Fclty / 1026 | 669 SM | 669 SM | 1996 / *2 / ConBl | Return to base |
| 219-946 | BE Stor Cv Fclty / 1027 | 141 SM | 141 SM | 1957 / 3 / Conc | Demo XDAT 951103 |
| 219-946 | BE Stor Cv Fclty / 1365 | 724 SM | 724 SM | 1969/ 3 / ConBl | Return to base |
| 219-946 | BE Stor Cv Fclty / 5568 | 46 SM | 46 SM | 1980 / 3 / Mtl | Demolition, this MILCON |
| 219-946 | BE Stor Cv Fclty / 5569 | 531 SM | 860 SM | 1951 / 3 / WdFrm | Demolition, this MILCON |
| 219-946 | BE Stor Cv Fclty / 5570 | 383 SM | 383 SM | 1974 / 3 / Mtl | Demolition, this MILCON |
| | Total Substandard: | 7592 SM | | | |
| **c. Existing Adequate:** | | **None** | | | |
| 219-946 | BE Stor Cv Fclty | None | | N/A | |
| **g. Deficiency** | | **2,637 SF** | | | |
| 219-946 | BE Stor Cv Fclty / 867 | 2,637 SF | | | This MILCON |

* Change Condition Codes in the next real estate submittal

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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

3. INSTALLATION AND LOCATION

TRAVIS AIR FORCE BASE, CALIFORNIA

| 4. PROJECT TITLE | 5. PROJECT NUMBER |
|---|---|
| BASE CIVIL ENGINEER COMPLEX | XDAT 97-3003 |

EXISTING FACILITIES/DEFICIENCY DETAIL DATA SHEET

SCOPE OF FY04 REQUEST: 2786 SM BSE ENGR ADMIN

REQUIREMENTS/ASSETS

REQUIREMENTS COMPUTATIONS (610-127)

Mission: Air Mobility Command base, primary mission as an Aerial Port (Air Freight and Air Passenger Terminal Operations), with 37 C-5B, and 27 KC-10A aircraft assigned; 15th Air Force Headquarters; Aeromedical Airlift Detachment; 60th Medical Group; 349th Air Mobility Wing (Reserve Associate). Personnel strengths consist of 7,136 assigned permanent party military (includes 15th Air Force and other tenants), 2,877 assigned DOD civilians. Associate Reserve strength, including permanent personnel (Air Reserve Technicians and civilians) and reservists consist of 3,580. (Personnel data as of SEP 00 from Travis AFB's Economic Impact Analysis).

| | SCOPE ( SM ) | NO. OF BLDGS |
|---|---|---|
| a. Total Requirement | 2786 | 1 |
| b. Existing Substandard | 2944 | 9 |
| c. Existing Adequate | 0 | 0 |
| d. Funded, Not in Inventory | 0 | 0 |
| e. Adequate Assets (c+d) | 0 | 0 |
| f. Unfunded Prior Authorization | 0 | 0 |
| g. Deficiency (a-e-f) | 2786 | 1 |

Requirement: AFH 32-1084 Para 12.8.4
Functional breakout of proposed scope: AFH 32-1084, Table 7.12

| CAT CODE | Nomenclature/ Facility No. | Scope Used (SM) | Scope Total Fac (SM) | Cond Type Year/Code/Const | Remarks |
|---|---|---|---|---|---|
| **b. Existing Substandard:** | | **3881 SM** | | | |
| 610-127 | BSE Engr Admin / 570 | 1040 SM | 1040 SM | 1952 / 2 / Conc | Return to base |
| 610-127 | BSE Engr Admin / 571 | 881 SM | 881 SM | 1952 / 2 / Conc | Return to base |
| 610-127 | BSE Engr Admin / 742 | 48 SM | 48 SM | 1985 / 2 / Conc | Return to base |
| 610-127 | BSE Engr Admin / 875 | 259 SM | 259 SM | 1987/ 2 /Conc | Return to base |
| 610-127 | BSE Engr Admin / 877 | 171 SM | 171 SM | 1987 / 2 /Conc | Return to base |
| 610-127 | BSE Engr Admin / 878 | 545 SM | 545 SM | 1953 / 2 / Conc | Return to base |
| | Total Substandard: | 2944 SM | | | |
| **c. Existing Adequate:** | | **None** | | | |
| 610-127 | BSE Engr Admin | None | | N/A | |
| **g. Deficiency** | | **2,786 SM** | | | |
| 610-127 | BSE Engr Admin / 867 | 2,786 SM | | | This MILCON |

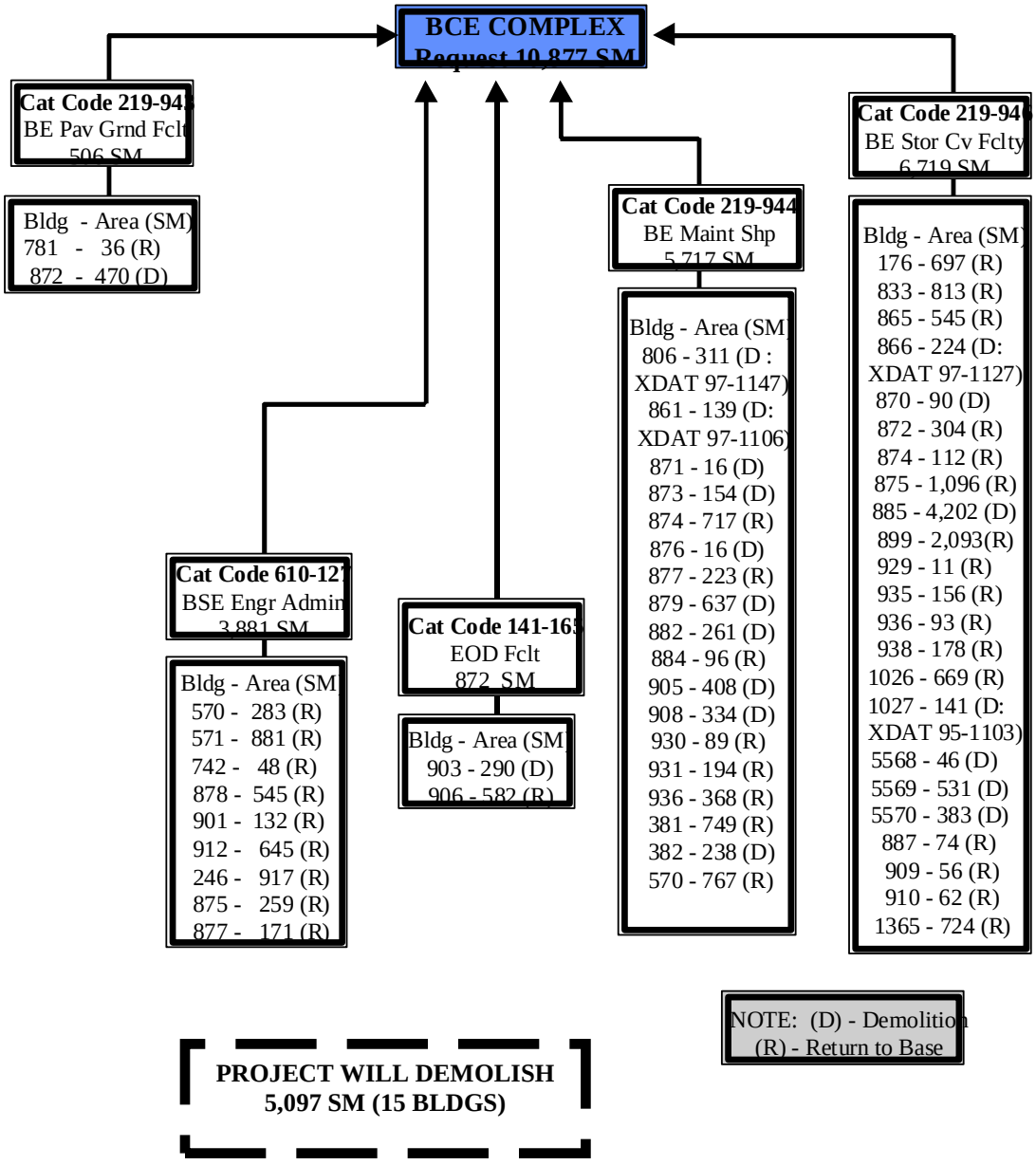
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| 1. COMPONENT | FY 2004 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | | |

ECT NUMBER

AT 97-3003

FUNCTIONAL RELOCATION SCHEMATICS




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| 1. COMPONENT | FY 2012 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | (computer generated) | |

| 3. INSTALLATION AND LOCATION | 4. PROJECT TITLE |
|---|---|
| TRAVIS AIR FORCE BASE, CALIFORNIA | CONSTRUCT BASE CIVIL ENGINEER MAINTENANCE SHOPS |

| 5. PROGRAM ELEMENT | 6. CATEGORY CODE | 7. PROJECT NUMBER | 8. PROJECT COST ($000) |
|---|---|---|---|
| 41976 | 219-944 | XDAT973003P1 | 12,500 |

9. COST ESTIMATES

| ITEM | U/M | QUANTITY | UNIT COST | COST ($000) |
|---|---|---|---|---|
| PRIMARY FACILITIES | | | | 9,651 |
| BCE MAINTENANCE SHOPS | SM | 3,809 | 2,093 | ( 7,972 ) |
| SDD & EPACT05 | LS | | | ( 170 ) |
| AT/FP | LS | | | ( 84 ) |
| SUPPLY WAREHOUSE | SM | 1,963 | 726 | ( 1,425 ) |
| SUPPORTING FACILITIES | | | | 1,568 |
| UTILITIES | LS | | | ( 228 ) |
| PAVEMENTS | LS | | | ( 785 ) |
| SITE IMPROVEMENTS | LS | | | ( 122 ) |
| COMMUNICATIONS | LS | | | ( 433 ) |
| SUBTOTAL | | | | 11,219 |
| CONTINGENCY (5.0%) | | | | 561 |
| TOTAL CONTRACT COST | | | | 11,780 |
| SUPERVISION, INSPECTION AND OVERHEAD (5.7%) | | | | 671 |
| TOTAL REQUEST | | | | 12,452 |
| TOTAL REQUEST (ROUNDED) | | | | 12,500 |

10. Description of Proposed Construction: Reinforced concrete foundation floor slab, masonry walls; structural steel beams, sloped roofs, thermal aluminum windows, steel stud partitions with gypsum board finish; HVAC; completely insulated. All necessary and required work associated with this project including seismic bracing. Includes AT/FP physical security IAW DOD minimum construction standards.

Air Conditioning: 120 Tons

11. Requirement: 5772 SM Adequate: 0 SM Substandard: 6998 SM

PROJECT: Construct Base Civil Engineering (BCE) Maintenance Shops & Supply Warehouse (current mission)

REQUIREMENT: This project is a FIM Rating: CRI/BS requirement. A base civil engineer maintenance facility is required to provide adequate work areas for maintenance personnel to maintain, repair, operate, and construct facilities, and utility systems in support of base missions. This project is the first phase of three phases that will provide facilities for all civil engineering functions. Each function (command, admin support, operations, engineers, and emergency response) need to be located in close proximity to improve coordination and communication. Force protection measures will be incorporated IAW USAF Installation Force Protection Guide. A supply warehouse is required to support the BCE Maintenance Shops with materials and equipment for normal day to day operation.

CURRENT SITUATION: Existing base civil engineering functions are dispersed throughout 55 facilities on base. The average age of these facilities is 45 years old. Majority of facilities have leaking roofs, cracks in the foundations and do not comply with building code or seismic requirements. The facilities have no energy conserving devices and are in need of constant repair. Narrow streets make the existing facilities inaccessible to large vehicles restricting deliveries and Civil Engineering maintenance vehicles thereby impeding the maintenance personnel

| 1. COMPONENT<br>AIR FORCE | FY 2012 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) | 2. DATE |
|---|---|---|

| 3. INSTALLATION AND LOCATION | 4. PROJECT TITLE |
|---|---|
| TRAVIS AIR FORCE BASE, CALIFORNIA | CONSTRUCT BASE CIVIL ENGINEER MAINTENANCE SHOPS |

| 5. PROGRAM ELEMENT | 6. CATEGORY CODE | 7. PROJECT NUMBER | 8. PROJECT COST ($000) |
|---|---|---|---|
| 41976 | 219-944 | XDAT973003P1 | 12,500 |

from performing their tasks. Maintenance shops are extremely crowded which makes it difficult and unsafe to operate machinery and power tools. The offices are located in small rooms making expansion or relocation difficult without extensive interior renovation. Fifteen facilities (5,097 SM) will be disposed of upon completion of all phases of the Base Civil Engineer project.

IMPACT IF NOT PROVIDED: Continued use of dispersed, crowded, and outdated facilities will significantly degrade the efficiency and quality of the organizations performance. Civil engineering support to the units assigned to this base would continue to affect the overall mission effectiveness and quality of life. Current facilities would continue to be utilized, effecting adverse working conditions and compromise personnel safety.

ADDITIONAL: Conversion: 1 SM = 10.76 SF. Demolition of all required facilities will be accomplished in phase-3 of BCE Complex project. There is no criteria/scope for this project in Part II of Military Handbook 1190, "Facility Planning and Design Guide". However, this project does meet the criteria/scope specified in AFH-32-1084, "Facility Requirements".

