

**DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)
 INSTALLATION DEVELOPMENT ENVIRONMENTAL ASSESSMENT (IDEA)
 TRAVIS AIR FORCE BASE (AFB), CALIFORNIA**

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321–4270d, implementing Council on Environmental Quality (CEQ) Regulations, 40 C.F.R. §§ 1500–1508, and 32 C.F.R. Part 989, Environmental Impact Analysis Process, the United States Air Force (Air Force) assessed the potential environmental consequences associated with planned installation development at Travis AFB, California.

The purpose for the Proposed Action is to provide facilities and infrastructure improvements necessary to support the mission of the 60th Air Mobility Wing and tenant units. The Proposed Action consists of 14 projects involving building demolition, construction of new facilities, and renovation/repair of existing facilities. Each project has its own purpose and need; however, in general, individual projects are needed to improve the physical infrastructure and functionality of Travis AFB to meet current and future mission and facility requirements.

The Installation Development Environmental Assessment (IDEA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with the projects identified under the Proposed Action and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The IDEA considers all potential impacts of the Proposed Action, associated project alternatives, and the No Action Alternative. The IDEA also considers cumulative environmental impacts with other projects at Travis AFB, California.

PROPOSED ACTION / ALTERNATIVES

Section 2.2 of the EA provides a detailed description of the Proposed Action and associated alternatives.

The Proposed Action consists of 14 projects; all projects have a Preferred Alternative and a No Action Alternative. Each project involves several components, including ground disturbing activities, demolition, and construction. A summary is provided below:

Project Name	Project ID / Alternatives (Alt.)	Approximate Size	Planned Activity Year
Construction Projects			
C-5 Galaxy Static Display	C1-1 (Preferred Alt.)	465,901 SF	2019 - 2024
	C1-3 (NAA)	0 SF	NA
WRM Expansion/New Patient and Staff Parking Area	C2-1 (Preferred Alt.)	152,507 SF	2019 - 2024
	C2-3 (NAA)	0 SF	NA
New Youth Center	C3-1 (Preferred Alt.)	148,330 SF	2019 – 2024
	C3-2 (NAA)	0 SF	NA

Project Name	Project ID / Alternatives (Alt.)	Approximate Size	Planned Activity Year
Recreational Vehicles (RVs) Parking Area	C4-1 (Preferred Alt.)	5,500 SF	2019 – 2024
	C4-2 (NAA)	0 SF	NA
Renovation/Repair Projects			
Bunker B Roof and Electrical Repair & Access gate upgrade	R1-1 (Preferred Alt.)	148,422 SF	2019 - 2024
	R1-2 (NAA)	0 SF	NA
Demolition Projects			
Demolish Infrastructure Associated with former Wastewater Treatment Plant (WWTP)	D1-1 (Preferred Alt.)	110,978 SF	2020
	D1-2 (NAA)	0 SF	NA
Demolish Building 927	D2-1 (Preferred Alt.)	23,826 SF	2019 - 2024
	D2-2 (NAA)	0 SF	NA
Demolish Building 1115	D3-1 (Preferred Alt.)	6,823 SF	2019 - 2024
	D3-2 (NAA)	0 SF	NA
Demolish Building 1201	D4-1 (Preferred Alt.)	35,382 SF	2019 - 2024
	D4-2 (NAA)	0 SF	NA
Demolish Building 819	D5-1 (Preferred Alt.)	51,148 SF	2019 - 2024
	D5-2 (NAA)	0 SF	NA
Demolish Building 1	D6-1 (Preferred Alt.)	184,230 SF	2019 - 2024
	D6-2 (NAA)	0 SF	NA
Demolish Building 1182	D7-1 (Preferred Alt.)	2,244 SF	2019 - 2024
	D7-2 (NAA)	0 SF	NA
Demolish Building 1332	D8-1 (Preferred Alt.)	29,786 SF	2019 - 2024
	D8-2 (NAA)	0 SF	NA
Demolish Building 891	D9-1 (Preferred Alt.)	5,987 SF	2019 - 2024
	D9-2 (NAA)	0 SF	NA

Depending on projects selected and implemented, including site preparation to allow for demolition, new construction, and infrastructure, the improvements would affect up to approximately 32 acres throughout the installation.

NO ACTION ALTERNATIVE

Each specific project under the Proposed Action has an associated no action alternative, under which that specific project would not be implemented. In such cases, no associated new facilities and/or infrastructure would be constructed or repaired or buildings would not be demolished, and personnel would continue to utilize existing facilities and infrastructure.

SUMMARY OF FINDINGS

The Air Force has concluded that no significant adverse effects would result to the following resources as a result of the action alternatives: air quality, greenhouse gases, biological resources, water resources, cultural resources, geology and earth resources, recreation and visual resources, land use resources, noise, public health and safety, hazardous materials, infrastructure, and transportation. No significant adverse cumulative impacts would result from activities associated with any of the preferred alternative projects when considered with past, present, or reasonably foreseeable future projects at Travis AFB. In addition, the EA concluded that the action alternatives would not affect airspace, wilderness, socioeconomics, and environmental justice.

Consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act resulted in the following concurrence for each of the 14 Proposed Actions within the IDEA:

ID	Project Name	Consultation Concurrence	
		Vernal Pool Branchiopods, Contra Costa Goldfield*	California Tiger Salamander
Construction Projects			
C1	C-5 Galaxy Static Display	Level 1, No Effect	Level 1b, No Effect with Conservation Measures – 95% of project within Low Risk Area. Work within High Risk Area limited to 0.22 acre of upland habitat
C2*	WRM Expansion/New Patient and Staff Parking Area	Level 2, Not Likely to Adversely Affect	Level 1b, No Effect with Conservation Measures – temporary and permanent disturbance of upland habitat in Low Risk Area
C3	New Youth Center	Level 1, No Effect	Level 3, May Adversely Affect – temporary and permanent ground disturbance (acre) of upland habitat within Medium Risk Area

ID	Project Name	Consultation Concurrence	
		Vernal Pool Branchiopods, Contra Costa Goldfield*	California Tiger Salamander
C4	RV Storage Area	Level 1, No Effect	Level 1b, No Effect with Conservation Measures – Temporary and permanent disturbance of upland habitat in Low Risk Area
Renovation/Repair Project			
R1	Bunker B Roof and Electrical Repair & Security Gate upgrade	Level 2, Not Likely to Adversely Affect	Level 3, May Adversely Affect – temporary ground disturbance (4.81 acres) of upland habitat within High Risk Area
Demolition Projects			
D1	Demolish Infrastructure Associated with former WWTP	Level 2, Not Likely to Adversely Affect	Level 3, May Adversely Affect – temporary ground disturbance (3 acres) of upland habitat within High Risk Area
D2	Demolish Building 927	Level 1, No Effect	Level 1b, No Effect with Conservation Measures – temporary and permanent disturbance of upland habitat in Low Risk Area
D3	Demolish Building 1115	Level 2, Not Likely to Adversely Affect	Level 3, May Adversely Affect – temporary ground disturbance (0.22 acre) of upland habitat within High Risk Area
D4	Demolish Building 1201	Level 1, No Effect	Level 3, May Adversely Affect – temporary ground disturbance (0.26 acre) of upland habitat within High Risk Area
D5	Demolish Building 819	Level 1, No Effect	Level 1b, No Effect with Conservation Measures – temporary and permanent disturbance of upland habitat in Low Risk Area
D6	Demolish Building 1	Level 1, No Effect	Level 1a, No Effect
D7	Demolish Building 1182	Level 1, No Effect	Level 3, May Adversely Affect – temporary ground disturbance (0.34 acre) of upland habitat within High Risk Area
D8	Demolish Building 1332	Level 1, No Effect	Level 2, Not Likely to Adversely Affect -temporary disturbance of upland habitat in Medium Risk Area

ID	Project Name	Consultation Concurrence	
		Vernal Pool Branchiopods, Contra Costa Goldfield*	California Tiger Salamander
D9	Demolish Building 891	Level 1, No Effect	Level 1b, No Effect with Conservation Measures – temporary and permanent disturbance of upland habitat in Low Risk Area

Note - *Contra Costa goldfields concurrence at D2, WRM Facility

For potential impacts to archaeological and historic building resources under Section 106 of the National Historic Preservation Act, through current and previous consultation on the 14 IDEA project sites on July 2, 2018 and July 10, 2014, the California State Historic Preservation Officer has concurred with the Air Force's "no historic properties affected" finding for IDEA projects D1, D3, D4, D5, D6, D7, D8, D9, C1, C2, C3, and R1 and through current and previous consultation on July 2, 2018 and October 26, 2015, the SHPO has concurred with the USAF's "no adverse effects" finding for IDEA projects D2 and C4.

Noise (EA Section 4.1). No significant impacts have been identified. Two preferred alternatives, D8-1 and C3-1, would cause short-term, moderate effects for noise near sensitive receptors (housing), but would be limited to short durations in intermittent bursts, at the lower end of the established noise limits, and would be expected to attenuate to less than 65 dBA before reaching the adjacent housing units. Potential noise impacts would be minimized by the employment of construction best management practices (BMPs) and compliance with applicable noise laws and guidelines. Implementation of the Proposed Action would have an insignificant, long-term impact on noise levels.

Air Quality and Greenhouse Gas Emissions (EA Section 4.2). No significant impacts have been identified. None of the estimated emissions for criteria pollutants associated with the Proposed Action construction, demolition, and renovation actions are above the established significance indicators, indicating no significant impact to air quality. The greenhouse gas (GHG) analysis indicate that total annual GHG emissions for the Proposed Action is less than the established significance indicators indicating no significant impact to GHG emissions.

Biological Resources (Section 4.3). No significant impacts have been identified. Travis AFB obtained a programmatic biological opinion (PBO) under Section 7 of the Endangered Species Act that is applicable to the Proposed Action and conservation measures will be implemented accordingly to control potential effects to threatened and endangered species. BMPs and site restoration would minimize potential effects on vegetation and wildlife habitat; BMPs and applicable conservation measures would be implemented to minimize effects on wildlife.

Cultural Resources (Section 4.4). No significant impacts have been identified. No demolition projects would remove a structure contributing to a Historic District or otherwise remove a building of architectural significance. The Proposed Action would not affect archaeological property or be within an American Indian Sacred Site or Traditional Resource.

Earth (Geological Resources) (Section 4.5). No significant impacts have been identified. A potential for increase in soil erosion during construction activities would be controlled to minimize adverse impacts through compliance with a National Pollutant Discharge Elimination System (NPDES) permit is required for construction activities and BMPs.

Recreation and Visual (Section 4.6). No significant impacts have been identified. The proposed RV Parking Area would have a minor but positive impact on recreation by providing additional on-Base storage of RVs. Construction of new facilities would be consistent with the current appearance and character of each area and landscaped to minimize any visual impact. Demolition of deteriorated, obsolete buildings would have a minor but positive impact on visual resources.

Water Resources (EA Section 4.7). No significant impacts have been identified. The Proposed Action does not include any 100-year floodplains or wetlands. However, seven projects included in the Proposed Action are within a 250-foot buffer from vernal pool habitat, so conservation measures would be implemented to avoid or minimize disturbances. Construction/demolition activities have the potential for minor adverse effects on surface water quality entering wetlands, but the use of BMPs and development of site-specific Storm Water Pollution Prevention Plans (SWPPP) as required would minimize adverse effects.

Hazardous Materials (EA Section 4.8). No significant impacts have been identified. All hazardous materials and petroleum products required for the Proposed Action and waste generated would be managed in accordance with applicable USAF regulations and federal, state, local, and Travis AFB requirements to minimize potential adverse effects.

Transportation (EA Section 4.9). No significant impacts have been identified. Several demolition projects are within the airfield clear zone, so removal of these potential obstructions would have a minor but positive impact. Other impacts from construction activities would be short-term and minimized through BMPs.

Infrastructure (EA Section 4.10). No significant impacts have been identified. Several demolition projects would include removal of outdated utilities, which would have a positive impact. Other impacts from construction activities would be short-term and minimized through BMPs.

Land Use (EA Section 4.11). No significant impacts have been identified. The Proposed Action would further the mission of Travis AFB maximizing land use within the Base boundary, including removal of deteriorating, unused structures for other beneficial use, providing long-term and direct beneficial land use.

Safety (EA Section 4.12). No significant impacts have been identified. Construction associated with the Proposed Action would have potential safety issues for workers that would be controlled through BMPs and compliance with OSHA and safety standards. Demolition of deteriorating structures would eliminate existing hazards, such as for flightline clear zones, and repairs and construction would improve explosives safety providing a long-term, benefit.

FINDING OF NO PRACTICABLE ALTERNATIVE

A Finding of No Practicable Alternative is not applicable to this IDEA as no part of the Proposed Action would involve “construction” in a wetland as defined in Executive Order (EO) 11990, *Protection of Wetlands*, or “action” in a floodplain under EO 11988, *Floodplain Management*.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ regulations, and 32 C.F.R. Part 989, I conclude that implementation of the projects identified in the EA would not have a significant environmental impact, either by themselves or cumulatively with other projects at Travis AFB. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

JEFFREY W. NELSON, Colonel, USAF
Commander

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DRAFT

**Installation Development Environmental Assessment
Travis Air Force Base, California**

Prepared for:



**United States Army Corps of Engineers
Omaha District
1616 Capitol Avenue, Suite 9000
Omaha, Nebraska 68102-4901**

May 2019

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
349 AMW	349th Air Mobility Wing
60 AMW	60th Air Mobility Wing
621 CRW	621st Contingency Response Wing
AAQS	ambient air quality standards
AB	aggregate base
ACAM	Air Conformity Applicability Model
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos containing materials
ACWM	asbestos containing waste material
ADC	Air Defense Command
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFSWP	Armed Forces Special Weapons Project
AICUZ	Air Installation Compatible Use Zone
ALZ	Assault Landing Zone
AMC	Air Mobility Command
amsl	above mean sea level
AMU	Aircraft Maintenance Unit
AoA	Antioch-San Ysidro complex
APCD	air pollution control district
APE	Area of Potential Effects
APZ	Accident Potential Zone
AQMD	Air Quality Management District
Asa	Antioch-San Ysidro complex, thick surface
AST	above-ground storage tank
AT/FP	anti-terrorism and force protection
BAAQMD	Bay Area Air Quality Management District
BASH	Bird/Wildlife Aircraft Strike Hazard
BCC	Birds of Conservation Concern

BCR	Bird Conservation Region
BEEF	Base Engineering Emergency Force
BMP	best management practice
BO	Biological Opinion
BTU	British thermal units
BX	Base Exchange
C&D	construction and demolition
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standard
Cal Water	California Water Service Company
Cal-IPC	California Invasive Plant Council
CARB	California Air Resources Board
CCG	Contra Costa goldfields
CDFW	California Department of Fish and Wildlife
CEIE	Civil Engineering Installation Environmental
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Environmental Response, Compensation, and Liability Act
CES	Civil Engineering Squadron
CESA	California Endangered Species Act
CEX	Contingency Support Directorate
CFR	Code of Federal Regulations
CGP	Construction General Permit
CLP	City Light & Power, Inc.
CMP	Congestion Management Program
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂ e	carbon dioxide equivalent
CSDC	Consolidated Storage Distribution Center
CTS	California Tiger Salamander
CWA	Clean Water Act
CY	calendar-year
CZ	clear zone
CZMA	Coastal Zone Management Act

dB	decibels
dBA	A-weighted decibels
DGGB	Delta green ground beetle
DGMC	David Grant Medical Center
DIC	Dibble-Los Osos Clay Loam
DLA	Defense Logistics Agency
DNL	A-weighted Day-Night Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
ECF	Entry Control Facility
ECM	earth covered magazine
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EMCS	Energy Monitoring and Control System
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
EVO	Emulsified vegetable oil
FEMA	Federal Emergency Management Agency
FFA	Federal Facilities Agreement
FOD	foreign objects and debris
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FR	Federal Register
FRP	Facility Response Plan
FSS	60th Force Support Squadron
FSSD	Fairfield-Suisun Sewer District
GHG	greenhouse gas
GOV	government owned vehicle
GPD	gallons per day

GSU	geographically separated unit
GVWR	gross vehicle weight rating
H ₂ S	hydrogen sulfide
HABS	Historic American Buildings Survey
HAP	hazardous air pollutant
HMMP	Hazardous Materials Management Program
HQ	Headquarters
HVAC	heating, ventilation, and air-conditioning
HWAS	Hazardous waste accumulation site
HWMP	Hazardous Waste Management Plan
HWSF	Hazardous Waste Storage Facility
Hz	hertz
I	Interstate
IAW	in accordance with
ICP	Integrated Contingency Plan
ICRMP	Integrated Cultural Resources Management Plan
IDEA	Installation Development Environmental Assessment
IDP	Installation Development Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
ISWMP	Integrated Solid Waste Management Plan
kg	kilogram
Kgal	thousand gallons
Kv	Kilo-volt
LBP	Lead-based paint
LCM	Lead containing material
LID	Low impact development
LIM	Land Inventory and Monitoring
LUC	Land Use Control
LUST	Leaking underground storage tank
M	million
MBTA	Migratory Bird Treaty Act
mg/m ³	milligrams per cubic meter
MkA	Millsap Sandy Loam

MM	Mitigation Measures
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MOA	Memorandum of Agreement
MOGAS	motor gasoline
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer Systems
MVA	million volt-amperes
MWR	Morale Welfare and Recreation
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEC	National Electrical Code
NEPA	National Environmental Policy Act
NEWIOU	North, East, and West Industrial Operable Unit
NFPA	National Fire Protection Act
NH ₃	Ammonia
NHPA	National Historic Preservation Act
NIPRNET	nonsecure internet protocol router networks
NLAA	Not Likely to Adversely Affect
NO ₂	nitrogen dioxide
NOA	Notice of Availability
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRM	Natural Resource Manager
O ₃	ozone
OSHA	Occupational Safety and Health Administration
OU	Operable unit
OWS	oil-water separator
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PBA	Programmatic Biological Assessment
PCB	Polychlorinated biphenyls
PCI	pavement condition index

pCi/L	picocuries per liter
PHLF	Potrero Hills Landfill
PHMSA	Pipeline and Hazardous Materials Safety Administration
PM ₁₀	particulate matter less than or equal to 10 micrometers in diameter
PM _{2.5}	particulate matter less than or equal to 2.5 micrometers in diameter
POL	petroleum, oils, and lubricants
POTW	publicly owned treatment works
POV	privately owned vehicle
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PSD	Prevention of Significant Deterioration
QD	quantity-distance
QOL	quality of life
RCRA	Resource Conservation and Recovery Act
ROCA	Record of Conformity Analysis
ROD	Record of Decision
ROG	Reactive organic gas
ROI	region of influence
RONA	Record of Non-Applicability
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SAC	Strategic Air Command
SDI	Sustainability Development Indicators
SeA	San Ysidro Sandy Loam
SF	square feet
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SIPRNET	secure internet protocol router networks
SO ₂	sulfur dioxide
SPCC	Spill Prevention, Control and Countermeasures
SPD	Surge Protection Device
SR	State Route
SSC	species of special concern
STA	Solano Transportation Authority

SVOC	semi-volatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&E	threatened and endangered
TAC	toxic air contaminant
TACAMO	Take Charge and Move Out
TACAN	Tactical Air Navigation
TCP	Traditional Cultural Property
TL	Transmission Loss
TPH	Total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TSDF	Treatment, storage, and disposal facility
TWA	time-weighted average
UFC	Unified Facilities Criteria
UPH	Unaccompanied Personnel Housing
USACE	US Army Corps of Engineers
USAF	U.S. Air Force
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Service
USTs	Underground storage tanks
UXO	Unexploded ordnance
VOC	volatile organic compound
VPCA	Vernal Pool Conservation Area
VPFS	vernal pool fairy shrimp
VPIS	vernal pool tadpole shrimp
WABOU	West/Annexes/Basewide Operable Unit
WAPA	Western Area Power Administration
WRM	War Reserve Materiel
WWTP	wastewater treatment plant

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The 60th Air Mobility Wing (60 AMW) at Travis Air Force Base (AFB), California, and the Air Mobility Command (AMC) have identified priority projects for installation development and propose to implement them over the next five years (2018-2023). This Installation Development Environmental Assessment (IDEA) was prepared to evaluate the potential environmental impacts of these proposed projects in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] 1500-1508), the Air Force Environmental Impact Analysis Process (EIAP) Regulations at 32 CFR Part 989 Air Force Instruction (AFI) 32-7061), and the California Environmental Quality Act (CEQA) (California Public Resources Code 21000 21177).

The intent of this IDEA is to address installation development actions necessary to support the mission of 60 AMW and tenant units. The fourteen (14) projects considered in this IDEA were identified as priorities for installation development in the Travis AFB Installation Development Plan (IDP) (Travis AFB, 2016a) and the community of all existing approved management plans for the installation concerning continuing development on Travis AFB. These plans identify requirements for the improvement of the physical infrastructure and functionality of Travis AFB, including current and future mission and facility requirements, development constraints and opportunities, and land use relationships.

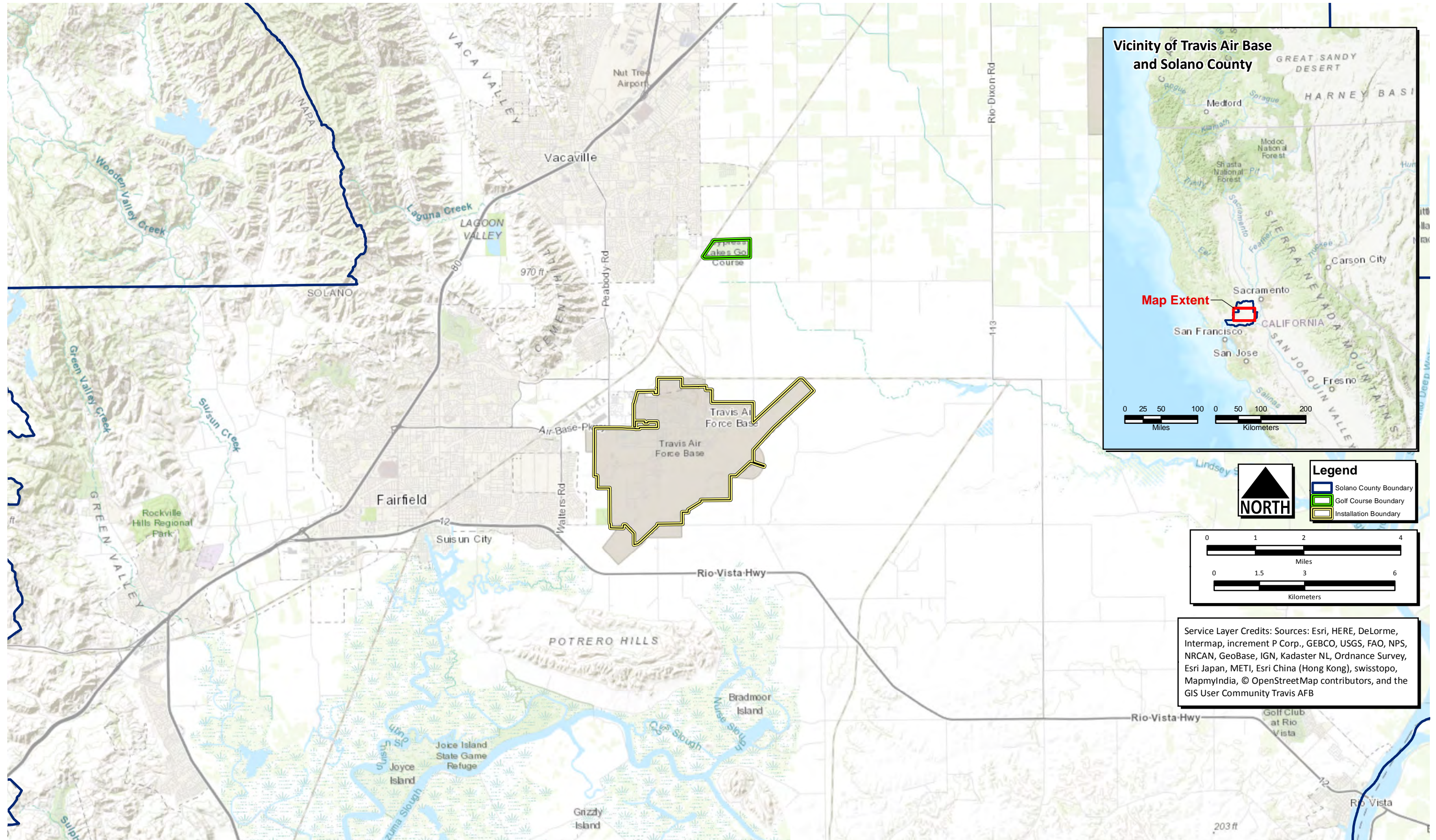
Travis AFB is in northern California, within the city limits of Fairfield, which is the county seat of Solano County (**Figure 1-1**). Travis AFB is a 6,383-acre active United States Air Force (USAF) installation under the command and control of AMC (60 CES, 2016). It was established in 1942 as Fairfield-Suisun Army Air Base. Travis AFB has hosted a variety of missions and airframe types throughout its history. Travis AFB is unique in that it is home to more than 50 tenant units and partner organizations, including the 349th Air Mobility Wing (349 AMW), several groups from the 621st Contingency Response Wing (621 CRW), and an alert station for the US Navy's Take Charge and Move Out (TACAMO) group (Travis AFB, 2016a). The mission of Travis AFB is to provide rapid, responsive, reliable airlift of forces to any point on Earth in support of national objectives and to fulfill the global logistics needs of the Department of Defense (DoD) in sustaining its worldwide activities. The installation's tenants are responsible for strategic airlift and air refueling missions with a versatile all-jet fleet of C-5 Galaxy and C-17 Globemaster III cargo, and KC-10 Extender refueling aircraft.

Known as the "Gateway to the Pacific," Travis AFB handles more cargo and passenger traffic through its aerial port than any other military air terminal in the US and is the West Coast terminal for aeromedical evacuation aircraft returning sick or injured patients from the Pacific area.

The intent of the 60 AMW and Headquarters (HQ) AMC is to streamline NEPA compliance and facilitate the installation development process by evaluating in one integrated document the potential impacts on the human environment of the fourteen (14) projects proposed for execution at Travis AFB. These projects are listed in **Section 1.4, Table 1-1**.

The information presented in this document will serve as the basis for deciding whether the Proposed Action would result in a significant impact to the human environment, requiring the preparation of an Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be appropriate.

Figure: 1-1
Location of Travis Air Force Base and Surrounding Area



1 If the execution of any part of the Proposed Action would involve “construction” in a wetland as
2 defined in Executive Order (EO) 11990, *Protection of Wetlands*, or “action” in a floodplain under EO
3 11988, *Floodplain Management*, a Finding of No Practicable Alternative (FONPA) would be prepared in
4 conjunction with the FONSI.

5 Analysis of all appropriate projects in a single IDEA fulfills the following functions:

- 6 • Coordinates land use planning and infrastructure development
- 7 • Proactively addresses potential roadblocks to project execution
- 8 • Reduces installation, reviewing agency, and major command workloads
- 9 • Provides cost savings
- 10 • Documents an understanding of the potential environmental consequences associated with
11 the continuing installation development process
- 12 • Evaluates potential cumulative environmental impacts
- 13 • Maintains a baseline for future analysis
- 14 • Supports strategic decision making
- 15 • Encourages agency coordination
- 16 • Streamlines NEPA reviews to eliminate project segmentation
- 17 • Meets USAF’s EIAP goals

18 **1.2 Purpose of Installation Development**

19 The Travis IDP comprehensive planning process describes the installation’s past, present, and future
20 physical state (Travis AFB, 2016a). Ideal development principles for maximizing the Installation’s
21 long-term capabilities are identified in the Strategic Vision Alignment. The Planning Constraints,
22 together with the Installation Capacity Opportunities, identify areas suitable for future development.
23 Those, combined with Sustainability Development Indicators (SDIs), direct the scale of development
24 and how and where that development should occur to best meet the ongoing mission needs and the
25 long-term Travis AFB IDP vision, which is illustrated in Chapter 9 of the Travis IDP, “Future
26 Development Planning.” Chapter 10 of the Travis IDP, “Plan Implementation” identifies short-,
27 mid-, and long-range projects, and correlates projects with the goals and objectives of the IDP.
28 Planning activities must integrate the NEPA processes; to ensure that planning and decisions reflect
29 environmental values; to identify alternatives that have been considered, document which alternatives
30 could be carried forward for full analysis and the reason the alternatives were dismissed to avoid delays
31 later in the process, and to avert potential conflicts (AFI 32-7062 *Comprehensive Planning*).

32 **1.3 Need for Installation Development**

33 The need for installation development at Travis AFB is to be able to provide and maintain
34 infrastructure that is adequate for 60 AMW and its tenant units in a manner that:

- 35 • Supports the Air Force mission requirements and quality of life of units and Airmen hosted
36 by the installation.
- 37 • Meets applicable DoD installation master planning criteria, consistent with Unified Facilities
38 Criteria (UFC) 2-100-01, Installation Master Planning; AFI 32-7062 *Comprehensive Planning*; and
39 Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities*.

- Meets all applicable DoD, Federal, State, and local laws and regulations including but not limited to: The Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Water Act (CWA), Clean Air Act (CAA), Resource Conservation and Recovery Act (RCRA), and Migratory Bird Treaty Act (MBTA). More detailed information regarding resource-specific laws and regulations are provided in the specific resource sections located in **Chapter 3**.

1.4 Purpose of and Need for Individual Proposed Actions

1.4.1 Demolition Proposed Actions

The DoD has called for significant transformation in all services to strengthen US warfighting capabilities and to operate more efficiently. A key element of USAF transformation is embodied in the goal “20/20 by 2020.” This describes a major goal of the USAF Civil Engineering to achieve offsetting efficiencies to ensure that installations remain capable of fully supporting USAF missions. The purpose of the proposed demolition actions is to remove excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation to improve mission capability and meet security objectives. Proposed demolition actions would allow the USAF Civil Engineering to reduce the amount of the physical plant requiring ongoing expenditure by 20 percent by the year 2020. USAF Civil Engineering currently manages more infrastructure than is necessary and must focus limited time and funding on only the infrastructure needed to perform the USAF mission. To achieve this goal, the USAF must divert its limited resources away from excess, obsolete, and under-used infrastructure, and implement processes to increase consolidation and demolition, optimize space allocation and utilization, and promote other emerging initiatives. Therefore, 60 AMW has established SDIs to help guide and monitor the balance between consolidating and demolishing existing infrastructure with future planned needs, as outlined in the 2016 Travis AFB Installation Development Plan (Travis AFB, 2016a).

The specific purpose of and need for each of the nine proposed demolition projects, in addition to those indicated above, are presented in **Table 1-1**.

1.4.2 Infrastructure Construction Proposed Actions

Four infrastructure construction projects are proposed to support troops in fulfilling the mission of Travis AFB. The purpose of and need for each of the four infrastructure construction projects are presented in **Table 1-1**.

1.4.3 Renovation and Repair Proposed Actions

One renovation and repair project is proposed to upgrade an existing facility and maintain Travis AFB's ability to achieve its mission. The specific purpose of and need for this project are presented in **Table 1-1**.

1.5 Environmental Analysis Approach for the IDP

To effectively manage the complexity and volume of projects considered in the IDP, the Air Force has identified representative projects within the IDP to carry forward for environmental analysis that are related to the different categories of activities considered and geographic areas associated with the installation and have the greatest likely potential for adverse impacts. Analysis focuses on these projects to provide a context by which a comparative analysis can be made not only for implementation of those projects identified in the IDP but not specifically analyzed, as well as any future development activities on the installation that are similar in scope to those analyzed in this IDEA. Any additional projects or future activities proposed on areas associated with the installation must be evaluated on their own merit under the USAF EIAP guidelines to determine their environmental impacts and appropriate level of NEPA analysis.