BASE CIVIL ENGINEER: Lt Col D. WADE LAWRENCE, 707-424-2492

JOINT USE CERTIFICATION: This facility can be used by other components on an "as available" basis; however, the scope of the project is based on Air Force requirements.

| 1. COMPONENT | FY 2012 MILITARY CONSTRUCTION PROJECT DATA | 2. DATE |
|---|---|---|
| AIR FORCE | (computer generated) | |

| 3. INSTALLATION AND LOCATION | 4. PROJECT TITLE |
|---|---|
| TRAVIS AIR FORCE BASE, CALIFORNIA | CONSTRUCT BASE CIVIL ENGINEER MAINTENANCE SHOPS |

| 5. PROGRAM ELEMENT | 6. CATEGORY CODE | 7. PROJECT NUMBER | 8. PROJECT COST ($000) |
|---|---|---|---|
| 41976 | 219-944 | XDAT973003P1 | 12,500 |

**12. SUPPLEMENTAL DATA:**

**a. Estimated Design Data:**

**(1) Status:**

| | |
|---|---|
| (a) Date Design Started | |
| (b) Parametric Cost Estimates used to develop costs | YES |
| * (c) Percent Complete as of 01 JAN 2011 | |
| * (d) Date 35% Designed | |
| (e) Date Design Complete | |
| (f) Energy Study/Life-Cycle analysis was/will be performed | NO |

**(2) Basis:**

| | |
|---|---|
| (a) Standard or Definitive Design - | NO |
| (b) Where Design Was Most Recently Used | |

| (3) Total Cost (c) = (a) + (b) or (d) + (e): | ($000) |
|---|---|
| (a) Production of Plans and Specifications | 0 |
| (b) All Other Design Costs | 0 |
| (c) Total | 0 |
| (d) Contract | 0 |
| (e) In-house | 0 |

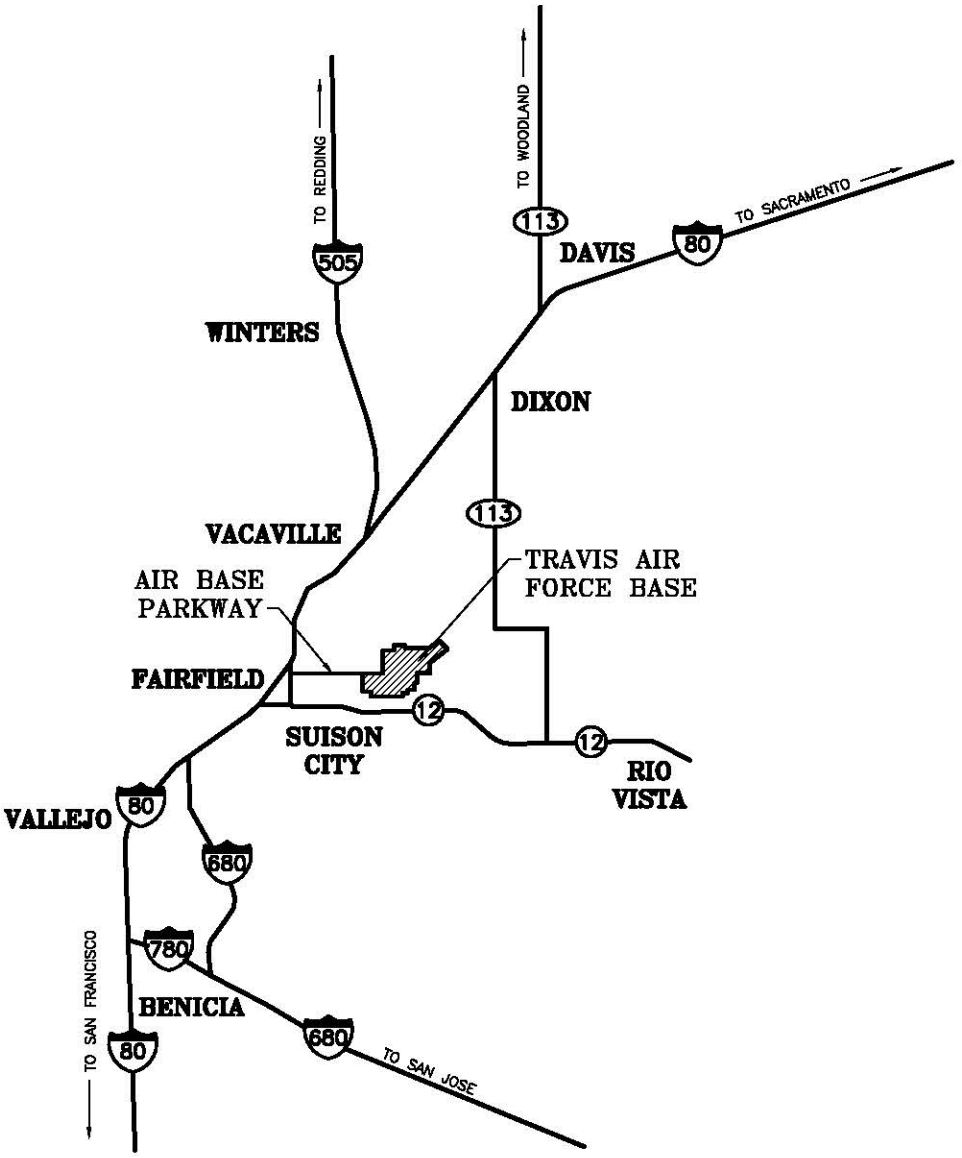
**(4) Construction Contract Award**

**(5) Construction Start**

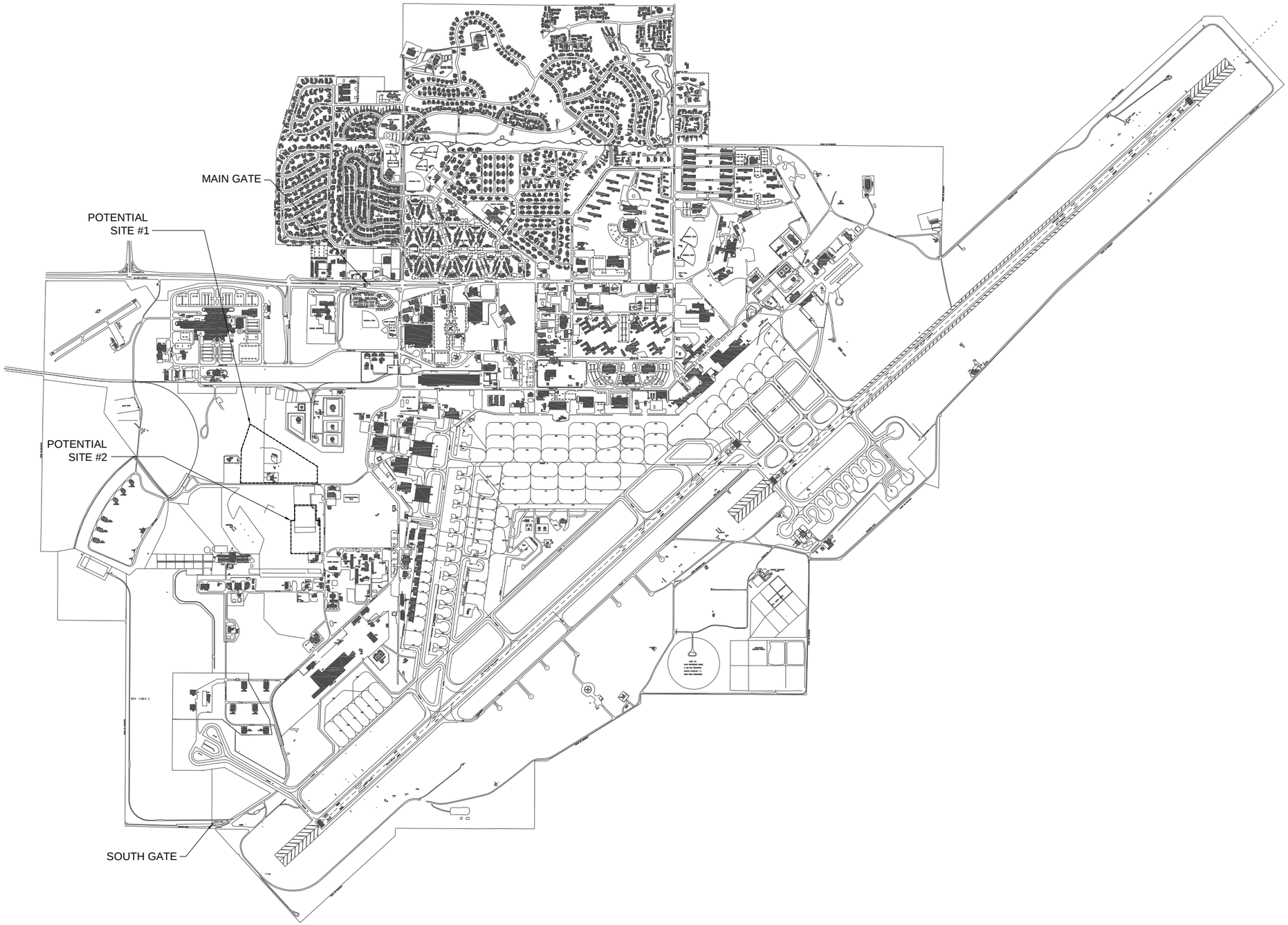
**(6) Construction Completion**

*** Indicates completion of Project Definition with Parametric Cost Estimate which is comparable to traditional 35% design to ensure valid scope, cost and executability.**

**b. Equipment associated with this project provided from other appropriations:**
**N/A**




| | | |
|---|---|---|
| TranSystems | | SHEET TITLE: VICINITY MAP |
| | | PROJECT: NAVAL FACILITIES ENGINEERING COMMAND<br>FY 2012 MILCON PROJECT XDAT 97-3003 - P1, P2, P3<br>BASE CIVIL ENGINEERING COMPLEX |
| PROJ NO: P501090107<br>SCALE: AS SHOWN<br>DATE: 26 FEBRUARY 2010<br>DESIGNED BY:<br>DRAWN BY:<br>CHECKED BY: | | ATTACHMENT 2A |




**BASE MAP**
SCALE: NOT TO SCALE

PLAN NORTH

TranSystems
180 GRAND AVE. SUITE 400
OAKLAND, CA 94612
PHONE: 510-835-2761
FAX: 510-835-9839

CONSULTANTS:

AIR MOBILITY COMMAND
TRAVIS AIR FORCE BASE

NAVAL FACILITIES ENGINEERING COMMAND
FY 2012 MILCON PROJECT XDAT 97-3003 - P1, P2, P3
BASE CIVIL ENGINEERING COMPLEX

REVISIONS:

| MARK | DATE | DESCRIPTION |
|---|---|---|

PROJ NO: P501090107
SCALE: AS SHOWN
DATE: 26 FEBRUARY 2010
DESIGNED BY:
DRAWN BY:
CHECKED BY:

SHEET TITLE:

BASE MAP

SHEET NO.
ATTACHMENT 2B
SHEET OF

IF THIS DRAWING IS LESS THAN 22" X 34" IT IS A REDUCED SIZE DRAWING

G:_OK09\0107\ProjectMgmt_5Design\10-02-17 Area Development and Concept Report\Attachment 2 Location Maps\AGE Att03b Base Map.dwg, Plotted: Feb 19, 2010 - 10:14am



HORIZONTAL SHOP - EXTERIOR STORAGE YARD



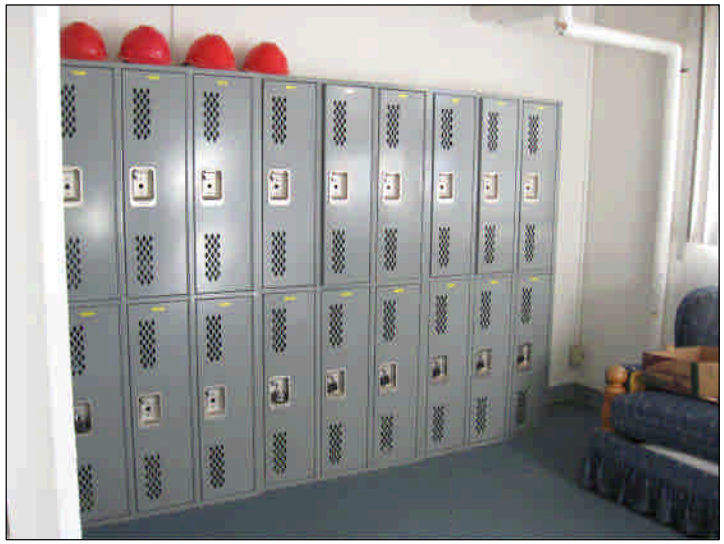
HORIZONTAL SHOP - EXTERIOR STORAGE YARD



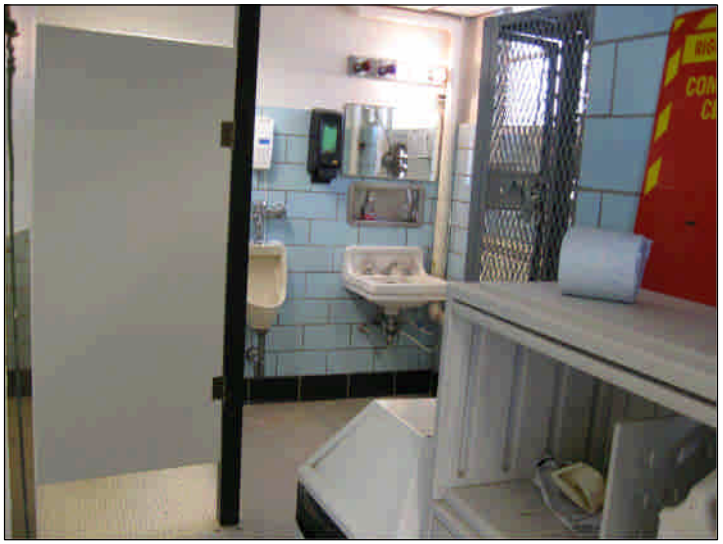
HORIZONTAL SHOP - EXTERIOR STORAGE YARD



HORIZONTAL SHOP - OFF SITE STORAGE YARD



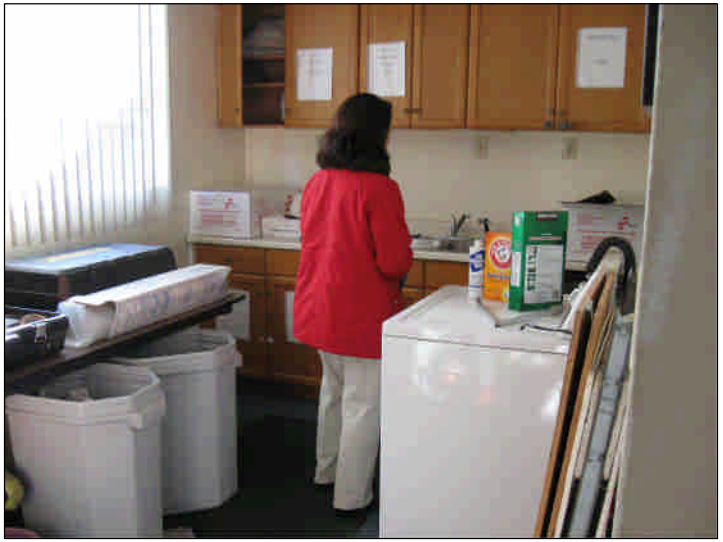
BASE APPEARANCE - LOCKER AREA



BASE APPEARANCE - RESTROOM



BASE APPEARANCE - CORRIDOR



BASE APPEARANCE - BREAK ROOM



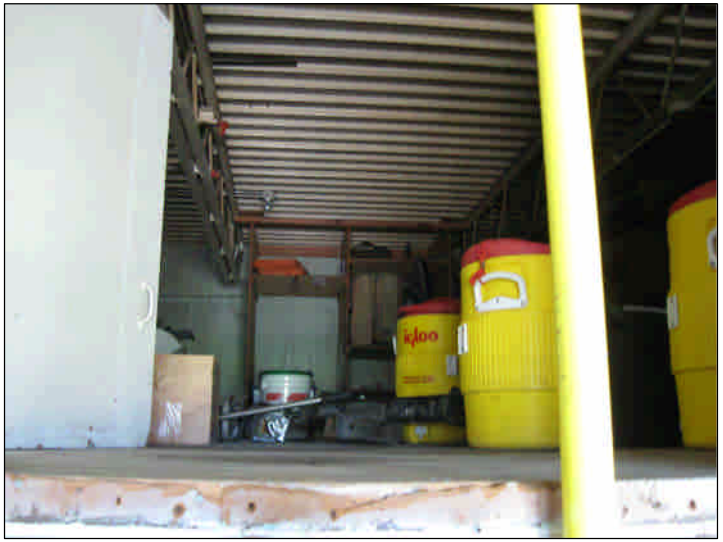
BASE APPEARANCE - GARAGE




BASE APPEARANCE - GARAGE




BASE APPEARANCE - GARAGE



BASE APPEARANCE - STORAGE ATTIC ABOVE GARAGE



BASE APPEARANCE - EXTERIOR STORAGE BOXES


BASE APPEARANCE - EXTERIOR STORAGE YARD


BASE APPEARANCE - EXTERIOR STORAGE YARD


BASE APPEARANCE - EXTERIOR STORAGE YARD



POWER PRO SHOP - INTERIOR STORAGE / OFFICE SPACE



POWER PRO SHOP - ATTIC IN STORAGE ROOM



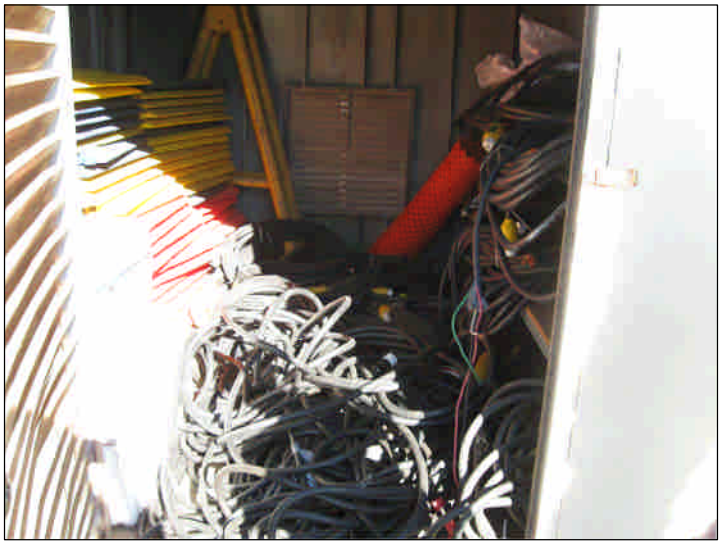
POWER PRO - INTERIOR STORAGE SPACE



POWER PRO SHOP - EXTERIOR VEHICLE/TRANSFORMER STORAGE AREA



POWER PRO SHOP - PARTS STORAGE



POWER PRO SHOP - CONDUIT STORAGE



POWER PRO - EXTERIOR VIEW



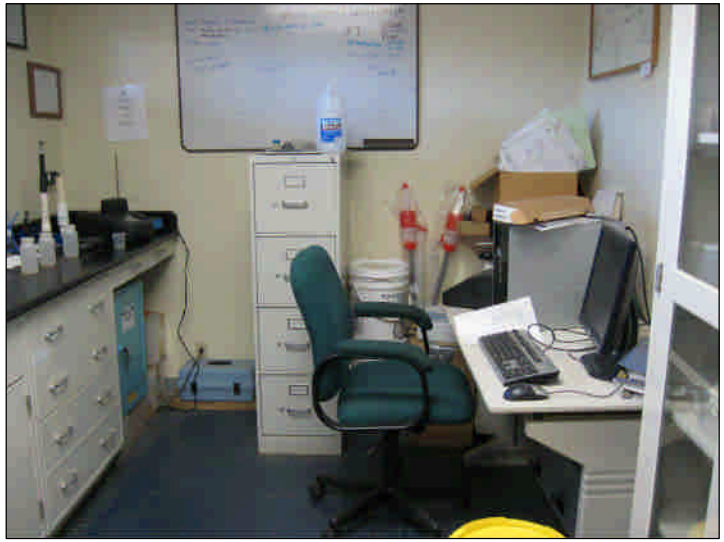
POWER PRO SHOP - EXTERIOR STORAGE YARD



WATER FUELS SHOP - ADMINISTRATION AREA



WATER FUELS SHOP - BREAK ROOM



WATER FUELS SHOP - OFFICE SPACE



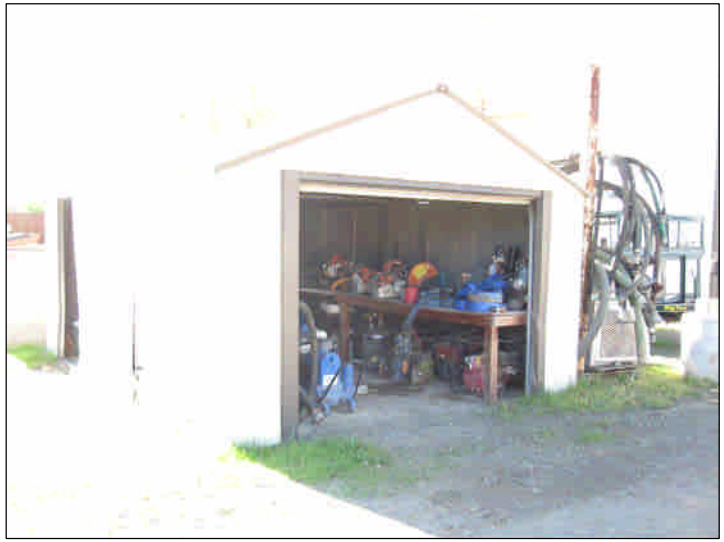
WATER FUELS SHOP - LOCKER AND STORAGE AREA



WATER FUELS SHOP - STORAGE AREA



WATER FUELS SHOP - COVERED PARKING AREA



WATER FUELS SHOP - EXTERIOR STORAGE BOX



WATER FUELS SHOP - EXTERIOR STORAGE YARD

# APPENDIX C

# Biological Assessment

# Biological Assessment Report and Findings

# Construction of Base Civil Engineer Maintenance Shops, Travis Air Force Base, Fairfield, California

**Contract No. FA4427-06-D-0100**
**Delivery Order No. 5019**

Submitted By:

## Travis Air Force Base, California

November 2011

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# Tables

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# Figures

Figure 1 – Location Map of Project Area
Figure 2 – Proposed BCE Complex Footprint
Figure 3 –Action Area and Existing Utilities
Figure 4 – Distribution of California Tiger Salamander
Figure 5 – Distribution of Vernal Pool Fairy Shrimp
Figure 6 – Distribution of Contra Costa Goldfields
Figure 7 – Conservation and Minimization Measures
.

# Attachments

Attachment A – Potential Ponded Areas at Travis AFB as presented by CH2M HILL, Figure 2 (2006)

## 1.0 INTRODUCTION

Aerostar Environmental Services, Inc. (AEROSTAR) conducted a Biological Assessment (BA) for the proposed construction of the Base Civil Engineering (BCE) complex at Travis Air Force Base (AFB) in Solano County, California. The proposed project is located in the mid-section of the western half of the 6,883 acre Travis AFB, approximately six miles east of the City of Fairfield urban limits, and seven miles south of the City of Vacaville (**Figure 1**). The assessment was conducted from October 2010 through August 2011. The purpose of the BA is to evaluate the potential effects of the action on listed and proposed species and designated and proposed critical habitat and to determine whether any such species or habitat are likely to be adversely affected by the action. This BA has determined that the proposed action would not affect federally and state listed species or critical habitat. The following are the assessment details which support the findings of this BA.

## 2.0 PURPOSE AND NEED OF THE PROPOSED ACTION

The purpose of the proposed action is to consolidate civil engineering functions into a modern and unified location which is expected to increase the ability of Travis AFB to meet its national defense mission and other missions while reducing adverse environmental impacts. This project is also expected to reduce the costs to meet Air Force (AF) missions. Examples of how this will minimize adverse environmental or potential environmental effects are (1) to reduce air emissions that presently occur due to the vehicular traffic between dispersed facilities, (2) the opportunity to design modern environmental safeguards into the new facilities, and (3) reducing energy consumption through building design efficiency as required for Leadership in Energy and Environmental Design (LEED) Silver Standard. Additionally, the majority of existing maintenance and engineering facilities are aged, crowded, are not designed for conserving energy use and require constant maintenance and repair.

## 3.0 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action would involve construction of the BCE complex in an area just north of Ellis Drive and west of Ragsdale Street. The footprint of the complex would permanently disturb approximately 7.4 acres of upland area that could eventually be offset by the demolition of existing facilities and the restoration of an unknown amount of open land. **Figure 2** presents the location of the footprint area of the BCE complex. The construction of the BCE complex would occur in the following three phases:

- Phase I: Construction of the BCE Maintenance Shops and Supply Warehouse for a total of 40,968 square feet (sf), including a separate building for Entomology and Fuels Facility (3,105 sf).
- Phase II: Construction of the Base Engineering Administration Building totaling of 29,050 sf.

- Phase III: Construction of the Pavement and Ground Facility, Covered Storage Facility and Explosive Ordinance (EOD) for a total of 44,924 sf.

The BCE complex would include four buildings with areas of 37,863 sf, 3,105 sf, 29,050 sf and 44,924 sf, for a combined total of approximately 114,943 sf. The parking lots and shop yards would be contiguous to the facility. The parking lot and shop yards would contain approximately 258,600 sf for a total of approximately 373,543 sf. The parking lot design would include structural components for storm water management. The BCE complex would have the following general design features:

- Reinforced concrete footings
- Concrete masonry unit walls
- Exterior insulated finish system
- Free-standing, seam metal roof
- Metal doors and frames
- Aluminum windows
- Concrete hardener floor finishes
- Solid-core doors
- Fire and intrusion alarm system
- Seismic components
- AT/FP components

The BCE complex would also be used for shops and warehouse for bulk storage and bins of materials needed to support Base operations. Materials stored at the facility would include machinery, portable generators and lights, building and maintenance supplies, and some heavy equipment.

Construction of the project will require typical construction equipment such as aerial lifts, air compressors, cement mixers, concrete and industrial saws, cranes, dumper/tenders, excavators, forklifts, graders, pavers, paving equipment, plate compactors, pumps, rollers, rubber tired loaders, skid steer loaders, surfacing equipment, sweepers and scrubbers, tractors/loaders/backhoes, water trucks, and welders. Equipment staging and laydown will be located within the boundary of the project or within existing nearby improved areas.

An approximate 50 feet by 50 feet bore pit would be prepared within the laydown boundaries of the project site to install an 8-15 inch sewer pipe. This sewer pipe will be installed beneath the ground to circumvent the wetlands located to north and northeast of the BCE complex. The pipe would connect into an existing 15 inch sewer line at a man hole that runs parallel to the west branch of Union Creek (see **Figure 3**).

## 4.0 DESCRIPTION OF THE ACTION AREA

The Action Area is defined in 50 Code of Federal Regulations (CFR) 402.02 as, “all areas to be affected directly or indirectly by the Federal action and not merely the

immediate area involved in the action." For the Travis AFB BCE complex, this includes all areas subject to the direct effects associated with construction which include the laydown areas, parking areas and the BCE complex buildings. All of these activities will encompass up to 19.95 acres of disturbance. Access to the BCE complex site will be directly from Ellis Drive. No temporary lanes will be needed to access this site from other areas of Travis AFB. Phase I will be prepared with the support of a laydown and staging areas anywhere within the area designated "Phase I Laydown" as presented in **Figure 3**. However, additional Phase I, II and III laydown and staging areas will occur within previously paved areas located west of Dixon Avenue where a portion of an alternate site (Alternative 2) was eliminated for the BCE complex site. Access to this site is directly from Dixon Avenue. **Figure 3** presents the Proposed Action Area and alternative project location site boundaries within Travis AFB.

Alternatives

Alternative 1 was chosen as the preferred alternative for the Proposed Action. This alternative was selected to minimize impacts to natural and environmental resources and to avoid impacts to federally listed species. Infrastructure such as water, sewer, gas and power are already in the area as seen in **Figure 3**. A summary comparison of environmental effects for Alternative 1 and Alternative 2 locations is provided in Table 4-1 of the Environmental Assessment (EA) for the BCE complex (Travis AFB 2011).

The site where the BCE complex will be constructed is comprised primarily of open manicured grass; however, the southwestern portion of the site was historically used for Building 755 and associated parking lots and fences. The building was demolished in November 2009 and the area is being used to site a groundwater remediation system. The Proposed Action area incorporates the Environmental Restoration Program (ERP) DP039; however, current designs for the Proposed Action avoid construction in the area where groundwater remediation is underway. Furthermore, buildings would not be constructed over the groundwater plume. Additional details of the groundwater plume and treatment programs are located in Section 3.4.3 of the EA for the BCE complex (Travis AFB 2011).

Upland areas of the project site (Alternative 1) provide habitat for the California ground squirrel (*Spermophilus beecheyi*) as indicated by the presence of multiple burrows and numerous squirrels. The site is comprised of mowed vegetation that may include slender wild oat, ripgut brome, soft brome, yellowstar thistle (*Centaurea solstitialis*), purplestar thistle (*Centaurea calcitrapa*), medusa head (*Taeniatherum caputmedusae*), coyote baccharis (*Baccharis pilularis*), valley gum plant (*Grindelia camporum*), Italian thistle (*Carduus tenuiflorus*) and various other weed species. Wildlife identified on-site included the ground squirrel and jack rabbits (*Lepus californicus*). No federally or state listed species were observed within this project site during monthly habitat surveys by the Natural Resource Manager or during the habitat surveys conducted in October and November 2010 by AEROSTAR biologists. More details describing the grassland can be found in Section 3.6.1.1 of the EA for the BCE complex (Travis AFB 2011).

Wetlands and Waters of the U.S North of the Action Area

Several small seasonal wetlands were delineated during October and November of 2010 just outside the north and northeast boundary of the project site (action area) adjacent to the channelized west branch of Union Creek (**Figure 3**).

These temporary wetlands were comprised of coyote thistle (*Eryngium vaseyi*), mowed grass species, yellowstar thistle, common bindweed (*Convovulus arvensis*), slimaster (*Aster subulatus*), valley gum plant, Fitch spike weed (*Hemizonia fittchii*), curley leaved dock (*Rumex crispus*), inland salt grass and *Geranium spp.* No protected species or species of concern were encounterd during the assessment of this area during monthly habitat surveys by the Natural Resource Manager or during the habitat surveys conducted by AEROSTAR biologists in October and November 2010. More details describing the wetlands and waters of the U.S. can be found in Section 3.5.4 of the EA for the BCE complex (Travis AFB 2011).

Base-wide and other surveys (see Table 2, most recently CH2M Hill 2006) have never found other federally listed species that use seasonal wetland habitats including: Boggs Lake hedge-hissop, Colusa grass, Cramptons tuctoria, San Joaquin Valley orcutt grass, the tadpole shrimp, the conservancy fairy shrimp, the California red-legged frog and the delta green ground beetle. (Note that while Ricksecker's Hydrochara and the vernal pool tadpole shrimp occur on geographically separate lands managed by Travis AFB, but have never been discovered on base.)

Coyotes and various bird species are known to be in the area, and river otters are rarely observed nearby in the west branch of Union Creek. The Western pond turtle (*Emys marmorata)* is presumed to inhabit Union Creek which is not included in the Action Area and is subject to California protection; however no impacts are expected (personal communication with Raymond Hasey CES/CEAN).