1

Table 1-1 Purpose of and Need for Each Proposed Action

Project ID		Project Name	Demolition Project Description	Purpose of the Action	Need for the Action
D1	XDAT051034	Demolish Infrastructure Associated with former Wastewater Treatment Plant (WWTP)	Demolish former WWTP process structures, including digester tanks, Imhoff secondary digesters, settling basins, and associated piping	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove infrastructure that violates the airfield operation clear zone (CZ) due to its proximity to the flight line, which would also eliminate the need for a permanent CZ waiver in accordance with (IAW) UFC 3-260-01. The facilities are obsolete, do not have a future use, and would count against the Travis AFB real property inventory for the 2020 base reduction.
D2	XDAT121004	Demolish Building 927	Demolish Civil Engineering Semi-Permanent Mobile Trailer Building	The purpose is to alleviate health and safety concerns associated with the structure, such as those with leaking roofs causing mold growth and structural instability, and to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove obsolete and unsafe infrastructure that counts against the Travis AFB real property inventory for the 2020 base reduction.
D3	XDAT131013	Demolish Building 1115	Demolish old Tactical Air Navigation (TACAN) building	The purpose is to alleviate health and safety concerns associated with the structure, which is partially burned and unstable, and to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove infrastructure that violates the airfield operation CZ due to its proximity to the flight line, eliminating the need for a permanent CZ waiver IAW UFC 3-260-01. The facility is obsolete, has no future use, and would count against the Travis AFB real property inventory for the 2020 base reduction.
D4	XDAT071136	Demolish Building 1201	Demolish Consolidated Flight Kitchen Building	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove infrastructure that violates the airfield operation CZ due to its proximity to the flight line, eliminating the need for a permanent CZ waiver IAW UFC 3-260-01. The facilities are obsolete, do not have a future use, and would count against the Travis AFB real property inventory for the 2020 base reduction.
D5	XDAT081039	Demolish Building 819	Demolish Aircraft Shop General Purpose Building and relocate current building occupant to another available existing facility at the Base	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need for action is to remove costly infrastructure that counts against the Travis AFB real property inventory for the 2020 base reduction.
D6	XDAT111018	Demolish Building 1	Demolish Squadron Operations & Warehouse Building and relocate current building occupant to another available existing facility at the Base	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove infrastructure that violates the airfield operation CZ due to its proximity to the flight line, eliminating the need for a permanent CZ waiver IAW UFC 3-260-01. The facility is obsolete, has no future use, and would count against the Travis AFB real property inventory for the 2020 base reduction.
D7	XDAT991008	Demolish Building 1182	Demolish abandoned, dilapidated electrical shed	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove obsolete infrastructure that counts against the Travis AFB real property inventory for the 2020 base reduction.
D8	XDAT111016	Demolish Building 1332	Demolish vacant dormitory	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove obsolete infrastructure that counts against the Travis AFB real property inventory for the 2020 base reduction.
D9	XDAT171040	Demolish Building 891	Demolish former gas vaporizer building, perimeter fence, propane tanks, and associated piping	The purpose is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.	The need is to remove obsolete infrastructure that counts against the Travis AFB real property inventory for the 2020 base reduction.

1

Project ID		Project Name	Construction Project Description	Purpose of the Action	Need for the Action
C1	XDAT879190	C-5 Galaxy Static Display	Construct a permanent C-5 airframe static display and concrete pad and a temporary haul road to facilitate airframe movement to the display	The purpose is to establish a permanent display area that would symbolize the heritage of the C-5 airframe and its significance to Travis AFB's history.	The need is to increase warfighter morale, provide a lasting patriotic symbol of the Travis AFB mission, and unify Installation personnel behind the historic mission of the C-5 airframe.
C2	XDAT740353	War Reserve Materiel (WRM) Expansion/New Patient and Staff Parking Area	Construct a new WRM warehouse facility and a permanent, paved parking lot to accommodate increased patient care and staffing for the David Grant Medical Center (DGMC)	The purpose is to provide the necessary infrastructure to accommodate both increased storage needs for medical supply equipment and increased parking areas for the DGMC.	The need is to provide additional parking area for patients and staff, as recently added medical services provided at DGMC have increased its capacity. Inadequate parking can impede prompt and unhindered care to patients. Additionally, medical equipment needs to be consolidated in a single WRM facility to alleviate inefficient operation from multiple smaller facilities throughout the installation.
C3	XDAT085011	New Youth Center	Construct a youth facility that would consist of 12 classrooms, a partially covered outdoor recreation area, administrative offices, multipurpose gym, kitchen, and parking lot	The purpose is to support the Travis AFB family by providing a safe Youth Center with adequate capacity to meet current demands.	The need is to replace an existing facility with inadequate space for the children of Travis AFB personnel and does not meet current Air Force building codes and regulations.
C4	NA	Recreational Vehicle (RV) Storage Area	Re-purpose unused parking lot adjacent to existing RV storage lot	The purpose is to provide additional RV storage capacity to meet current demands for personnel stationed at Travis AFB.	The need is to support the Travis AFB family through provision of adequate MWR facilities offering on-installation parking for RVs.
Project ID		Project Name	Renovation/Repair Project Description	Purpose of the Action	Need for the Action
R1	XDAT087366	Bunker B Roof and Electrical Repair, Security Gate upgrade, and Perimeter Lighting	Replace soil-covered roofs of all bunkers (earth-covered magazines [ECMs]) in the Bunker B Area; correct electrical system deficiencies in the Bunker B Area; improve access control with the addition of an electronic gate; improve security with the addition of perimeter lighting.	The purpose is to correct soil depths on the roofs of all ECMs, repair electrical system deficiencies, improve access control by adding an electronic gate and provide increased security with perimeter lighting.	The need is to bring the Bunker B Area into compliance with safety requirements under Air Force Manual (AFMAN) 91-201 5.58.1 and AFI 31-101 Section 6.6.3. In accordance with AFMAN 91-201, depth of earth cover for the ECMs must be at least two feet, and according to AFI 31-101, perimeter lighting is required for munitions storage in the Bunker B Area. Additionally, the roof repairs, electrical system upgrades, and addition of a gate would ensure longevity of the bunkers by improving storage conditions and access control.

1.6 Interagency/Intergovernmental Coordination and Consultations

1.6.1 Interagency Coordination and Consultations

Scoping is an early and open process for developing the breadth of issues to be addressed in the IDEA and for identifying significant concerns related to a Proposed Action. Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 USC 4231(a)) and EO 12372, *Intergovernmental Review of Federal Programs*, Federal, state, and local agencies with jurisdiction that could be affected by the Proposed Actions will be notified during the development of this IDEA.

Appendix A contains the list of agencies consulted during this analysis and copies of correspondence (pending).

1.6.2 Government-to-Government Consultations

Consultation with Native American tribal governments has been conducted in accordance with Department of Defense Instruction (DoDI) 4710.02, Interactions with Federally-Recognized Tribes, and AFI 90-2002, Air Force Interaction with Federally-recognized Tribes, Federally recognized tribes that are historically affiliated with the Travis AFB geographic region will be invited to consult on all proposed undertakings that have the potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation and the interagency coordination process, and it requires separate notification to all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Travis AFB point-of-contact for Native American tribes is the Installation Commander.

Native American tribal governments have been consulted regarding these actions and the consultation documents are provided in **Appendix A**.

1.6.3 Other Agency Consultations

Per the requirements of Section 106 of the NHPA (54 USC 300101) and implementing regulations (36 CFR Part 800), Section 7 of the ESA (16 USC 1531) and implementing regulations, the MBTA (16 USC 703), and the Coastal Zone Management Act (CZMA) (16 USC 1451), findings of effect and request for concurrence will be transmitted to the applicable state and Federal regulatory agencies. Results of the consultations and records of correspondence with these agencies are included in **Appendix A**.

Through current and previous consultation on the 14 IDEA project sites on July 2, 2018 and July 10, 2014, the SHPO has concurred with the USAF's "no historic properties affected" finding for IDEA projects D1, D3, D4, D5, D6, D7, D8, D9, C1, C2, C3, and R1. Through current and previous consultation on July 2, 2018 and October 26, 2015, the SHPO has concurred with the USAF's "no adverse effects" finding for IDEA projects D2 and C4. Concurrence letters for all 14 project sites are found in **Appendix A**.

From October 2018 to March 2019 the USFWS issued a series of letters regarding proposed projects included in this IDEA. Correspondence regarding the findings, concurrence, and resolution of any adverse effect is included in **Appendix A**.

1.7 Public and Agency Review of IDEA

Through the public involvement process for the IDEA, the USAF will notify relevant Federal, state, and local agencies and the public of the Proposed Actions and request input on environmental concerns they might have regarding the Proposed Actions. The public involvement process provides Travis AFB with the opportunity to consider and address state and local views in its decision regarding implementing this Federal proposal. Hard copies of the Draft IDEA and FONSI will be sent to various agencies identified in **Appendix A**, as well as any interested parties that have requested a copy.

1 Because the Proposed Action areas would not be located within wetlands or floodplains, they are not
 2 subject to the requirements and objectives of EO 11990, *Protection of Wetlands*, and EO 11988, *Floodplain*
 3 *Management*.

4 A Notice of Availability (NOA) of the Draft IDEA and FONSI will be published in the newspapers
 5 of record (listed below), announcing the availability of the IDEA for review on (DATE TO BE
 6 DETERMINED). The NOA will invite the public to review and comment on the Draft IDEA. The
 7 public and agency review period will end on (DATE TO BE DETERMINED). The NOA and public
 8 and agency comments will be provided in **Appendix A**.

9 The NOA will be published in the following newspapers:

- 10 Vacaville Reporter
- 11 401 Davis Street, Suite F
- 12 Vacaville, California 95688
- 13 Daily Republic
- 14 1250 West Texas Street
- 15 Fairfield, California 94533
- 16 Tailwind
- 17 Travis Air Force Base, California 94535

18 The Draft IDEA and FONSI will be available online and hard copies will be sent to the following
 19 local libraries:

Fairfield Civic Center Library 1150 Kentucky Street Fairfield, California 94533	Suisun City Library 601 Pintail Drive Suisun City, California 94585
Vacaville Public Library Cultural Center 1020 Ulatis Drive Vacaville, California 95688	Mitchell Memorial Library 510 Travis Boulevard Travis AFB, California 94535
Online: http://www.travis.af.mil/About-Us/Environment/	

20

21 **1.8 Decision to be Made**

22 The IDEA evaluates whether the Proposed Actions would result in significant impacts on the human
 23 environment. If significant impacts are identified, Travis AFB would undertake mitigation actions to
 24 reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the
 25 Proposed Action or abandon the Proposed Action.

26 This IDEA is a planning and decision-making tool that will be used to guide Travis AFB in
 27 implementing the proposed actions in a manner consistent with Air Force standards for environmental
 28 stewardship.

1 2.0 DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES

2 2.1 Selection Standards for Project Alternatives

3 The scope and location of each Proposed Action and, where applicable, their Alternatives, have
4 undergone extensive review by 60 AMW Civil Engineering Squadron personnel, and supporting
5 installation and Air Force staff specialists.

6 Potential Alternatives to the Proposed Actions were each evaluated based on three Universal Selection
7 Standards (Travis AFB, 2016a):

8 Selection Standard 1: Planning Constraints

- 9 • Operational Constraints
- 10 • Natural Constraints
- 11 • Built Constraints

12 Selection Standard 2: Installation Capacity Opportunities

- 13 • Mission Operations
- 14 • Mission Support
- 15 • Built Infrastructure
- 16 • Quality of Life (QOL)

17 Selection Standard 3: Sustainability Development Indicators

- 18 • The ability for the Installation to operate into the future without a decline in either
19 the mission or the natural and man-made systems that support it

20 **Section 2.3** provides further information regarding Universal Selection Standards and how they apply
21 to specific project requirements. Additionally, alternatives must satisfy the Purpose of and Need for
22 each individual project (refer to **Table 1-1**).

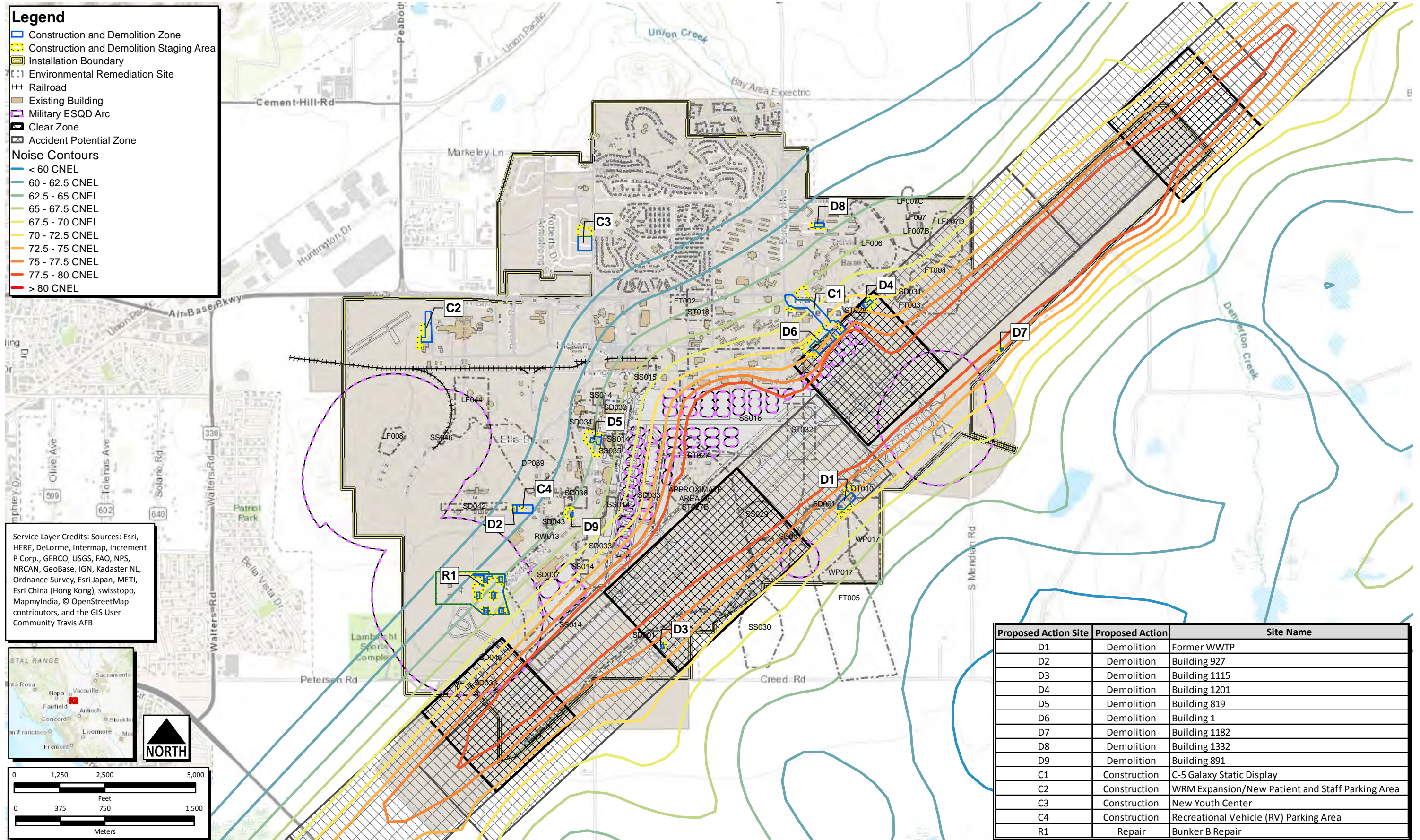
23 **Selection Standard 1: *Planning Constraints (IDP Chapter 6; Travis AFB, 2016a)*** – Planning
24 constraints are man-made or natural elements that can create significant limitations to the operation
25 or construction of buildings, roadways, utility systems, airfields, training ranges, and other facilities
26 (**Figures 2-1 through 2-3**). These constraints, when considered collectively with the Installation's
27 capacity opportunities, help identify potential areas for development, as well as those areas that can
28 be redeveloped to support growth. Selection Standard 1 addresses compatibility with installation
29 operational aspects, and natural and built resources; and largely dictates the location/placement of
30 proposed facilities.

31 - *Operational Constraints* – Operational constraints are related to aircraft operations, munitions, force
32 protection, and similar mission requirements. At Travis AFB operational constraints include, but
33 are not limited to (Travis AFB, 2016a):

34 - *Explosive Safety Zones* – Explosive Safety Quantity-Distance (ESQD) Arcs have been
35 designated at Travis AFB to safeguard the base population and civilian community from the
36 risk of potential explosions related to explosives/munitions storage. Approximately 999
37 acres of ESQD arcs are established on Travis AFB to ensure that a minimum safety distance
38 is established in areas where explosions could occur (Travis AFB, 2016a).

39 Development unrelated to explosives storage or maintenance is avoided in the ESQD arcs
40 at Travis AFB. Redevelopment/new development initiatives strive to minimize waivers in
41 these areas as required for mission support.

Figure 2-1:
Non-Natural Constraints



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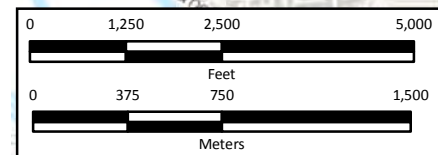
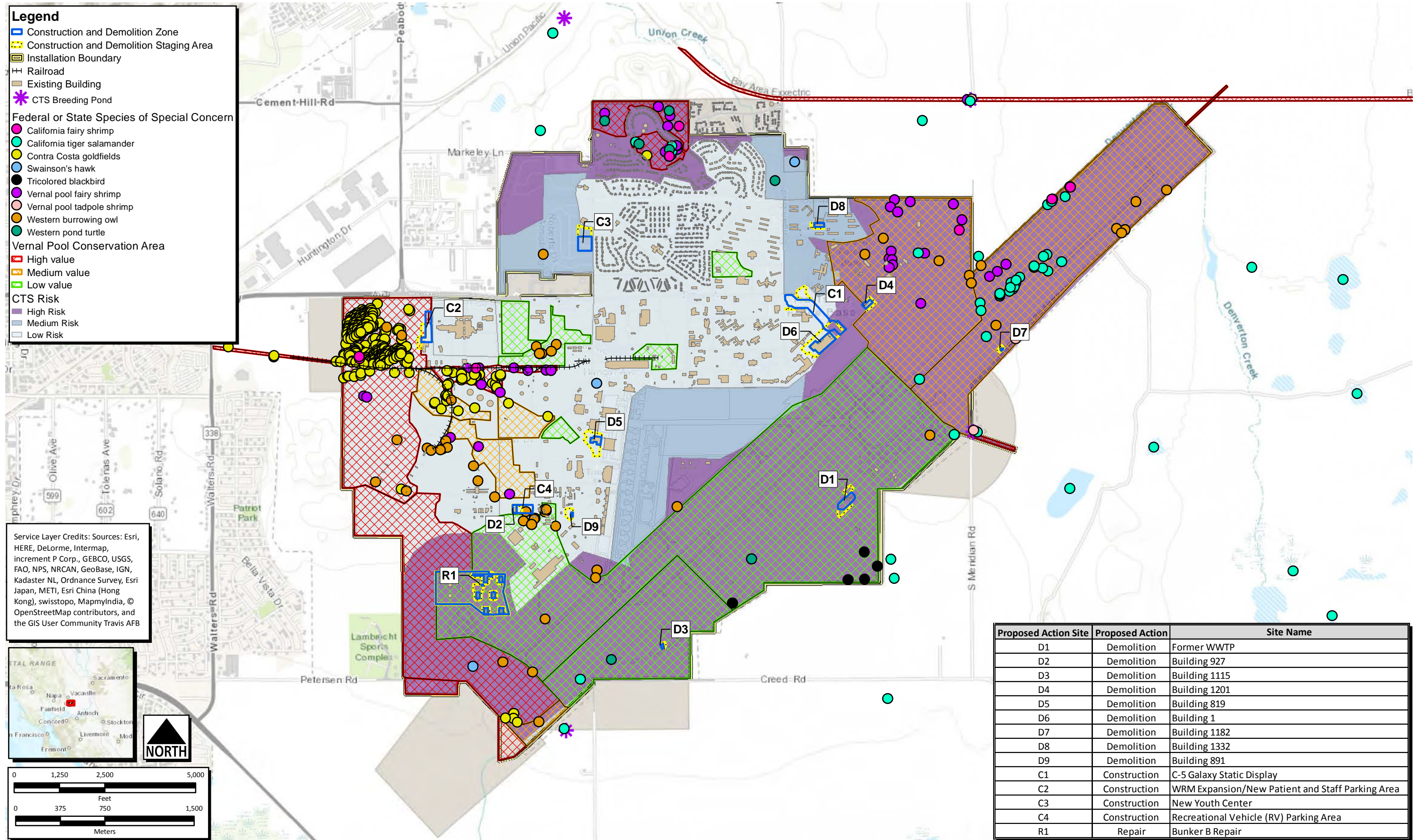


Figure 2-2:
Special Status Species Constraints



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Travis AFB

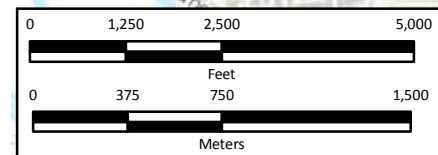
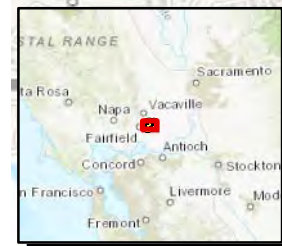
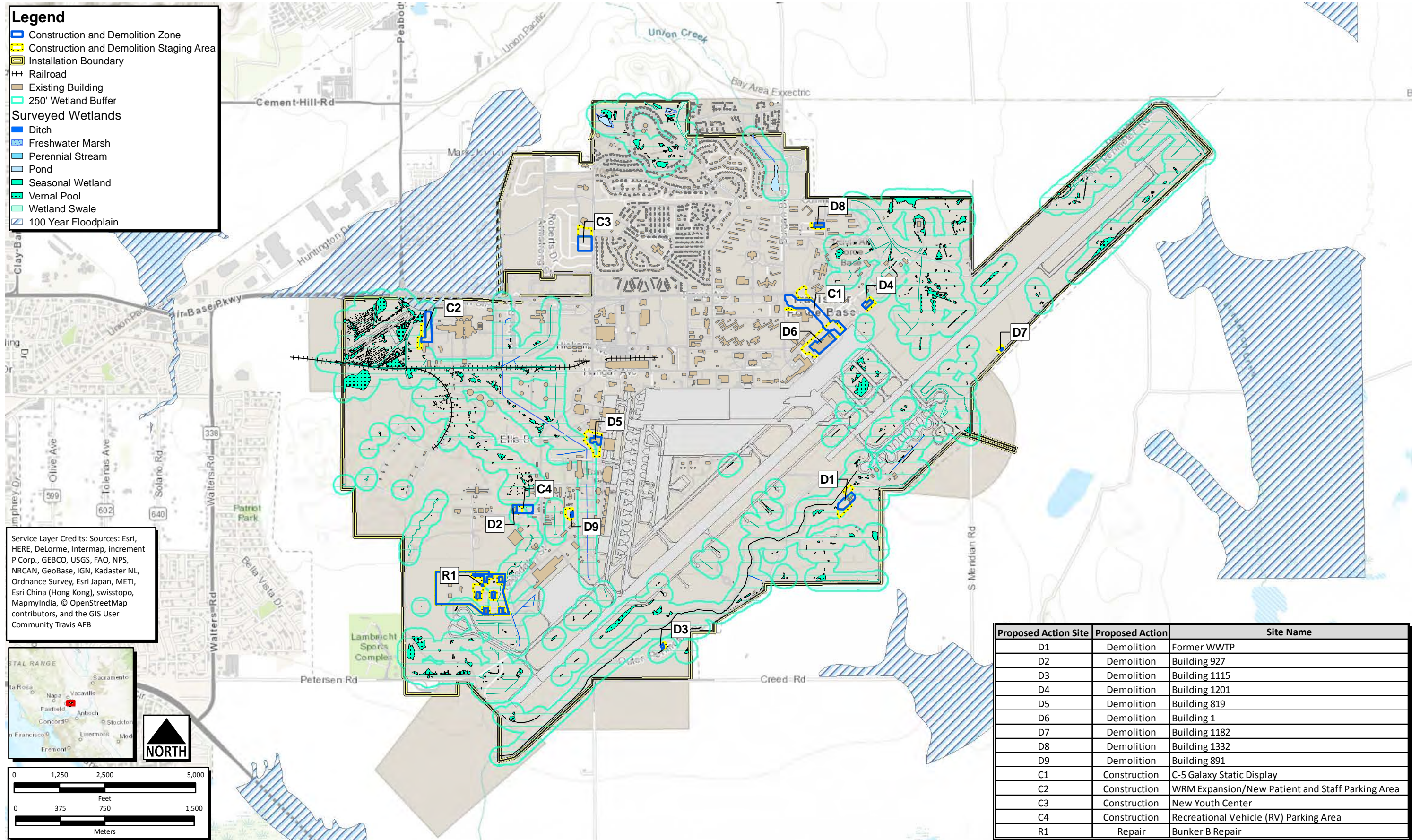


Figure 2-3:
Wetlands and Waterways Constraints



- 1 - *Airfield Operations and Air Installation Compatible Use Zone (AICUZ)* requirements –Multiple
2 zones have been established around the Travis AFB airfield to protect the base population
3 from flight related accidents. Clear Zones are established at the ends of each runway and
4 represent the areas with the highest potential for accidents.
- 5 - *Accident Potential Zones (APZs I and II)* - APZs I and II lie beyond the CZs and represent areas
6 of lesser accident potential but of a magnitude to warrant land use restrictions and
7 recommendations (AFI32-7063, *Air Installations Compatible Use Zones Program*). Airfield CZs
8 at Travis AFB are 3,000 feet wide centered on the runways and extend 3,000 feet beyond
9 the end of the runways (approximately 826 acres). The CZs extend across the Travis AFB
10 boundaries; accident potential zones (APZ I and APZ II) extend 5,000 feet and 7,000 feet,
11 respectively, beyond the end of the CZs, respectively, outside of the Installation boundaries
12 (approximately 1,377 acres and 1,927 acres, respectively) (Travis AFB, 2009 and 60 CES,
13 2016). Development is prohibited within the CZs, and any development within APZs must
14 adhere to limitations in UFC 3-260-01, *Airfield and Heliport Planning and Design*.
15 Redevelopment/new development initiatives strive to minimize waivers required for
16 mission support.
- 17 - *Bird/Wildlife Aircraft Strike Hazard (BASH) program requirements* – Bird and wildlife strikes
18 present a concern for aircraft operations at any airfield. At Travis AFB, presence of
19 protected species and unique habitats limits the use of insecticides, rodenticides, and other
20 lethal means of pest control. Means of mitigating bird strikes at Travis AFB include but are
21 not limited to: monitoring, flight restrictions (e.g., sunrise and sunset), and development
22 restrictions near the airfield (Travis AFB, 2016a).
- 23 - *AT/FP Standards (AT/FP)* – AT/FP is a required site design consideration for all new
24 development and redevelopment on military installations, per UFC 4-010-01. Building
25 setbacks from roadways and parking lots are defined according to the facility construction
26 materials and personnel occupancy.
- 27 - *Environmental Restoration Program (ERP) Sites* – ERP Sites are locations that are known or
28 suspected by the USAF to be contaminated from activities occurring prior to 1984. There
29 are currently 29 sites undergoing remediation or under Land Use Controls (LUCs) for
30 soil (10) or groundwater (19) contamination. Development in or near ERP sites is often
31 restricted and may require implementation of LUCs, which may limit subsurface disturbance
32 and use of groundwater in designated areas (Travis AFB, 2016a).
- 33 - *Air Emissions* – Air emissions are a consideration for development at Travis AFB. Numerous
34 permits govern the operation of equipment and facilities on Travis AFB, and no air emission
35 sources are known to negatively affect the installation or the surrounding areas. However,
36 consideration for Air Quality is intrinsic to all installation activities and changes to
37 regulations may pose challenges in the future (Travis AFB, 2016a).
- 38 - *Natural Constraints* – Natural resources can present constraints on future development and limit
39 the areas feasible for development. At Travis AFB, natural constraints include but are not limited
40 to the following (Travis AFB, 2016a):
- 41 - *Wetlands* – Wetlands are an important natural system and habitat because of the diverse
42 biologic and hydrologic functions they perform. These functions include water quality
43 improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling,
44 wildlife habitat provision, unique flora and fauna niche provision, stormwater attenuation
45 and storage, sediment detention, and erosion protection (Travis AFB, 2016b).
46 Approximately 91 acres of wetlands are scattered throughout the installation, but they are
47 generally absent in the highly developed central and northern areas (Travis AFB, 2016a). EO

1 11990, *Protection of Wetlands* includes mandates and provisions to “minimize the destruction,
2 loss, or degradation of wetlands and to preserve and enhance the natural and beneficial
3 values of wetlands.” This EO requires Federal agencies to consider alternatives to wetland
4 sites and limit potential damage if an activity affecting a wetland cannot be avoided.

- 5 - *Threatened and Endangered Species* – Travis AFB is home to six state and Federally listed plant,
6 amphibian, bird, and invertebrate species (Travis AFB, 2016b) including:
 - 7 - Contra Costa goldfields (*Lasthenia conjugens*), plant, Federally Endangered
 - 8 - California tiger salamander (*Ambystoma californiense*), amphibian, Federally
9 Threatened, State Threatened
 - 10 - Swainson’s hawk (*Buteo swainsoni*), bird, State Threatened
 - 11 - Tricolored blackbird (*Agelaius tricolor*), bird, State Threatened
 - 12 - Vernal pool fairy shrimp (*Branchinecta lynchi*), invertebrate, Federally Threatened
 - 13 - Vernal pool tadpole shrimp (*Lepidurus packardii*), invertebrate, Federally Endangered

14 The *Endangered Species Act of 1973* (16 USC 1531) requires protection be afforded to Federally listed
15 threatened or endangered animals, plants, and their habitats.

- 16 - *Drainage/Hydrology, Floodplains* – Travis AFB is divided into eight distinct drainage basins
17 according to topography and drainage patterns. Two of these basins sheet flow stormwater
18 to adjacent property outside the installation, with the remaining six basins discharging
19 through a series of underground piping and open ditches to stormwater outfalls along Union
20 Creek, Hill Slough and ultimately Suisun and San Francisco Bays. Outfall locations are
21 designated similarly to the drainage basin from which the stormwater is collected (Travis
22 AFB, 2016b). EO 11988, *Floodplain Management*, addresses concerns about the potential loss
23 of the natural and beneficial functions of the nation’s floodplains, as well as the increased
24 cost to Federal, state, and local governments due to flooding disasters that are caused or
25 worsened by unwise development of floodplains. According to the Federal Emergency
26 Management Agency (FEMA), Flood Insurance Rate Map, Travis AFB is in Other Areas,
27 Zone D (an area of possible but undetermined flood hazard) (FEMA, 2014 and 2016). The
28 California Department of Water Resources (DWR) Best Available Map Web Viewer
29 showing 100-year floodplains in Solano County does not indicate that a 100-year floodplain
30 is located within the boundaries of Travis AFB (DWR, 2014).
- 31 - *Soils* – Fourteen soil types are found on Travis AFB. Surficial soils have weathered under a
32 distinctive climatic cycle of the Pacific Coast region and the lower layers of most soils are
33 dense and compact. Some soils present on Travis AFB require special management
34 considerations for development (Travis AFB, 2016a).
- 35 - *Climate* – Travis AFB is in Zone 14 of the Geographic Subdivisions and Climate Zones of
36 California. The region has a Mediterranean climate characterized by mild, wet winters and
37 warm, dry summers. The rainy season typically begins in November and continues into
38 March. During this period, approximately 83 percent of the annual rainfall occurs (Travis
39 AFB, 2016a). Seasonal temperatures and rainfall affect the migratory patterns of birds and
40 presence of active species present on Travis AFB, which in turn affects opportunities for
41 development.
- 42 - *Topography/Geology* – Topography at Travis AFB is characterized by a gently sloping to nearly-
43 flat surface with occasional small hills. The elevations on the installation range from 12 feet
44 in the southwest corner to more than 400 feet above sea level in the north central portion.
45 The slope of the ground surface is generally south to southwest, and must be considered in
46 proposed development (Travis AFB, 2016a). The San Francisco Bay Area is an area of
47 historical and recent seismic activity, primarily due to the presence of the San Andreas, the

1 Hayward, and the Calaveras fault zones. These faults are all more than 20 miles from the
2 installation. A smaller potentially active fault, the Green Valley fault, is about 10 miles west
3 of the installation but has been inactive since 1985. An earthquake that occurred in Napa
4 Valley on August 24, 2014, was felt at Travis AFB. Due to the potential for seismic activity
5 in the region, construction plans must comply with all current building standards and seismic
6 codes.

- 7 - *Built Constraints* – The condition and capacity of existing facilities, infrastructure, and utilities that
8 support the installation’s mission can create significant limitations on future development. At
9 Travis AFB, the built constraints included in Selection Standard 1 are limited to historic structures
10 and cultural sites (Travis AFB, 2016a).