## 5.0 STATUS OF SPECIES IN THE ACTION AREA

### 5.1 Background and Technical Support Studies Relevant to the Action Area

Travis AFB is located within the Solano-Colusa vernal pool region and the Greater Jepson Prairie Ecosystem, which is a geographical area defined by landscape and hydrological features that support a complex of vernal pools and a variety of associated endemic and special-status plants and animal species. This BA utilized a variety of information relevant to the Action Area and included: technical support studies, literature review, California Natural Diversity Database (CNNDB) queries, and the U.S. Fish and Wildlife Service (USFWS) Ecological Services online queries. **Table 1** lists technical support studies reviewed. From these data and documents a list of protected species with potential to occur near the Action Area is presented in **Table 2**.

A review of the critical habitat areas provided by the USFWS Geographical Information System (GIS) database (http://www.data.gov/raw) was conducted and revealed that the Action Area is not located within areas designated as critical habitat for any of the federally listed species in **Table 2**.

**TABLE 1-**
**Technical Support Studies within or near the Action Area**

| Study Name | Date of Study | Study Area | Species of Interest | Summary of Findings as it Relates to the Action Area |
|---|---|---|---|---|
| Conservation and Management of California Tiger Salamanders *(Ambystoma californiense)* at Travis Air Force Base (Johnson and Shaffer, in press) | 2010 | Travis AFB (Base-wide) | California tiger salamander | Evaluation of suitable breeding habitat. No suitable breeding habitat identified within the Action Area. |
| Biological Opinion for the Travis South Gate Improvement Project, Solano County, California, USFWS, May 2010 | 2010 | Travis AFB-Southwest of the BCE complex site | California tiger salamander Vernal pool fairy shrimp, tadpole shrimp, conservatory shrimp and Contra Costa goldfields | No Species of interest were located within the Action Area |
| Biological Opinion for the Proposed Travis AFB JP-8 Pipeline and Terminal Project, Solano County, California, USFWS, Oct. 29, 2009 | 2009 | Travis AFB-Northwest of Proposed BCE complex site | California tiger salamander Vernal pool fairy shrimp, tadpole shrimp, conservatory shrimp and Contra Costa goldfields | No Species of interest were located within the Action Area |
| Summary of Rare, Threatened,and Endangered Species Associated with Seasonal Wetlands (CH2M HILL, 2006) | 2006 | Travis AFB (Base-wide) | Special-status species | Current distributions of special-status species. No federal or state protected species are located within the Action Area |
| Results of Special Status Vernal Pool Invertebrate Surveys at Travis Air Force Base (EcoAnalysts, 2006)<br><br>Results of Special Status Vernal Pool Invertebrate Surveys at Travis Air Force Base (EcoAnalysts, 2005) | Wet season 2005 – 2006<br><br>Wet season, 2004 – 2005 | Travis AFB (Base-wide) | Delta green ground beetle, Ricksecker's hydrochara, Vernal pool fairy shrimp, Vernal pool tadpole shrimp, Conservancy fairy shrimp | Only vernal pool fairy shrimp were found on the Base. No vernal pool fairy shrimp were identified within the Action Area. |
| California Tiger Salamander Habitat Assessment at Travis AFB (Rana Resources, 2005) | 2005 | Travis AFB (Base-wide) | California tiger salamander | No seasonal wetlands within the Action Area are suitable breeding areas |
| *Vernal Pool and Endangered Species Mitigation Plan*. Prepared by Sharon K. Collinge, University of Colorado, Boulder, CO, for the 60th CES. July. Travis AFB, CA | 1999 | Travis AFB-Northwest of Proposed BCE complex site | Contra Costa goldfields | No Contra costa goldfields are located within the Action Area |
| Vernal Pool Resources at Travis AFB (Biosystems Analysis, 1994) | 1994 | Travis AFB (Base-wide) | Special Status Species | Wetlands inventory and rare plant survey. No wetlands or rare plants identified within the Action Area |
| Assessment of Special Status Plant and Animal Species at Travis AFB, Solano County, California, Phase II Survey (Biosystems Analysis, 1993) | 1993 | Travis AFB (Base-wide) | Special Status Species | Wetlands inventory and rare plant survey. No wetlands or rare plants were identified in the Action Area |

**TABLE 2**
**List of Protected Species and Species of Concern that may be located within or near the Action Area**

| Scientific Name | Common name | Protection Status | Presence in Action Area | Critical Habitat Present? |
|---|---|---|---|---|
| **Plants** | | | | |
| *Gratiola heterosepala* | Boggs Lake hedge-hyssop | CE/CNPS 1B.2 | No | NA |
| *Neostapfia colusana* | Colusa grass | FT/CE/CNPS 1B.1 | No | No |
| *Lasthenia conjugens* | Contra Costa goldfields | FE/CNPS 1B.1 | No | No |
| *Tuctoria mucronata* | Crampton's tuctoria | FE/CE/CNPS 1B.1 | No | No |
| *Orcuttia inaqualis* | San Joaquin Valley Orcutt Grass | FT/CE/CNPS 1B.1 | No | No |
| *Trifolium amoenum* | Showy Indian clover | FE/CNPS 1B.1 | No | No |
| **Animals** | | | | |
| *Athene cunicularia* | Burrowing owl | CSC | Potential | NA |
| *Rana aurora draytonii* | California red-legged frog | FT | No | No |
| *Ambysoma californiense* | California tiger salamander | FT | No | No |
| *Emys marmorata* | Western pond turtle | CSC | No | NA |
| *Brachinecta conservatio* | Conservancy fairy shrimp | FE | No | No |
| *Elaphrus viridis* | Delta green ground beetle | FT | No | No |
| *Thamnophis couchi gigas* | Giant garter snake | FT/ST | No | No |
| *Desmocerus californicus dimorphus* | Valley elderberry longhorn beetle | FT | No | No |
| *Branchinecta lynchi* | Vernal pool fairy shrimp | FT | No | No |
| *Lepidurus packardi* | Vernal pool tadpole shrimp | FE | No | No |
| *Linderiella occidentalis* | California fairy shrimp | Not State or Federally Listed | No | No |

NA = Not Applicable
CE = California Endangered
CNPS = California Native Plants Ranking System
CSC = California Species of Concern
FE = Federal Endangered
FT = Federal Threatened
ST = Special Status
1B.1 = Rare or endangered in California and elsewhere; seriously threatened in California
1B.2 = Rare or endangered in California and elsewhere; fairly threatened in California

## 5.2 Species Considered for Analysis

Based on the review of technical support documents, recent BAs and Biological Opinions (BOs) relevant to the Action Area, CNDDB and USFWS online databases, none of the federally protected species identified in **Table 2** may be affected by the Proposed Action. However, federally protected species habitats that may be present near the Action Area were analyzed in an effort to support the data review and determination of **no effect**:

- California tiger salamander (*Ambystoma californiense*) (Threatened)
- Vernal pool fairy shrimp (*Branchinecta lynchi*) (Threatened)
- Contra Costa goldfields (*Lasthenia conjugens*) (Endangered)

Review of the literature also revealed that only vernal pool fairy shrimp have never been found on the Base. No vernal pool fairy shrimp were identified within the Action Area.

### 5.2.1 Status of the California Tiger Salamander in the Action Area

An assessment of potential California tiger salamander breeding and estivation habitat was conducted on Travis AFB during April and May, 2005 (Rana Resources 2005). All wetlands that had the 90 day hydroperiod to require larval surveys as potential California tiger salamander breeding habitat were determined and then had protocol larval surveys. (See **Attachment A**). Twenty seven wetlands were evaluated by Rana Resources in 2005 and eight were determined to have the required hydroperiod. Subsequently, these eight ponds had larval surveys conducted in 2005. Jarrett and Shaffer conducted an additional two seasons of protocol level larval surveys of these wetlands in 2008-2010. They were again surveyed with the same negative result in 2008-2010. California tiger salamander upland habitat exists at the Castle Terrace area, and at the two off-Base sites to the south and may exist relative to the known breeding site north of the Base. None of these are within a 1.3 mile radius of this Action Area. **Figure 4** presents the distribution of California tiger salamander occurrences recorded by the USFWS (2010), EcoAnalysts (2005) and BioSystems (1993-1994).

Upland burrows created by ground squirrels would present suitable habitat within the proposed BCE complex site for the California tiger salamander; however, the recorded occurrence of the salamander is not within the 1.3 mile migration range.

Species Listing and Status Description

The California tiger salamander was listed as threatened throughout its range on August 4, 2004 (69 CFR 47211-47248). The USFWS decision to downlist the Sonoma and Santa Barbara populations from endangered to threatened was reversed in U.S. District Court on August 19, 2005. Therefore, the Sonoma and Santa Barbara populations are listed as endangered. On August 23, 2005, critical habitat was designated in 19 counties for the central population, totaling 199,109 acres (70 CFR 49379).

The California tiger salamander is an amphibian in the family Ambystomatidae, endemic to California and native to Solano County. This large terrestrial salamander has a broad, rounded snout and white or pale yellow spots or bars on a black background on its back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. The salamander's small eyes protrude from its head and have black irises (Jennings and Hayes, 1994). Males can be distinguished from females, especially during the breeding season, by their swollen cloacae, a common chamber into which the intestinal, urinary, and reproductive canals discharge. They also have more developed tail fins. Adult males are slightly larger than females (8 inches and less than 7 inches, respectively) (Stebbins, 1951). Juvenile salamanders are 1.7 to 2.8 inches from the tip of the snout to the rear of the vent and have the same coloration patterns as adults (as cited in Jennings, 2005). Larval salamanders range from 0.4 to 6.6 inches long with a paleyellow, tan, or dark colored belly (Anderson, 1968). After two weeks from emergence, a larval salamander will have prominent external gills and legs (Storer, 1925). Eggs measure 0.13 to 0.21 inch (Storer, 1925).

Life History and Ecology

Breeding of California tiger salamanders has been observed following the onset of warm rains (November through late December) (Storer, 1925; Barry and Schaffer, 1994). Based on observations in the 1990s, unseasonably cold rains or drought periods in the wet season may inhibit breeding activity (as cited in Jennings, 2005). Males and females nocturnally migrate up to one mile or more from subterranean refugia to egg deposition sites, which include vernal pools with substantial hydroperiods (Austin and Schaffer, 1992; Loredo, et al., 1996; Twitty, 1941; Anderson, 1968). Males generally precede females during the breeding season by 1 or 2 weeks (Loredo, et al., 1996). Females normally deposit eggs on vegetation or detritus in shallow margins of pools (Storer, 1925), which may number up to 350 eggs per season, although Jennings (2005) reports that 100 to 200 eggs are more typical. Soon after spawning, adult salamanders will return to aestivation habitats (small mammal burrows), where they spend approximately 9 to 10 months until the next winter rains (Barry and Schaffer, 1994; Loredo, et al., 1996; Jennings, 2005). Associated upland habitat containing underground refugia is essential for the survival of adult California tiger salamanders and juveniles that have recently undergone metamorphosis. For the majority of their life cycle, California tiger salamanders depend on upland habitats in these underground (or covered and concealed) refugia where they are less susceptible to desiccation. The ability of California tiger salamanders to move freely across the landscape in search of breeding ponds is essential in maintaining gene flow and recolonization of sites that are temporally extirpated and is essential in preserving the California tiger salamander's population structure. Salamander embryos hatch approximately 2 to 4 weeks after egg deposition, and the aquatic larvae require a 10- to 12-week metamorphosis period before developing into the juvenile form. Following metamorphosis (normally early May through July), juveniles emigrate from drying breeding ponds in mass group migrations (Holland, et al., 1990). Larvae require significantly more time to transform into juvenile adults than other amphibians, such as the western spadefoot toad (*Scaphiopus hammondii*) and the Pacific tree frog (*Pseudacris regilla*). Sexual maturity is reached typically after 2 years,

although longer periods may be required when juvenile salamanders experience stress through drought or seasonal rainfall (Schaffer, et al., 1993).

Distribution and Threats

The species is restricted to grasslands and low (under 1,500 feet above mean sea level) foothill regions where lowland aquatic sites are available for breeding. They prefer natural ephemeral pools, ponds that mimic them (stock ponds that are allowed to go dry), or ponds that are specifically managed under a moist soil management regime (wet season flooding and dry season drawdowns). This species is restricted to California and does not overlap with other species of tiger salamander. California tiger salamanders are restricted to vernal pools and seasonal ponds, including many constructed stockponds, in grassland and oak savannah plant communities from sea level to about 1,500 feet above mean sea level in central California. In the Coastal region, populations are scattered from Sonoma County to Santa Barbara County, and in the Central Valley and Sierra Nevada foothills from Yolo to Kern Counties. The Sonoma population appears to have been geographically isolated from the remainder of the California tiger salamander population by distance, mountains, and major waterway barriers for more than 700,000 years.

The primary cause of the decline of California tiger salamander populations is the loss and fragmentation of habitat from human activities and the encroachment of non-native predators. Federal, state, and local laws have not prevented past and ongoing losses of habitat. The estimated seven genetic populations of this species have been significantly reduced because of urban and agricultural development, land conversion, and other human-caused factors. Reduction of ground squirrel populations to low levels through widespread rodent control programs may reduce availability of burrows and adversely affect the California tiger salamander. Poison typically used on ground squirrels is likely to have a disproportionately adverse effect on California tiger salamanders, which are smaller than the target species and have permeable skins. Use of pesticides, such as methoprene, in mosquito abatement may have an indirect adverse effect on the California tiger salamander by reducing the availability of prey. Non-native subspecies of the tiger salamander have been imported into California for use as fish bait. The introduced salamanders may out-compete the California tiger salamanders, or interbreed with them to create hybrids that may be less adapted to the California climate or are not reproductively viable past the first or second generations. Automobiles and off-road vehicles kill migrating California tiger salamanders, and contaminated runoff from roads, highways, and agriculture may adversely affect them.

### 5.2.2 Status of the Vernal Pool Fairy Shrimp in the Action Area

Vernal pool invertebrate investigations have revealed that the only listed crustacean is the vernal pool fairy shrimp (*Branchynecta lynchi*). Protocol-level surveys for vernal pool branchiopods of the seasonal wetlands within the project area were conducted as part of Base-wide vernal pool surveys during two wet seasons (2004 and 2005) by EcoAnalysts. Additionally, no invertebrate fauna were observed within this project site during monthly habitat surveys by the Natural Resource Manager or during the habitat surveys conducted

in October and November 2010 by AEROSTAR biologists. A review of CNDDB in 2008 and 2010 (CH2MHILL 2009, CH2MHILL 2010) present vernal pool fairy shrimp occurrences 250 feet west of the Proposed Action Area. **Figure 5** presents the known occurrences and distribution of vernal pool fairy shrimp.

Species Listing Status and Description

The vernal pool fairy shrimp (*Branchinecta lynchi)* was listed as endangered on September 19, 1994 (59 CFR 48136). Critical habitat was designated on August 6, 2003 (68 CFR 46683), and subsequently revised with critical habitat unit designations on February 10, 2006 (71 CFR 7117). USFWS' *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* includes this species (USFWS, 2005).

The vernal pool fairy shrimp is a small crustacean in the Branchinectidae family. Fairy shrimp are aquatic species in the order Anostraca. They are characterized by the presence and size of several mounds on the male's second antennae and by the female's short, pyriform brood pouch (USFWS, 2005). The species range from 0.4 to 1.0 inch (Eng, et al., 1990; USFWS, 2005). Fairy shrimp feed on algae, bacteria, protozoa, rotifers, and bits of detritus.

Life History and Ecology

Vernal pool fairy shrimp are adapted to ephemeral conditions characterized by vernal pool habitats. Helm (1998) determined that this species reaches sexual maturity in an average of 41 days, but in as few as 18 days at optimal conditions. Life cycles range from 63 to 147 days, demonstrating that growth rates depend on water temperature, which can vary greatly. Vernal pool fairy shrimp co-occur with other vernal pool crustacean species, including Conservancy fairy shrimp and vernal pool tadpole shrimp (USFWS, 2005).

Distribution and Threats

The CNDDB reports 23 occurrences of vernal pool fairy shrimp in Solano County (CNDDB, 2010). In 1994, Biosystems Analysis identified adult vernal pool fairy shrimp at three locations and fairy shrimp cysts at two locations in the Landfill 2 area. Adult fairy shrimp were identified at one location in the Travis AFB fire training area. Adult fairy shrimp and cysts were also found at two locations in the grazing area south of the former Aero Club. The fairy shrimp cysts were keyed only to genus but were assumed to be vernal pool fairy shrimp (Biosystems Analysis, 1994). During the abbreviated 1994 wet season surveys, Biosystems found adult vernal pool fairy shrimp in a drainage channel along the abandoned railroad track on the north side of Hangar Avenue.

During the 2004-2005 protocol-level surveys conducted by EcoAnalysts, vernal pool fairy shrimp were identified at eight locations on the Base (EcoAnalysts, 2005). Most occurrences were on the west side of the Base. Low numbers of adult vernal pool fairy shrimp were observed in five vernal pools west of Union Creek. Two large populations were observed in a roadside pool and a drainage ditch along the abandoned railroad tracks on the north side of Hangar Avenue, east of Union Creek. A few adults were also

observed in a wet depression along the railroad right-of-way at Meridian Road and in one pool north of runway 03R/21L.

In the Solano-Colusa Vernal Pool Region, vernal pool fairy shrimp are reported on the greater Jepson Prairie, which includes the Wilcox Ranch, as well as near Vacaville and Dixon in Solano County. The historical distribution of this species is not known (USFWS, 2005); however, the distribution of vernal pool habitats in the areas where this species is known to occur was once more continuous and larger than it is today (Holland, 1998). Vernal pool fairy shrimp likely once occupied vernal pool habitats throughout a large portion of the Central Valley and southern coastal regions of California (USFWS, 2005). Holland (1978) estimated that nearly 4 million acres of vernal pool habitat existed in the Central Valley prior to intensive land use practices of the mid-1800s. In the Solano-Colusa Vernal Pool Region, populations of this species are threatened by land development, particularly near Fairfield and Vacaville, as well as invasive predator fish introductions. This species is also subject to general threats of vernal pool impacts discussed in **Section 3**.

### 5.2.3 Status of the Contra Costa Goldfields in the Action Area

The majority of the Contra Costa goldfields occur in the northwestern portion of the Base (LSA and Associates 2010) over 3000 feet from the Proposed Action Area boundary. However, Contra Costa goldfields (*Lasthenia conjugens*) have been found in seasonal wetlands north of the Action Area approximately 220 feet north of the Proposed Action Area boundary (S.K. Collinge 1999; CH2MHILL 2009; CH2MHILL 2010; R. A. Hasey 2010, 2011). **Figure 6** presents the known occurrences and distribution of Contra Costa goldfields. Field assessments conducted during October 2010–November 2010, and monthly presence or absence surveys conducted by the Natural Resource Manager during April and May 2011, no Contra Costa goldfields were found within the closest seasonal wetland to the north where the species was found in a prior survey. This endangered plant however may well be present as seeds since it may germinate in some but not all years.

Description Listing Status and Description

Contra Costa goldfields was federally listed as endangered on June 18, 1997 (62 FR 33029) and is a CNPS List 1B species. This species is an annual herb in the sunflower tribe (Heliantheae) of the sunflower family (Asteraceae). Individual plants range from approximately 10 to 40 centimeters (cm) tall. Being in the sunflower family (Asteraceae), the characteristic yellow flower of this plant actually consists of many flowers (numerous disk flowers and 6 to 13 ray flowers) which combined are referred to as a radiate head.

Life History Ecology

The blooming period ranges from March through June, but appears to be extremely dependent on environmental conditions (i.e. rainfall, edaphic conditions etc.) (CNDDB 2008, CNPS 2007). Contra Costa goldfields grow in vernal pools, swales, and other

depressions in open grassland and woodland communities, often in alkaline soils but also under a wide variety of moisture, soil, and salinity conditions.

Distribution and Threats

Historically, Contra Costa goldfields were found in several counties surrounding the San Francisco Bay and along the coast, from Santa Barbara County to Mendocino County. However, several of the historic occurrences, such as the occurrences in Santa Barbara and Mendocino Counties, are extirpated. Currently, this species is known from only 15 populations, with the largest number of populations occurring in the Fairfield-Suisun area in Solano County. Other presumably extant populations are in Alameda (1), Contra Costa (1), Napa (1), Marin (1), and Monterey (2) counties. Within Solano, Contra Costa goldfields have been designated into seven core populations in order to address issues related to potential genetic variations between various locations in the County (LSA Associates, Inc. 2010). These core area boundaries were based in part on watershed divides and other physical barriers. The majority of these core areas are located around the periphery of, or within, the existing and proposed developed lands of the cities of Fairfield and Suisun City. Thus, the major threat to populations within the County is loss of habitat to urban development. Additional conservation issues include declining population numbers from lack of proper habitat management, habitat degradation posed by indirect effects of urban development (i.e. changes in hydrology and loss of pollinator populations), invasive species competition, and potential changes in climate.

# 6.0 EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

## 6.1 Direct Effects

Direct effects occur at the time of a Proposed Action (USFWS, 1998). A Proposed Action may cause a temporary effect or a permanent effect, depending on the action. For this project, direct effects are limited to activities resulting from construction of the BCE complex. No direct effects would occur to California tiger salamander, vernal pool fairy shrimp, or Contra Costa goldfields. Directional boring will avoid seasonal wetlands, and implementation of BMPs in accordance with the current Storm Water Pollution Prevention Plan (SWPPP) (2010) and Bay Area Air Quality Management District (BAAQMD) guidance Best Management Practices (BMPs) would keep equipment, construction workers and sediment from leaving the construction site.

## 6.2 Indirect Effects

Indirect effects are defined by the Endangered Species Act (ESA) as "…those effects that are caused by, or will result from the Proposed Action later in time, but are still reasonably certain to occur..." (50 CFR 402.02). Construction of the BCE complex will increase the amount of impervious surface at the site, decreasing stormwater infiltration rates and increasing the quantity of stormwater runoff in the immediate area. The Proposed Action will increase the Base's total impermeable surface by approximately 322,344 square feet (7.4 acres). During construction, appropriate BMPs in accordance

with the Base SWPPP will be installed for perimeter control of the construction area so that sediment laden rainwater will not leave the site. Temporary sediment traps and dewatering structures would be installed within the construction site as determined by the SWPPP. The design of the BCE complex storm water conveyance system would comply with Section 438 guidance of Executive Order (EO) 13514 (October 2009). These methods require the Department of Defense (DoD) installations under the Unified Facilities Criteria (UFC 3-210-0) to use Low Impact Development (LID) techniques that would reduce impacts to surface waters. No indirect effects from the construction and operation of the BCE are expected to occur to listed species or wetlands.

### 6.3 Cumulative Effects

Cumulative effects are defined by the ESA as "those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the area of the federal action subject to consultation" (50 CFR 402.02). No future Non-federal actions are projected to occur within the Action Area that would affect listed species. Therefore cumulative impacts to California tiger salamander, vernal pool fairy shrimp and Contra Costa goldfields are not expected.

## 7.0 CONSERVATION MEASURES

### 7.1 Mitigation

The Proposed Action does not include compensatory mitigation because there will be no direct or indirect impacts to listed species based on this analysis.

### 7.2 Conservation and Minimization Measures

The superintendent of construction or designee will be responsible for implementing these Conservation and Minimization measures stipulated in this section of the BA and shall be the point of contact for the project. The Resident Officer in Charge of Construction or their designee will maintain a copy of these measures that are required to be implemented by the project SWPPP and BAAQMD guidelines. These conservation measures should be on site whenever construction is taking place. Their name and telephone number will be provided to the Travis AFB Contracting Officer at least 30 days prior to the start of construction. Prior to groundbreaking, the resident officer in Charge of Construction will submit a letter to the Travis AFB Contracting Officer verifying that they possess a copy of the Conservation and Minimization Measures and will comply with its requirements.

Measures during construction will be implemented to keep equipment, construction workers and sediment from leaving the construction site and staging areas. These measures include:

1. BMPs would be implemented in accordance with the construction permit and Storm Water Pollution Prevention Plan (SWPPP 2010). These BMPs would entail such measures as installing a double walled silt fence around the perimeter of the project boundary (Action Area) so that the project boundary is clearly marked to keep equipment from leaving the project Action Area. Other measures used for perimeter controls in conjunction with silt fencing may include earthen berms. Access to this site would be only from Ellis Drive.

2. This project will not involve sewer access outside of the Action Area. To keep activities associated with the sewer line from affecting seasonal wetlands located to the north and northeast of the BCE complex, the wetlands will be enclosed by silt fence material (approximately 10-20 feet from the edge) that may be flagged in a way to alert that the area is not to be entered. These fences may be dismantled once the sewer line work is completed and as long as the laydown area is encompassed by silt fencing.

3. The Natural Resource and Storm Water Managers will inspect the site as necessary and will conduct a pre-construction survey no sooner than 15 days prior to the initial ground disturbance.

4. All construction activity will be confined to the laydown areas and along the sewer line which will be clearly defined by the temporary silt fence and appropriate flagging. Equipment or personnel will not be allowed to be outside of the Action Area or to have impacts offsite without authorization from the Chief, Environmental (60 AMW CES/CEAN).

5. Maps showing where minimization measures and avoidance measures are being implemented will be included as part of SWPPP (see **Figure 7** for a copy of this map) and provided to the Superintendent of construction.

6. Access to the BCE complex site will only be from Ellis Drive. During sewer connection activity, access will be granted along the sewer main next to the west branch of Union Creek as long as the wetlands are clearly marked and protected with silt fence. The staging areas will be limited to the permanent impact areas within the Action Area during the wet season. To minimize ground disturbance to temporary impact areas, construction equipment and vehicles will remain within areas for permanent disturbance whenever the soil is moist enough that tracks are left.

7. During this project all trash that may attract wildlife will be in a closed container, removed every evening, and then disposed of properly. All workers will ensure their food related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed at least once per day from the entire project site.

8. All equipment will be kept in approved work areas or travel corridors, or in approved staging and storage areas.

9. Fires will not be permitted. Any smoke or open flame will immediately be reported to the Contracting Officer. A fire extinguisher is required in every field truck and will remain in good operating order and readily available. Smoking will only be allowed in approved smoking areas.

10. Feeding or disturbing wildlife will not be permitted.

11. If pesticides are used for invasive species control or other appropriate purposes this will comply with all applicable regulations and the Integrated Natural Resources Management Plan (INRMP) and the Integrated Pest Management Plan.

12. A qualified biologist will ensure that the spread or introduction of invasive exotic plant species is avoided to the maximum extent possible in accordance with the Base INRMP. Where practicable, invasive exotic plants in the project areas will be removed.

13. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 250 feet from seasonal wetlands. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

14. Fluid spill and containment materials will be readily available.

15. Erosion control measures will be utilized throughout all phases of construction and operation where sediment run-off from exposed slopes threatens to enter waters of the U.S. At no time will silt laden run-off be allowed to enter ditches, and Union Creek, or be placed where it may enter adjacent seasonal wetlands.

16. The AF will prepare an erosion control and restoration plan to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities. The plan will include all necessary local jurisdiction requirements regarding erosion control and will implement BMPs for erosion and sediment control as required. Only appropriate native plant material will be used for erosion control and restoration.

17. Equipment or personnel will not be allowed to be outside of the Action Area or to have impacts offsite without authorization from the Chief of Environmental (60 AMW CES/CEAN).

18. No soil may be transported outside of the Action Area without written authorization from the Environmental Flight.

19. The contractor will wash down all vehicles and equipment that have been operated off roads before they enter the base to prevent the introduction of invasive plants.

20. The AF will submit to the Regional Water Quality Control Board (RWQCB) a notice of intent to discharge storm water before construction and /or operation activities begin and will develop and implement a SWPPP as required by the conditions of the National Pollution Discharge Elimination System (NPDES) permit. The AF will prepare a SWPPP that identifies BMPs for discharges and groundwater disposal from dewatering operations associated with construction. The SWPPP will identify how and where these discharges would be disposed of during construction and operations.

## 8.0 FINDINGS

Effects of the Proposed Action on listed species were evaluated based on the following definitions (50 CFR 402.02):

**No effect** – the appropriate conclusion where the Proposed Action will not affect listed species or critical habitat.

**Not likely to adversely affect** – the appropriate conclusion when effects on listed species are expected to be beneficial, insignificant, or discountable. Beneficial effects are contemporaneous positive effects without adverse effects to the species. Insignificant effects relate to the size of the impact and should not reach the scale where take occurs. Discountable effects are those effects unlikely to occur.

**Likely to adversely affect** – the appropriate conclusion if an adverse effect to listed species may occur as a direct or indirect result of the Proposed Action (including interdependent and interrelated actions), and the effect is not discountable or insignificant.

**Jeopardize proposed species / adversely modify critical habitat** – the appropriate conclusion if an action will reasonably be expected to directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species by reducing the reproduction, numbers, or distribution of that species, or by modifying critical habitat to the point of preventing the recovery of a listed species.

Based on the above definitions and on the species status descriptions relative to the Proposed Action, this BA concludes the following:

- The Proposed Action will **not affect** the California tiger salamander because NONE ARE PRESENT. No suitable breeding habitat is located within the proposed action

and known location occurrences of the salamander are greater than 1.3 miles distant from the proposed action.

- The Proposed Action will **not affect** vernal pool fairy shrimp, or other similar invertebrate species because NONE ARE PRESENT. The closest recorded occurrence is 250 feet west of the Proposed Action Area boundary.

- The Proposed Action will **not affect** the Contra Costa goldfields because NONE ARE PRESENT. The closest recorded occurrence is 220 feet north of the Proposed Action Area boundary.