11 **Selection Standard 2: *Installation Capacity Opportunities (IDP Chapter 7; Travis AFB, 2016a)***

12 This refers to the capabilities of the installation’s existing facilities/infrastructure to meet existing and
13 future mission needs. This standard largely drives the scope of the facility/infrastructure development
14 and/or improvement and requires that proposed facility/infrastructure development and
15 improvements support the following aspects (Travis AFB, 2016a):

- 16 - *Mission Operations* - Mission operations include a broad range of functions with specific
17 requirements in terms of facilities, infrastructure, and systems needed to adequately support the
18 Travis AFB mission. At Travis AFB, metrics regarding mission operations include developable
19 land, apron/ramp parking, airfield pavements, petroleum, oils, and lubricants (POL), munitions
20 and ranges, communications, and fire protection.
- 21 - *Mission Support* - The ability of the installation and its facilities to accommodate and manage
22 essential mission support needs and related facilities is key to maintaining the ongoing mission
23 and potentially accepting expanded missions. Mission Support facilities include the fitness
24 center, DGMC, privatized housing, dormitories, dining facilities, and lodging.
- 25 - *Built Infrastructure* - The capacity of the installation’s infrastructure and utility systems to
26 accommodate both the ongoing mission and potential growth is an important factor in assessing
27 overall installation capacity opportunities. Built infrastructure encompasses fundamental assets
28 such as gates, the roadway network, the electrical system, the water system, the wastewater
29 system, stormwater infrastructure, and the natural gas system.
- 30 - *Quality of Life (QOL)* - QOL capacity metrics are measurements of facilities intended to maintain
31 high personnel, family, and employee morale and welfare, directly affect an installation’s quality
32 of life, and impact the installation’s ability to accommodate future growth and development. At
33 Travis AFB, the Base Exchange (BX), commissary, child development centers, youth center,
34 and MWR facilities are the primary QOL capacity metrics considered.

35 **Selection Standard 3: *Sustainability Development Indicators (IDP Chapter 8; Travis AFB,***

36 ***2016a)*** – This refers to the ability to operate into the future without a decline in either the mission or
37 the natural and man-made systems that support it and to create sustainable installations. Sustainability
38 is a holistic approach to asset management that seeks to minimize the negative impacts of the USAF’s
39 mission and operations on the environment. This standard also generally drives the scope of the
40 facility/infrastructure development and/or improvement, and supports sustainability of the
41 installation through consideration of the following (Travis AFB, 2016a):

- 42 - *Energy Use* – facility energy use intensity, energy consumption, energy use cost, and regional
43 electric grid reserve capacity
- 44 - *Renewable Energy* – renewable energy use feasibility and opportunity
- 45 - *Water Quantity* – supply availability during average and peak demand

- 1 - *Water Quality* – water quality status
- 2 - *Water Intensity* – water consumption intensity
- 3 - *Waste Water Quantity* – average and peak wastewater discharge
- 4 - *Air Quality* – air quality status
- 5 - *Waste Reduction* – construction waste and non-hazardous waste
- 6 - *Facilities Space Optimization* – usable space, vacant space, availability of dorm rooms, availability
7 of family housing, facility condition, and 20/20 by 2020
- 8 - *Encroachment* – incompatible acres in CZ, APZs, and AICUZ
- 9 - *Airfield* – average pavement condition index (PCI) rating
- 10 - *ELAP* – number of environmental assessments and environmental impact statements in
11 progress and completed
- 12 - *Natural and Cultural Resources* – archaeological sites, historic facilities, wetlands, threatened and
13 endangered (T&E) Species, and agricultural leases
- 14 - *Community Planning* – Land Use - total, constrained and developable acres within the following
15 planning districts: administrative, aircraft operations and maintenance, airfield, community
16 (service and commercial), housing (accompanied and unaccompanied), industrial, medical, open
17 space, and outdoor recreation
- 18 - *External Sustainability* – urban sprawl, regional land urbanization, regional population growth,
19 and housing affordability and availability
- 20 - *Climatic Vulnerability* – flood risk, seismicity, tornadoes, sea level rise, temperature rise impact,
21 precipitation pattern changes, storm surge/intensity, and drought intensity

22 **2.2 Proposed Actions and Alternatives**

23 This IDEA evaluates the potential environmental impacts that may arise from implementation of 14
24 projects selected from the 2016 Travis AFB IDP (Travis AFB, 2016a), various future funding
25 documents, and approved installation development priorities for the next five years (2018-2023). This
26 IDEA considers each project independently and evaluates the collective/aggregate impacts of
27 implementing all proposed projects. These projects include initiatives for facility demolition,
28 construction, and renovation/repair as discussed in **Sections 2.2.1** through **2.2.4**.

29 The NEPA, CEQ, and CEQA regulations mandate the consideration of reasonable alternatives to the
30 Proposed Actions, as well as a No Action Alternative. “Reasonable alternatives” are those that also
31 could be utilized to fulfill the purpose of and need for each Proposed Action.

32 The NEPA process is intended to support flexible, informed decision-making. The analysis provided
33 by this IDEA, and feedback from the public and other agencies will inform decisions about whether,
34 when, and how to execute a Proposed Action. Among the Alternatives evaluated for each project is a
35 No Action Alternative. The No Action Alternative will substantively analyze the consequences of not
36 undertaking a Proposed Action and maintaining the current conditions/operations; it will not simply
37 conclude there is no impact. It will also serve to establish a comparative baseline for analysis.

38 The scope, location, and objectives of the Proposed Actions are described here, and grouped by
39 project category. This chapter also presents reasonable and practicable alternatives, for projects for
40 which there are multiple viable courses of action. Alternatives are assessed relative to the Universal
41 Selection Standards (as outlined in **Section 2.2**) and project specific selection standards, where
42 applicable. Alternatives that met all three Universal Selection Standards, as well as the Purpose of and

1 Need for each individual project, were considered reasonable and retained for consideration in this
2 IDEA. Alternatives that did not meet one or more of the Universal Selection Standards were not
3 considered reasonable and are not retained for consideration.

4 **2.2.1 Proposed Demolition Projects**

5 There are nine facilities throughout Travis AFB that no longer meet mission requirements, are
6 functionally obsolete, have deteriorated beyond repair, are no longer in use, and/or do not meet
7 AT/FP criteria. Some facilities near the flightline have waivers for the CZ requirements, but are no
8 longer in use and pose a needless potential danger to airfield operations. These facilities would be
9 demolished to reduce infrastructure management costs by diverting resources away from excess,
10 obsolete, or underused facilities. The following is a discussion of each proposed demolition project.
11 Project locations are depicted in **Figures 2-4** through **2-6**.

- 12 **1. Demolish Infrastructure Associated with Former WWTP (Project ID D1):** The former
13 WWTP is on the south side of the Travis airfield, approximately 1,000 feet southwest of the
14 Navy TACAMO facility. It is located within the airfield APZ and is in violation of height
15 requirements (**Figure 2-1**). The location is remote, unpopulated, primarily vegetated, and
16 approximately 900 feet from the southeastern Travis AFB boundary (**Figure 2-4**).

17 The facility was in use from the 1950s to the late 1970s, when it was removed from service, at
18 which time Travis began transferring wastewater to the Fairfield-Suisun Sewer District for
19 treatment (Travis AFB, 2007). This project would involve demolishing the remaining
20 infrastructure associated with the former WWTP (13,412 square feet [SF] in total), including
21 two Imhoff tanks (2,500 SF each), two digesters (706 SF each), a primary settling tank (5,000
22 SF), manhole structures (approximately 2,000 SF), and other associated inactive equipment
23 and piping (refer to **Table 2-1**). Some of these structures extend up to approximately 26 feet
24 below grade; thus, the disturbed area would be backfilled and graded for positive drainage.
25 Upon completion of demolition activities, the area would be hydroseeded and allowed to
26 return to natural conditions. The active wastewater treatment equipment and pumphouse
27 would remain. Staging areas would be established on previously cleared areas within the site,
28 away from Perimeter Road.

29 Planning District and Land Use: The former WWTP is in the South Flightline Planning
30 District, in an area designated as Industrial Land Use (refer to **Table 2-1**).

31 Constraints: The former WWTP is within a 250-foot wetlands buffer, within low-value Vernal
32 Pool Conservation Area (VPCA) and within high-risk California Tiger Salamander (CTS)
33 habitat (**Figure 2-4**).

- 34 **2. Demolish Building 927 (Project ID D2):** Building 927, the former Contingency Support
35 Directorate (CEX) Prime Base Engineering Emergency Force (BEEF) Management Facility,
36 is in a developed area in an industrial section on the western portion of the installation. The
37 area has also been identified as the Air Force Special Weapons Program/Strategic Air
38 Command (AFSWP/SAC) Q Area Historic District, a Cold War era historical zone; however,
39 Building 927 is not a historical building (Sassaman, 2015 and Polanco, 2015). Building 927 is
40 on the north side of W Street, approximately 700 feet west of the intersection of W Street and
41 Dixon Avenue and directly south of the MWR RV Storage Area, which is accessed from Dixon
42 Avenue (**Figure 2-5**).

43 Building 927 was constructed in 1995 as a modular facility and was abandoned in 2014. It has
44 deteriorated beyond the point of economical repair and cannot be reasonably altered or
45 economically used.

Figure: 2-4
 Demo Former WWTP, Building 1115 and Building 1182

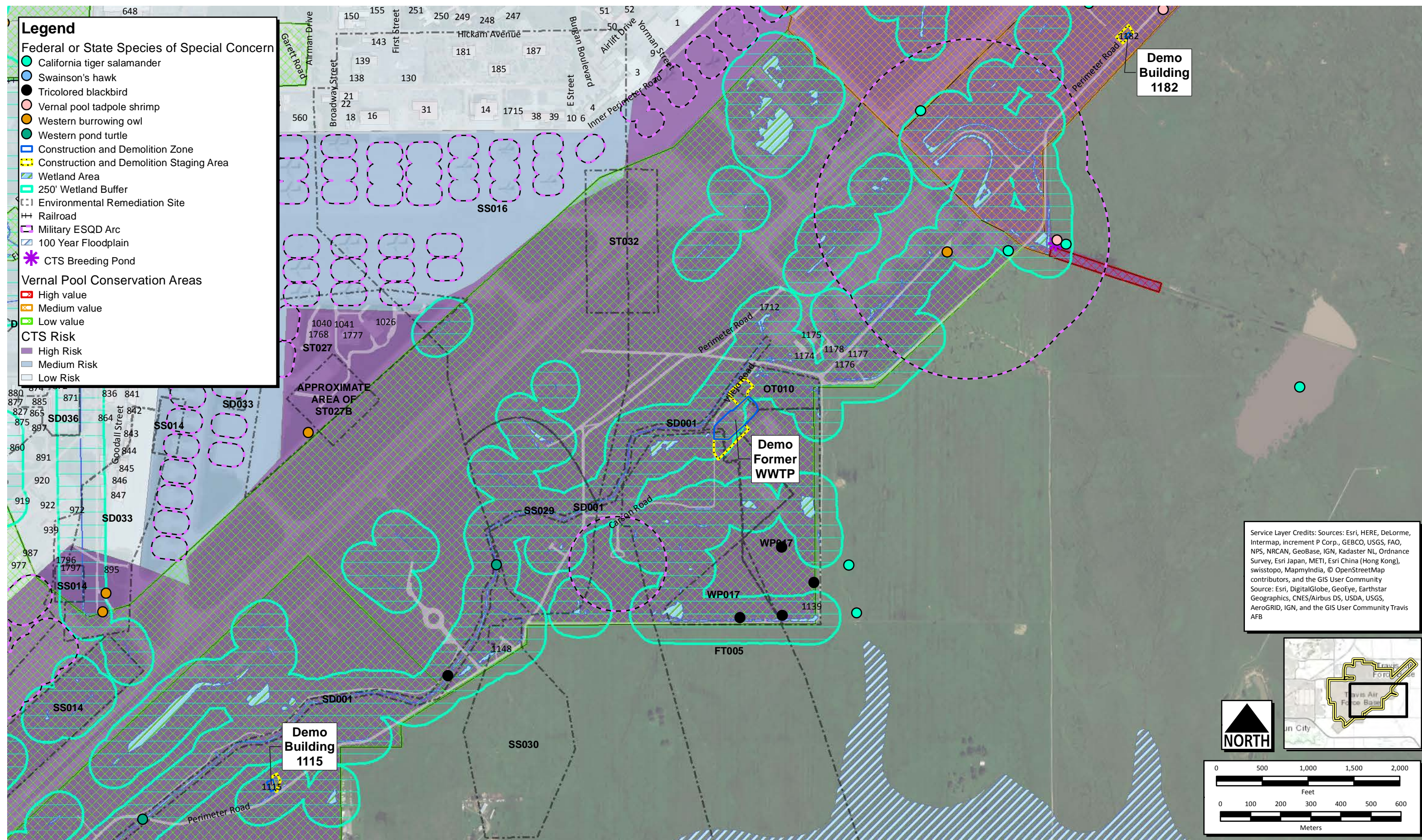


Figure: 2-5
Demo Buildings 927, 819 and 891

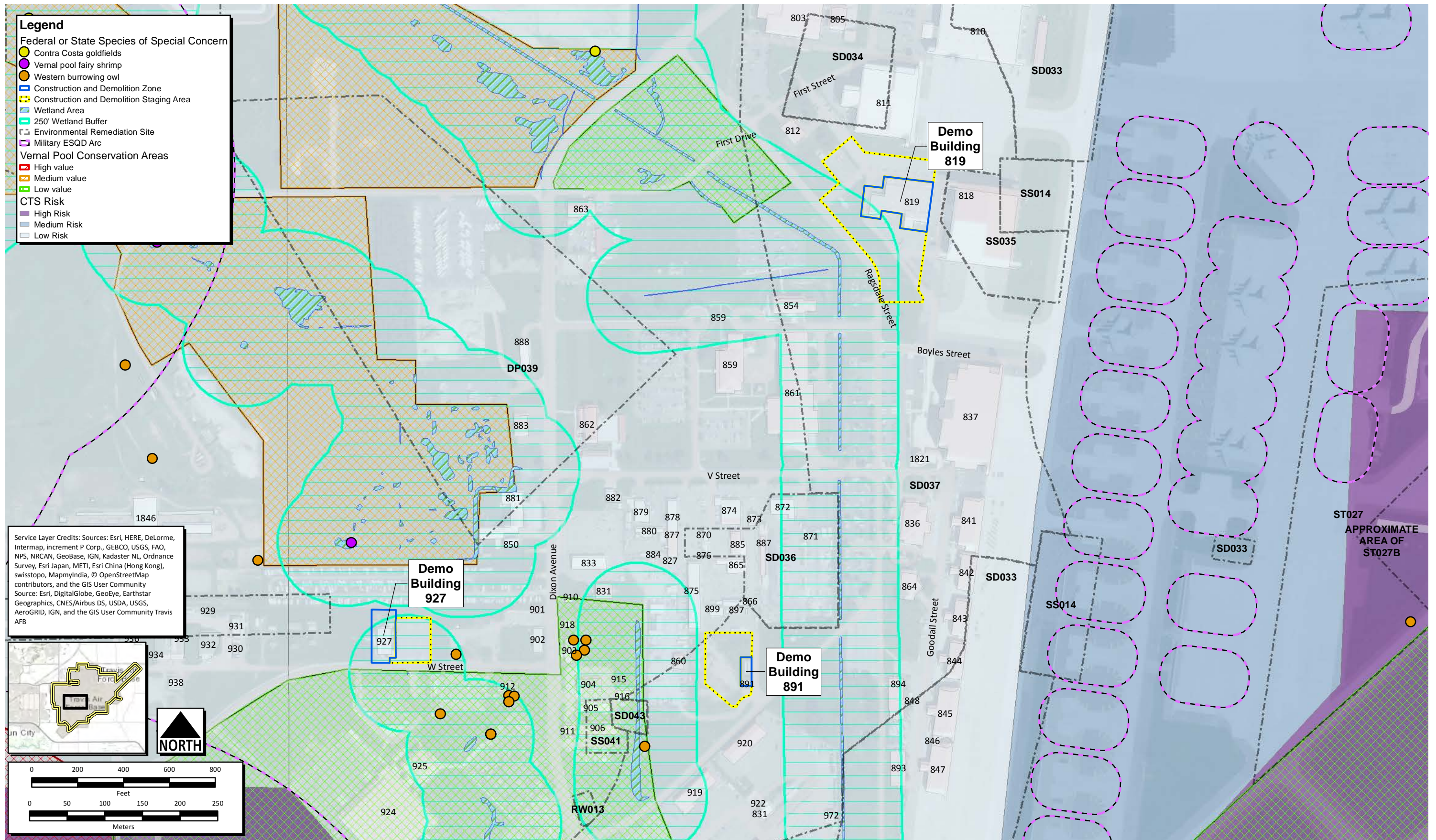
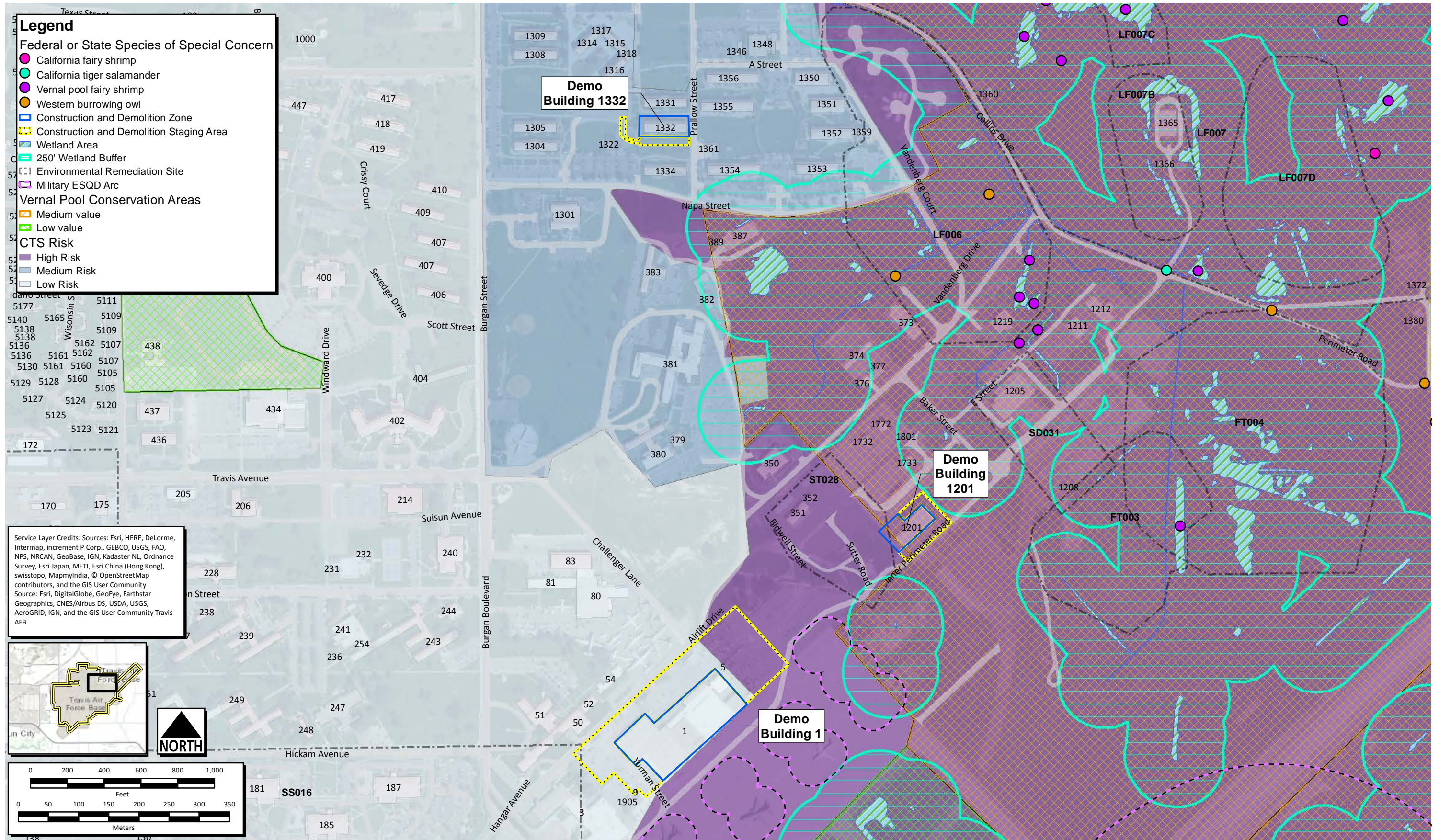


Figure: 2-6
Demo Buildings 1, 1201 and 1332



1 This project would consist of demolishing Building 927 and associated infrastructure (7,200
2 SF). As part of this proposed project, the modular building (6,800 SF), including
3 foundation/tie-downs, roof mounted mechanical units (four each), porches (four each)
4 (approximately 65 SF each), as well as a storage shed (140 SF) north of the modular building
5 would be demolished (refer to **Table 2-1**). All utilities would be abandoned in place at-grade.
6 Staging areas would be established in the associated parking lot. The associated asphalt parking
7 lot and surrounding landscaping, including all trees, would remain. Upon completion of
8 demolition activities, the disturbed area would be backfilled, graded for positive drainage,
9 hydroseeded, and allowed to return to natural conditions.

10 Planning District and Land Use: Building 927 is in the Western Planning District, in an area
11 designated as Industrial land use (refer to **Table 2-1**).

12 Constraints: Building 927 is within a 250-foot wetlands buffer, within low-risk CTS habitat,
13 and near a recorded instance of a Western burrowing owl (**Figure 2-5**). It is within the Q Area,
14 but it is considered an intrusive, non-contributing element that is neither historically important
15 nor architecturally significant (Sassaman, 2015 and Polanco, 2015).

- 16 **3. Demolish Building 1115 (Project ID D3):** Building 1115, the former TACAN building, is
17 located on the south side of the airfield in a remote, unpopulated, primarily vegetated area
18 with a small (approximately 2,000 SF) associated gravel driveway and parking lot (**Figure 2-4**).
19 The parking lot is shared by Building 1114, located approximately 40 feet to the northeast. It
20 is located within the airfield CZ and APZ and is in violation of height requirements (**Figure**
21 **2-1**). Building 1115 is on the north side of Perimeter Road less than 750 feet from the
22 south/southeastern installation boundary.

23 This project would include the demolition of Building 1115, which was originally constructed
24 in 1957. This building has been vacant for several years and was permanently damaged by fire
25 in 2017. Demolition of Building 1115 (398 SF) would be at-grade, and the existing concrete
26 foundation and the southernmost fuel tank and its foundation (27 SF) would be removed
27 (refer to **Table 2-1**). The adjacent building (Building 1114) and its associated structures
28 (TACAN antenna, generator, etc.) to the north and the transformer to the southeast would
29 remain. The associated gravel parking lot would also remain. Staging areas would be
30 established in the associated gravel parking lot and expanded to the vegetated area northeast
31 of the buildings, as needed. Upon completion, the area would be backfilled, graded for positive
32 drainage, hydroseeded and allowed to return to natural conditions. Facility measurements and
33 square footage associated with the expected area of disturbance, staging area, and changes in
34 impervious surface are listed in **Table 2-1**.

35 Planning District and Land Use: Building 1115 is in the South Flightline Planning District, in
36 an area designated as Open Space land use (refer to **Table 2-1**).

37 Constraints: Building 1115 is within a 250-foot wetlands boundary, low value VPCA, and
38 high-risk CTS habitat (**Figure 2-4**).

- 39 **4. Demolish Building 1201 (Project ID D4):** Building 1201 is near the airfield northwest of
40 Inner Perimeter Road between the intersections of Inner Perimeter Road and Baker Street to
41 the north/northeast, and Inner Perimeter Road and Sutter Road to the south/southwest
42 (**Figure 2-6**). It is located within the airfield CZ and APZ and is in violation of height
43 requirements (**Figure 2-1**). Building 1201 has an approximately 10,000-SF parking lot
44 northeast of the facility, and an approximately 45,000-SF parking lot southwest of the facility.

45 This project would include demolition of Building 1201, which was originally constructed in
46 1968 and used as a Consolidated Flight Kitchen. Demolition of Building 1201 (18,215 SF)
47 would be at-grade and the existing concrete foundation and utilities would be removed (refer

1 to **Table 2-1**). The building has deteriorated beyond the point of economical repair and cannot
2 be reasonably altered or economically used. Staging areas would be established in the
3 associated parking lots. Due to its proximity to the airfield and airfield pavements, the
4 footprint of the demolished structure would likely be graded and filled with asphalt, as
5 opposed to hydroseed, to minimize grassy areas that birds could use for feeding. This would
6 help in reducing bird strikes and eliminating sources of foreign objects and debris (FOD) to
7 improve runway safety.

8 Planning District and Land Use: Building 1201 is in the North Flightline Planning District, in
9 an area designated as Aircraft Operations and Maintenance land use (refer to **Table**
10 **2-1**).

11 Constraints: Building 1201 is partially within the boundary of ERP Site ST-028 (**Figure 2-6**),
12 partially within medium-value VPCA, and is entirely within high-risk CTS habitat
13 (**Figure 2-6**).

- 14 5. **Demolish Building 819 (Project ID D5):** Building 819 is in a developed and populated area
15 dedicated to airfield support west of the center portion of the Travis Airfield. Building 819 is
16 just west of Hangar Building 818, on the northeast side of Ragsdale Street between the
17 intersections of Boyles Street and First Drive (**Figure 2-5**).

18 This project would include the demolition of Building 819, which was originally constructed
19 in 1973. The building is currently still in use as an aircraft maintenance shop but is outdated
20 and in constant need of repair. The maintenance function would be moved to another facility
21 with ample space to accommodate current equipment and personnel. As part of this proposed
22 project, the main building (39,000 SF) and the associated infrastructure such as the foundation
23 and utilities would be demolished at grade (refer to **Table 2-1**). The associated parking lot
24 would accommodate the initial staging of equipment, with minimal disruption of localized
25 parking for other facilities. Vegetated areas to the southwest of the facility could be utilized to
26 support additional staging areas, as needed. Due to its proximity to the airfield and airfield
27 pavements, the footprint of the demolished structure would likely be graded and filled with
28 asphalt, as opposed to hydroseed, to minimize grassy areas that birds could use for feeding.
29 This would help in reducing bird strikes and eliminating sources of FOD to improve runway
30 safety.

31 Planning District and Land Use: Building 819 is in the North Flightline Planning District, in
32 an area designated as Aircraft Operations and Maintenance land use (refer to **Table 2-1**).

33 Constraints: Building 819 is in proximity to ERP Site SS-035 (**Figure 2-1**), partially within a
34 250-foot wetlands boundary, and entirely within low-risk CTS habitat (**Figure 2-5**).

- 35 6. **Demolish Building 1 (Project ID D6):** Building 1 is located adjacent to the north end of
36 the Travis Airfield, in a heavily populated area established to provide airfield support. It is
37 located within the airfield CZ and APZ and is in violation of height requirements (**Figure**
38 **2-1**). Building 1 has three associated parking lots to the north, south/southwest, and
39 north/northeast. The north and south/southwest parking lots are approximately 100,000 SF
40 and the larger, nearly 265,000-SF parking lot is to the north/northeast. The building and
41 parking lots are south of Airlift Drive between the intersections of Inner Perimeter and Sutter
42 Road to the north/northeast, and Inner Perimeter and Yorman Road to the south/southwest
43 (**Figure 2-6**).

44 This project would include the demolition of Building 1, which was originally constructed in
45 1946 and has been extensively modified through renovation in the subsequent years. Building
46 1 is currently in use as a Squadron Operations and Warehouse but is outdated and in constant
47 need of repair. The maintenance function would be moved to other facilities with ample space

1 to accommodate the equipment and personnel. Demolition activities would involve
2 demolishing the main structure (161,000 SF), and the associated infrastructure such as the
3 foundation and utilities would be demolished at grade (refer to **Table 2-1**). Staging areas would
4 be established in the associated parking lots. Due to its proximity to the airfield and airfield
5 pavements, the footprint of the demolished structure would be graded and filled with asphalt,
6 as opposed to hydroseed, to minimize grassy areas that birds could use for feeding. This would
7 help in reducing bird strikes and eliminating sources of FOD to improve runway safety.

8 Planning District and Land Use: Building 1 is in the North Flightline Planning District, in an
9 area designated as Aircraft Operations and Maintenance land use (refer to **Table 2-1**).

10 Constraints: Building 1 is within low-risk CTS habitat, but it is immediately adjacent to
11 high-risk CTS habitat (**Figure 2-6**).

- 12 **7. Demolish Building 1182 (Project ID D7):** Building 1182 is located on the south side of the
13 airfield in a remote, sparsely populated, primarily vegetated area on the north side of Perimeter
14 Road (**Figure 2-4**). The fence-line on the south side of this portion of Perimeter Road
15 coincides with the eastern border of the installation. Thus Building 1182 is approximately 50
16 feet from the eastern installation boundary.

17 This project would include the demolition of Building 1182, which was originally constructed
18 in 1955 and most recently used as a shed for protection of electrical equipment. The electrical
19 shed is no longer in use, has deteriorated beyond the point of economical repair, and cannot
20 be reasonably altered or economically used. As part of this proposed project, the structure
21 (276 SF) and associated infrastructure such as the foundation and remaining utilities would be
22 demolished at grade (refer to **Table 2-1**). The laydown area would be established in the gravel
23 driveway to the south/southwest of the facility. Due to its location away from airfield
24 pavements, the area would be backfilled, graded for positive drainage, hydroseeded and
25 allowed to return to natural conditions.

26 Planning District and Land Use: Building 1182 is in the Airfield Planning District, in an area
27 designated as Airfield land use (refer to **Table 2-1**).

28 Constraints: Building 1182 is within medium-value VPCA and high-risk CTS habitat
29 (**Figure 2-4**).

- 30 **8. Demolish Building 1332 (Project ID D8):** Building 1332, a dormitory, is in the northeastern
31 portion of the developed area north of the Travis AFB Airfield (**Figure 2-6**). The location is
32 heavily populated with numerous other dormitories and community amenities such as
33 common areas, courtyards, and basketball courts. Building 1332 is located west of Prallow
34 Street and is approximately 450 feet northwest of the intersection of Prallow Street and Napa
35 Street.

36 This project would include the demolition of Dormitory Building 1332, which was originally
37 constructed in 1954. The dormitory is no longer in use, has deteriorated beyond the point of
38 economical repair, and cannot be reasonably altered or economically used. As part of this
39 proposed project, the three-story dormitory (25,120 SF) and the associated infrastructure such
40 as the foundation and utilities would be demolished at grade (refer to **Table 2-1**). Staging areas
41 could be established in the vegetated area south of the building, and on paved areas to the
42 west and northwest. Due to its location away from the airfield, the disturbed area would be
43 backfilled, graded for positive drainage, hydroseeded, and allowed to return to natural
44 conditions.

45 Planning District and Land Use: Building 1332 is in the Community Planning District, in an
46 area designated as Unaccompanied Housing land use (refer to **Table 2-1**).

1 Constraints: Building 1332 is within medium-risk CTS habitat (**Figure 2-6**).

- 2 **9. Demolish Building 891 (Project ID D9):** Building 891 is located near the center of the
3 installation, in an area set back from direct airfield support. The general area is populated and
4 within an operational/maintenance support district. It is on the north side of Ragsdale Street,
5 approximately 1,000 feet northeast of the intersection with Dixon Avenue (**Figure 2-5**).

6 This project would include the demolition of Building 891, a former gas vaporizer. The
7 building was originally constructed in 1957 and has been abandoned in place for many years.
8 Remaining structures include the process building (288 SF), an adjacent above-ground storage
9 tank (AST) (80 SF), and two additional ASTs (620 SF each) for propane with associated above-
10 ground and underground piping (refer to **Table 2-1**). The gas vaporizer facility is no longer
11 required, has deteriorated beyond the point of economical repair, and cannot be reasonably
12 altered or economically used for other purposes. As part of this proposed project, the
13 associated fencing, propane tanks, and above-ground and underground piping would also be
14 removed. Staging areas would be established in the associated fenced area west of the building
15 and tanks. Due to its location away from the airfield, the disturbed area would be backfilled,
16 graded for positive drainage, hydroseeded, and allowed to return to natural conditions.

17 Planning District and Land Use: Building 891 is in the North Flightline Planning District, in
18 an area designated as Aircraft Operations and Maintenance land use (refer to **Table 2-1**).