Formal consultation with the USFWS is required if an action is likely to "adversely affect" listed species and designated critical habitat (USFWS & NMFS Section 7 Consultation Guide at http://www.fws.gov/midwest/Endangered/section7/ba_guide.html). This BA has determined that the Proposed Action will not affect listed species, and designated and proposed critical habitat. Therefore, since the determination is "**No Effect**", Travis AFB may proceed without consultation with USFWS {50 CFR CH IV (10-1-08) Subpart B: 402.12 (k)}.

Approved:_____

Name: _____

Title: _____

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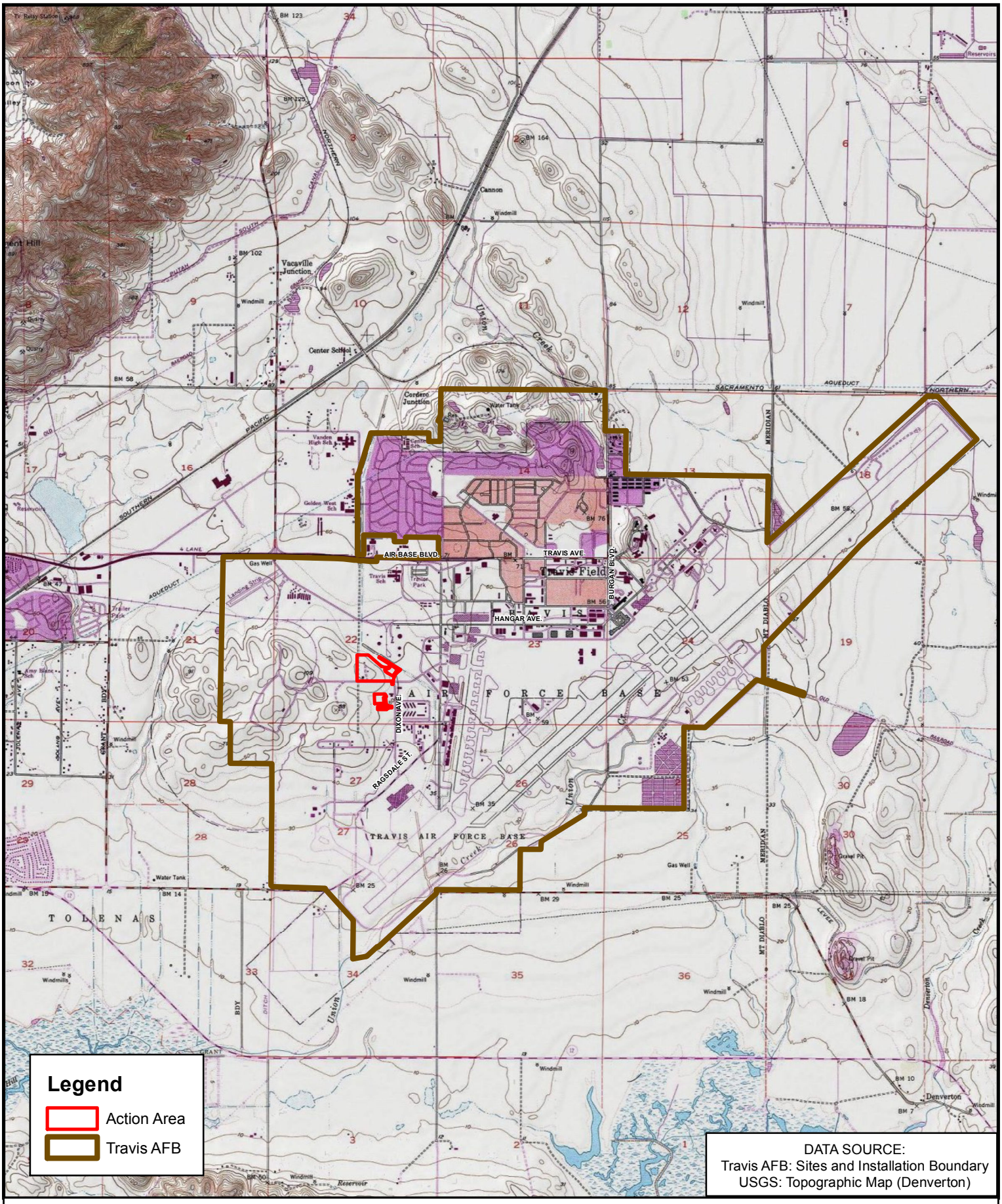



**FIGURE 1 - LOCATION MAP OF PROJECT AREA**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

**Base Civil Engineering Complex**
**Biological Assessment**
**Travis Air Force Base, California**

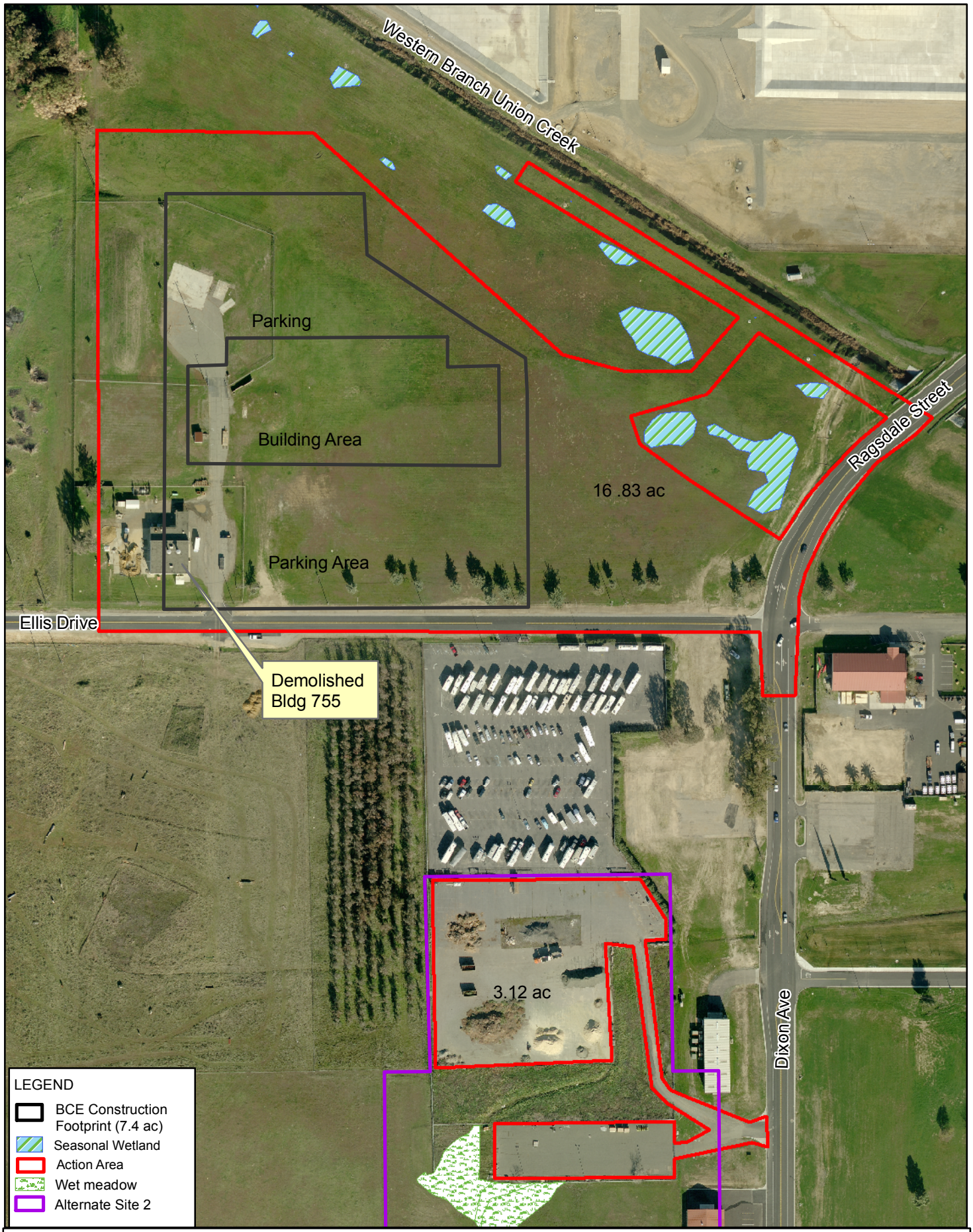



**FIGURE 2 - PROPOSED BCE COMPLEX FOOTPRINT**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N W E S

120 60 0 120 240 360 480 Feet

Base Civil Engineering Complex
Biological Assessment
Travis Air Force Base, California

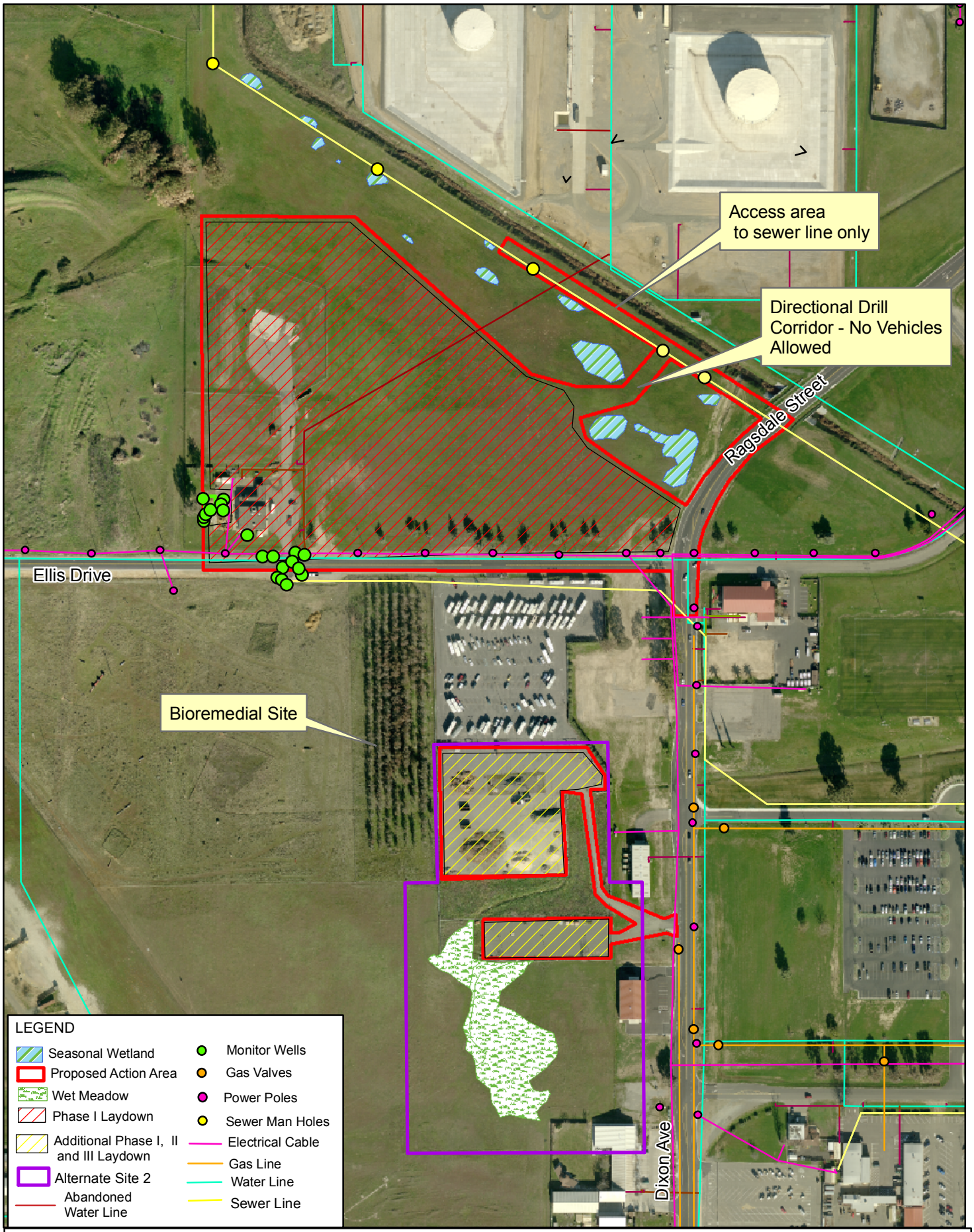



**FIGURE 3 - ACTION AREA AND EXISTING UTILITIES**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N W E S 180 90 0 180 360 540 720 Feet

Base Civil Engineering Complex
Biological Assessment
Travis Air Force Base, California

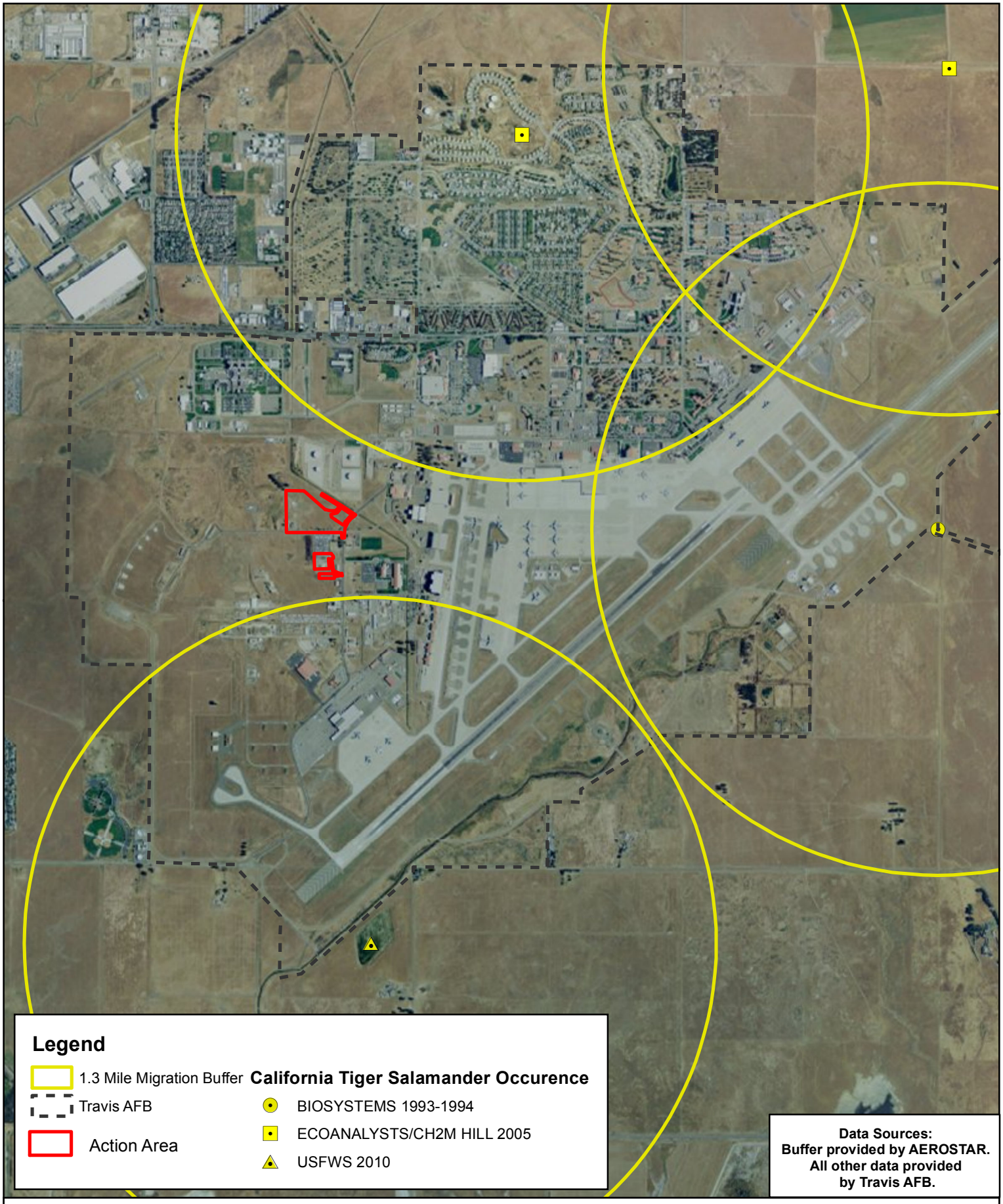



**FIGURE 4 - DISTRIBUTION OF CALIFORNIA TIGER SALAMANDER**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 1,000 2,000 4,000 Feet