19 Constraints: Building 891 is within low-risk CTS habitat (**Figure 2-5**).

20 **Selection Standard Applicability for Demolition Projects:**

21 The following Selection Standards are applicable to the nine demolition projects:

22 Selection Standard 1: Planning Constraints, Operational Constraints

23 The presence of unnecessary facilities within the CZ and APZ (the former WWTP infrastructure
24 and Buildings 1115, 1201, and 1) conflicts with Selection Standard 1 because of the operational
25 constraints related to airfield safety requirements. Facilities are not compatible within the CZ and
26 APZs because these zones are shown to have higher probabilities of flight related accidents,
27 presenting an unnecessary risk to flight crews and ground-based personnel.

28 Selection Standard 2: Installation Capacity Opportunities, Mission Operations and Mission Support

29 Maintenance of vacant and obsolete facilities reduces current and future installation capacity
30 opportunities because funds used to maintain these facilities could be allocated for future mission-
31 essential requirements.

32 Selection Standard 3: SDIs, Facilities Space Optimization, Facility Condition, 20/20 by 2020

33 Reduction of unneeded and under-utilized facilities in tandem with consolidation of personnel and
34 functions into modern, sustainable facilities maximizes existing operation and maintenance funding.
35 Reducing short- and long-term costs through the consideration of facility conditions and space
36 reduction goals helps support mission longevity and sustainability.

37 **Alternatives Considered but Eliminated from Further Analysis:**

38 Renovating and leasing unneeded facilities on Travis AFB to non-DoD entities were considered but
39 would not be feasible for force protection requirements because secured, active military installations
40 cannot accommodate non-military functions. Therefore, this alternative was dismissed from further
41 analysis early in the scoping process because it does not meet Selection Standard 1: Planning
42 Constraints, *AT/FP Standards* and Selection Standard 2: Installation Capacity Opportunities, *Mission*
43 *Operations and Mission Support*. Mothballing or “pickling” unneeded and obsolete facilities was also
44 considered but would not be feasible because, without maintaining operational climate control

1 systems, facilities would rapidly deteriorate further due to the extreme central California climate. This
2 alternative does not meet Selection Standard 3: Sustainability Development Indicators, *Facilities Space*
3 *Optimization, Facility Condition and 20/20 by 2020*, and was removed from consideration due to the cost
4 of maintaining facilities no longer needed to support the mission. There are no other practicable
5 alternatives that meet the Purpose of and Need for the Proposed Actions.

6 **2.2.1.1 Alternatives Considered for Demolition Projects**

- 7 • Alternatives D1-D9 (Preferred Alternatives): Under these alternatives, the former WWTP
8 Infrastructure, and Buildings 927, 1115, 1201, 819, 1, 1182, 1332, and 891 would be abated of
9 any hazardous materials (including asbestos containing materials and lead-based paint IAW
10 AFI 32-7042, Waste Management) and demolished. Salvageable materials would be recycled,
11 and unsalvageable materials would be properly disposed of. Utility lines, where present, would
12 be isolated, cut, and capped, and the building sites would be backfilled/stabilized, graded for
13 positive drainage, and returned to open green space or covered with asphalt until needed for
14 future development.
- 15 • No Action Alternatives D10-D18: Under the No Action Alternatives, the former WWTP
16 Infrastructure, and Buildings 927, 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would
17 not be demolished, and a permanent CZ waiver IAW UFC 3-260-01 would be required for
18 the former WWTP infrastructure and Buildings 1115, 1201, and 1. This conflicts with
19 Selection Standard 1: Planning Constraints, Operational Constraints, Airfield Operations due
20 to the increased accident probabilities within these zones. Additionally, ongoing maintenance
21 of these facilities would result in continued expenditure of Air Force funds for sustainment,
22 and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused
23 facilities and pavements throughout the installation, which would conflict with Selection
24 Standard 2: Installation Capacity Opportunities, Mission Operations and Mission Support, and
25 Selection Standard 3: SDI, Facilities Space Optimization, Facility Condition, and 20/20 by
26 2020. This is not supportive of the Purpose of and Need for the Proposed Actions. The No
27 Action Alternatives (Alternatives D10-D18) will be carried forward for further analysis,
28 consistent with CEQ regulations, to provide a baseline against which the impacts of the Action
29 Alternatives can be assessed.

30 **2.2.2 Proposed Infrastructure Construction Projects**

31 **2.2.2.1 Project C1: C-5 Galaxy Static Display**

32 Under this project, a new, permanent, static display would be constructed to showcase a C-5 Galaxy
33 airframe. The C-5 Galaxy Static Display would be adjacent to the existing airframe display area,
34 immediately south of Travis Avenue and east of Burgan Boulevard, near the “Y” intersection at
35 Challenger Lane and Travis Avenue (**Figure 2-7**). This location would be approximately 900 feet
36 northwest of the other airframe display area at Airlift Drive and Challenger Lane, and approximately
37 1,700 feet northwest of the Travis Airfield.

38 The addition of the C-5 Galaxy Static Display would complement the existing array of static airframes
39 and stand as a lasting symbol of the aircraft that have flown and been retired at Travis AFB. The new
40 facility would require a permanent, reinforced, six-inch concrete pad to support the weight of the
41 airframe (55,000 SF). Lighting, sidewalks, handicapped accessible ramps, two memorial display
42 plaques, and permanent landscaping (consisting of ginger rock and vegetation to match the adjacent
43 “Golden Bear” display) are included as part of the proposed project.

44 A temporary haul-road (56,520 SF) would be needed to transport the airframe from the flightline to
45 its destination. Construction of this haul-road would involve removing a small stand of trees, grading
46 existing topography, and restoring the haul road and surrounding area to its current state to the

1 maximum extent possible after the airframe has been moved. Staging areas are available in the
2 vegetated area to the northeast across Challenger Lane and due south from the display pad in the
3 parking lot associated with Buildings 81 and 83.

4 Planning District and Land Use: The proposed C-5 Galaxy Static Display would be in the
5 Administrative Planning District, in an area designated as Administration land use (refer to **Table**
6 **2-1**).

7 Constraints: The proposed C-5 Galaxy Static Display would require a limited amount of ground
8 disturbance within high-risk CTS area for the haul road (maximum disturbed area would be expected
9 to be less than 0.20 acres of vegetation in the high-risk area), and most grading and the final display
10 would be within low-risk CTS area outside the APZ (**Figure 2-7**).

11 ***Selection Standard Applicability:***

12 The following Selection Standards apply to the proposed C-5 Galaxy Static Display:

13 Selection Standard 1: Planning Constraints, Operational Constraints, Airfield Operations

14 Since the display is designed for public visitation, its location must be outside the CZ and APZs
15 associated with airfield operations. Additionally, the display site must be proximal to the airfield to
16 accommodate transport with minimal disruption to airfield operations and airfield support facilities.

17 Selection Standard 2: Installation Capacity Opportunities, Built Infrastructure and QOL

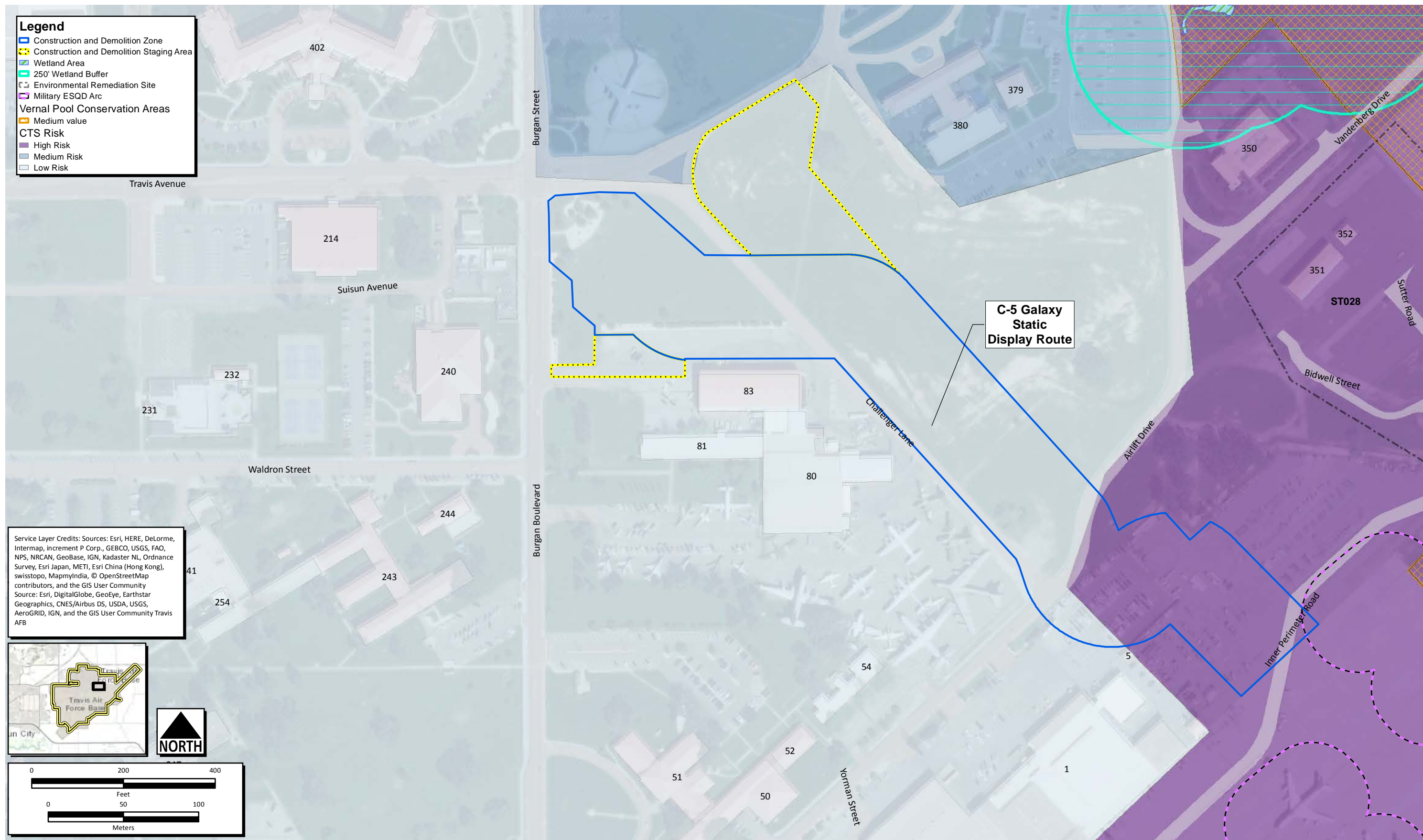
18 The proposed route and method of airframe transport must minimize effect on the Built
19 Infrastructure, such as roadways, utilities, and stormwater infrastructure. Additionally, the display site
20 must be large enough to house the airframe and to provide infrastructure such as visitor parking and
21 walkways (including handicap accessible parking, ramps, and visitor access).

22 The location of the display must be within walking distance of static airframes already on display at
23 Travis AFB to comply with increased QOL criteria.

24 Selection Standard 3: SDI, Land Use

25 The display site must comply with land use district constraints as designated in the IDP.
26

Figure: 2-7
C-5 Galaxy Static Display



1 ***Alternatives Considered but Eliminated from Further Analysis:***

2 Alternatives were limited to other reasonable potential haul routes to move the airframe to the display
3 location. Alternative C1-1 (Proposed Route C) would be used to move the airframe from the flightline
4 through the parking lot on the northwest side Building 1. From the parking lot, the route would
5 necessitate moving the four southeastern-most static airframe displays at the corner of Challenger
6 Lane and E Street/Airlift Drive. A temporary road lined with aggregate base (AB) would then be
7 created parallel to, and on the northeast side of Challenger Lane, until a turn to the west prior to the
8 intersection of Challenger Lane, Airlift Drive, and Travis Avenue similar to Route D (Alternative
9 C1-2). Alternative C1-1 (Route C) was not carried forward for further analysis because it does not
10 meet Selection Standard 2, due to the operational disruption that would be created by the movement
11 of additional airframes and the negative effect on the existing static display area.

12 ***Alternatives Considered for this Proposed Action:***

- 13 • *Alternative C1-2 (Preferred Alternative, Route D):* Under this Alternative, Proposed Route D would
14 be established as a temporary haul route to allow for movement of the airframe from the
15 flightline to the static display pad (**Figure 2-7**). Route D maximizes maneuverability of the
16 airframe on existing paved parking lots, allows for minimal grading requirements for unpaved
17 areas and creates the least negative effect on the Built Infrastructure. The transportation
18 pathway for the C-5 Galaxy would commence at the airfield and follow a path trending
19 northwest from the flightline, parallel to Challenger Lane. It would then shift in a westward
20 direction crossing Challenger Lane southeast of the three-way intersection of Challenger Lane,
21 Airlift Drive, and Travis Avenue (**Figure 2-7**). The area is predominately previously disturbed;
22 however, as previously stated, a small stand of trees would need to be removed.
- 23 • *No Action Alternative C1-3:* Under the No Action Alternative, the C-5 Galaxy Static Display
24 would not be constructed, and a permanent display of the airframe would not occur. This
25 would not improve the QOL as outlined in Selection Standard 2: Installation Capacity
26 Opportunities, *QOL* and would not support the Purpose of and Need for the Proposed
27 Action. The No Action Alternative is carried forward for further analysis, consistent with 32
28 CFR Part 989, to provide a baseline against which the impacts of the Action Alternative can
29 be assessed.

30 ***2.2.2.2 WRM Expansion/New Patient and Staff Parking Area***

31 **Project C2: WRM Expansion/New Patient and Staff Parking Area**

32 This project would involve the construction of a new warehouse facility and a secure, fenced storage
33 pad, and would convert a temporary parking lot, which lacks lighting and stormwater infrastructure,
34 into a permanent parking lot complete with stormwater infrastructure, lighting, sidewalk, and
35 crosswalk.

36 A 35,000-SF heated/cooled warehouse facility would be constructed north of the existing
37 Consolidated Storage Distribution Center (CSDC) facility located west of the DGMC (Building 777).
38 Additionally, a 43,125-SF secure, fenced storage pad would be constructed for WRM tactical
39 equipment and vehicles north of the proposed warehouse facility (**Figure 2-8**). Construction of these
40 facilities would impact the existing paved parking lot adjacent to the WRM, as it would consume
41 approximately 25 percent of the available space. Considering there is a current parking deficit for
42 patients and staff at the DGMC, additional parking would be necessary to offset this loss. The
43 proposed parking lot would be approximately 302 feet by 66 feet (19,932 SF) and would provide
44 approximately 100 additional parking spaces. It would entail paving the surface, adding applicable
45 stormwater features, upgrading exterior lighting, and constructing a crosswalk and sidewalk to access
46 an existing sidewalk leading into the DGMC.

1 Staging areas could be established west of the existing facility and parking lot (refer to **Table 2-1**).
2 Utilities, parking, communication, force protection, and all other necessary support would be
3 expanded to the additional facility.

4 Planning District and Land Use: The proposed WRM expansion site would be in the Medical Planning
5 District, in an area designated as Medical land use (refer to **Table 2-1**).

6 Constraints: The proposed WRM expansion site is near recorded instances of Western burrowing owl
7 and Contra Costa goldfields (CCG) and is partially within high-value VPCA and entirely within low-
8 risk CTS habitat (**Figure 2-8**). The proposed WRM expansion site and parking area are close to, but
9 outside of the 100- and 500-year floodplains (**Figure 2-3**).

10 ***Selection Standard Applicability:***

11 The following Selection Standards apply to the proposed WRM Expansion/New Patient and Staff
12 Parking Area:

13 Selection Standard 1: Planning Constraints, Operational Constraints, AT/FP Standards

14 The proposed site needs a secured, fenced storage pad to accommodate WRM tactical equipment and
15 vehicles.

16 Selection Standard 2: Installation Capacity Opportunities, Built Infrastructure and Mission Support

17 The proposed site must have the ability to support a facility large enough to expand the WRM
18 function, along with parking for privately- and government-owned vehicles (POVs and GOVs).

19 The proposed site for this facility must be located adjacent to the existing WRM facility and associated
20 parking should be close to the WRM facility and the DGMC in the medical district.

21 Selection Standard 3: SDI, Facilities Space Optimization and Land Use

22 The proposed site must maximize Facilities Space Optimization criteria and must comply with land
23 use district constraints as designated in the IDP.

24 ***Alternatives Considered but Eliminated from Further Analysis:***

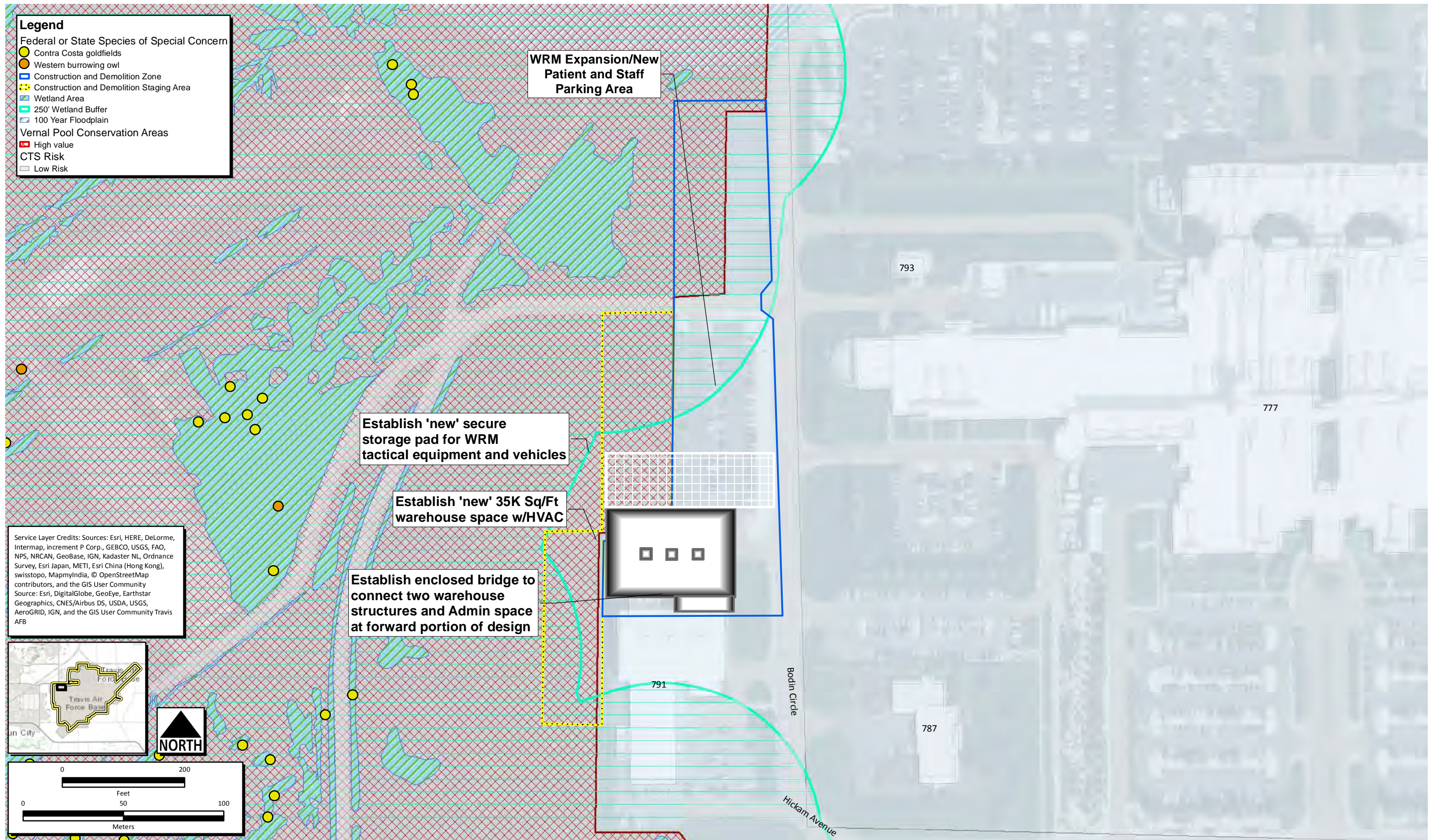
25 Selection of an off-installation location would require additional long-term logistical support and the
26 necessary infrastructure to comply with force protection mandates as established in Selection Standard
27 1: Planning Constraints, AT/FP.

28 No other locations on Travis AFB were evaluated for expansion of the WRM facility because the only
29 practical location for expansion is adjacent to the existing facility. Siting the WRM warehouse and
30 associated parking lot in a geographically separated area would not meet Facilities Space Optimization
31 guidelines, as established in Selection Standard 3.

32 ***Alternatives Considered for this Proposed Action:***

- 33 • *Alternative C2-1 (Preferred Alternative):* Under this Alternative, the WRM warehouses would be
34 connected and the warehousing functions would be co-located. Expansion of the secure
35 vehicle storage pad would improve services available at the facility. The corresponding loss
36 of parking area would be offset by creation of a new permanent paved parking lot less than
37 500 feet to the north, allowing for continued use by WRM personnel, hospital staff, and
38 patients.

Figure: 2-8
WRM Expansion/New Patient and Staff Parking Area



- *No Action Alternative C2-2*: Under the No Action Alternative, a new WRM storage warehouse and paved parking lot would not be constructed and functions would continue to operate inefficiently from multiple facilities throughout the installation. This would not support Selection Standard 2: Installation Capacity Opportunities, *Mission Support* criteria, which promotes efficient operations and improved access to medical facilities by appropriately locating medical resources. Additionally, the current parking deficiency for staff and patients at DGMC would continue to conflict with Selection Standard 2: Installation Capacity Opportunities, *Built Infrastructure*. Furthermore, the No Action Alternative is not supportive of the Purpose of and Need for the Proposed Action. The No Action Alternative is carried forward for further analysis, consistent with 32 CFR Part 989, to provide a baseline against which the impacts of the Action Alternative can be assessed.

2.2.2.3 Youth Center

Project C3: Youth Center

Under this project, a new Youth Center would be constructed to better meet the needs of the growing population at Travis AFB. The current Youth Center has fire safety deficiencies, is outdated, and is no longer compliant with USAF regulations. The proposed facility (30,104 SF) would support approximately 350 children and would comply with all current building standards, seismic codes, fire and safety requirements, and environmental regulations. To better meet the needs of Travis AFB personnel, the facility would encompass three functional Program Areas, which include School Age Program, Youth Program Area, and Teen Program Area.

The proposed Youth Center would be adjacent to the south of the existing Youth center across Collins Drive from the Base housing area, southwest of the intersection of Nevada Street and Collins Drive (**Figure 2-9**). The Youth Center would be close to the northwestern extent of development on Travis AFB, approximately 2,200 feet south of the northern installation boundary.

Staging areas may include portions of the existing parking lot and previously developed vegetated areas west of the existing parking lot. The existing parking lot would be shared and utilities, force protection, and all other necessary support would be expanded to the new facility.

Planning District and Land Use: The proposed Youth Center facility would be in the Community Planning District, in an area designated as Community Service land use (refer to **Table 2-1**).

Constraints: The proposed Youth Center site is located within medium-risk CTS Area (**Figure 2-9**).

Selection Standard Applicability.

The following Selection Standards apply to the proposed Youth Center:

Selection Standard 1: Planning Constraints, Operational Constraints, AT/FP Standards

The site must accommodate AT/FP Standards applicable to a facility for military dependent children.

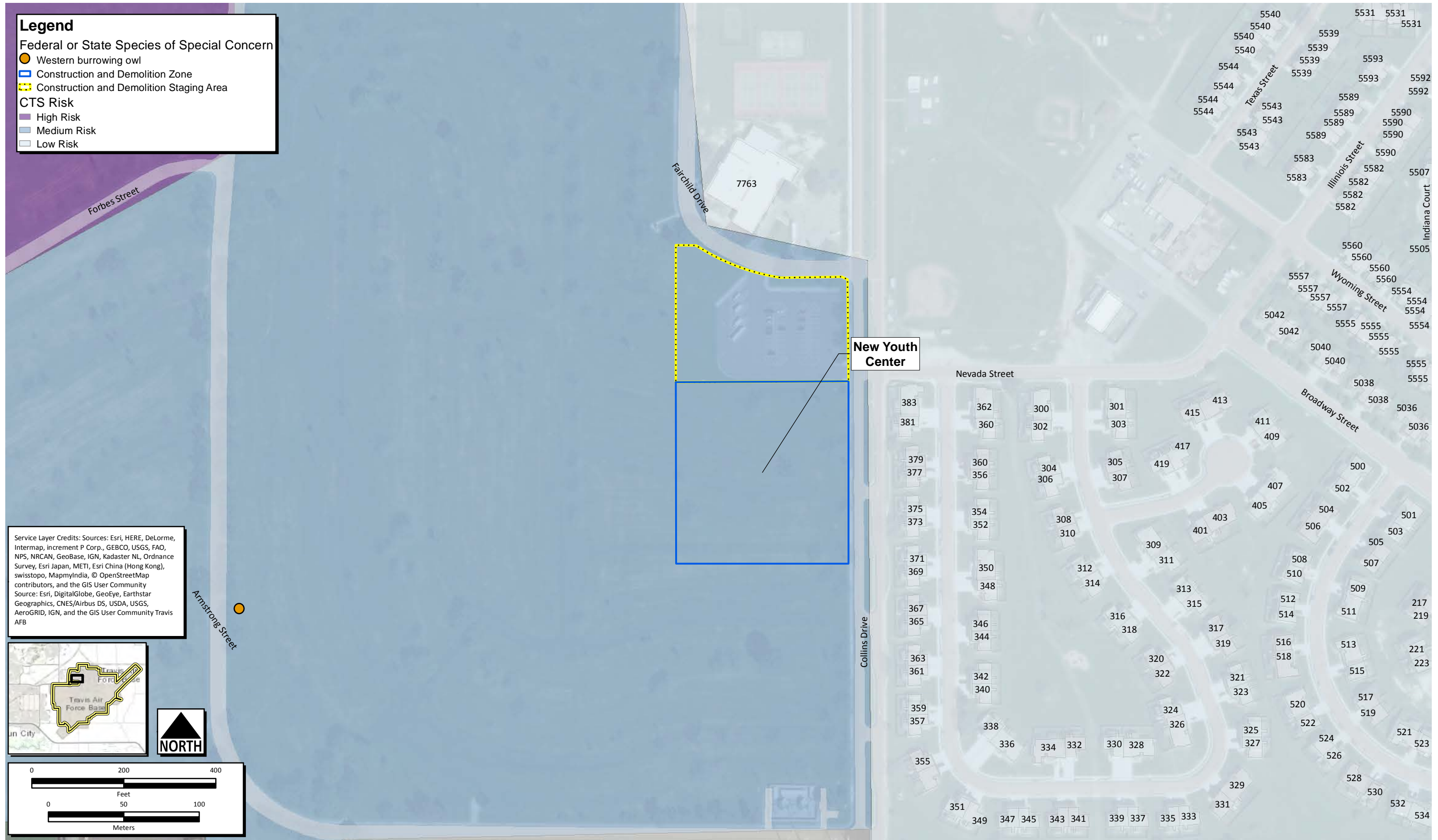
Selection Standard 2: Installation Capacity Opportunities, Built Infrastructure and QOL

The site must have the ability to support a facility large enough to accommodate the proposed 30,104-SF Youth Center, inclusive of the three functional Program Areas (School Age, Youth, and Teen). The location of the Youth Center must be on the north side of Travis Avenue to allow children and parents convenient access from military housing without having to traverse major roadways utilized for primary access to the Installation.

Selection Standard 3: SDI, Facilities Space Optimization and Land Use

The site for this facility must be located adjacent to the existing Youth Center and the site must comply with land use district constraints as designated in the IDP.

Figure: 2-9
New Youth Center



1 ***Alternatives Considered but Eliminated from Further Analysis:***

- 2 • *Alternative C3-1:* Under this alternative, a new Youth Center would be located at an available
3 building site on the Installation that complies with applicable siting constraints within a
4 community service district. These available building sites are not convenient to military
5 housing and would result in children having to travel greater distances and cross high-traffic
6 roadways to reach the Youth Center. This would not provide a safe or convenient location for
7 military families and therefore would not improve quality of life, which would not meet the
8 criteria established in Selection Standard 2: Installation Capacity Opportunities, *QOL*.
- 9 • *Alternative C3-2:* Under this alternative, a new Youth Center would be leased or constructed at
10 an off-Installation location. An off-Installation location would require the necessary
11 infrastructure to comply with force protection as outlined in Selection Standard 1: Planning
12 Constraints, *AT/FP*.

13 Additionally, an off-Installation location would not be convenient for military families, as they
14 would have to leave the installation each day before and after work shifts to drop off and pick
15 up their children. Alternative C3-2 would not improve QOL as stipulated in Selection Standard
16 2: Installation Capacity Opportunities, *QOL*.

- 17 • *Alternative C3-3:* Under this alternative, a new Youth Center would be housed in an existing
18 available facility that would be re-designed and renovated to achieve the specifications of the
19 Youth Center (e.g., support approximately 350 children and three functional Program Areas).
20 No existing facilities at the Installation that would be appropriate to house the Youth Center
21 were identified. Candidate facilities that were evaluated already have tenants, would require
22 extensive renovation, and would be remote from military housing, which does not meet
23 criteria outlined in Selection Standard 2: Installation Capacity Opportunities, *QOL* and
24 Selection Standard 3: SDI, *Facility Space Optimization and Usable Space*. Consequently, no existing
25 facilities were identified for further evaluation.
- 26 • *Alternative C3-4:* Under this alternative, the existing Youth Center would be renovated to meet
27 current building standards, seismic codes, fire and safety requirements, and environmental
28 regulations. Square footage available at the existing facility would not accommodate the three
29 functional Program Areas (School-Age, Youth, and Teen), which does not meet the criteria
30 established in Selection Standard 2: Installation Capacity Opportunities, *Built Infrastructure*.
31 Furthermore, renovation would require closing the existing facility and moving the function
32 to another appropriate facility on installation during renovations. No existing facilities at the
33 installation that would be appropriate to house the Youth Center were identified, which
34 conflicts with criteria outlined in Selection Standard 3: SDI, *Facility Space Optimization and Usable*
35 *Space*.
- 36 • *Alternative C3-5:* Under this alternative, the existing Youth Center would be demolished and
37 reconstructed in its current location. The design for the new facility would include expanded
38 areas to accommodate the three functional Program Areas (School-Age, Youth, and Teen)
39 and would incorporate current building standards, seismic codes, fire and safety requirements,
40 and environmental regulations. This would require closing the existing facility and moving the
41 function to another appropriate facility on the installation. No appropriate facilities at the
42 installation were identified, which conflicts with criteria outlined in Selection Standard 3: SDI,
43 *Facility Space Optimization and Usable Space*.

1 *Alternatives Considered for this Proposed Action:*

- 2 • *Alternative C3-6 (Preferred Alternative):* Under this alternative the new 30,104-SF Youth Center
3 would be constructed due south of the existing Youth Center and share the existing Youth
4 Center parking lot.

5 *No Action Alternative C3-7:* Under the No Action Alternative, a new Youth Center compliant with
6 current building standards, seismic codes, fire and safety requirements, and environmental regulations
7 would not be constructed. The current Youth Center, which has fire safety deficiencies, is outdated,
8 is no longer compliant with AF regulations, and would continue to be used, which does not meet
9 criteria outlined in Selection Standard 3: SDI, *Facility Space Optimization and Facility Condition*.
10 Furthermore, this does not support the Purpose of and Need for the Proposed Action. The No Action
11 Alternative is carried forward for further analysis, consistent with 32 CFR Part 989, to provide a
12 baseline against which the impacts of the Action Alternative can be assessed.

13 **2.2.2.4 RV Storage Area**

14 **Project C4: RV Storage Area**

15 Under this project, approximately two-and-a-half partially paved acres would be repurposed to better
16 accommodate increased demand for RV Storage at Travis AFB. The proposed RV Storage Area would
17 be south of the existing MWR RV Storage Area and east of Building 927 in the south-central industrial
18 area of the installation (**Figure 2-10**). The general area has also been identified as the AFSWP/SAC
19 Q Area, a known Cold War era historical zone.

20 The proposed RV Storage Area would utilize paved parking and previously developed acreage in the
21 space between Building 927, which has been abandoned and proposed for demolition (see
22 **Section 2.2.1**, Project ID D2), and Building 902, on the north side of W Street, approximately 500 feet
23 west of the intersection of W Street and Dixon Avenue. Improvements to this area would include
24 paving approximately 5,000 SF, installing an electricity junction box for lighting, and installing a fenced
25 and gated perimeter. The existing parking lot would serve as the laydown area for any necessary
26 equipment (refer to **Table 2-1**).