**Base Civil Engineering Complex**
**Biological Assessment**
**Travis Air Force Base, California**

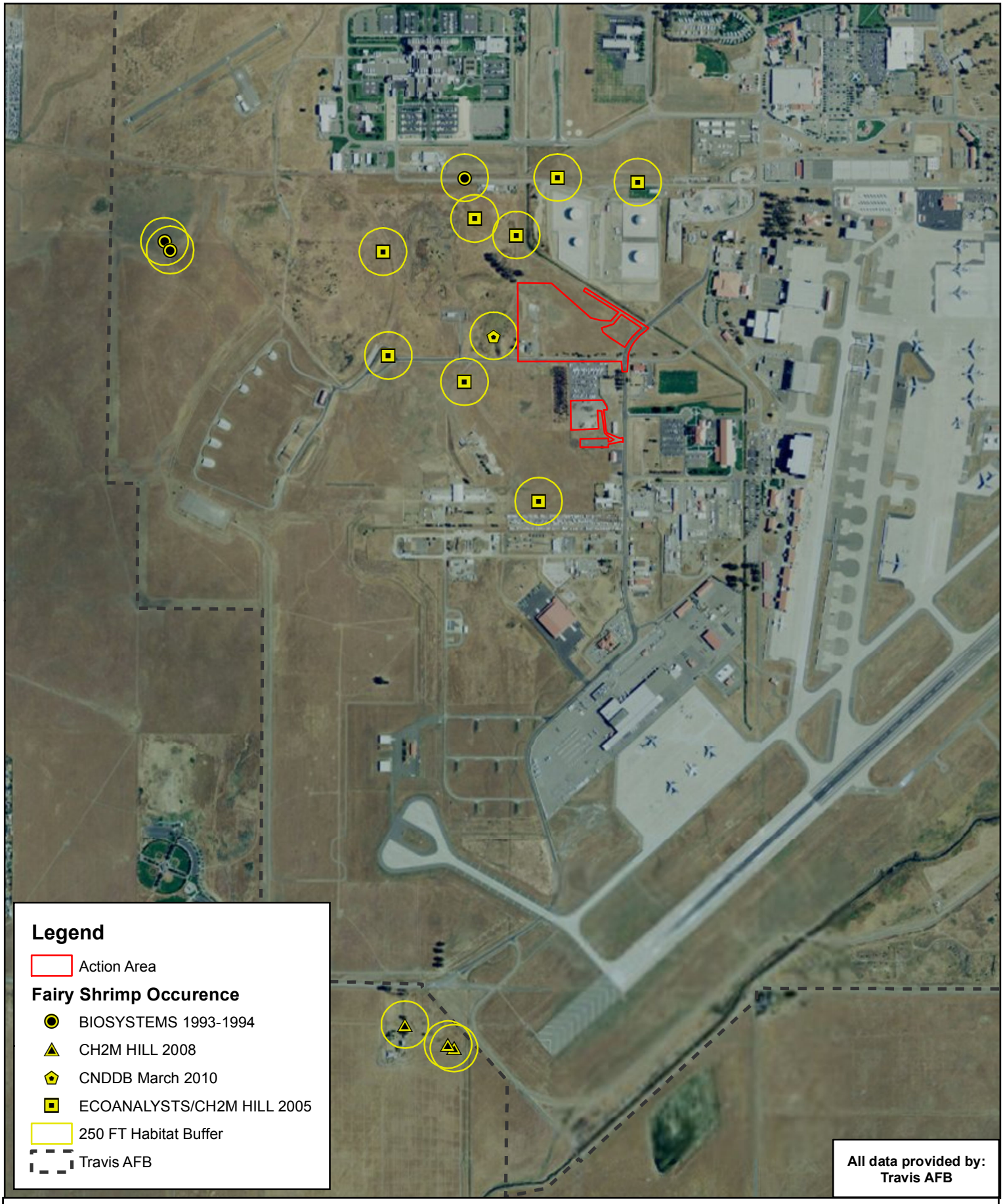



**FIGURE 5 - DISTRIBUTION OF VERNAL POOL FAIRY SHRIMP**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 500 1,000 2,000 Feet

**Base Civil Engineering Complex**
**Biological Assesment**
**Travis Air Force Base, California**

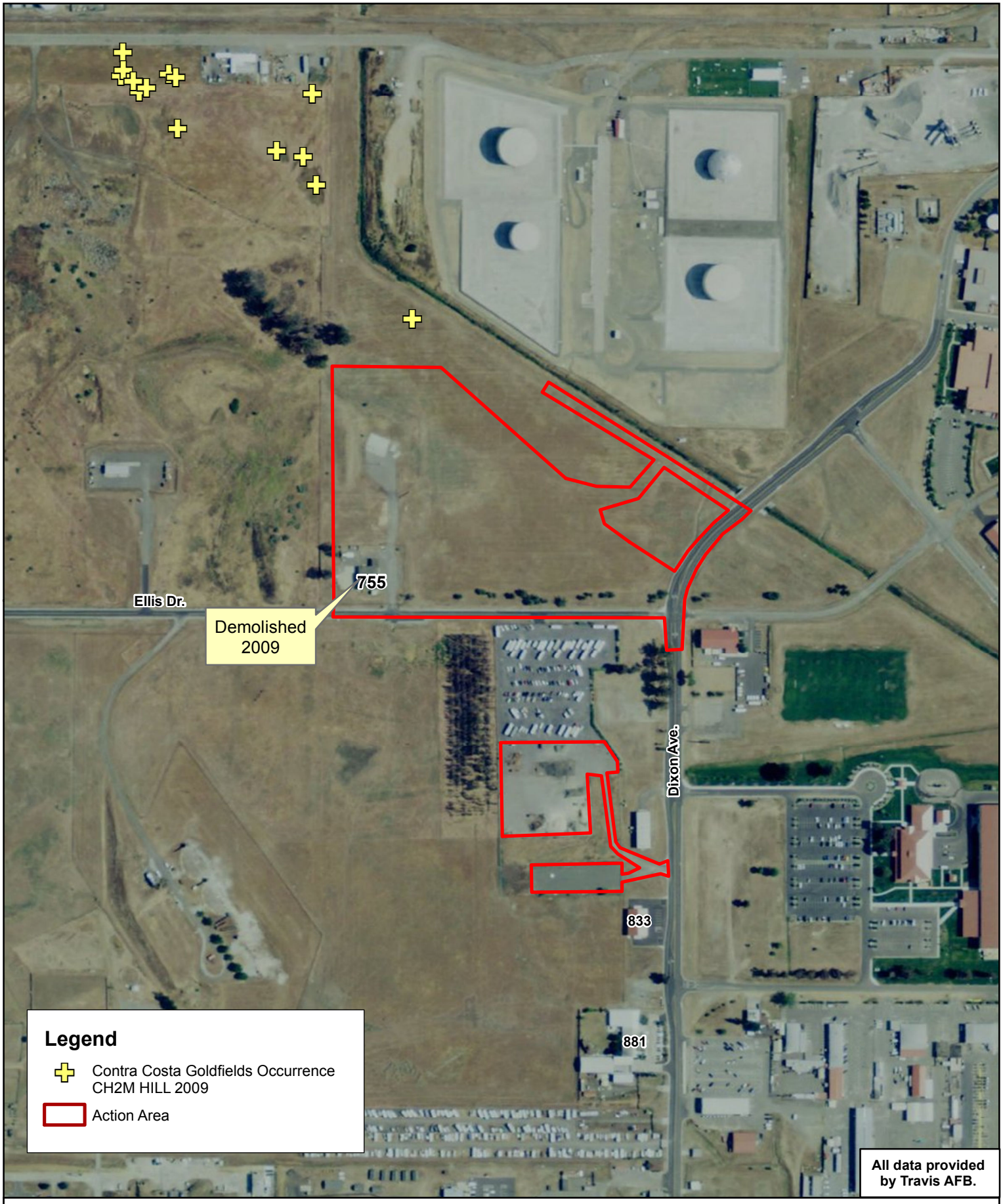



**FIGURE 6 - DISTRIBUTION OF CONTRA COSTA GOLDFIELDS**

AEROSTAR
ENVIRONMENTAL SERVICES, INC.

N

0 162.5 325 650 Feet

**Base Civil Engineering Complex**
**Biological Assesment**
**Travis Air Force Base, California**

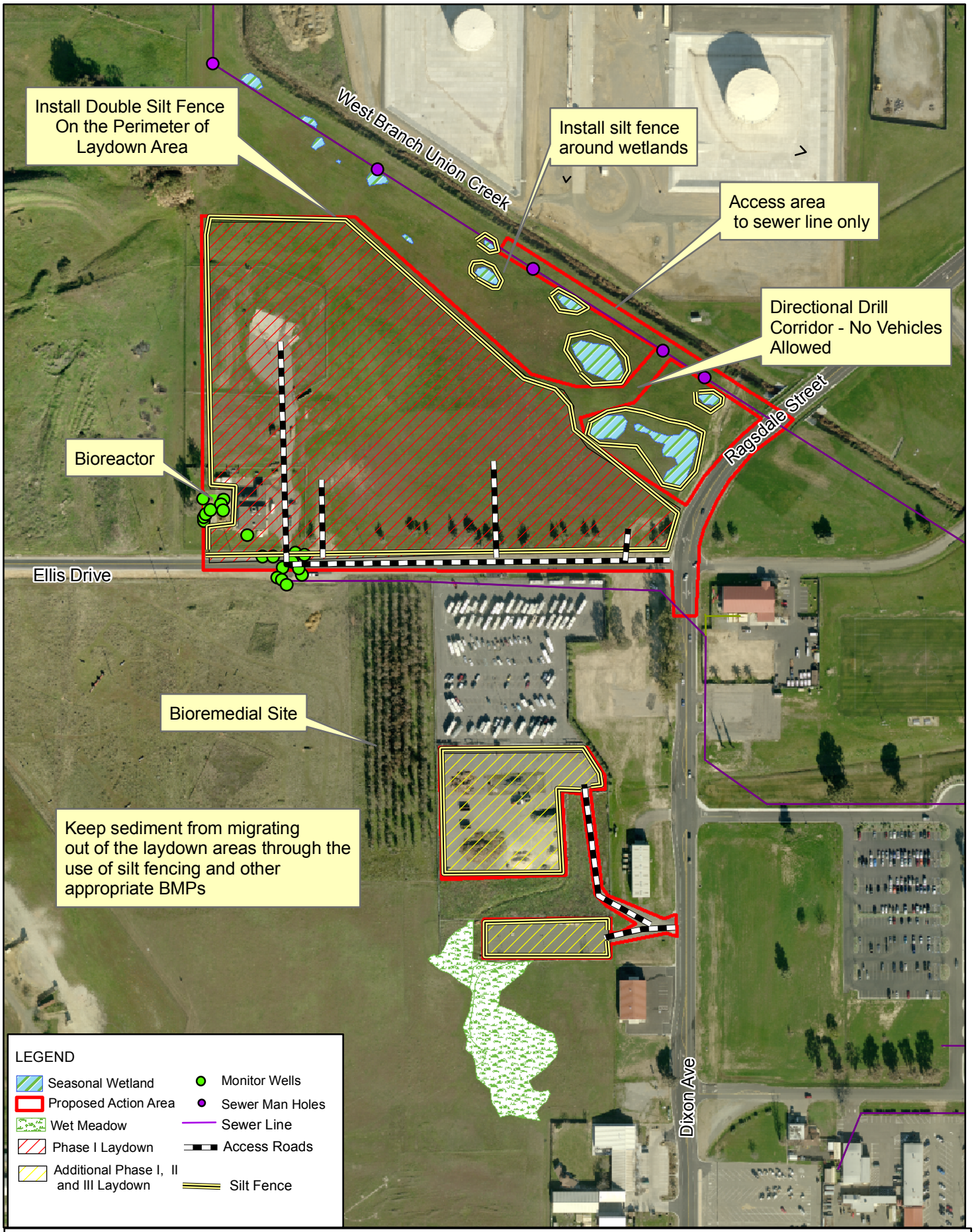



**FIGURE 7 - CONSERVATION AND MINIMIZATION MEASURES**

AEROSTAR ENVIRONMENTAL SERVICES, INC.