27 Planning District and Land Use: The proposed RV Storage Area would be in the Western Planning
28 District, in an area designated as Industrial land use (refer to **Table 2-1**).

29 Constraints: The proposed RV Storage Area is within a 250-foot wetland buffer, is near recorded
30 instances of Western burrowing owls, and is within low-risk CTS Area (**Figure 2-10**).

31 ***Selection Standard Applicability.***

32 The following Selection Standards apply to the proposed RV Storage Area:

33 Selection Standard 1: Planning Constraints, Operational Constraints, AT/FP Standards

34 The site must accommodate AT/FP Standards applicable to an MWR storage facility.

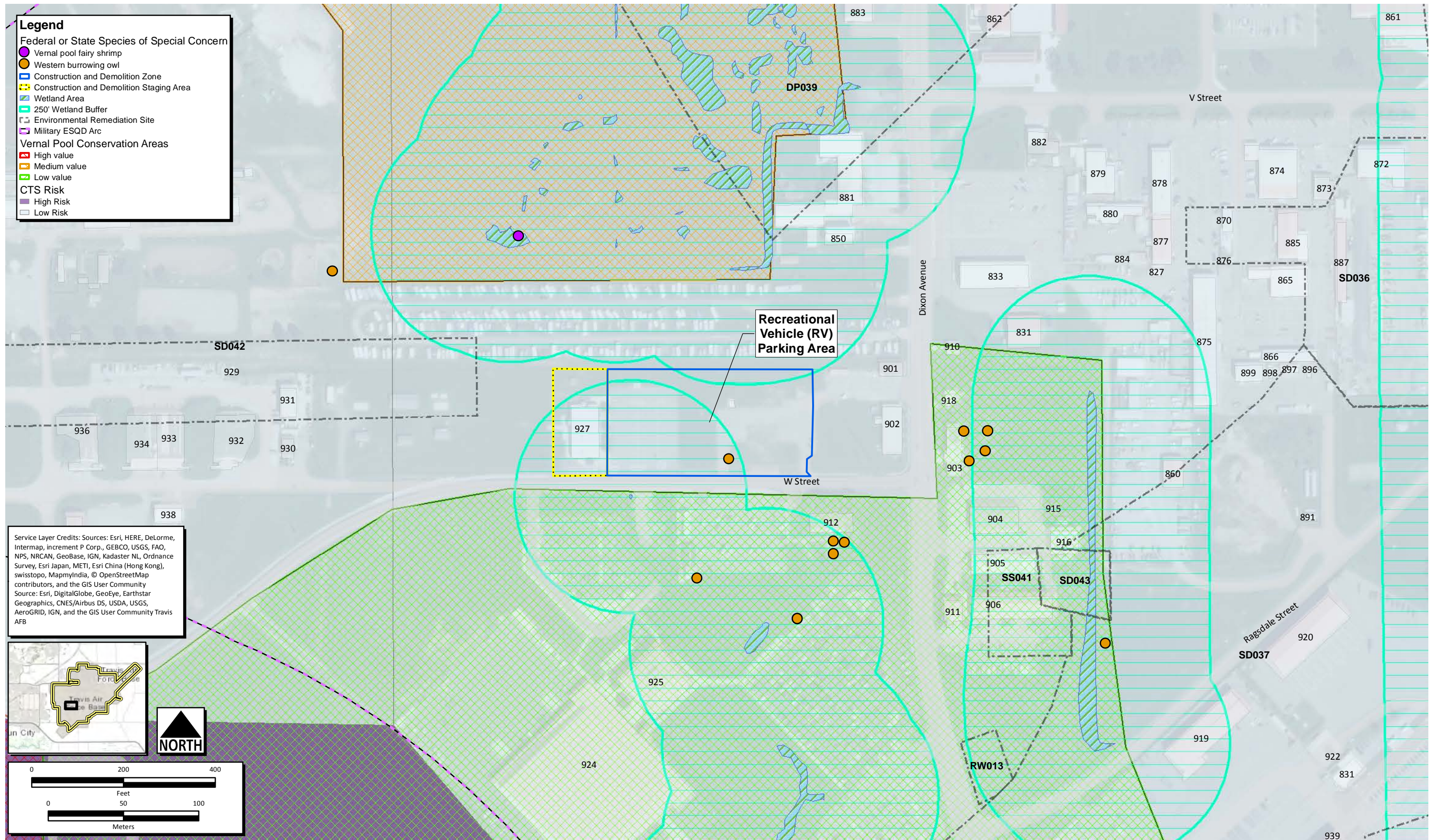
35 Selection Standard 2: Installation Capacity Opportunities, Built Infrastructure and QOL

36 The proposed RV Storage Area must be sized adequately to accommodate at least a 50 percent
37 increase in RV storage capacity and must be in an area of the Installation with unencumbered access
38 and limited traffic density to allow Travis personnel ease of movement of RVs, including trailers and
39 boats.

40 Selection Standard 3: SDI, Facilities Space Optimization and Land Use

41 The RV Storage Area must be constructed as a centralized asset adjacent to the existing RV storage
42 lot and comply with land use district constraints as designated in the IDP.

Figure: 2-10
Recreational Vehicle (RV) Parking Area



1 *Alternatives Considered but Eliminated from Further Analysis:*

- 2 • *Alternative C4-1:* Under this alternative, another location on the Installation would be selected.
3 Several candidate locations were identified and evaluated, but none were proximate to the
4 existing RV storage area, which conflicts with Selection Standard 3: SDI, *Usable Space*.
5 Additionally, some identified locations were in areas of the Installation with more visibility
6 that would not offer the same QOL, which conflicts with Selection Standard 2: Installation
7 Capacity Opportunities, *QOL*.
- 8 • *Alternative C4-2:* Under this alternative, an off-Installation location would be leased to store
9 additional RVs of Travis AFB military personnel. Available space at off-site RV storage
10 facilities is limited within 10 miles of Travis AFB, so identifying a single facility with capacity
11 is not feasible. Further, this option would not improve quality of life under Selection Standard
12 2: Installation Capacity Opportunities, *QOL* and would present security concerns for storage
13 of the RVs under Selection Standard 1: Planning Constraints, .

14 *Alternatives Considered for this Proposed Action:*

- 15 • *Alternative C4-3 (Preferred Alternative):* Under this Alternative, the paved parking lot west of
16 Building 927 and south of the current RV Storage Area would be repurposed as additional RV
17 storage. Repurposing the area would yield a 60 percent increase in available RV storage.
- 18 • *No Action Alternative C4-4:* Under the No Action Alternative, an additional RV storage area
19 would not be constructed. Capacity would remain the same which would not result in fostering
20 Travis AFB quality of life through installation support and services as outlined under Selection
21 Standard 2: Installation Capacity Opportunities, *QOL*. The No Action Alternative does not
22 support the Purpose of and Need for the Proposed Action. The No Action Alternative is
23 carried forward for further analysis, consistent with 32 CFR Part 989, to provide a baseline
24 against which the impacts of the Action Alternative can be assessed.

25 **2.2.3 Renovation and Repair Project**

26 ***2.2.3.1 Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter*** 27 ***Lighting Addition***

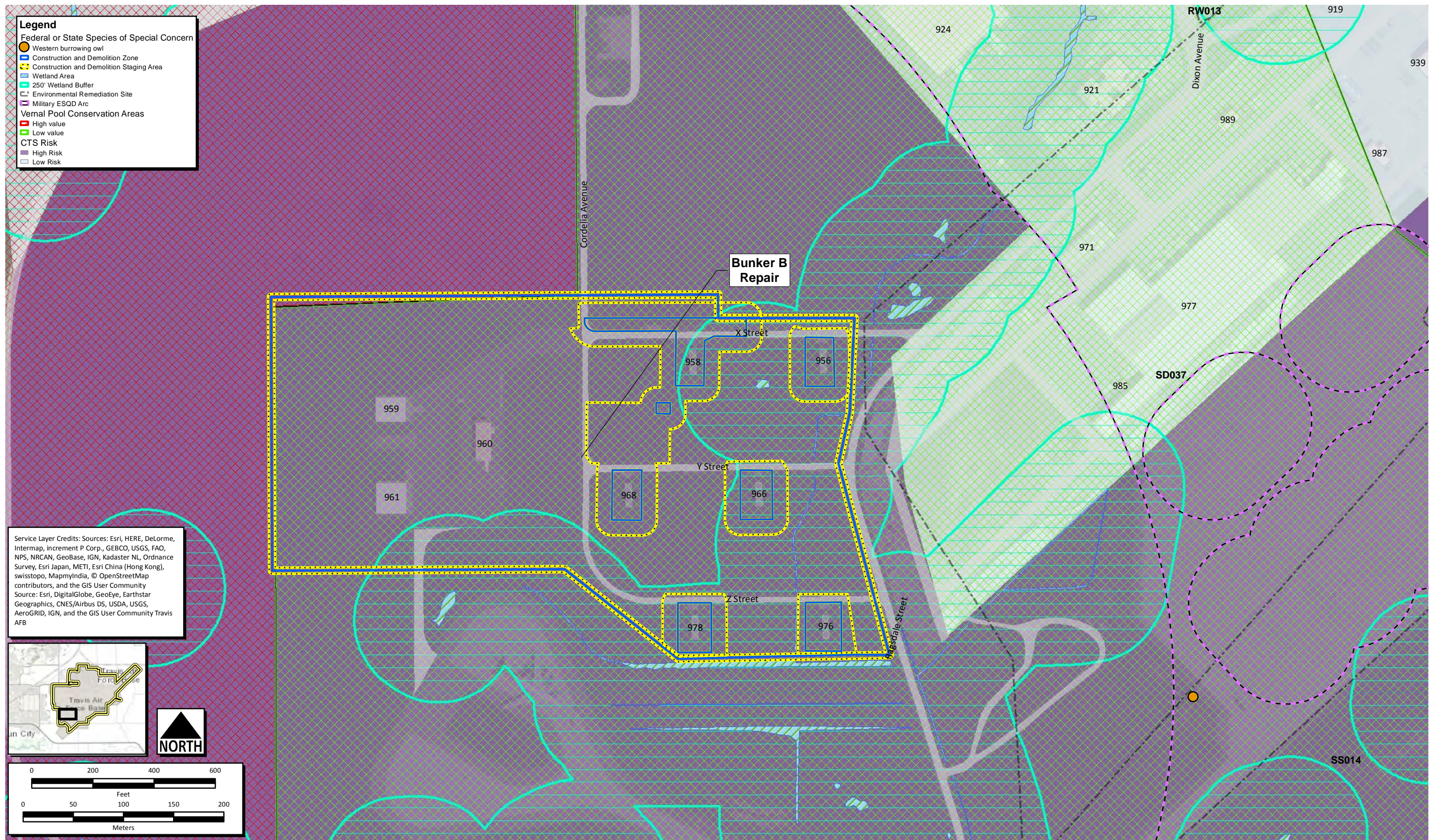
28 **Project R1: Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter** 29 **Lighting Addition**

30 Bunker B is located near the southwestern end of the Travis AFB Airfield (**Figure 2-11**). The closest
31 intersection is X Street and Ragsdale Street. Due to its function as a munition storage area, the area is
32 largely unpopulated and away from infrastructure incompatible with munitions storage and ESQD
33 arcs. The center of the Bunker B Area is approximately 2,500 feet east of the westernmost installation
34 boundary.

35 Under this project, roof repairs, correction of adequate soil cover, and electrical deficiencies present
36 within the Bunker B Area would be undertaken concurrently. Additionally, an electrically-operated
37 security gate would be installed at the main entrance and perimeter lighting would be added around
38 the entirety of the Bunker B Area in accordance with AFI 31-101, *Integrated Defense*.

39 Cracks in the concrete roofs and incompetent levels of soil coverage associated with several of the
40 ECMs in the Bunker B Area necessitate rehabilitation of the roofs of Buildings 956, 958, 966, 968,
41 976, and 978 to comply with USAF explosive storage safety requirements (AFMAN 91-201, Section
42 5.58.1). Roof repairs would involve temporarily removing soil cover to assess and repair cracks in each
43 of the six bunkers (approximately 17,000 SF of soil disturbance per bunker, for a total of 102,000 SF).
44 After repairs are completed, soil cover would be placed to a depth of at least two feet to meet current
45 regulations under Section 5.58.1 of AFMAN 91-201. Additionally, electrical system deficiencies

Figure: 2-11
Bunker B Repair



1 associated with ECMs in the Bunker B Area require replacement, repair, and upgrade to comply with
2 construction standards within the National Fire Protection Act (NFPA) 70 National Electrical Code
3 (NEC). Present conditions do not meet Article 230.7 *Service Equipment – Disconnect Means* for easy,
4 ready access to disconnect electrical services, and require undue burden to both 60 CES technicians
5 and City, Light & Power (owners of the transformer). Recommended repairs and upgrades include
6 installation of electrical surge protection devices (SPDs), replacement of aged/failing facility electrical
7 panels, and relocation of a site electrical panel.

8 Each ECM would need an SPD added to its electrical system, which would involve approximately 30
9 SF of trenching around each of the six bunkers (180 SF total) to protect the existing system from
10 failure due to exposure, bad weather, and pest intrusion.

11 The current electrical distribution panel is not up to code, and the new distribution panel would need
12 a new transformer. These additions would require a new concrete pad (approximately 100 SF) to
13 support the panel and transformer, and approximately 50 SF of trenching to accommodate new
14 connections.

15 Replacement of the existing mechanical security gate at the entrance of the Bunker B Area would
16 include installation of an electrically-operated security gate outfitted with a remotely actuated
17 mechanism to comply with security requirements. The existing mechanical gate would be removed
18 and disposed of concurrently with the installation of a new gate. The current pole-mounted
19 transformer would be demolished and replaced with a pad-mounted transformer, requiring an
20 approximate 100 SF concrete pad and approximately 2,500 SF of trenching for connection to the new
21 gate. The area in proximity to the gate would require regrading and replacing asphalt (approximately
22 1,000 SF) to ensure gaps under the gate meet security requirements.

23 The addition of perimeter lighting would require a new lighting panel to be installed on a concrete pad
24 (approximately 100 SF) next to the existing transformer. To accommodate installation of the new
25 lighting, approximately 6,500 linear feet or 21,000 SF of trenching would be required around the
26 perimeter of the Bunker B fence line.

27 All trenching (23,730 SF total; 21,000 SF for perimeter lighting and 2,730 SF for electrical conduit)
28 would be restored and revegetated as appropriate upon completion. Adequate space for staging is
29 present within the fenced area associated with Bunker B.

30 Planning District and Land Use: Bunker B is in the Western Planning District, in an area designated
31 as Industrial land use (refer to **Table 2-1**).

32 Constraints: The Bunker B Area is partially within a 250-foot wetlands buffer and entirely within low
33 value VPCA and High-Risk CTS Area. Due to its function as a munition storage area, it is within the
34 ESQD (**Figure 2-11**).

35 ***Selection Standard Applicability:***

36 The following Selection Standards apply to the proposed Bunker B Area Roof and Electrical Repair,
37 Security Gate Upgrade, and Perimeter Lighting Addition:

38 Selection Standard 1: Planning Constraints, Operational Constraints, Explosive Safety Zones

39 The upgraded facility must be located within the ESQD as a function of its use for explosives storage.

40 Selection Standard 2: Installation Capacity Opportunities, Mission Support

41 The upgraded facility must comply with the AFMAN 91-201, *Explosive Safety Standards* and AFI 31-101,
42 *Integrated Defense*.

43

1 Selection Standard 3: SDI, Facility Space Optimization and Land Use

2 Alternatives must maximize use of existing facilities and/or infrastructure, and the site must comply
3 with land use district constraints as designated in the IDP.

4 ***Alternatives Considered but Eliminated from Further Analysis:***

5 In general, potential alternatives to facility renovation and repair projects, other than the No Action
6 Alternative, involve replacement (i.e., demolition and new construction, either on the same site or at
7 a different location) or relocation to an existing facility.

- 8 • *Alternative R1-1:* Under this Alternative, the contents of the non-compliant bunkers would be
9 consolidated into existing compliant bunkers, and the non-compliant bunkers would be
10 abandoned/demolished. No existing facilities at the Installation that would be appropriate to
11 house the stored munitions were identified, which conflicts with criteria outlined in Selection
12 Standard 3: SDI, *Facility Space Optimization and Usable Space*.
- 13 • *Alternative R1-2:* Relocating the entire Bunker B to a newly constructed facility was not carried
14 forward because it would not meet Selection Standard 3: SDI, *Facility Space Optimization, Usable*
15 *Space*.

16 ***Alternatives Considered for this Proposed Action:***

- 17 • *Alternative R1-3 (Preferred Alternative):* Under this Alternative, the soil depth and electrical system
18 upgrade/repair would occur concurrently, resulting in one instance of ground disturbance.
19 This would minimize potential effects to small mammals such as ground squirrels and pocket
20 gophers and the CTS which may inhabit burrows across the site. The Bunker B Area entry
21 gate would be upgraded to an electrically operated and remotely actuated gate and perimeter
22 lighting would be installed IAW AFI 31-101, *Integrated Defense*.
- 23 • *No Action Alternative R1-4:* Under the No Action Alternative, correction of adequate soil cover
24 and electrical deficiencies present within the Bunker B Area would not occur, and an
25 electrically operated security gate to the area and perimeter lighting would not be installed.
26 Water leaks and incompetent levels of soil coverage associated with several of the ECMs in
27 Bunker B Area would remain and Travis AFB would not be in compliance with USAF
28 explosive storage safety requirements (AFMAN 91-201, Section 5.58.1 and AFI 31-101,
29 Section 6.6.3), which would not meet Selection Standard 2: Installation Capacity
30 Opportunities, *Mission Support*. Furthermore, this does not support the Purpose of and Need
31 for the Proposed Action. The No Action Alternative is carried forward for further analysis,
32 consistent with 32 CFR Part 989, to provide a baseline against which the impacts of the Action
33 Alternative can be assessed.

34 **2.3 Identification of the Preferred Alternative**

35 The Preferred Alternative is to implement each of the proposed demolition, infrastructure
36 construction, and renovation/repair projects at the preferred sites as identified in **Section 2.3** and
37 summarized in **Table 2-1**.

38

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1

Table 2-1 Summary of the Preferred Alternative

Project Map ID	Installation Project Number	Project Name	Facilities (SF)	Potential Disturbed Area associated with Demolition, Construction, or Renovation/Repair (SF) ¹	Potential Staging Area (SF) ²	Change in Impervious Surface Area (SF) ³	Planning District	Land Use Category
Demolition Projects								
D1	XDAT051034	Demolish Infrastructure Associated with former WWTP	13,412 (Total Facility) Facility includes: 2 Imhoff tanks (5,000 total) 2 digesters (706 each) primary settling tank (5,000) manhole structures (approx. 2,000)	110,978	85,542	-13,412	South Flightline District	Industrial
D2	XDAT121004	Demolish Building 927	7,200 (Total Facility) Facility includes: 6,800 modular facility 4 porches (65 each) Shed (140)	23,826	30,424	-7,200	Western District	Industrial
D3	XDAT131013	Demolish Building 1115	428 (Total Facility) Facility includes Fire damaged building (398) Fuel tank foundation (27)	6,823	9,487	-428	South Flightline District	Open Space
D4	XDAT071136	Demolish Building 1201	18,215	35,382	37,034	0 (Due to proximity to the airfield and airfield pavements, the footprint of the demolished structure would likely be filled with asphalt to limit bird habitat to reduce bird strikes and eliminate sources of FOD for improved safety.)	North Flightline District	Aircraft Ops. and Maintenance
D5	XDAT081039	Demolish Building 819	39,000	51,148	167,947	0 (Due to proximity to the airfield and airfield pavements, the footprint of the demolished structure would likely be filled with asphalt to limit bird habitat to reduce bird strikes and eliminate sources of FOD for improved safety.)	North Flightline District	Aircraft Ops. and Maintenance
D6	XDAT111018	Demolish Building 1	161,000	184,230	312,644	0 (Due to proximity to the airfield and airfield pavements, the footprint of the demolished structure would likely be filled with asphalt to limit bird habitat to reduce bird strikes and eliminate sources of FOD for improved safety.)	North Flightline District	Aircraft Ops. and Maintenance
D7	XDAT991008	Demolish Building 1182	276	2,244	14,603	-276	Airfield District	Airfield
D8	XDAT111016	Demolish Building 1332	25,120 (three-story facility)	29,786	16,954	-13,940	Community District	Housing (unaccompanied)

Project Map ID	Installation Project Number	Project Name	Facilities (SF)	Potential Disturbed Area associated with Demolition, Construction, or Renovation/Repair (SF) ¹	Potential Staging Area (SF) ²	Change in Impervious Surface Area (SF) ³	Planning District	Land Use Category
D9	XDAT171040	Demolish Building 891	988 (Total Facility): Facility includes process building (288) adjacent AST foundation (80) two propane tank foundations (620)	5,987	51,086	-988	North Flightline District	Aircraft Ops. and Maintenance
Construction Projects								
C1	XDAT879190	C-5 Galaxy Static Display	55,000	465,901	106,878	+55,000	Administrative District	Administration
C2	XDAT740353	WRM Expansion/New Patient and Staff Parking Area	98,057 (Total Facilities) Facilities include: 35,000 warehouse 43,125 storage pad 19,932 parking lot	155,031	73,439	+55,224	Medical District	Medical
C3	XDAT085011	New Youth Center	30,104	148,330	93,098	+30,104	Community District	Community Service
C4	N/A	RV Storage Area	98,450	5,500	27,394	+5,000	Western District	Industrial
Renovation/Repair Project								
R1	XDAT087366	Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter Lighting Addition	127,030 (Total Facility) 102,000 bunker repairs 21,000 trenching for perimeter lighting 2,730 trenching for electrical conduit 1,000 expanded asphalt pad for electrical gate 300 concrete pads for transformers/panel	148,422	268,516	+1,300	Western District	Industrial
1. Shown on associated Figures as Construction and Demolition Zone with blue outline.								
2. Shown on associated Figures as Construction and Demolition Staging Area with yellow outline.								
3. (-) indicates a reduction in impervious surface area and (+) indicates an increase in impervious surface area.								
4. Represents increase in impervious surface, not the total facilities area.								

3.0 AFFECTED ENVIRONMENT

Chapter 3 describes the environmental resources and conditions most likely to be affected by the Proposed Actions and provides information to serve as a baseline from which to identify and evaluate potential environmental impacts that could result from the Proposed Actions and No Action Alternatives. Baseline conditions represent current conditions. The potential environmental impacts of the Proposed Action and No Action Alternatives on the baseline conditions are described in **Chapter 4**.

3.1 Resource Areas Eliminated from Detailed Analysis

Resource areas that are not impacted (40 CFR 1501.7(3)) or that have been covered by prior environmental review (40 CFR 1506.3) have not been carried forward for further environmental review. The determination of environmental resources to be analyzed versus those not carried forward for detailed analysis is part of the EA scoping process. CEQ and USAF regulations (40 CFR §1501.7(a)(3) and 32 CFR 989.18) encourage project proponents to identify and eliminate resource areas from detailed study that are not important or have no potential to be impacted through implementation of their respective proposed actions.

The following environmental resource areas were found to have no applicability to the Proposed Actions, the Alternative Actions, or the No Action Alternative, as there would be no potential for direct, indirect, or cumulative impacts. Therefore, these environmental resource areas are not carried forward for detailed analysis in this IDEA.

Airspace - Airspace addresses the safe, orderly, and compatible use of the nation's airspace through a system of flight rules and regulations, airspace management actions, and air traffic control procedures. The national airspace system is designed and managed to protect aircraft operations around most airports and along air traffic routes connecting these airports, as well as within special areas where activities such as military flight testing and training are conducted. The 14 demolition, construction, and renovation/repair projects considered in this EA do not involve modifications to the airspace or the introduction or changing of aircraft assigned to Travis AFB, as such, detailed analysis of this resource is not warranted.

Wilderness - The Wilderness Act of 1964 helped establish a National Wilderness Preservation System. A wilderness refers to an area of undeveloped Federal land retaining its natural character and influence, without permanent improvements or human habitation, which is protected and managed as to preserve its natural conditions. Areas with such designation nearest Travis AFB are the Cedar Roughs Wilderness, located approximately 25 miles northwest and the Philip Burton Wilderness, located approximately 50 miles west near the Point Reyes National Seashore and the Golden Gate National Recreation Area. These areas are managed by the State of California and the United States National Park Service, respectively. All 14 proposed demolition, construction, and renovation/repair projects would be within the boundary of Travis AFB and thus none would affect designated Wilderness.

Socioeconomics - Potential socioeconomic impacts were assessed in terms of the direct effects of the Proposed Actions on the local economy and the related effects on population and socioeconomic attributes. The 14 demolition, construction, and renovation/repair projects that would take place over the next five years are expected to generate temporary jobs for construction workers in the local region as well as revenue to the local economy through the purchase of materials and supplies. However, no new military jobs would be generated as a result of the Proposed Actions and no new personnel would be relocated to Travis AFB. Therefore expenditures, employment, and population at Travis AFB are expected to remain at about current levels.

1 Demolition of Building 819 (D5) and Building 1 (D6) would result in indirect, temporary impacts
2 through the on-installation relocation of operations, including equipment and personnel.
3 Socioeconomic impacts associated with the remaining demolition projects are not anticipated since
4 operations at each facility have ceased and are otherwise vacant of personnel and equipment. Proposed
5 construction projects including the WRM Expansion (C2) and the Youth Center (C3) are anticipated
6 to result in slightly beneficial but negligible impacts to socioeconomic resources.

7 Travis AFB has a relatively continuous economic impact on the local and regional economy, which is
8 estimated at approximately \$1 billion annually (Travis AFB, 2016a). Although, the Proposed Action
9 would support general operation of Travis AFB in furtherance of its mission and thus indirectly
10 support local and regional jobs and revenue, it would not be expected to significantly impact
11 socioeconomic conditions in the ROI. Therefore, impacts to Socioeconomics as a result of the
12 Proposed Actions would be minor, beneficial, and less-than significant.

13 **Environmental Justice** – EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-*
14 *Income Populations* and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*,
15 requires that all federal agencies address the effects of policies on minorities, low-income populations,
16 and children.

17 The demolition, construction, and renovation/repair associated with the 14 Proposed Actions
18 analyzed in this IDEA would be contained within the Travis AFB boundaries and would not
19 significantly impact on- or off-base communities. Therefore, no populations (minority, low-income,
20 or otherwise) would be disproportionately or adversely impacted and no adverse impact with regard
21 to environmental justice would result.

22 Implementation of the Proposed Action would not result in increased exposure of children to
23 environmental health risks or safety risks such as those associated with the generation, use, or storage
24 of hazardous materials. Standard construction site safety precautions (e.g., fencing and other security
25 measures) would reduce potential risks to minimal levels and any potential impacts to children would
26 be negligible and short-term.

27 **3.2 Noise**

28 **3.2.1 Definition of the Resource**

29 Noise and sound share the same physical aspects, but noise is considered a disturbance while sound
30 is defined as an auditory effect. The meaning of noise for this analysis is undesirable sound that
31 interferes with verbal communication and hearing or is otherwise annoying (unwanted sound). Human
32 response to increased noise levels varies according to the source type, characteristics of the noise
33 source, distance between source and receptor, receptor sensitivity, and time of day.

34 Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used
35 to quantify sound intensity. The decibel is a logarithmic unit that expresses the ratio of a sound
36 pressure level to a standard reference level. Sound frequency is quantified using the units of hertz
37 (Hz). Sound level measurements used to characterize sound levels that can be sensed by the human
38 ear are designated “A-weighted” (dBA). A-weighted denotes the adjustment of the frequency content
39 of a noise event to represent the way in which the average human ear responds to the noise event.

40 The dBA noise metric describes steady noise levels, although very few noises are constant. Therefore,
41 the A-weighted Day-Night Level (DNL) has been developed. The DNL is defined as the average
42 sound energy in a 24-hour period with a 10-dB penalty added to nighttime levels (10 p.m. to 7 a.m.).
43 The DNL is a useful descriptor for noise because it averages ongoing, yet intermittent noise and it
44 measures total sound energy over a 24-hour period. Noise levels used to characterize community noise
45 effects from such activities as aircraft or building construction are measured in the DNL.

46 Most people are exposed to sound levels of DNL 50 to 55 dBA or higher daily. Studies specifically

1 conducted to determine noise effects on various human activities show that about 90 percent of the
 2 population is not significantly bothered by outdoor sound levels below a DNL of 65 dBA (FICON
 3 1992). As shown in **Table 3-1**, a normal suburban area is about 55 dBA, which increases to 60 dBA
 4 for an urban residential area and 80 dBA in the downtown section of a city. Common household items
 5 range from 50 dBA for a refrigerator running in the background of the home to 90 dBA for an active
 6 garbage disposal.

7 **Table 3-1 Noise Levels of Common Locations and Items**

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway Train
Tractor	90	Garbage Disposal
Noisy Restaurant	85	Blender
Downtown (large city)	80	Ringling Telephone
Freeway Traffic	75	TV Audio
Very Noisy Urban Residential Area	70	Hair Dryer
Noisy Urban Residential Area	65	Vacuum
Normal Conversation	60	Sewing Machine
Suburban Residential Area	55	Coffee Pot
Rainfall	50	Refrigerator
Quiet Residential Area	40	Library

8 Source: FHWA, 1980 and Harris, 1998

9 The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with applicable
 10 federal, state, and local noise control regulations. In 1974, the U.S. Environmental Protection Agency
 11 (USEPA) provided information suggesting continuous and long-term noise levels greater than 65 dBA
 12 DNL are normally unacceptable for noise-sensitive receptors such as residences, schools, churches,
 13 and hospitals.

14 3.2.2 Affected Environment

15 The primary sources of noise on Travis AFB are airfield operations, industrial activities, and vehicular
 16 traffic. Typical ambient sound levels on the installation have not been measured, but would be
 17 expected to be comparable to sound levels in other moderately populated areas in the western U.S.
 18 During the day, both on- and off-post individuals may be subjected to multiple sources of noise,
 19 including military unit training activities, construction activities, normal operation of HVAC (heating,
 20 ventilation, and air-conditioning) systems, lawn maintenance, and general maintenance of streets and
 21 sidewalks.

22 Sensitive Receptors at Travis AFB would include the DGMC, Travis Child Development Center,
 23 Travis Youth Center, Twin Peaks Chapel, Base Housing, Unaccompanied Housing (Dormitories), and
 24 the Temporary Lodging Facility (Westwind Inn). **Table 3-2** shows noise contour levels (DNL)
 25 resulting from airfield operations (takeoffs, landings, static runups, and aircraft maintenance) relative
 26 to the Proposed Action locations.

27 The ROI for noise concerns is the immediate area around each Proposed Action site.

1 A noise study was conducted at Travis AFB in 2009 to establish noise contours for airfield operations
 2 at the installation (Travis AFB, 2009). Proposed Action locations are in the following noise contours
 3 (**Figure 2-1**) and **Table 3-2**, below:

4 **Table 3-2 Noise Contour Intervals at the Proposed Action Locations**

Site ID	Site Name	Noise Contour Interval (dBA DNL)
D1	Former WWTP	70-75
D2	Building 927	60-65
D3	Building 1115	75-80
D4	Building 1201	70-75
D5	Building 819	60-70
D6	Building 1	70-80
D7	Building 1182	75-80
D8	Building 1332	60-65
D9	Building 891	65-70
C1	C-5 Galaxy Static Display	65-75
C2	WRM Warehouse/New Patient and Staff Parking Area	<60
C3	New Youth Center	<60
C4	Recreational Vehicle (RV) Storage Area	60-65
R1	Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter Lighting Addition	60-70

5 Source: Travis AFB, 2016a

6 3.3 Air Quality

7 3.3.1 Definition of the Resource

8 Air quality for a given location is defined by ambient air concentrations of specific pollutants
 9 determined by the USEPA to be of concern related to the health and welfare of the public and the
 10 environment. Pollutant emissions typically refer to the amount of pollutants or pollutant precursors
 11 introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the
 12 ambient air concentrations of criteria pollutants, either by directly affecting the pollutant
 13 concentrations measured in the ambient air or by interacting in the atmosphere to form criteria
 14 pollutants.

15 Air quality is influenced by many factors including the type and amount of pollutants emitted into the
 16 atmosphere, the size and topography of the air basin, and local and regional meteorological influences.
 17 For this IDEA, the region of influence (ROI) for analysis of air quality includes Travis AFB, the
 18 surrounding communities, and the area potentially affected by emissions from the projects. The
 19 Project Areas for this analysis are the areas where the proposed demolition, construction, and
 20 renovation/repair activities would occur.

21 *National Ambient Air Quality Standards (NAAQS)*

22 The significance of air pollutant concentrations in a region or geographical area is determined by
 23 comparison to federal and/or state ambient air quality standards. Under the authority of the CAA, the
 24 USEPA has established nationwide air quality standards to protect public health and welfare with an

1 adequate margin of safety. These federal standards, known as the National Ambient Air Quality
2 Standards (NAAQS), represent the maximum allowable ambient concentrations and have been
3 developed for six criteria pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO),
4 respirable particulate matter less than or equal to 10 micrometers in diameter (PM₁₀), particulate matter
5 less than or equal to 2.5 micrometers in diameter (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). The
6 NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic
7 meter [µg/m³]) determined over various periods of time (averaging periods). Short-term standards
8 (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may
9 not be exceeded more than once a year. Long-term standards (annual periods) were established for
10 pollutants with chronic health effects.

11 Based on measured ambient criteria pollutant data, the USEPA designates areas as having air quality
12 equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). When
13 nonattainment areas achieve the applicable NAAQS, the areas are in maintenance status for a period
14 of 10 or more years. Areas are designated as unclassifiable for a pollutant when insufficient ambient
15 air quality data are available to form a basis for attainment status. In applying air quality regulations,
16 unclassifiable areas are treated like areas that are in attainment of the NAAQS.

17 *State of California Air Quality Standards under the CAA*

18 State and local agencies may establish ambient air quality standards (AAQS) and regulations of their
19 own, provided these are at least as stringent as the federal requirements. California has set standards
20 for certain pollutants, such as particulate matter and O₃, which are more protective of public health
21 than respective federal standards. California has also set standards for some pollutants that are not
22 addressed by federal standards.

23 *Air Pollutant Emissions Sources*

24 CO, SO₂, NO₂, Pb, and most particulate matter are emitted directly into the ambient air by mobile
25 sources (e.g., on-road cars, trucks, buses and non-road construction equipment); stationary point
26 sources (e.g., power plants, industries and refineries); and area sources (e.g., unpaved roads, wood
27 burning, gas stations, dry cleaners). O₃ is formed after emissions of precursors nitrogen oxides (NO_x)
28 and volatile organic compounds (VOCs) combine in the presence of sunlight. PM_{2.5} may also be
29 formed from secondary chemical reactions in the ambient air. Air pollutants are also emitted by natural
30 sources including forest fires and volcanic eruptions.

31 Hazardous air pollutants (HAPs) are pollutants known or suspected to cause serious health or adverse
32 environmental impacts if present above risk-based concentrations. The CAA amendments identified
33 187 compounds as HAPs. HAPs are emitted by mobile sources, gasoline dispensing, industrial
34 facilities, and aircraft and combustion processes. California has established regulations to control toxic
35 air contaminants including the toxic “hot spots” program (AB 2588).

36 **3.3.2 Affected Environment**

37 *Climate*

38 Travis AFB is in Zone 14 of the Geographic Subdivisions and Climate Zones of California. The region
39 has a Mediterranean climate characterized by mild, wet winters and warm, dry summers. The rainy
40 season typically begins in November and continues into March. During this period, approximately 83
41 percent of the annual rainfall occurs (Travis AFB, 2016a). Seasonal temperature and rainfall variations
42 affect the migratory patterns of birds and the presence of active species present on Travis AFB, which
43 in turn affect opportunities for development.

44 Although Travis AFB is not near the coast, it is near the Carquinez Strait, a major break in the Coast
45 Range that allows the ocean to moderate temperatures at Travis AFB. Travis AFB usually experiences
46 mild temperatures; the mean annual temperature is 60 degrees Fahrenheit (°F).

1 The lowest temperatures are in January, with a mean of 46° F. The highest temperatures are in July
2 and August, with a mean of 72° F. The monthly mean relative humidity typically ranges from 50
3 percent in June to 77 percent in January. The mean annual relative humidity is 60.5 percent.
4 Precipitation is approximately 17 inches per year.

5 During late summer and early fall, Travis AFB is subject to marine air flowing from high pressure cells
6 offshore toward low-pressure areas in the Central Valley. Winds tend to flow from the west at 15 to
7 20 miles per hour and are typically strongest in the afternoon. Travis AFB occasionally experiences
8 easterly winds generated in the Central Valley. Winds from the Central Valley tend to have higher
9 pollutant loads.

10 *Region of Influence*

11 Air emissions produced from demolition, construction, renovation/repair, and operation of the
12 Proposed Actions would mainly affect air quality within Solano County. Operation of the proposed
13 new facilities would affect air quality within the immediate surroundings associated with Travis AFB.
14 Identifying the ROI for air quality requires knowledge of the pollutant type, source emission rate,
15 proximity of project emission sources to other emission sources, and local and regional meteorology.
16 For inert pollutants, such as CO and particulates in the form of dust, the ROI is generally limited to a
17 few miles downwind from a source. The ROI for reactive pollutants such as O₃ may extend much
18 farther downwind than for inert pollutants. O₃ is formed in the atmosphere by photochemical
19 reactions of previously emitted pollutants called precursors. O₃ precursors are mainly NO_x and photo
20 chemically reactive VOCs. In the presence of solar radiation, the maximum effect of precursor
21 emissions on O₃ levels usually occurs several hours after they are emitted and many miles from their
22 source.

23 *San Francisco Bay Area Air Basin*

24 Travis AFB is in central Solano County, which is at the eastern edge of the San Francisco Bay Area
25 Air Basin (Basin). The Basin extends from Napa County in the north to Santa Clara County in the
26 south. The Basin encompasses 5,340 square miles and includes 19 percent of California's population.
27 The Basin is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD)
28 pursuant to a mandate from the California Air Resources Board (CARB).

29 According to the CARB, the Basin is designated nonattainment for state standards (California
30 Ambient Air Quality Standard or CAAQS) for O₃, PM₁₀, and PM_{2.5}. The Basin is designated attainment
31 for NO₂, SO₂, CO, sulfate particulates, and lead particulates under the CAAQS.

32 By federal standards (NAAQS), the Basin is also designated nonattainment for 8-hour O₃, PM_{2.5}, and
33 maintenance for CO. Travis AFB falls within two different air quality NAAQS designated areas: the
34 San Francisco Bay Area and the San Francisco-Oakland-San Jose Area. The San Francisco Bay Area
35 is designated marginal nonattainment for the 2008 NAAQS for 8-hour O₃ and moderate
36 nonattainment for the 2006 NAAQS for PM_{2.5}. The San Francisco-Oakland-San Jose Area is
37 designated maintenance for the 1971 NAAQS for CO.

38 Both federal and state ambient air quality standards are listed in **Table 3-3**, along with the area's
39 respective attainment status. Pollutants of concern (i.e., pollutants to be scrutinized in the assessment)
40 for NEPA include all criteria pollutants (and their precursors) that at the location of the proposed
41 actions are in nonattainment or maintenance for state or federal, or both, ambient air quality standards.
42 However, for the General Conformity applicability analysis, the pollutants of concern ONLY include
43 all criteria pollutants (and their precursors) at the location of the proposed actions that are in
44 nonattainment or maintenance for the NAAQS. Therefore, while the NEPA assessment must address
45 state and federal pollutants of concern, the General Conformity assessment must only include federal
46 pollutants of concern.

1 **Table 3-3 Federal and State Ambient Air Quality Standards and Area Attainment Status**

Pollutant	Averaging Time	California Standards ¹		National Standards ²	
		Concentration ³	Attainment Status	Concentration ^{3,5}	Attainment Status
Ozone (O ₃) ⁸	8 Hour	0.070 ppm (137 µg/m ³)	Nonattainment ⁹	0.070 ppm Primary same as secondary	Nonattainment ⁴
	1 Hour	0.09 ppm (180 µg/m ³)	Nonattainment		<i>See Note #5</i>
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m ³)	Attainment	9 ppm (10 mg/m ³)	Maintenance
	1 Hour	20 ppm (23 mg/m ³)	Attainment	35 ppm (40 mg/m ³)	Maintenance
Nitrogen Dioxide (NO ₂) ¹⁰	1 Hour	0.18 ppm (339 µg/m ³)	Attainment	0.100 ppm <i>See Note #10</i>	Unclassified
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Attainment
Sulfur Dioxide (SO ₂) ¹¹	24 Hour	0.04 ppm (105 µg/m ³)	Attainment	0.14 ppm (365 µg/m ³) <i>See Note #11</i>	Attainment
	1 Hour	0.25 ppm (655 µg/m ³)	Attainment	0.075 ppm (196 µg/m ³)	Attainment
	Annual Arithmetic Mean			0.030 ppm (80 µg/m ³) <i>See Note #11</i>	Attainment
Particulate Matter (PM ₁₀) ⁹	Annual Arithmetic Mean	20 µg/m ³	Nonattainment ⁷		
	24 Hour	50 µg/m ³	Nonattainment	150 µg/m ³	Unclassified
Particulate Matter – (PM _{2.5}) ⁹	Annual Arithmetic Mean	12 µg/m ³	Nonattainment ⁷	12 µg/m ³	Unclassified/ Attainment
	24 Hour			35 µg/m ³ <i>See Note #10</i>	Nonattainment
Sulfates	24 Hour	25 µg/m ³	Attainment		
Lead (Pb) ^{12, 13}	30-day Average	1.5 µg/m ³		-	Attainment
	Calendar Quarter	-		1.5 µg/m ³ <i>See Note #12</i>	Attainment
	Rolling 3 Month Average ¹⁴	-		0.15 µg/m ³	<i>See Note #14</i>

Pollutant	Averaging Time	California Standards ¹		National Standards ²	
		Concentration ³	Attainment Status	Concentration ^{3,5}	Attainment Status
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 µg/m ³)	Unclassified		
Vinyl Chloride C ₂ H ₃ Cl (chloroethene) ¹²	24 Hour	0.010 ppm (26 µg/m ³)	No information available		
Visibility Reducing particles ¹⁴	8 Hour (10:00 to 18:00 PST)	<u>See Note #14</u>	Unclassified		

Reference: Bay Area Air Quality Management District. 2017.

- 1 mg/m³ = milligrams per cubic meter
- 2 µg/m³ = micrograms per cubic meter
- 3 ppm = parts per million

4 **NOTES**

5 1. California standards for ozone, carbon monoxide, sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate
 6 matter (PM₁₀, PM_{2.5}, and visibility-reducing particles) are values that are not to be exceeded. All others are not to be
 7 equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title
 8 17 of the California Code of Regulations.

9 2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be
 10 exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured
 11 at each site in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is
 12 attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is
 13 equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged
 14 over three years, are equal to or less than the standard. Contact the USEPA for further clarification and current national
 15 policies.

16 3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based
 17 upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be
 18 corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by
 19 volume, or micromoles of pollutant per mole of gas.

20 4. Any equivalent measurement method that can be shown to the satisfaction of the ARB to provide equivalent results
 21 at or near the level of the air quality standard may be used. USEPA has made recommendations on attainment
 22 designations and will issue final designations by April 30, 2018.

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

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

27 7. Reference method as described by the USEPA. An “equivalent method” of measurement may be used but must have
 28 a “consistent relationship to the reference method” and must be approved by the USEPA.

29 8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070
 30 ppm.

31 9. On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The
 32 existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary
 33 standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained.
 34 The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

35 10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum
 36 concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units
 37 of ppb. California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to
 38 the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is
 39 identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

State Implementation Plan

The federal CAA establishes air quality planning processes and requires areas in nonattainment or maintenance of a NAAQS to develop a State Implementation Plan (SIP) that details how the state will attain and maintain the standard within mandated timeframes.

Sixteen areas in California were designated nonattainment for 8-hour O₃ in 2012. In 2015, the USEPA strengthened the 8-hour O₃ standard to 70 parts per billion (ppb). The nonattainment status designations for the revised 8-hour O₃ standard went final on April 30, 2018 and include Travis AFB in the San Francisco nonattainment area. In 2012, USEPA also strengthened the annual fine particulate matter (PM_{2.5}) standard to 12 micrograms per µg/m³. USEPA designated four areas in California as nonattainment for this standard.

On May 17, 2016, CARB released for public review and comment the Proposed 2016 State Strategy for the SIP (State SIP Strategy), describing proposed measures to achieve the reductions necessary from the mobile sector and consumer products to meet federal ozone and PM_{2.5} standards over the next 15 years. The State SIP Strategy proposes a suite of regulatory and incentive programs, referred to as State SIP measures, which are designed to achieve the required emission reductions to meet the federal standards (CARB, 2016a).

General Conformity Rule

The General Conformity Rule was established under the CAA § 176(c)(4) to ensure that actions taken by federal agencies in NAAQS nonattainment and maintenance areas do not interfere with a state’s plans for bringing these areas back into attainment with the air quality standards. Unlike the air permitting programs that only consider emissions from stationary sources, the General Conformity Rule requires federal agencies to consider emissions from all activities associated with the proposed federal action, including new or modified stationary, mobile, and fugitive emission sources. The requirements of the General Conformity Rule do not apply to federal actions located in NAAQS attainment areas. The purpose of the rule is to ensure that federal actions do not cause or contribute to:

- New violations of the NAAQS
- Worsening of existing violations of the NAAQS
- Delays in attaining the NAAQS

1 A General Conformity assessment begins with an Applicability Analysis that includes screening for
2 exemptions or presume to conform actions and, if needed, an estimate of air emissions that would be
3 generated by the Proposed Actions compared with the *de minimis* threshold levels defined in the rule.
4 If the emission levels are below the threshold levels, a Record of Non-Applicability (RONA) is
5 prepared. If the emission levels are above the threshold levels, an in-depth Conformity Determination
6 is required. In the case of the projects identified in this IDEA, a RONA would be prepared because
7 the calculated air emissions are below the threshold levels defined by the rule.

8 A General Conformity Applicability Analysis is required for this IDEA to calculate estimated air
9 pollutant emissions due to the Proposed Actions. As required by the Air Force Civil Engineer Center
10 (AFCEC), this analysis must be done using the USAF's automated Air Conformity Applicability
11 Model (ACAM) or other AFCEC approved automated tool. At the time of publication, ACAM is the
12 only currently AFCEC approved automated air quality impact assessment tool. Details regarding the
13 Proposed Actions are entered into ACAM and a Record of Conformity Analysis (ROCA) is
14 automatically produced.

15 *Stationary Source Operating Permits*

16 As a means of tracking and limiting air pollutant emissions, federal, state, and local air quality
17 regulations require any new or modified stationary source (i.e., facility) to obtain a permit to construct
18 and operate if its emissions will be above certain thresholds for criteria and non-criteria pollutants.
19 This includes federally defined HAPs and California-defined toxic air contaminants (TACs).

20 The purpose of air permitting is to establish regulatory control over both small and large sources of
21 air pollutants and monitor their impact on air quality. An air permit identifies the facility's air emission
22 sources, allowable emission levels, and conditions of operation. The regulations also provide
23 exemptions from air permitting requirements for certain types and sizes of emission activities. In
24 California, any person or organization proposing to construct, modify, or operate a facility or
25 equipment that may emit pollutants from a stationary source into the atmosphere must first obtain an
26 Authority to Construct from the county or regional air pollution control district (APCD) or air quality
27 management district (AQMD). Air districts issue permits and monitor new and modified sources of
28 air pollutants to ensure compliance with national, state, and local emission standards and to ensure
29 that emissions from such sources will not interfere with the attainment and maintenance of ambient
30 air quality standards adopted by CARB and the USEPA (CARB, 2017a).

31 Each air district determines which emissions sources and levels have an insignificant impact on air
32 quality and, therefore, are exempt from permit requirements. Examples of activities that may be
33 exempt from the permit requirements include:

- 34 • Combustion Equipment Less Than 2 million British thermal units (BTUs) per hour Fired
35 on Natural Gas/Liquefied Petroleum Gas
- 36 • Stationary Piston-Type Internal Combustion Engines with 50 Brake-Horsepower or Less
- 37 • Incinerators Used in Residential Dwellings for Not More Than Four Families

38 Some projects also require a Prevention of Significant Deterioration (PSD) permit from the USEPA.
39 The USEPA requires PSD permits on a pollutant-by-pollutant basis when two conditions exist:

- 40 • The project's emissions may exceed 100 tons per year for certain industrial activities and
41 250 tons per year for other industrial activities
- 42 • The project is in an attainment area where the ambient air quality standard is not being
43 exceeded for the pollutant that the proposed project will emit (CARB, 2017a)

44
45 The Proposed Actions do not trigger any permitting requirements.

1 *Truck and Bus Regulation: On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation*

2 This regulation requires diesel trucks and buses that operate in California to be upgraded to reduce
 3 emissions. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines
 4 or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks
 5 and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR)
 6 greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets
 7 operating low use vehicles, fleets operating in selected vocations like agricultural and construction,
 8 and small fleets of three or fewer trucks (CARB, 2017c).

9 *Applicable State Regulations and Standards*

10 In California, CARB is responsible for enforcing air pollution regulations. The federal CAA establishes
 11 air quality planning processes and requires areas in nonattainment or maintenance of a NAAQS to
 12 develop a SIP that details how the state will attain and maintain the applicable standard within
 13 mandated timeframes. The requirements and compliance dates for attainment are based on the
 14 severity of the nonattainment classification of the area.

15 *Solano County and BAAQMD Baseline Air Pollutant Emissions*

16 The current level of air pollutant emissions within a region represents the baseline emissions. Baseline
 17 emission levels for both Solano County and the BAAQMD were taken from:

- 18 • CARB Almanac of Emissions of Calendar Year 2012 (CARB, 2013 and CARB, 2015), and
- 19 • BAAQMD Greenhouse Gas (GHG) inventory for Calendar year 2011 (BAAQMD 2015).

20 These data represent the most recent published data available for this area. The baseline emissions
 21 are shown in **Table 3-4** (tons per day) and **Table 3-5** (tons per year), respectively.

22 **Table 3-4 Local and Regional Baseline Emissions (tons/day)**

Location	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	ROG ^(D)	GHGs ^(C)
Solano County ^(A)	74.86	26.38	12.59	4.15	0.70	22.16	15,530.05
BAAQMD ^(B)	974.88	331.25	88.85	40.95	30.89	244.89	261,491.5

- 23 (A) Local emission totals reported in tons per day from the 2016 SIP Emission Projection Data.
 24 [https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_DIV=-](https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CO&F_CO=48)
 25 [4&F_DD=Y&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CO&F_CO=48](https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CO&F_CO=48)
 26 (B) Regional emission totals reported in tons per day from the 2016 SIP Emission Projection Data.
 27 [https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105A](https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_DIV=-4&F_AREA=DIS&F_DIS=BA)
 28 [DJ&F_DIV=-4&F_AREA=DIS&F_DIS=BA](https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_DIV=-4&F_AREA=DIS&F_DIS=BA)
 29 (C) GHG emissions reported as non-biogenic CO₂ equivalent from the Bay Area Emissions Inventory Summary
 30 Report: Greenhouse Gases Base Year 2011- Table L (BAAQMD 2015), converted to tons per day.
 31 [http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_GHG](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_GHG_Summary.ashx?la=en)
 32 [Summary.ashx?la=en](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_GHG_Summary.ashx?la=en)
 33 (D) Note: Reactive organic gas (ROG) is reported in the 2016 SIP Emission Projection Data instead of VOCs.
 34
 35
 36

37 **Table 3-5 Local and Regional Baseline Emissions (tons/year)**

Location	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	ROG ^(D)	GHGs ^(C)
Solano County ^(A)	27,323.9	9,628.7	4,595.35	1,514.75	255.5	8,088.4	5,142,400
BAAQMD ^(B)	355,831.2	120,906.3	32,430.25	14,946.75	11,274.85	89,384.85	1,655,735

- 1 (A) Local emission totals reported in tons per day from the 2016 SIP Emission Projection Data.
2 [https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_DIV=-](https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CO&F_CO=48)
3 [4&F_DD=Y&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CO&F_CO=48](https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CO&F_CO=48)
- 4 (B) Regional emission totals reported in tons per day from the 2016 SIP Emission Projection Data.
5 [https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_DIV=-](https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_DIV=-4&F_AREA=DIS&F_DIS=BA)
6 [4&F_AREA=DIS&F_DIS=BA](https://www.arb.ca.gov/app/emsinv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_DIV=-4&F_AREA=DIS&F_DIS=BA)
- 7 (C) GHG emissions reported as non-biogenic CO₂ equivalent from the Bay Area Emissions Inventory Summary Report: Greenhouse Gases
8 Base Year 2011 – Table L (BAAQMD 2015), in metric tons per day. Solano County GHG emissions are only for the portion of Solano
9 County within the BAAQMD.
10 http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_GHGSummary.ashx?la=en
- 11 (D) Note: Reactive organic gas (ROG) is reported in the 2016 SIP Emission Projection Data instead of VOCs.

12 Solano County is in attainment for criteria pollutants NO₂, SO₂, sulfates, and Pb. The County is in
13 nonattainment for O₃ and PM_{2.5}, and in maintenance status for CO. O₃, PM_{2.5}, and CO are the major
14 regional air pollutants of concern in the San Francisco Bay Area. O₃ is primarily a problem in the
15 summer and PM_{2.5} in the winter.

16 In the summer, most of Solano County is exposed to prevailing westerly winds through the Carquinez
17 Strait, which mixes and reduces O₃ levels by drawing cooler, marine air from the Pacific Ocean and
18 San Pablo Bay eastward. However, when the marine flow is weak or nonexistent, O₃ levels may exceed
19 health standards on a few days each year, mainly east of Suisun City.

20 In Solano County, PM_{2.5} concentrations can become elevated enough to exceed health standards
21 during the winter when air pollution is transported from the Central Valley due to prevailing easterly
22 winds. Local residential wood burning can also cause elevated particulate levels on cold, calm evenings
23 during winter (BAAQMD, 2016).

24 O₃ is not shown in the baseline emissions tables because it is not directly emitted as a pollutant; it is
25 formed in the atmosphere when VOC, which is also known as reactive organic gas (ROG), and NO_x
26 precursor emissions react in the presence of sunlight. Meteorology plays a major role in O₃ formation.
27 Summer is the peak O₃ season in the Bay Area. Because of the reaction time involved, peak O₃
28 concentrations often occur far downwind of the precursor emissions. Therefore, O₃ is a regional
29 pollutant that often impacts a large area (CARB, 2013).

30 *Greenhouse Gases (GHGs)*

31 GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes as
32 well as human activities. The accumulation of GHGs in the atmosphere regulates the earth's
33 temperature. Science indicates a trend of increasing global temperatures over the past century due to
34 an increase in GHG emissions from human activities. The climate change associated with this global
35 warming is producing negative environmental, economic, and social consequences across the globe.
36 Review of the USEPA GHG inventory website (<https://ghgdata.epa.gov/ghgp/main.do>) indicates
37 that GHG emissions are reported in Solano County, California. Reported GHG emissions totaled
38 approximately 3,045,246 metric tons of carbon dioxide equivalent (CO_{2e}) in 2016 (USEPA, 2016).

39 *Sensitive Receptors*

40 Sensitive receptors are identified facilities or geographic areas that would be used by persons more
41 susceptible to the effects of air pollution (i.e. children, the elderly, or people weak from illness or
42 disease). These receptors generally consist of residences, schools, hospitals, or retirement homes. The
43 nearest off-site sensitive receptors to the Proposed Action Areas are two residential areas to the west
44 of Travis AFB, located within one mile of the Bunker B Area (R1) and the proposed location for the
45 New Youth Center (C3). The Proposed New Youth Center (C3) is also adjacent to a residential area
46 on Travis AFB. Another residential area is located to the northwest of the Proposed Action Areas
47 within approximately one mile of Travis AFB. The DGMC is located adjacent to the WRM Parking
48 Lot (C2), and the demolition of Building 1332 (D8) is adjacent to occupied dormitories on Travis
49 AFB.

1 3.4 Biological Resources

2 3.4.1 Definition of the Resource

3 The ROI for biological resources is Travis AFB and extends to lands controlled by Travis AFB. These
4 lands include geographically separate units (GSUs), contiguous controlled land outside of the
5 perimeter fence, and railroad rights of way that contain habitat for biological resources managed by
6 the Installation. Biological resources include native or naturalized plants and animals, and the habitats
7 such as wetlands, woodlands, and grasslands, in which they exist. Sensitive and protected biological
8 resources include plant and wildlife species that are protected under the Federal ESA (16 USC 1532
9 et seq.) of 1973, as amended, the California Endangered Species Act (CESA), or through other federal
10 and state legislation and regulations; as well as wetland and other protected natural communities.

11 Special-status plants are species that are:

- 12 • listed or proposed for listing as threatened or endangered under the ESA (50 CFR 17.12
13 [listed plants]);
- 14 • candidates for possible future listing as threatened or endangered under the Federal ESA;
- 15 • listed or candidates for listing by the State of California as threatened or endangered under
16 the CESA (14 CCR 670.5);
- 17 • considered by the California Native Plant Society (CNPS) to be “rare, threatened or
18 endangered in California” (Lists 1B and 2B in CNPS 2018); or
- 19 • listed by CNPS as plants about which more information is needed to determine their status
20 and plants of limited distribution (Lists 3 and 4), which may be included as special-status
21 species on the basis of local significance or recent biological information.

22 Special-status animals are species that are:

- 23 • listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.11);
- 24 • candidates for possible future listing as threatened or endangered under ESA; listed or
25 candidates for listing by the State of California as threatened or endangered under CESA
26 (14 CCR 670.5);
- 27 • species of special concern (SSC) to California Department of Fish and Wildlife (CDFW)
28 (2017); or
- 29 • fully protected under CDFW Code Section 3511(birds), Section 4700 (mammals),
30 Section 5515 (fish), and Section 5050 (reptiles and amphibians).

31 The U.S. Fish and Wildlife Service (USFWS) implements the ESA, and CDFW implements the CESA.
32 “Endangered” means a species is in danger of extinction throughout all or a significant portion of its
33 range. “Threatened” means a species is likely to become endangered within the foreseeable future.
34 Candidate species are plants and animals for which the USFWS has sufficient information on their
35 biological status and threats to propose them as endangered or threatened, but for which development
36 of a proposed listing regulation is precluded by other higher priority listing activities. All federal agencies
37 are required to implement protection programs for endangered and threatened species and to use their
38 authority to further the purposes of the act. Although candidate species receive no statutory protection
39 under the ESA, the USAF gives the same protection, when practical, to any candidate or state-listed
40 species.

41 ESA Section 4(a)(3)(B) exempts military lands from critical habitat designation that are subject to an
42 Integrated Natural Resources Management Plan (INRMP) prepared under Section 101 of the Sikes
43 Act (16 USC 670a) if the Secretary of the Interior determines in writing that such plan provides a
44 benefit to the species for which critical habitat is proposed for designation. However, Travis AFB
45 acquired land that is designated as critical habitat (13 acres) for vernal pool fairy shrimp (*Branchinecta*

1 *lynchi*), conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool tadpole shrimp (*Lepidurus*
2 *packardii*), and Contra Costa goldfields (*Lasthenia conjugens*) that is located outside the fenced based
3 perimeter near the South Gate and for the delta green ground beetle (DGGB) (*Elaphrus viridis*) that is
4 located outside and east of the fenced perimeter.

5 The MBTA (16 USC 703-712), EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, for
6 migratory bird protection, and the *Bald and Golden Eagle Protection Act* (16 USC 668-668d) establishes
7 protections for migratory birds and their parts (e.g., eggs, nests, and feathers) from taking, hunting,
8 capture, transport, sale, or purchase. Most species of birds are classified as migratory under the MBTA,
9 except for upland game and introduced birds. The USFWS maintains a list of designated migratory
10 birds occurring in various regions of the United States. Additionally, EO 13186, *Responsibilities of*
11 *Federal Agencies to Protect Migratory Birds*, provides a specific framework for the federal government's
12 compliance with its MBTA obligations and aids in incorporating national planning for bird
13 conservation into agency programs. A memorandum of understanding (MOU) exists between the
14 DoD and USFWS to promote the conservation of migratory birds in compliance with EO 13186,
15 *Responsibilities of Federal Agencies to Protect Migratory Birds*. It is DoD policy to promote and support the
16 protection and conservation of migratory birds and their habitat by protecting vital habitat, enhancing
17 biodiversity, and maintaining healthy and productive natural systems consistent with the military
18 mission. However, the USFWS regulations allow for the incidental take of migratory birds for military
19 readiness activities. Birds of Conservation Concern (BCCs) are a subset of MBTA-protected species
20 identified by the USFWS as those in the greatest need of additional conservation action to avoid future
21 listing under the ESA. BCCs have been identified at three geographic scales: National, USFWS Regions,
22 and Bird Conservation Regions (BCRs). BCRs are the smallest geographic scale at which BCCs have
23 been identified, and the lists of BCC species at this scale are the most useful for governmental agencies
24 to consider in complying with the MBTA and EO 13186, *Responsibilities of Federal Agencies to Protect*
25 *Migratory Birds* (USFWS, 2008). According to the *USFWS Birds of Conservation Concern* (USFWS, 2008),
26 the ROI for the proposed actions at Travis AFB is located within the Coastal California (US portion
27 only) region, also known as BCR 32. Forty-eight BCCs occur within BCR 32. Migratory birds traverse
28 the area, presenting a BASH; however, the 60 AMW/CC Flight Safety Office implements the BASH
29 plan to reduce this risk to aircraft (Travis AFB Instruction, 2015).

30 Invasive species are non-native species whose introduction causes or is likely to cause economic or
31 environmental harm or harm to human health. Travis AFB is directed by EO 13112 of February 3,
32 1999 – *Invasive Species*, which prevents federal agencies from authorizing, funding, or carrying out
33 actions “that it believes are likely to cause or promote the introduction or spread of invasive species
34 in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has
35 determined and made public its determination that the benefits of such actions clearly outweigh the
36 potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk
37 of harm will be taken in conjunction with the actions.” The Air Force is guided by AFI 32-7064,
38 *Integrated Natural Resource Management*, to reduce the occurrence of invasive species on Air Force
39 installations, including Travis.

40 The California Invasive Plant Council (Cal-IPC) maintains an inventory that categorizes non-native
41 invasive plants that are a threat to wildlands in the state (Cal-IPC, 2008). Plants are categorized as
42 high, moderate, or limited, based on the level of each species' negative ecological impact in the state.

43 For the purposes of this IDEA, sensitive and protected biological resources include plant and
44 animal species that are federally, or state listed for protection. Identifying which species occur in an
45 area affected by an action may be accomplished through literature reviews and coordination with
46 appropriate federal and state regulatory agency representatives, resource managers, and other
47 knowledgeable experts.

3.4.2 Affected Environment

3.4.2.1 Vegetation

Descriptions of vegetation and plant community associations at Travis AFB are provided in the Installation's INRMP (Travis AFB, 2016b). Travis AFB is located primary within ecological communities of northern claypan vernal pool and annual grassland, sometimes referred to as vernal pool grassland. This community covers over 90 percent of the natural habitat on the Installation and in the surrounding landscape (Holland and Jain, 1988). Other communities include lacustrine marsh, riparian vegetation, planted eucalyptus groves, and urban landscapes (Travis AFB, 2016b).

Two hundred and fifty-two herbaceous plant species representing 53 plant families and 159 genera occur on the Installation. Thirteen species of woody plants occur on the Installation. Composites (*Asteraceae*) and grasses (*Poaceae*) are the most dominant families, comprising one-third of all species present. The flora includes 120 species (48 percent) that are not native to California. Vernal pools provide habitat for over 110 species or just over 44 percent of all taxa found on the Installation. Furthermore, the three-species listed by the CNPS as rare, threatened, or endangered reside in vernal pool habitats. These are Contra Costa goldfields, San Joaquin spearscale (*Atriplex joaquiniana*), and alkali milk vetch (*Astragalus tener* var. *tener*). The Contra Costa goldfield is federally listed as endangered. The San Joaquin spearscale and alkali milk vetch are listed as rare, threatened, or endangered by the CNPS (California Natural Diversity Data Base [CNDDB], 2016).

According to the INRMP, vegetation classification types at Travis AFB include: annual grassland, lacustrine marsh, riparian, vernal pools, and urban landscaped areas (Travis AFB, 2016b). Vegetation community types found on the Installation are described in the INRMP. Descriptions of the habitat types are provided in the following subsections.