N

0 90 180 360 540 720 Feet

Base Civil Engineering Complex
Biological Assessment
Travis Air Force Base, California

**ATTACHMENTS**

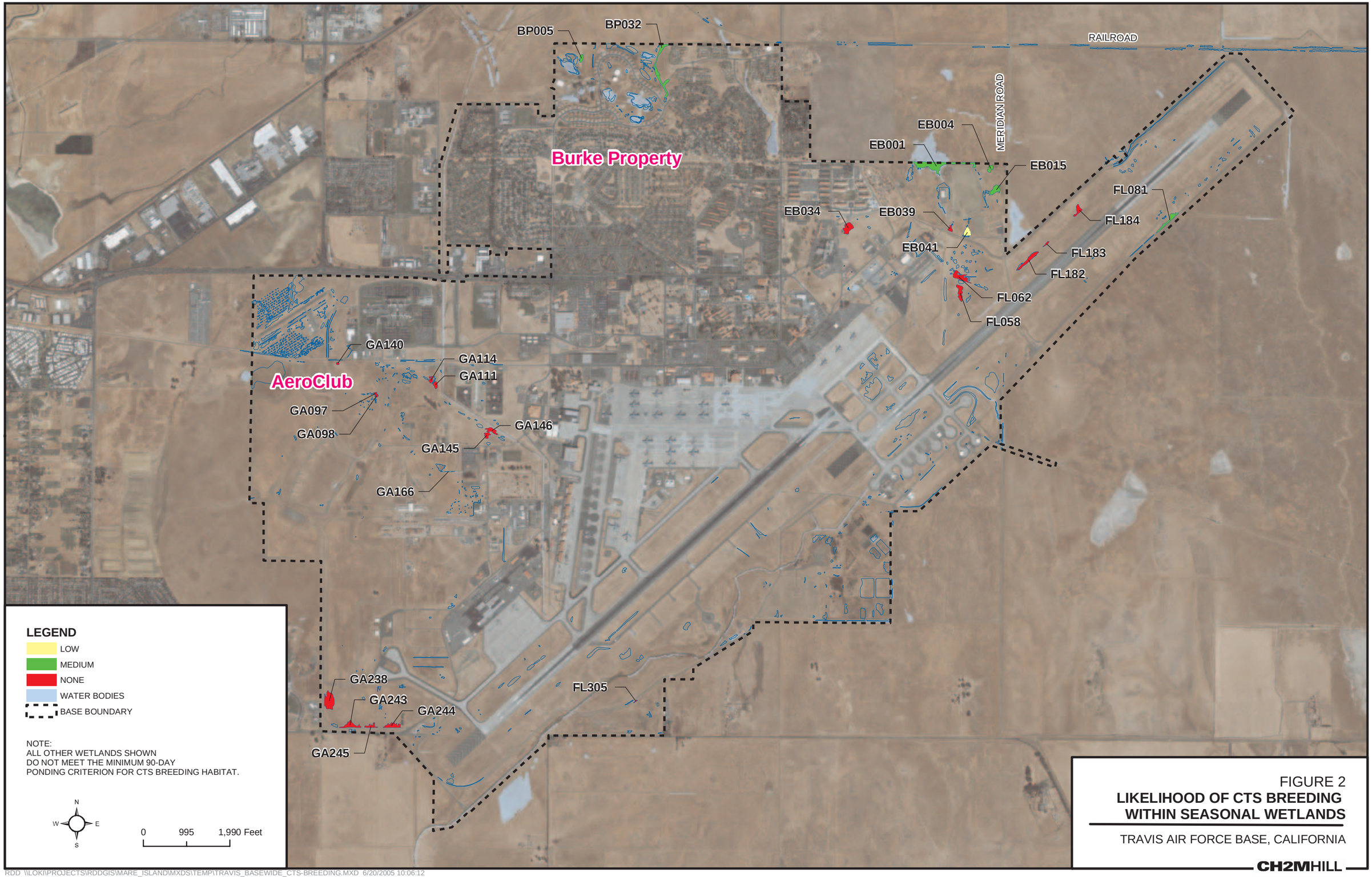



FIGURE 2
**LIKELIHOOD OF CTS BREEDING WITHIN SEASONAL WETLANDS**

TRAVIS AIR FORCE BASE, CALIFORNIA

CH2MHILL

RDD \\LOKI\PROJECTS\RDDGIS\MARE_ISLAND\MXDS\TEMP\TRAVIS_BASEWIDE_CTS-BREEDING.MXD 6/20/2005 10:06:12

# APPENDIX D

# Construction Air Emissions

# Table D1 – Construction Equipment Emissions Factors

Source: South Coast Air Quality Management District CEQA Air Quality Handbook, November 1993, Tables A9-8-B, A9-8-C and A9-8-D

| Equipment | Horsepower | Load Factor (percent) | Days | Hours | CO (lb/hr) | VOC (lb/hr) | $NO_X$ (lb/hr) | $SO_X$ (lb/hr) | $PM_{10}$ (lb/hr) | PM 2.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Air Compressor | 37 | 48 | 120 | 600 | 0.195 | 0.036 | 0.32 | 0.036 | 0.018 | |
| Backhoe | 79 | 46.5 | 120 | 720 | 0.551 | 0.11 | 0.808 | 0.073 | 0.037 | 0.31 |
| Bedding Hopper/Conveyor System | 55 | 46.5 | 30 | 240 | 0.512 | 0.077 | 0.614 | 0.051 | 0.038 | |
| Compactor (sheep-foot) | 99 | 57.5 | 30 | 300 | 0.398 | 0.114 | 1.139 | 0.114 | 0.057 | |
| Concrete Mixer | 11 | 56 | 30 | 300 | 0.062 | 0.012 | 0.148 | 0.012 | 0.006 | |
| Crane | 194 | 43 | 120 | 1200 | 0.751 | 0.25 | 1.919 | 0.167 | 0.125 | |
| Dozer | 102.9 | 59 | 120 | 1200 | 0.668 | 0.121 | 1.396 | 0.121 | 0.061 | 0.113 |
| Forklift | 83 | 30 | 240 | 2400 | 0.324 | 0.075 | 0.772 | 0.05 | 0.037 | |
| Front End Loader | 147 | 46.5 | 120 | 1200 | 0.752 | 0.137 | 1.572 | 0.137 | 0.068 | 0.079 |
| Gas Welding Machine | 19 | 51 | 60 | 600 | 14.332 | 0.523 | 0.019 | 0.006 | 0.002 | |
| Grader | 156.6 | 57.5 | 60 | 600 | 0.72 | 0.27 | 1.891 | 0.18 | 0.09 | 0.077 |
| Hand Held Vibrator Plate | 8 | 43 | 30 | 300 | 7.018 | 3.086 | 0.002 | 0.002 | 0.029 | |
| Pile Hammer | 161 | 62 | 60 | 600 | 1.996 | 0.299 | 2.396 | 0.2 | 0.15 | |
| Roller | 99 | 57.5 | 30 | 300 | 0.398 | 0.114 | 1.139 | 0.114 | 0.057 | 0.062 |
| Scraper | 266.76 | 66 | 30 | 300 | 1.937 | 0.176 | 3.345 | 0.352 | 0.264 | |
| Tamping Spade | 4 | 55 | 60 | 600 | 4.488 | 1.973 | 0.001 | 0.001 | 0.019 | |
| Truck Mounted Vertical Auger Drill | 209 | 75 | 60 | 600 | 3.135 | 0.47 | 3.762 | 0.314 | 0.235 | |
| Vibrator Compactor | 99 | 57.5 | 60 | 600 | 0.398 | 0.114 | 1.139 | 0.114 | 0.057 | |
| | | | | | | | | | | |

**Table D2- Total Emissions from Construction Equipment for 18 months construction duration to include weather days and holidays.**

| Equipment | CO lbs | VOC lbs | NOx lbs | SOx lbs | PM10 lbs | PM2.5 lbs |
|---|---|---|---|---|---|---|
| Air Compressor | 117 | 21.6 | 192 | 21.6 | 10.8 | |
| Backhoe | 396 | 79.2 | 581.76 | 52.56 | 26.64 | 223.2 |
| Bedding Hopper/Conveyor System | 122.88 | 18.48 | 147.4 | 12.24 | 9.12 | |
| Compactor (sheep-foot) | 119.4 | 34.2 | 341.7 | 34.2 | 17.1 | |
| Concrete Mixer | 18.6 | 119.4 | 44.4 | 3.6 | 1.8 | |
| Crane | 901.2 | 901.2 | 2302.8 | 200.4 | 150 | |
| Dozer | 801.6 | 145.2 | 1675.2 | 145.2 | 73.2 | 135.6 |
| Forklift | 777.6 | 180 | 1852.8 | 120 | 88.8 | |
| Front End Loader | 902.4 | 164.4 | 1886.4 | 164.4 | 81.6 | 94.8 |
| Gas Welding Machine | 8580 | 313.8 | 11.4 | 0.36 | 1.2 | |
| Grader | 432 | 162 | 1134.6 | 108 | 54 | 46.2 |
| Hand Held Vibrator Plate | 2105 | 925.8 | 0.6 | 0.6 | 8.7 | |
| Pile Hammer | 1198 | 179.4 | 1437.6 | 120 | 90 | |
| Roller | 119.4 | 34.2 | 341.7 | 34.2 | 17.1 | 18.6 |
| Scraper | 581 | 52.8 | 1003.5 | 105.6 | 79.2 | |
| Tamping Spade | 2693 | 1183.8 | 0.6 | 0.6 | 11.4 | |
| Truck Mounted Vertical Auger Drill | 1881 | 282 | 2257.2 | 188.4 | 141 | |
| Vibrator Compactor | 2388 | 68.4 | 683.4 | 68.4 | 34.2 | |
| **Total lbs** | 24134.08 | 4865.88 | 15895.06 | 1380.36 | 895.86 | 518.4 |
| **Total Tons** | 12 tons | 2.4 tons | 7.95 tons | 0.69 tons | 0.45 tons | 0.26 tons |

## Table D3- Construction Motor Vehicle Exhaust, Tire and Brake Wear, and Entrained Road Dust Emission Factors

Source: ARB EMFAC7G motor vehicle emission factor model, 2/10/2000 version, for calendar year 2001, summertime
[a] Based on 720 minutes engine-off

| Vehicle Type | NO. | No. Days | Location | Vehicle Class | Distance (miles) | Speed (mph) | CO | | VOC | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Exhaust (g/mi) | Start-Up[a] (g/start) | Exhaust (g/mi) | Start-Up[a] (g/start) | Hot Soak (g/trip) | Resting (g/hr) | Evap. Running (g/mi) | Diurnal (g/hr) |
| Worker Commuting | 30 | 480 | Paved Road | Light Duty Truck | 20 | 55 | 3.81 | 26.1 | 0.17 | 3.01 | 0.51 | 0.11 | 0.08 | 0.58 |
| Material Delivery Truck | 1 | 60 | Paved Road | Heavy Heavy-Duty Truck | 40 | 55 | 6.28 | 0 | 0.78 | 0 | 0 | 0 | 0 | 0 |
| Dump Truck | 1 | 120 | On-Site | Heavy Heavy-Duty Truck | 10 | 5 | 33.38 | 0 | 3.27 | 0 | 0 | 0 | 0 | 0 |
| Pickup Truck | 4 | 480 | On-Site | Medium-Duty Truck | 2 | 5 | 17.25 | 29.42 | 1.63 | 4.14 | 0.33 | 0.08 | 0.08 | 0.41 |
| Water Truck | 1 | 240 | On-Site | Heavy Heavy-Duty Truck | 2 | 5 | 33.38 | 0 | 3.27 | 0 | 0 | 0 | 0 | 0 |

| Vehicle Type | | | | | Nox | Nox | Sox | PM10 | PM10 | PM10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Worker Commuting | NO. | NO. Days | Location | Distance | Exhaust (g/mi) | Start-Up[a] (g/start) | Exhaust (g/mi) | Exhaust (g/mi) | Brake Wear (g/mi) | Tire Wear (g/mi) |
| Material Delivery Truck | 30 | 480 | Paved Road | 20 | 1.18 | 2.04 | 0 | 0 | 0.01 | 0.01 |
| Dump Truck | 1 | 60 | Paved Road | 40 | 11.51 | 0 | 0.08 | 0.53 | 0.01 | 0.04 |
| Pickup Truck | 1 | 480 | On-Site | 10 | 15.08 | 0 | 0.08 | 0.53 | 0.01 | 0.04 |
| Water Truck | 4 | 240 | On-Site | 2 | 2.08 | 2.69 | 0 | 0 | 0.01 | 0.01 |

**Table D4 - Total Construction Motor Vehicle Exhaust, Tire and Brake Wear, and Entrained Road Dust Emissions during 18 months to include weather days and holidays.**

| | | | | | | | CO | | VOC | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Vehicle Type** | **NO.** | **No. Days** | **Location** | **Vehicle Class** | **Distance (miles)** | **Speed (mph)** | **Total Exhaust (g/mi)** | **Total Start-Up[a] (g/start)** | **Total Exhaust (g/mi)** | **Total Start-Up[a] (g/start)** | **Total Hot Soak (g/trip)** | **Total Resting (g/hr) 8** | **Total Evap. Running (g/mi)** | **Total Diurnal (g/hr) 2** |
| Worker Commuting | 30 | 480 | Paved Road | Light Duty Truck | 20 | 55 | 548640 | 375840 | 24480 | 43344 | 3672 | 6336 | 11520 | 8352 |
| Material Delivery Truck | 1 | 60 | Paved Road | Heavy Heavy-Duty Truck | 40 | 55 | 15072 | 0 | 1872 | 0 | 0 | 0 | 0 | 0 |
| Dump Truck | 1 | 120 | On-Site | Heavy Heavy-Duty Truck | 10 | 5 | 40056 | 0 | 3924 | 0 | 0 | 0 | 0 | 0 |
| Pickup Truck | 4 | 480 | On-Site | Medium-Duty Truck | 2 | 5 | 33120 | 56486 | 3130 | 7949 | 316.8 | 614 | 153.6 | 787 |
| Water Truck | 1 | 240 | On-Site | Heavy Heavy-Duty Truck | 2 | 5 | 16022 | 0 | 1570 | 0 | 0 | 0 | 0 | 0 |
| **Total (g)** | | | | | | | 652910 | 432326 | 34976 | 51293 | 3988.8 | 6950 | 11673.6 | 9139 |
| **Total tons** | | | | | | | 1.196 | | 0.130 | | | | | |
| **Total lbs** | | | | | | | 2392 | | 260.19 | | | | | |

| | | | | | NOx | NOx | SOx | PM10 | PM10 | PM10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Type | **NO.** | **NO. Days** | **Location** | **Distance** | **Total Exhaust (g)** | **Total Start-Up[a] (g)** | **Total Exhaust (g)** | **Total Exhaust (g)** | **Total Brake Wear (g)** | **Total Tire Wear (g)** |
| **Worker commute** | 30 | 480 | Paved Road | 20 | 339840 | 58752 | 0 | 0 | 2880 | 2880 |
| Material Delivery Truck | 1 | 60 | Paved Road | 40 | 27624 | 0 | 192 | 1272 | 24 | 96 |
| Dump Truck | 1 | 120 | On-Site | 10 | 18096 | 0 | 96 | 636 | 12 | 48 |
| Pickup Truck | 4 | 480 | On-Site | 2 | 7998 | 10330 | 0 | 0 | 38.4 | 38.4 |
| Water Truck | 1 | 240 | On-Site | 2 | 7238 | 0 | 38.4 | 254.4 | 4.8 | 19.2 |
| **Total (g)** | | | | | 400796 | 69082 | 326.4 | 2162.4 | 2959.2 | 3081.6 |
| **Overall Total (g)** | | | | | 469878 | | 326.4 | 8203.2 | | |
| **Total tons** | | | | | 0.518 | | 0.0004 | 0.009 | | |
| **Total lbs** | | | | | 1035.9 | | 0.720 | 18.08 | | |

**Table D5 - AQCR – Solano County in San Francisco Bay Area Air Emissions in tons per day**.

Source: 2008 California Environmental Protection Agency, Air Resources Board

| TOG | ROG | CO | NOx | SOx | PM | PM10 | PM2.5 |
|---|---|---|---|---|---|---|---|
| 41.5 | 21.2 | 76.6 | 27.6 | 17.8 | 23.7 | 12.9 | 4.5 |