3.4.2.1.1 Annual Grasslands

The grassland habitat comprises some 1,735 acres. The dominant vegetation in these areas includes non-native species such as soft chess (*Bromus hordeaceus*), Italian ryegrass, rat-tail fescue (*Festuca myuros* var. *myuros*), filaree, wild oats, ripgut brome, and Harding grass (*Phalaris aquatica*). Native perennial grasses grow in abundance in a few areas. At the site of the former Aero Club, several acres of meadow barley grow interspersed between the vernal pools. In the Castle Terrace special natural area, large patches of purple needlegrass can be found. This plant community supports a variety of birds, reptiles, and mammals. The most abundant wildlife includes red-winged blackbird (*Agelaius phoeniceus*), ring-necked pheasant (*Phasianus colchicus*; a non-native species), western fence lizard (*Sceloporus occidentalis*), Pacific gopher snake (*Pituophis melanoleucus*), and deer mouse (*Peromyscus maniculatus*) (Roy F. Weston, Inc., 1995).

Highly disturbed grassland habitat is found in the southeastern quadrant of the Installation adjacent to Union Creek in an area formerly used for pheasant hunting. The vegetation in these disturbed grasslands typically consists of non-native broad-leaved, often invasive species, interspersed with non-native grass species. In general, disturbed grasslands occur in areas such as road fills and construction sites and in areas subject to recurrent disturbances such as mowing. Such habitats are widely distributed but constitute only a small portion of the land area. They are also evident on old fire training areas and landfills. Some shrub vegetation grows in the grasslands on Travis AFB. The vegetation in these areas can contain a variety of native and non-native shrub and tree species including coyote brush (*Baccharis pilularis*), blue gum (*Eucalyptus globulus*), California pepper tree (*Schinus molle*), and black locust (*Robinia pseudoacacia*). Common herbaceous species include yellow star thistle (*Centaurea solstitialis*), cut-leaved geranium (*Geranium dissectum*), and some annual grasses such as wild oats and ripgut brome. The ruderal habitat next to Union Creek supports numerous birds, reptiles, and small mammals. Dominant representatives include red-winged blackbird, killdeer (*Charadrius vociferus*), western meadowlark (*Sturnella neglecta*), Pacific tree frog (*Hyla regilla*), western fence lizard,

1 gopher snake, deer mouse, and house mouse (*Mus musculus*) (Roy F. Weston, 1995). Tri-colored
2 blackbird (*Agelaius tricolor*) is also found using habitat within Union Creek on Travis AFB.

3 3.4.2.1.2 *Lacustrine Marsh*

4 A small man-made, open-water habitat associated with North Gate Park Pond was created by the
5 impoundment of Union Creek. North Gate Park Pond is 2.2 surface acres and has an average depth
6 of approximately 5 feet. A well-maintained recreational park with mowed grass and a jogging path
7 adjacent to the shoreline surrounds the pond. Presently, trees and shrubs are located adjacent to the
8 pond that provide shade and cover for picnics. Some rooted, aquatic, submerged, and floating
9 macrophytes, such as duckweed, Eurasian water-milfoil, and leafy pondweed, are in the pond, and
10 some emergent vegetation such as cattails (*Typha latifolia*), which offer cover to fish (Roy F. Weston,
11 Inc., 1995). This pond supports recreational fishing. Several small ponds in the southeast portion of
12 the Installation also exhibit this lacustrine, open water environment. The edges of these ponds support
13 vegetation dominated by grass species (*Poaceae*) and some species of dock (*Rumex* spp.). These ponds
14 do not appear to support any special status wildlife (Earth Tech, 2000).

15 3.4.2.1.3 *Riparian*

16 The riparian community is a component of the in-stream habitat and the exposed banks of Union
17 Creek. The streambed is channelized, and for the most part, the flow is sluggish. This habitat type
18 does not extend more than a few meters from the banks of these aquatic environments. The dominant
19 vegetative species found along Union Creek include creeping wild-rye (*Elymus triticoides*), perennial
20 pepperweed (*Lepidium latifolia*), Harding grass, saltgrass (*Distichlis spicata*), and areas of dense twig/leaf
21 litter. Red willows (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), coyote brush, and small patches of
22 scrub/shrub vegetation are found scattered along the creek. Representative wildlife that dominate this
23 habitat include red-winged blackbirds, mallards (*Anas platyrhynchos*), Pacific tree frogs, western pond
24 turtles (*Clemmys marmorata*), and California red-sided garter snake (*Thamnophis sirtalis*). The habitat north
25 of North Gate Park Pond is characterized by small stands of cattails and willow along the creek edge.
26 Representative wildlife species that dominate this habitat include the red-winged blackbird, Brewer's
27 blackbird (*Euphagus cyanocephalus*), Anna's hummingbirds (*Calypte anna*), cliff swallows (*Hirundo*
28 *pyrrhonota*), barn swallows (*Hirundo rustica*), and violet green swallows (*Tachycineta bicolor*). A wide variety
29 of migratory birds also utilize this habitat. Western fence lizards, gopher snakes, and the house mouse
30 are also abundant in this habitat (Roy F. Weston, 1995).

31 3.4.2.1.4 *Northern Claypan Vernal Pools and Swales*

32 Vernal pools and swales are found within the grassland habitat. This hydrologic regime supports the
33 unique plant and animal community's characteristic of vernal pools. The vernal pools on Travis AFB
34 are classified as northern claypan vernal pools (CDFW, 1998). These pools occur on deep alluvial
35 soils. Vernal swales are ecologically and floristically related to vernal pools; however, vernal swales are
36 drainage ways or poorly defined depressions that are seasonally inundated, holding standing water for
37 relatively short periods. These wetlands are scattered throughout the installation but are generally
38 absent in the highly developed central and northern areas. The highest-quality vernal pools are in the
39 northwest portion of the Base.

40 A highly distinctive flora, consisting largely of annual species, is associated with vernal pools and other
41 ecologically related, vernal wet habitats (i.e., vernal swales), including about 70 plant species
42 considered to be endemic to vernal pools in California (Holland and Jain, 1977; Stone, 1990). The
43 highly distinctive flora of these habitat types includes many special-status plant species.

44 Plant species identified in the vernal pools include Pacific meadow foxtail, annual hairgrass
45 (*Deschampsia danthonioides*), goldfields (*Lasthenia* spp., including the federally endangered Contra Costa
46 goldfields, round woolly marbles (*Psilocarphus tenellus*), popcorn flower, Downingia (*Downingia* spp.),
47 meadow barley (*Hordeum brachyantherum*), coyote thistle, hyssop loosestrife (*Lythrum hyssopifolia*), spike

1 rush (*Eleocharis macrostachya*), flowering quillwort (*Lilaea scilloides*), alkali milk vetch, and San Joaquin
2 spearscale. Federally listed invertebrate and vertebrate species identified within the vernal pools at
3 Travis AFB include vernal pool fairy shrimp, vernal pool tadpole shrimp and CTS (*Ambystoma*
4 *californiense*) (CH2M Hill, 2006).

5 3.4.2.1.5 Urban Landscape

6 Travis AFB recognizes the importance of the functional and aesthetic aspects of plants and
7 landscaping. Cultivated vegetation on the Installation consists of landscaped and turf areas
8 surrounding buildings, residences, play areas, and recreation fields. The Travis AFB landscaping goal
9 is to provide an attractive, low-maintenance landscaping environment that enhances the natural and
10 human-made features of the Installation. The Installation has approximately 300 acres of irrigated,
11 improved urban landscapes. Over 80 species of trees have been planted. Wildlife found in the
12 landscaped areas on the Installation include song sparrow (*Melospiza melodia*), red-winged blackbird,
13 killdeer, house sparrow (*Passer domesticus*), western harvest mouse (*Reithrodontomys megalotis*), and
14 California ground squirrels (*Spermophilus beecheyi*) (Roy F. Weston, 1995).

15 3.4.2.2 Natural Resource Area of Concern

16 No National Refuge lands, Coastal Barrier Resource Units, or other areas of concern were identified
17 near Travis AFB (USFWS, 2018a).

18 3.4.2.3 Wildlife

19 Information on wildlife occurring on Travis AFB is provided in the INRMP (Travis AFB, 2016b). A
20 diversity of wildlife species occurs at Travis AFB, including mammals, birds, reptiles, fish, amphibians,
21 and aquatic invertebrates. Twenty-eight mammal species are found on the Installation. California
22 ground squirrels and black-tailed jackrabbits (*Lepus californicus*) are abundant throughout Travis AFB.

23 A 1995 installation-wide survey recorded a total of 61 bird species (Roy F. Weston, 1995). Of these,
24 16 species were confirmed as nesting on the Installation; all are common species, found regularly in
25 vicinity of the Installation.

26 The same survey recorded seven species of reptiles on Installation. Western fence lizards and gopher
27 snakes were both abundant and occupied a wide range of habitats including annual grassland and
28 riparian habitat of Union Creek. The riparian habitat associated with Union Creek was the only habitat
29 occupied by western pond turtles and the California red-sided garter snake. California king snakes
30 (*Lampropeltis getula californiae*) were observed to occupy only disturbed grassland habitat. A racer (*Coluber*
31 *lateralis*) was also observed in this habitat and in heavily grazed pasture. A western skink (*Plestiodon*
32 *skiltonianus*) was observed in irregularly mowed grassland habitat.

33 The 1995 survey identified the Pacific tree frog as the only common amphibian on the Installation
34 and was primarily associated with riparian and early successional habitats. Adult bullfrogs (*Rana*
35 *catesbeiana*) and western toads have since been identified in ponds in the Castle Terrace housing area
36 (Earth Tech, 1999). The federally-listed CTS breeds in the vernal pools and ponds surrounding the
37 Castle Terrace Housing project area and within a half mile of the Installation's eastern boundary
38 (CH2M Hill, 2006). A 2004-2005 survey conducted by EcoAnalysts identified a single adult female
39 CTS within a vernal pool in the railroad right-of-way property.

40 Five species of fish have been identified in the Duck Pond, including large-mouth bass, bluegill, green
41 sunfish, western mosquito fish, and channel catfish. Bluegills are the most abundant and share the
42 environment with a healthy population of large-mouth bass. Size ranges of all species collected were
43 mid- to large-size specimens, suggesting either low recruitment of juveniles into adult stocks, or that
44 juveniles frequent upstream areas in Union Creek for cover and forage. Union Creek also supports an
45 abundance of fish including western mosquitofish (*Gambusia affinis*), fathead minnow (*Pimephales*
46 *promelas*), hitch (*Lavinia exilicauda*), threespine stickleback (*Gasterosteus aculeatus*), largemouth bass and

1 rainwater killfish (*Lucania parva*). Other than the stickleback and hitch, the fish species are not native
2 (Roy F. Weston, Inc., 1995).

3 **3.4.2.4 Special Status Species**

4 Special status plant and wildlife species are subject to regulations under the authority of federal and
5 state agencies. Under the ESA, the USFWS maintains a list of species designated as endangered,
6 threatened, or candidate. The State of California also lists species as threatened or endangered as
7 regulated by the CESA. As indicated in the INRMP, special status species that occur or have potential
8 to occur on Travis AFB are listed in **Table 3-6**.

9 Based on this listing, the following special status species were excluded from further evaluation
10 because they were not identified on property in previous Travis AFB surveys:

- 11 • California red-legged frog (*Rana aurora draytonii*)
- 12 • Conservancy fairy shrimp (*Branchinecta conservation*)
- 13 • Crampton's tuctoria (*Tuctoria mucronata*)
- 14 • Colusa grass (*Neostapfia colusana*)
- 15 • Boggs Lake hedge-hyssop (*Gratiola heterosepala*)

16 Based on this listing, the following special status species were further evaluated for potential project
17 specific impacts:

- 18 • California tiger salamander (*Ambystoma californiense*)
- 19 • Vernal pool fairy shrimp (*Branchinecta lynchi*)
- 20 • Vernal pool tadpole shrimp (*Lepidurus packardii*)
- 21 • Delta green ground beetle (*Elaphrus viridis*)
- 22 • Contra Costa goldfields (*Lasthenia conjugens*)
- 23 • Tricolored blackbird (*Agelaius tricolor*)
- 24 • Western burrowing owl (*Athene cunicularia ssp. Hypogea*)
- 25 • Swainson's hawk (*Buteo Swainsonii*)

26

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Table 3-6 Special Status Species with the Potential to Occur on Travis AFB and GSUs

Common Name	Scientific Name	Protection Status*	Habitat	Potential for Occurrence at Travis AFB
<i>Amphibians</i>				
California red-legged frog	<i>Rana aurora draytonii</i>	F-Threatened	Occur in the pools of streams, marshes, and occasionally in temporary or permanent ponds. They require shoreline vegetation that provides shade at water level and are usually found near water at least 2.3 feet (0.7 meter) deep. Most breeding occurs in February, but the season extends from January to July.	Has not been identified on-Installation
California tiger salamander	<i>Ambystoma californiense</i>	F-Threatened	Grasslands or open oak woodlands. Spend most of lives in burrows dug by squirrels or other small mammals. Adults emerge at night after the first heavy rains in the fall and migrate to temporary ponds to breed. Larvae transform and leave the ponds by late April or early May when the ponds begin to dry. Successful breeding ponds must contain water long enough for larvae to transform (a minimum of 10 weeks). Necessary habitat components for CTS include rodent burrows, particularly California ground squirrel and Botta’s pocket gopher, for underground retreats and breeding ponds such as artificial stock ponds, seasonal wetlands, vernal pools, or slow-moving streams that do not support predators such as fish.	Identified on-Installation
<i>Birds</i>				
Tricolored blackbird	<i>Agelaius tricolor</i>	CA-Threatened	Tricolored blackbirds nest in dense vegetation near water or by emergent wetlands. Nesting sites are typically associated with cattails, tules, willows, blackberry, and wild rose. Nesting typically occurs from April to July, though it may extend later into the year. Within the Sacramento Valley, breeding has been observed as late as October and November. During the non-breeding season, they can be found foraging in open habitats such as croplands and grassy fields. Occur on Travis AFB in vegetation growing in Union Creek near the runway.	Identified on-Installation

Common Name	Scientific Name	Protection Status*	Habitat	Potential for Occurrence at Travis AFB
Western burrowing owl	<i>Athene cunicularia</i> ssp. <i>hypugea</i>	BCC	Habitat is typically annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Fossorial mammal burrows are typically used for protection, shelter, and nesting. Travis AFB supports a population of resident burrowing owls within the annual grasslands sporadically spaced across the Installation.	Identified on-Installation
Swainson's hawk	<i>Buteo swainsonii</i>	CA-Threatened	Foraging occurs in grasslands, irrigated pastures, and croplands. Nesting is often associated with riparian systems, as well as lone trees or groves in agricultural fields; occurs from April to September. Known to nest in large trees on the Installation and at the Cypress Lakes Golf Course GSU.	Identified on-Installation
<i>Invertebrates</i>				
Delta green ground beetle	<i>Elaphrus viridis</i>	F-Threatened	Occurs in vernal pool habitats, most commonly in gradually sloping areas with low, sparse vegetation near the water line of vernal pools. Also, have been found near the sides of roads or on paths away from the shores of vernal pools (perhaps during wet periods when their poolside habitat is flooded). Typically seen near pools that are relatively large and long lasting with well-delineated borders (shoreline does not fluctuate greatly).	Has not been identified on-Installation**
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	F-Threatened	Occur in seasonally inundated (continuously or sporadically between the autumn onset and spring termination of rain) pools that are not subject to strong flow. The habitat requirements for fairy shrimp are not completely understood, but factors affecting their distribution include the length of pool inundation, the chemical nature of the habitat, and water temperature.	Identified on-Installation
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	F-Endangered	Occur in seasonally inundated (continuously or sporadically between the autumn onset and spring termination of rain) pools that are not subject to strong flow. The habitat requirements for fairy shrimp are not completely understood, but factors affecting their distribution include the length of pool inundation, the chemical nature of the habitat, and water temperature.	Identified on-Installation

Common Name	Scientific Name	Protection Status*	Habitat	Potential for Occurrence at Travis AFB
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	F-Endangered	Live in large ephemeral or temporary pools of fresh water (vernal pools) that form in the cool, wet months of the year.	Has not been identified on-Installation
Plants				
Contra Costa goldfields	<i>Lasthenia conjugens</i>	F-Endangered	Found in vernal pools and mesic grasslands in Napa and Solano Counties.	Identified on-Installation
Crampton’s tuctoria	<i>Tuctoria mucronata</i>	F-Endangered	Found in mesic communities of valley and foothill grasslands, within vernal pools, and blooms from April to August.	Has not been identified on-Installation
Colusa grass	<i>Neostapfia colusana</i>	F-Threatened	Distribution is limited to large or deep vernal pools with high mud content for substrate.	Has not been identified on-Installation
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	CA - Endangered	Occurs in the drying margins of vernal pools, stock ponds, and lakes in lowland areas. Originally known from only one location, Boggs Lake in Lake County, California, recently found at several locations, including Solano County. Found at the nearby Jepson Prairie Preserve. It flowers from April through June.	Has not been identified on-Installation

1 * F = Federally listed Threatened or Endangered; BCC=Bird of Conservation Concern (Federal); CA= State listed Threatened or
 2 Endangered
 3 ** Due to uncertainty of distribution behavior and habitat, species is evaluated as part of the Travis AFB Installation site
 4 Source: USFWS, 2018a and CNDDDB, 2018

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1 A brief discussion of each species evaluated is presented below:

2 3.4.2.4.1 *Federally Listed Special Status Species*

3 3.4.2.4.1.1 *California Tiger Salamander*

4 The CTS in Solano County is part of the Central Valley Population of the Central California Distinct
5 Population Segment of the species. In 2004, the Central California Distinct Population Segment of
6 CTS was listed as Threatened under the ESA (USFWS, 2004). On March 3, 2010 the California Fish
7 and Game Commission determined that listing of CTS pursuant to the California Endangered Species
8 Act was warranted and on August 19, 2010 it was formally listed as Threatened.

9 Critical habitat was designated on August 23, 2005 for the central population on approximately
10 199,109 acres in 19 counties. Designated CTS critical habitat closest to Travis AFB is a nearly square
11 parcel about 1.75 miles east of the northeastern corner of the Installation (refer to **Figure 3-1**)
12 (Mantech, 2016, USFWS, 2018c).

13 The CTS is endemic to California and historically inhabited the low-elevation grassland and oak
14 savanna plant communities of the Central Valley, adjacent foothills, and Inner Coast Ranges
15 (Jennings and Hayes, 1994; Shaffer et al., 1993).

16 The CTS is a large terrestrial salamander with a broad, rounded snout. Coloration consists of white
17 or pale-yellow spots or bars on a black background on the back and sides. The belly varies from
18 almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black.

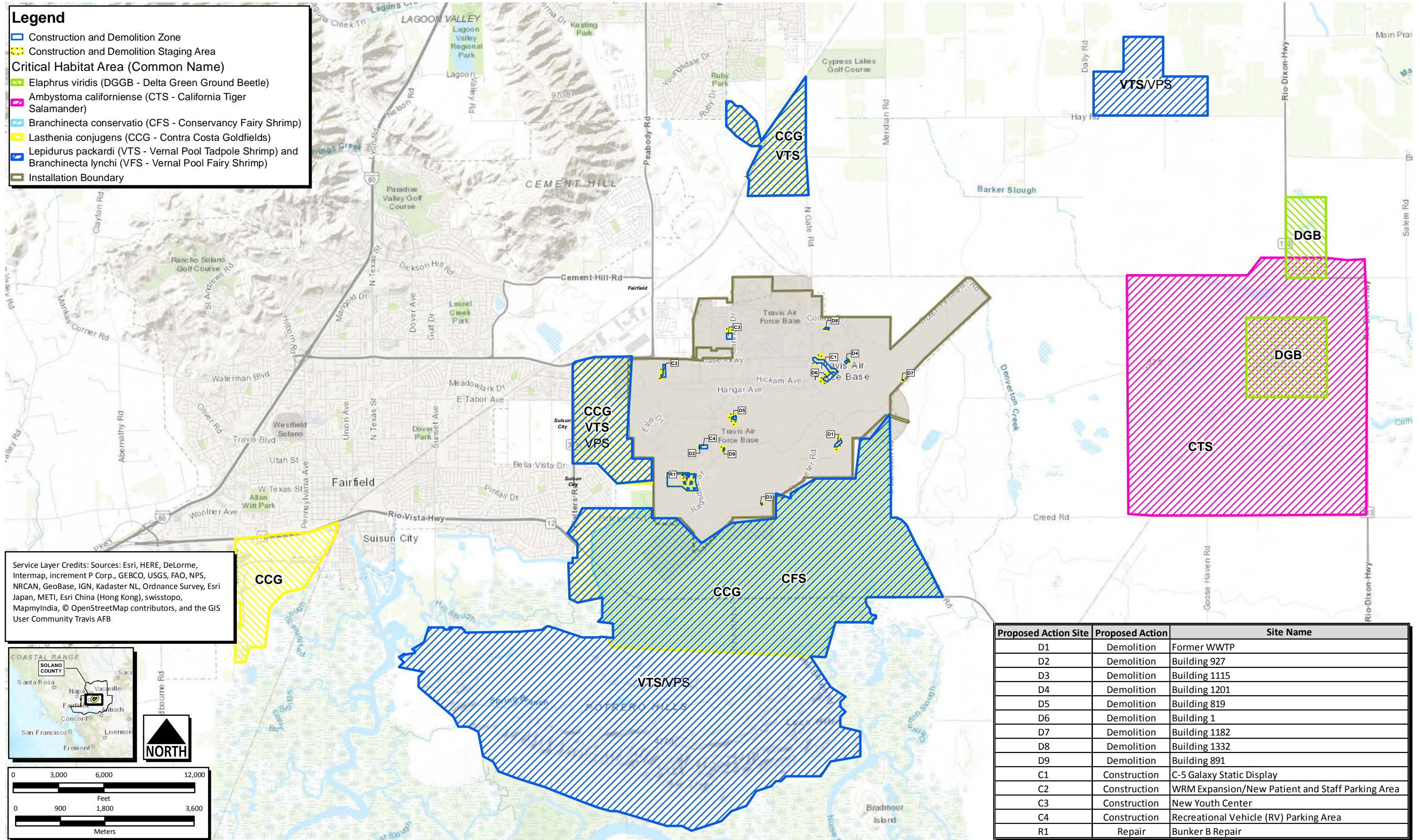
19 CTS larvae develop in vernal pools and ponds in which they were born; however, the species is
20 otherwise terrestrial and spends most of its post-metamorphic life in widely dispersed underground
21 retreats (Shaffer et al., 2004; Trenham et al., 2001). Because CTS spend most of their lives
22 underground, the animals rarely are encountered even in areas where CTS are abundant. Subadult
23 and adult CTS typically spend the dry summer and fall months in the burrows of small mammals,
24 such as California ground squirrels and Botta's pocket gopher (*Thomomys bottae*) (Loredo and Van
25 Vuren, 1996; Petranka, 1998).

26 During winter rains between November and February, adults emerge from underground retreats
27 to breed (Stebbins, 2003; Loredo and Van Vuren, 1996). Adults may travel long distances between
28 upland sites and breeding sites.

29 Metamorphosis typically occurs from May to July. Following metamorphosis, juvenile CTS leave
30 their pools and move to upland habitat. This emigration can occur in both wet and dry conditions
31 (Loredo and Van Vuren, 1996). Wet conditions are more favorable for upland travel, but summer
32 rain events seldom occur as metamorphosis is completed and ponds begin to dry. As a result,
33 juveniles may be forced to leave their ponds on rainless nights. Under dry conditions, juveniles
34 may be limited to seeking upland refugia in close proximity to their aquatic larval pool. These
35 individuals often wait until the next winter's rains to move farther into more suitable upland
36 refugia. Juveniles remain active in their upland habitat, emerging from underground refugia during
37 rainfall events to disperse or forage (Trenham and Shaffer, 2005).

38 CTS are known to breed in ponds on Travis AFB and much of the grassland habitat on the
39 Installation and GSUs provides suitable aestivation habitat for CTS (Travis AFB, 2017a). On Travis
40 AFB, the documented breeding ponds are concentrated in the far northern (Castle Terrace
41 Preserve) portion of the Installation (Marty, 2016). Several sightings of adults in the eastern portion
42 of the Installation indicate that CTS are aestivating nearby and dispersing through the Installation
43 (Travis AFB, 2017a).

Figure 3-1:
Travis AFB Critical Habitat



1 3.4.2.4.1.2 *Vernal Pool Tadpole Shrimp*

2 The vernal pool tadpole shrimp (VPTS) was listed as threatened by the USFWS in 1994 (59 CFR
3 48136). Critical habitat was designated on August 6, 2003 (68 CFR 46683), revised February 10, 2006
4 (71 CFR 7117) and a recovery plan was published in 2005. The species occurs primarily in vernal
5 pools, clay flats, roadside ditches, and ephemeral stock ponds. VPTS are known to be present in
6 much of the undeveloped areas surrounding Travis AFB, including the adjacent Wilcox Ranch
7 property (Travis AFB, 2018a). The shrimp has been found north of the base in the Northern Railroad
8 Right-of-Way GSU, owned by Travis AFB, adjacent to the northern border of the Installation, and
9 east of the base near Meridian Gate. Areas of designated critical habitat for VPTS are adjacent to the
10 Installation, with a large area present along the southern border and a small area located to the west
11 of the main entrance. Additional designated habitat parcels are located approximately one mile directly
12 north of the installation, and approximately 2.6 miles northeast of the northeastern extent of the
13 flightline (refer to **Figure 3-1**) (USFWS, 2018c).

14 3.4.2.4.1.3 *Delta Green Ground Beetle*

15 The terrestrial DGGB was listed as threatened by the USFWS in 1980 (45 CFR 62807). Critical
16 habitat was designated on August 8, 1980 (45 CFR 52807) and a recovery plan was published in 2005.
17 The species is associated with large playas (vernal lakes) found scattered throughout the Jepson Prairie
18 Region surrounding Travis AFB (PBA, 2018). Critical habitat includes the Northern Railroad Right-
19 of-Way GSU, owned by Travis AFB, adjacent to the northern border of the Installation and occurs
20 on Jepson Prairie Preserve and the Elsie Gridley Preserve (north of Jepson Prairie) approximately 3.5
21 miles to the east of the northern border of the Base (refer to **Figure 3-1**) (USFWS, 2018c). A habitat
22 suitability study conducted in 2016 did not identify suitable habitat on Base for DGGB (Marty, 2017a)

23 3.4.2.4.1.4 *Vernal Pool Fairy Shrimp*

24 The vernal pool fairy shrimp (VPFS) was listed as threatened by the USFWS in 1994 (Federal
25 Register (FR) 59:80 and updated in FR 68:151). Critical habitat was designated on August 6, 2003
26 (68 CFR 46683) and was subsequently revised with critical habitat unit designations on February 10,
27 2006 (71 CFR 7117). The species is widely distributed through the grasslands of California, occurring
28 in a variety of vernal pools ranging from small, clear, sandstone rock pools to large, turbid, alkaline,
29 grassland valley floor pools.

30 VPFS require cold winter water temperatures to hatch and grow and typically appear after the
31 first frosts. Pools must dry completely during the summer months to prevent fungus from
32 destroying cysts. VPFS reach sexual maturity on average in 41 days but may be as few as 18 days
33 at optimal conditions (Helm, 1998). Hatching begins shortly after temporary pools have been
34 inundated by runoff from fall and winter rains. Newly hatched larvae develop through a juvenile
35 stage and eventually become sexually mature adults. After males and females mate, the female
36 releases her eggs, which remain in the bottom of the dry pool through the summer.

37 The VPFS is known to occur on Travis AFB and much of the seasonal wetland habitat on the
38 Installation and GSUs provides suitable habitat for the species. The presence of suitable habitat for
39 the species and documented occurrences suggests that the species is likely to persist on Travis AFB
40 given current conditions. On Travis AFB, there are 45 documented occurrences of VPFS and these
41 are concentrated within the northern portion of the Installation though a number of other
42 occurrences are scattered throughout the center of the Installation in natural vernal pools as well as
43 manmade seasonal wetland features (Marty, 2016).

44 Areas of designated critical habitat for VPFS are adjacent to the Installation, with a large area present
45 along the southern border and a small area located to the west of the main entrance. Additional
46 designated habitat parcels are located approximately one mile directly north of the installation, and

1 approximately 2.6 miles northeast of the northeastern extent of the flightline (refer to **Figure**
2 **3-1**) (USFWS, 2018c).

3 3.4.2.4.1.5 *Contra Costa Goldfields*

4 The CCG (*Lasthenia conjugens*) was listed as federally endangered by the USFWS on 18 June 1997 (62
5 FR 33029 - 33038). In 2005, the USFWS issued a Recovery Plan to stabilize and restore CCG
6 populations (USFWS, 2005). Critical habitat was designated on August 6, 2003 (68 CFR 46683) and
7 was subsequently revised with critical habitat unit designations on February 10, 2006 (71 CFR 7117).
8 CCG is an annual plant in the Asteraceae family with a strong association to vernal pools. In addition
9 to vernal pools, this species is associated with vernal swales, moist flats, and grassland areas (USFWS,
10 2005).

11 CCG has golden-yellow daisy like flower heads borne singly (Chan and Ornduff, 2013). Its leaves
12 are opposite and narrow with entire basal leaves, and cauline leaves with one or two pairs of
13 narrow lobes. Seed germination of Contra Costa goldfields tends to be in response to initial wet
14 season rains in October or November (Collinge et al., 2013; USFWS, 2005). Plants may tolerate
15 prolonged submergence following germination, but do not begin rapid growth until water levels
16 recede during late winter or early spring (USFWS, 2005). The flowering period generally lasts
17 from March to June (Chan and Ornduff, 2013; USFWS, 2005). Pollination is attributed to insects
18 belonging to five different orders: Coleoptera, Diptera, Hemiptera, Hymenoptera, and Lepidoptera
19 (Thorp and Leong, 1998).

20 Rare plant surveys conducted in 1994 counted 36 separate occurrences of CCG on Travis AFB
21 concentrated on the western portion of the Installation (Biosystems, 1994). The majority of plants
22 (33 of 36 plants) were located at the former Aero Club or in the grazing areas south of the Aero
23 Club. The remaining occurrences are found in the southwestern corner of the Installation along
24 Perimeter Road at the end of the runway (CH2M Hill, 2006). In 2016, a total of 62 pools on Travis
25 AFB were occupied, with 80 percent of those occurrences within the Aero Club (Marty, 2017). CCG
26 have been found in pools totaling approximately 28 acres, all on the western portion of the
27 Installation.

28 Critical Habitat is designated for CCG adjacent to the Installation, with a large area present along
29 the southern border and a small area located to the west of the main entrance. Additional designated
30 habitat parcels are located approximately one mile directly north of the installation, and approximately
31 4.5 miles west of the southernmost tip of the Installation (refer to **Figure 3-1**) (USFWS, 2018c).

32 3.4.2.4.2 *State Listed Special Status Species*

33 3.4.2.4.2.1 *Tricolored Blackbird*

34 The tricolored blackbird was listed as threatened under the California ESA in April 2018 (Weiland,
35 2018). The medium-sized blackbird forages in a variety of vegetation, including grasslands, agricultural
36 croplands, or alkali scrub habitats, along with nearby freshwater (Beedy et al., 2017). The tricolored
37 blackbird forms large colonies and require suitable nesting habitat comprised primarily of cattails,
38 bulrushes, Himalaya berry, wild rose, or other water dependent species (Hamilton, 2004). Birds
39 typically breed April through July (Travis AFB, 2016b). During the non-breeding season, they can be
40 found foraging in open habitats such as croplands and grassy fields.

41 Although still abundant in numbers as a flocking bird, the tricolored blackbird has seen a recent decline
42 in population throughout their range in California. Threats to survival include loss of riparian
43 vegetation and increase in native predators, including ravens, night herons, and coyotes (Hamilton,
44 2004). Travis AFB supports a population of tricolored blackbirds within the wetlands and grasslands
45 near Union Creek, near the runway (Travis AFB, 2016b). Removal of grasslands for development on

1 the Installation and minimization of flocking birds for flight safety/BASH can reduce the potential
2 habitat for the bird.

3 3.4.2.4.2.2 *Western Burrowing Owl*

4 The Western burrowing owl is state-listed as a BCC by California. It is also listed as a BCC under
5 the MBTA by the federal government. Burrowing owls prefer habitats within grasslands, deserts, and
6 shrub-steppe, and utilize well-drained, level to gently sloping areas characterized by sparse vegetation
7 and bare ground (USFWS, 2018b). Burrowing owls also regularly utilize developed areas such as
8 agricultural fields, golf courses, cemeteries, roadway rights-of-way, airports, and vacant urban lots
9 (Poulin et al., 2011). Preferred nesting habitat is in modified abandoned burrows of small mammals
10 (e.g., ground squirrels, prairie dogs, and foxes). Breeding occurs from late March through June in
11 southern regions and mid-May to mid-August in colder climates.

12 Fluctuations in both the geographic range and numbers of Western burrowing owl have occurred
13 throughout their range. Canadian and mid-western populations have decreased significantly, as has
14 occurred in California populations. The primary threats to the survival and contributions to declining
15 populations of burrowing owl include conversion of grasslands and pastureland to agriculture and
16 development areas, destruction of ground squirrel colonies, automobile strikes from nesting in
17 roadside banks, and poisons intended for ground squirrel colonies (Travis AFB, 2016b). Travis AFB
18 supports a population of resident burrowing owls within the annual grasslands sporadically spaced
19 across the Installation. A burrowing owl survey was conducted in the spring of 2014 and a
20 Burrowing Owl Management Plan (H.T. Harvey & Associates, 2014) for Travis AFB was prepared
21 and included in the Travis AFB INRMP. Threats to the owl population include conversion of
22 grasslands and agricultural lands to development, destruction of ground squirrel colonies, automobile
23 strikes from nesting in roadside banks, and pest management (poisons) for ground squirrel colonies.
24 The Burrowing Owl Management Plan includes best management practices (BMPs) and identifies
25 impacts to burrowing owls and mitigation measures to reduce such impacts and support owl
26 populations.

27 3.4.2.4.2.3 *Swainson's Hawk*

28 Swainson's hawk is listed as a state threatened species by CDFW (CDFW, 2005). They are primarily a
29 neotropical migrant, wintering in South America and Mexico from approximately October to February
30 and then returning to North America to nest in the spring. Nesting is often associated with riparian
31 systems, as well as lone trees or groves in agricultural fields. They forage in grasslands, irrigated
32 pastures as well as croplands. The species nests from April to September. Swainson's hawks are known
33 to nest in large trees on the Installation and at the Cypress Lakes Golf Course GSU.

34 3.4.2.4.2.4 *Western Pond Turtle*

35 The Western pond turtle is a California State Species of Special Concern (CDFW, 2018). Pond turtles
36 are found in a variety of aquatic habitats ranging from ponds, lakes, streams, irrigation ditches, and
37 permanent pools of water. Pond turtles occur in the North Gate Park Pond as well as north of the
38 Base in the ponds associated with the Castle Terrace housing complex.

39 3.5 Cultural Resources

40 3.5.1 Definition of the Resource

41 Cultural resources are districts, sites, buildings, structures, or objects considered important to a culture
42 or community for scientific, traditional, religious, or other purposes. They include archaeological
43 resources, historic architectural/engineering resources, and Native American sacred sites and/or
44 traditional resources. Historic properties are any prehistoric, historic, or traditional resource included
45 in or eligible for inclusion in the National Register of Historic Places (NRHP) (36 CFR 800.16(l)). The

1 area of potential effects (APE) for cultural resources is the footprint of each Proposed Action and a
2 50-foot buffer zone surrounding each proposed activity.

3 **3.5.2 Affected Environment**

4 **3.5.2.1 Architectural Resources**

5 Three architectural surveys have been completed at Travis AFB encompassing 271 buildings and
6 structures built between 1943 and 1991 (Smith et. al. 2013; Weitze 1996a and 1996b; Moeller et. al.
7 1996). Results of the surveys determined the following (Travis AFB, 2016c):

- 8 • Building 810 (B-36 bomber hangar/maintenance dock built in 1955) was determined eligible
9 for inclusion in the NRHP on individual merit. In accordance with the 1999/2000
10 Memorandum of Agreement (MOA) described below, this building was documented in
11 accordance with Historic American Buildings Survey (HABS) standards in 2002. That
12 documentation was accepted by and deposited with the Library of Congress HABS program
13 under HABS Survey Number CA-2669.
- 14 • Buildings 369, 1205, 1206, and 1212 were recommended eligible as part of a potential Air
15 Defense Command (ADC) Alert and Readiness Area Historic District. These four buildings
16 are managed as historic properties. In accordance with the 1999/2000 MOA described below,
17 and along with Building 1204, which has since been demolished, Buildings 1205, 1206, and
18 1212 were documented in accordance with HABS standards in 2002. That documentation was
19 accepted by and deposited with the Library of Congress HABS program under HABS Survey
20 Number CA-2669. Building 369 was not documented using HABS standards and so any
21 impacts on this property require consultation with the California State Historic Preservation
22 Officer (SHPO).
- 23 • Buildings 902, 903, 904, 905, 906, 908, 909, 912, 915, 916, 930, 931, 932, 933, 934, 935, 936,
24 938, 940, 942, 943, and 944 were recommended eligible as part of a potential AFSWP/SAC Q
25 Area Historic District. These buildings are managed as historic properties. In accordance with
26 the 1999/2000 MOA described below, all these buildings and structures except Buildings 915,
27 916, 936, 938, and 943 were documented in accordance with HABS standards in 2002. That
28 documentation was accepted by and deposited with the Library of Congress HABS program
29 under HABS Survey Number CA-2669.

30 In 1999/2000, an MOA among the USAF and the California SHPO and with participation by the
31 Advisory Council on Historic Preservation (ACHP) was finalized regarding HABS documentation of
32 the B-36 Bomber hangar/maintenance dock (Building 810), buildings and structures within the
33 AFSWP/SAC Q Area, and buildings and structures within the ADC Readiness Area (HABS 2002).
34 This documentation satisfies a level of mitigation required by the MOA to offset adverse effects on
35 the documented individual structures, as well as the proposed historic districts within which they are
36 situated. Future activities, including renovation, construction, repairs, and demolition, may proceed
37 without further consultation with the SHPO; therefore, any projects described and proposed within
38 this IDEA that may encompass the facilities described above, require no further review (Travis AFB,
39 2016c).

40 Building 1332 is a Cold War-era dormitory (Unaccompanied Personnel Housing [UPH]) that was
41 constructed in 1954, making it 64 years of age in 2018. Building 1332 was evaluated for NRHP
42 eligibility in 2013 (Smith et al. 2013) but is subject to the Program Comment for Cold War Era
43 Unaccompanied Personnel Housing (1946-1974) which allows the USAF to alter or demolish
44 unaccompanied personnel housing without further consultation. (ACHP 2006; **Appendix B-1**). In
45 2007, the Office of the Under Secretary of Defense issued a Memorandum implementing the ACHP
46 Program Alternative and specified a required completion date for mitigation as of January 31, 2008

1 (Beehler 2007; **Appendix B-2**). In 2014, Building 1332 was re-reviewed by the SHPO as part of
2 consultation for a group of 19 buildings scheduled for future demolition. Results of the consultation
3 indicated no historic properties would be affected, including Building 1332 (**Appendix A**). Building
4 1332 is also no longer in use and has deteriorated beyond the point of economical repair. Adjacent
5 dormitories of the same age, design, condition, and construction, and within the same UPH complex
6 have been previously demolished, including Building 1328, which was demolished pursuant to an
7 IDEA for Travis AFB in 2007 (SAIC 2007).

8 The remaining buildings and structures at Travis AFB have been determined to be not eligible for
9 inclusion in the NRHP; however, 87 of the buildings will need to be reevaluated when they reach 50
10 years of age. A subset of 16 buildings are proposed to be evaluated over the next five years as a goal
11 of the 2016 Integrated Cultural Resources Management Plan (ICRMP) (Travis AFB, 2016c).

12 **3.5.2.2 Archaeological Resources**

13 The Travis AFB Main Installation has undergone a complete archaeological survey and no confirmed
14 NRHP-listed or -eligible prehistoric archaeological sites are within the boundary of the installation.
15 There are also no identified areas of high probability. Recently, this lack of prehistoric cultural activity
16 has been further examined in a site sensitivity assessment for Travis AFB. Based on an analysis of
17 landform age, type, slope, and other physical characteristics, and considering water sources,
18 sedimentation, drainage, and other processes, the study identified less than 16 acres (out of 6,383 acres,
19 or less than 0.3%) as having “high” or “moderate” potential for buried prehistoric sites. In sum,
20 surveys have identified no evidence of NRHP-eligible prehistoric archaeological sites on Travis AFB,
21 and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant,
22 unknown buried prehistoric archaeological deposits are extremely unlikely (Meyer, 2017).

23 Twelve archaeological sites have been recorded, three of which are prehistoric and nine of which are
24 historic. Two of the historic-era archaeological sites may be eligible for inclusion in the NRHP;
25 however, a final determination of eligibility and SHPO concurrence is pending. These two early
26 twentieth century historic resources, which include a segment of Leisure Town Road (Site No. CA
27 SOL383H) and a spur segment of the former Sacramento Northern Railway (Site No. CA-SOL-
28 424H), were assumed to be eligible in June 2014 for the purposes of a proposed water line project;
29 however, one of the sites is situated above the northern boundary of Travis AFB and none of the 14
30 Proposed Actions described in this draft IDEA are within the direct (i.e., ground disturbing) APE of
31 either historic resource (Travis AFB, 2016c).

32 As noted above, Travis AFB has a low probability for potential archaeological resources because it
33 has been used for grazing and farming from the late nineteenth century and through the first half of
34 the twentieth century. Free-range cattle grazing, dry land wheat and barley farming, as well as plantings
35 of non-native trees and orchard and nut trees significantly modified the topography of the Main
36 Installation during early historic periods, followed by establishment of the installation in the early years
37 of World War II and its associated construction (Travis AFB, 2016c).

38 **3.5.2.3 American Indian Sacred Site and Traditional Resources**

39 No known sacred sites or tribal resources are located within the vicinity of Travis AFB. A recent
40 inquiry to the California Native American Heritage Commission (NAHC) to request a search of the
41 Sacred Lands File was negative; however, the NAHC identified two federally recognized tribes
42 affiliated with the Travis AFB area and a copy of that correspondence is provided in **Appendix A**.
43 The tribes are the Cortina Indian Rancheria of Wintun Indians of California and the Yocha Dehe
44 Wintun Nation.

45 Pursuant to Sections 101(d)(6)(B) and 106 of the NHPA and implementing regulations at 36 CFR
46 Section 800.2(c)(2) and DoDI 4710.02, the USAF has consulted on a government-to-government
47 basis with the two identified tribes culturally affiliated with the installation; the tribes have been asked

1 to provide information on any properties to which they attach religious and cultural significance
2 (**Appendix A**). Consultation with both tribes is complete and the results are provided in **Section**
3 **4.4.1.3** of this EA.

4 **3.6 Earth (Geological Resources)**

5 **3.6.1 Definition of the Resource**

6 Geologic resources include topography, geology, soils, and geologic hazards. The ROI for geologic
7 resources in this IDEA includes the Travis AFB installation where demolition, construction, and
8 renovation/repair projects would be implemented.

9 **Topography.** Topography incorporates the physiographic or surface features of an area with respect
10 to elevation, slope, aspect, and landforms. Long-term geological, erosional, and depositional processes
11 typically influence topographic relief of an area. These resources may have scientific, historical,
12 economic, and recreational value.

13 **Geology.** Geologic resources of an area typically consist of surface and subsurface materials and their
14 inherent properties.

15 **Soils.** The term “soils” refers to unconsolidated materials formed from the underlying bedrock or
16 other parent material. Soils play a critical role in both the natural and human environment. Soil
17 drainage, texture, strength, shrink/swell potential, and erodibility all determine the suitability of the
18 ground to support man-made structures and facilities.

19 **Geologic Hazards.** Geologic hazards are defined as natural geologic events that can endanger human
20 lives and threaten property. Examples of geologic hazards include earthquakes, volcanoes, landslides,
21 rock falls, ground subsidence, and avalanches.

22 **3.6.2 Affected Environment**

23 **3.6.2.1 Topography**

24 According to the Natural Resources Conservation Service (NRCS), Travis AFB lies within the Pacific
25 Border Province of the Pacific Mountain System in the California Trough Section (NRCS, 2006).
26 Small areas along the western border are in the California Coast Ranges Section. This area includes
27 the valley basins adjacent to the Sacramento and San Joaquin Rivers, fans and floodplains of tributary
28 streams, and terraces and foothills around the edge of the valleys. Elevation ranges from sea level to
29 660 feet (200 meters) in the foothills surrounding the Central Valley. The valley floor is almost flat,
30 and relief is small even along the borders of the area. The flatness of the valley floor contrasts with
31 the rugged hills or gentle mountains that are typical of most of California’s terrain (NRCS, 2006).

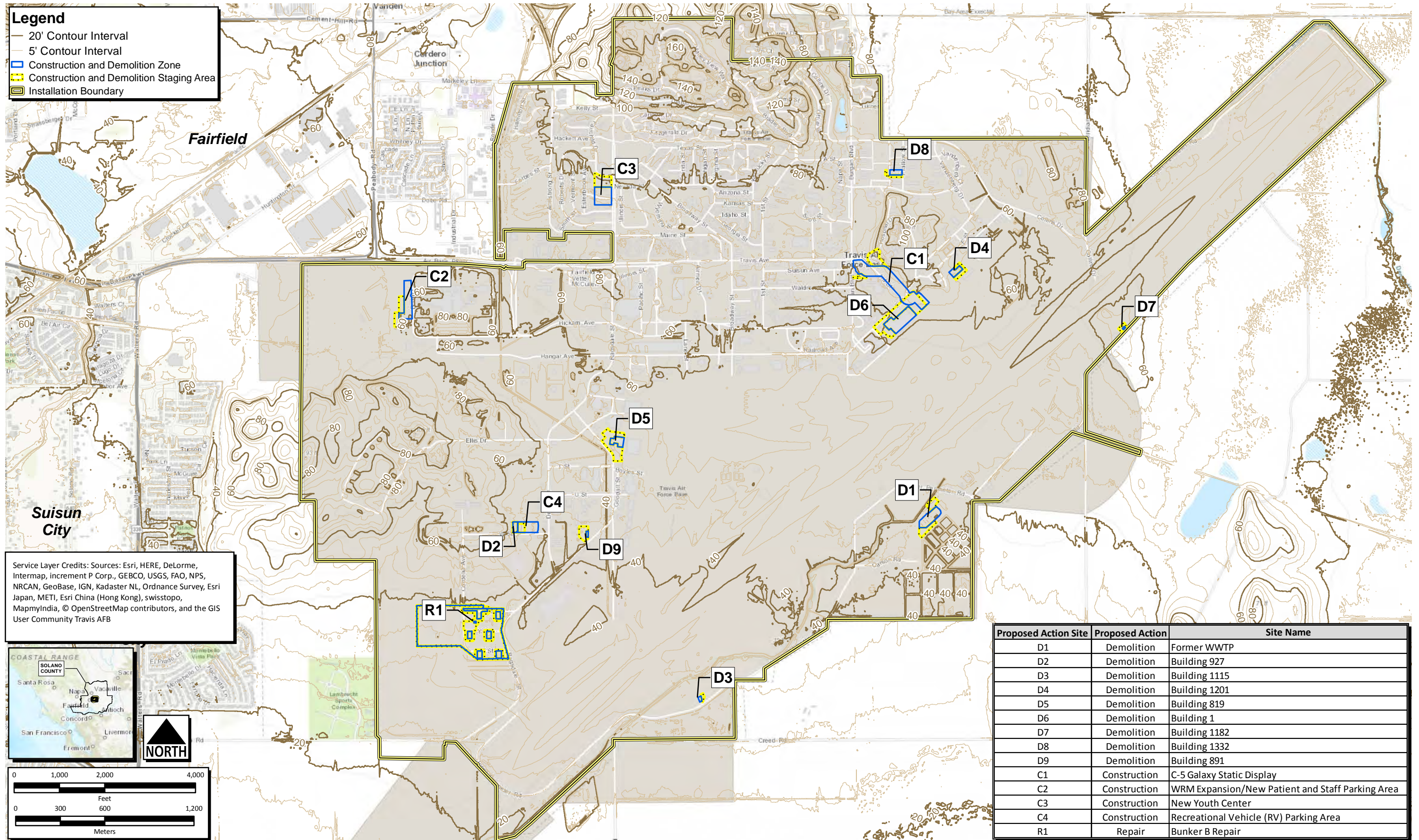
32 Travis AFB is situated partially in the California Trough Section on the east (Central Valley) and
33 partially in the California Coast Ranges Section on the west. The Coast Ranges bound the Trough
34 Section to the west and consist of low ridges of bedrock that extend from the Vaca Mountains to the
35 northwest of the Installation to the Montezuma Hills southeast of the Installation (NRCS, 2006). The
36 Installation is generally flat with elevations ranging from 20 feet above mean sea level (amsl) in the
37 southwest portion to 160 feet amsl in the northern portion. In general, Travis AFB slopes gently to
38 the south (refer to **Figure 3-2**).

39 **3.6.2.2 Geology**

40 Travis AFB lies within the Central Valley, which is a large, flat valley that dominates the central portion
41 of California and stretches nearly 400 miles (600 kilometers) north to south. Its northern half is
42 referred to as the Sacramento Valley and its southern half is referred to as the San Joaquin Valley.

43 Travis AFB is in the southeastern portion of Sacramento Valley and is primarily underlain by
44 Pleistocene-age alluvium consisting of sand, gravel, silt, and clay lenses, which is a body of ore, rock,

Figure 3-2:
Travis AFB Topography



1 or a geological deposit that is thick in the middle and thin at the edges, resembling a convex lens.
2 However, the northern portion of the Installation consists of recent origin alluvium with Tertiary
3 outcrops interbedded with volcanic debris of the Tehama Formation, Pleistocene-Pliocene non-
4 marine sediments, and Eocene marine sediments of the Markley Formation (NRCS, 2006 and NRCS,
5 1974).

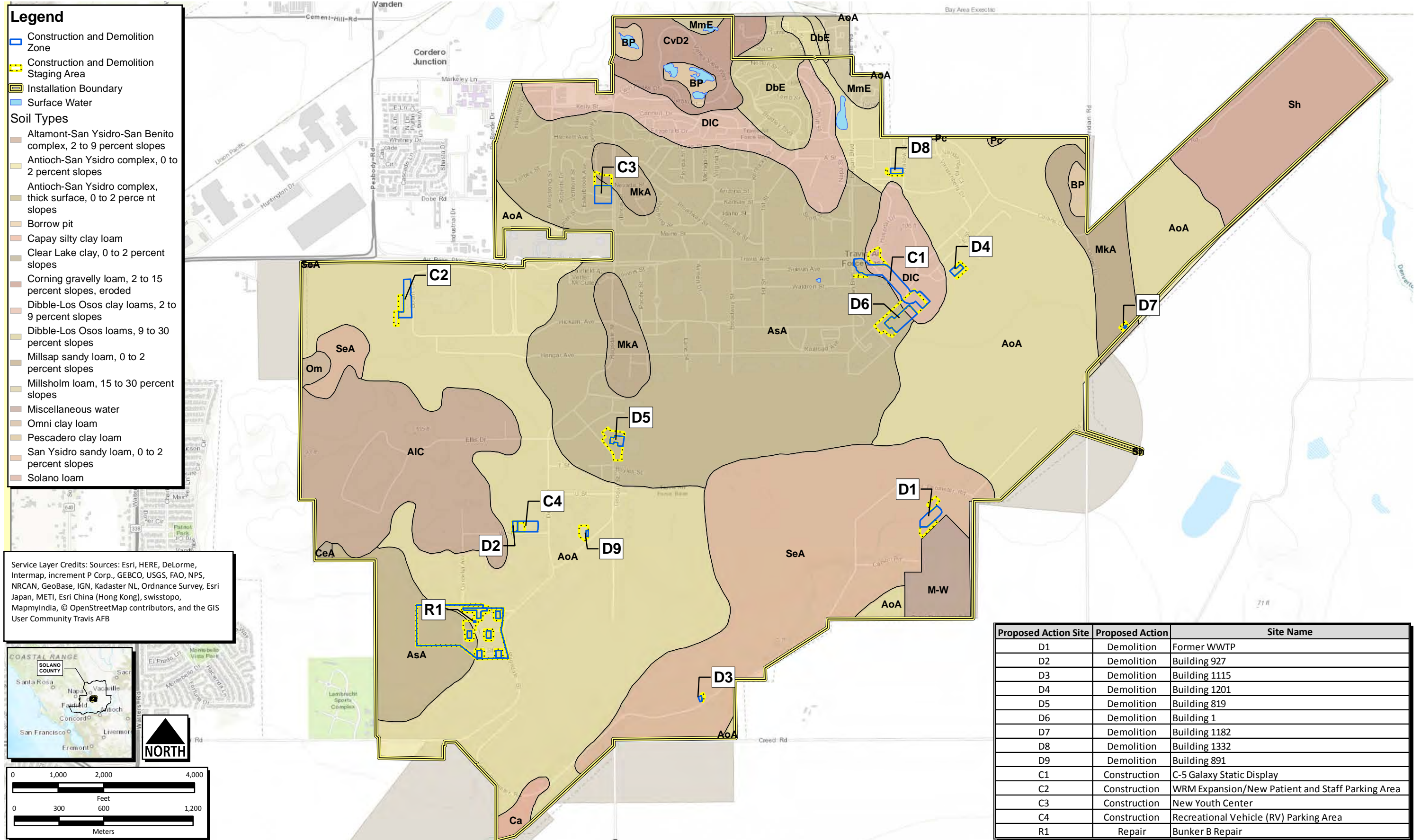
6 **3.6.2.3 Soils**

7 The dominant soil orders in Central Valley are Alfisols, Aridisols, Entisols, Mollisols, and Vertisols.
8 The soils in the area predominantly have a thermic soil temperature regime, which indicates that the
9 mean annual soil temperature is 59 degrees °F or higher but lower than 72°F; an aridic or xeric soil
10 moisture regime, which indicates an arid or typical of a Mediterranean climate where winters are moist
11 and cool, and summers are warm and dry, consecutively; and smectitic or mixed mineralogy. These
12 soils are generally very deep, well or moderately well drained, and loamy or clayey (NRCS, 2006 and
13 NRCS, 1974). In general, soils directly beneath Travis AFB tend to be dense and impervious to air
14 and water, especially in the lower layers, resulting in very little drainage through the soils (Travis AFB,
15 2016b).

16 Soils at the proposed demolition and construction sites are described in the INRMP (Travis AFB,
17 2016b) and on **Figure 3-3** as:

- 18 • **Antioch-San Ysidro complex (AoA):** This series consists of moderately well-drained soils
19 with slow permeability on terraces formed from alluvium from sedimentary sources. The
20 surface layer is mottled, light brownish-gray loam, 19 inches thick. The subsoil is mottled, light
21 yellowish-brown, yellowish-brown, and pale-brown clay 41 inches thick. The substratum is
22 pale brown loam extending 60 inches or more. The complex consists of 50 percent Antioch
23 loam and 35 percent San Ysidro sandy loam. The remaining 15 percent includes small areas
24 of Solano loam and Pescadero clay loam. Slopes are typically 0 to 2 percent. Runoff is slow,
25 and erosion is a slight hazard (NRCS, 1974).
- 26 • **Antioch-San Ysidro complex, thick surface (AsA):** These soils have a profile similar to the
27 one described above and are undulating to gently rolling on terraces. This complex is 45
28 percent Antioch loam and about 45 percent San Ysidro sandy loam. The remaining 10 percent
29 is included in small areas of these soils that have a rooting depth of less than 20 inches. Runoff
30 is medium, and erosion is a slight hazard (NRCS, 1974).
- 31 • **Dibble-Los Osos Clay Loam (DIC):** This soil profile is similar to the profile listed above.
32 This complex is 60 percent Dibble loam and 30 percent Los Osos loam. The remaining 10
33 percent includes small areas of Millsholm loam. These soils are 30 to 40 inches deep to the
34 weathered parent material. Slopes are typically 2 to 9 percent. Runoff is medium, and erosion
35 is a slight hazard (NRCS, 1974).
- 36 • **Millsap Sandy Loam (MkA):** This series consists of moderately well drained soils on uplands
37 underlain by sandstone at a depth of 20 to 30 inches with slow permeability. The surface layer
38 is light-gray sandy loam 14 inches thick and the subsurface is light-gray loamy sand about 2
39 inches thick. The subsoil is grayish-brown clay about 12 inches thick underlain by yellowish-
40 brown, very hard sandstone bedrock at a depth of about 28 inches. Slopes are typically 0 to 2
41 percent. Runoff is slow, and erosion is a slight hazard (NRCS, 1974).
- 42 • **San Ysidro Sandy Loam (SeA):** This series consists of moderately well drained soils on
43 terraces formed in alluvium derived from sedimentary rocks with very slow permeability. The
44 surface layer is light brownish-gray sandy loam and fine sandy loam 14 inches thick and the
45 subsoil is dark yellowish-brown heavy clay loam and yellowish-brown sandy clay loam 26
46 inches thick. The substratum is yellowish-brown light clay loam that extends to a depth of
47 more than 60 inches. Slopes are typically 0 to 2 percent. Runoff is slow, and erosion is a slight
48 hazard (NRCS, 1974).

Figure 3-3:
Travis AFB Soil Types



- No soil mapping units at the proposed demolition and construction sites meet the criteria for prime farmland; however, AsA and DIC soils are considered Farmland of Statewide Importance as outlined in the U.S. Department of Agriculture's Land Inventory and Monitoring (LIM) Project for the Solano County Soil Survey (USDA, 1977). Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.

3.6.2.4 *Geologic Hazards*

The San Andreas, Hayward, and Calaveras fault zones are all located more than 20 miles from the Installation. The San Francisco Bay is considered an area of historic and present-day seismic activity due to the presence of these faults. The Green Valley Fault is located approximately 10 miles west of the Installation and is potentially active. In addition, the Vaca Fault System lies as a concealed fault east and northeast of Travis AFB consisting of a number of separate lineaments; however, no present surface activity has been identified (Travis AFB, 2016b).

The combined southern and northern segments of the Hayward fault, as well as the San Andreas Fault, Rodgers Creek, and Calaveras Fault, are considered by the U.S. Geological Survey (USGS) to pose the greatest threat of generating at least one earthquake with a magnitude 6.7 or greater earthquake over the next 30 years (USGS, 2016). The Green Valley Fault is a smaller potentially active fault. Ground movement intensity during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. The composition of underlying soils in areas relatively distant from faults can intensify ground shaking. Typical results of a Level VII earthquake, considered to have strong shaking severity, are described as follows (Louie, 1996):

- People have difficulty standing;
- Drivers feel their cars shaking;
- Some furniture breaks;
- Loose bricks fall from buildings; and
- Damage is slight to moderate in well-built buildings; considerable in poorly built buildings.

3.7 **Recreation and Visual**

3.7.1 **Definition of the Resource**

Recreation. Recreation is an indoor or outdoor activity involving leisure pursuits. Examples include archery, arts/crafts, backpacking, boating/jet-skiing, cycling, camping, canoeing, gaming, golfing, fishing, hiking, horseback riding, hunting, kayaking, mountaineering, music, photography, rock climbing, running, sailing, skeet, skiing, surfing, team sports, theater, waterskiing, and more.

Visual Resources. Visual resources include the composite of natural and man-made features of the landscape. This includes the natural environment, such as trees, topography, and land structure, as well as any man-made structures that currently exist within the area. Landscape character includes attributes, qualities, and traits of a landscape that give it an image and makes it identifiable as unique or special. The importance of a change in visual character is influenced by social considerations, including public value placed on the resource, public awareness of the area, and general community concern for visual resources in the area. Visual resources can be regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable or protect specially designated or visually sensitive areas.

1 3.7.2 Affected Environment

2 3.7.2.1 Recreation

3 Recreational pursuits at Travis AFB are supported by Morale, Welfare and Recreation (MWR) services
4 provided by the 60th Force Support Squadron (FSS). The mission of the FSS is to ensure readiness
5 of military personnel through quality recreation and family support programs. Travis AFB has 411.6
6 acres of recreational areas including the Cypress Lakes Golf Course (206 acres, located approximately
7 4-miles north), outdoor courts (basketball and tennis), athletic fields (soccer and baseball), running
8 tracks, fitness trails, children's parks, the archery/trap/skeet range, paintball, long-term RV storage,
9 FamCamp, equestrian center, arts and crafts center, and aquatic center. Overall the MWR facilities are
10 older but in good condition despite age, apart from the Cypress Lakes Golf Course clubhouse, which
11 requires replacement (Travis AFB, 2016a). The MWR facilities are meeting existing demand (Travis
12 AFB, 2016a), except for the long-term RV storage area which is currently at capacity with a waiting list
13 of 200 eligible applicants (Blazek, October 16, 2017).

14 3.7.2.2 Visual Resources

15 The primary feature at Travis AFB is the Airfield, which dominates the southern portion of the
16 installation. Areas surrounding the airfield are largely utilitarian. One exception is the Travis AFB
17 Heritage Center, located just north of the airfield near the center of the Installation. The Heritage
18 Center was established to commemorate both service members and weapons systems that have
19 contributed to the United States military mission throughout the decades. The display area includes
20 indoor and outdoor exhibits honoring the mission of Travis AFB and exhibits include a wide range
21 of platforms that have been or are still in service at Travis AFB. Each of these platforms has held a
22 distinctive role in United States military history and is a contributing feature to the visual resources at
23 Travis AFB.

24 The northern portion of the installation is densely constructed, with little open green space. Existing
25 green space is sparsely vegetated, with few trees interspersed in landscaped areas. Large residential
26 areas occupy the northern half of the installation, with community and administrative uses just south
27 of these residential areas, and mission and airfield operations areas along the south side of the
28 installation. Grassland habitat dominates the landscape on the southern portion of the installation,
29 with numerous vernal pools and swales intermingled (Travis AFB, 2016b).

30 Travis AFB is bordered on the east, north, and south by agricultural lands. On the west, the installation
31 is bordered by mixed urban uses, including commercial, industrial, and manufacturing.

32 The region around Travis AFB is mostly composed of low hills that extend from the Vaca Mountains
33 southeastward to connect with the Montezuma Hills southeast of the installation. The topography of
34 the installation slopes gently to the south, with elevations ranging from about 15 feet amsl in the
35 southwest corner to about 140 feet amsl along the northern boundary (Travis AFB, 2016b).

36 3.8 Water Resources

37 3.8.1 Definition of the Resource

38 **Groundwater.** Groundwater includes the subsurface hydrologic resources of the physical
39 environment and is an important source of fresh water commonly used for potable water consumption
40 by the general population, agricultural irrigation, and industrial applications. In addition, groundwater
41 plays an important role in the overall hydrologic cycle. Groundwater properties are often described in
42 terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

43 **Surface Water.** Surface water resources include lakes, rivers, and streams and are important for a
44 variety of reasons, including irrigation, power generation, recreation, flood control, and human health.

1 **Stormwater.** Stormwater is a form of surface water that occurs when water flows across the landscape
2 during or immediately after precipitation events. Any stormwater that does not soak into the ground
3 becomes surface runoff. Stormwater is of important concern because of flood control and water
4 pollution. When stormwater falls on impermeable surfaces (e.g., parking lots, roads, buildings,
5 compacted soils, etc.) it cannot soak into the ground, and thus creates runoff. Runoff can cause many
6 problems, including the erosion of watercourses and flooding. In addition, daily human activities result
7 in the deposition of pollutants on roads, lawns, roofs, farm fields, etc. Therefore, when stormwater
8 results in runoff, pollutants have the potential to be introduced into surface waters. Stormwater
9 infrastructure present on Travis AFB is discussed in **Section 3.11.2.7.**

10 **Floodplains.** Floodplains are defined by EO 11988, *Floodplain Management*, as “the lowland and
11 relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands,
12 including at a minimum, the area subject to a one percent or greater chance of flooding in any given
13 year.” A 100-year flood has a 1 percent probability of occurring in any given year. A 500-year flood
14 has a 0.2 percent probability of occurring in any given year.

15 Floodplain values include natural moderation of floods, water quality maintenance, groundwater
16 recharge, as well as habitat for many plant and animal species.

17 **Wetlands.** The U.S. Army Corps of Engineers (USACE) defines wetlands as “those areas that are
18 inundated or saturated with ground or surface water at a frequency and duration sufficient to support,
19 and that under normal circumstances do support, a prevalence of vegetation typically adapted for life
20 in saturated soil conditions” (33 CFR Part 338). Wetlands, including vernal pools, are an important
21 natural system with diverse biological and hydrological functions (refer to **Section 3.4.2** for a
22 discussion of biological resources associated with wetlands). These functions include water quality
23 improvement, groundwater recharge and discharge, pollutant uptake, nutrient recycling, unique plant
24 and wildlife habitat provision, storm water attenuation and storage, sediment detention, and erosion
25 protection.

26 Vernal pools are shallow depressions or small, shallow ponds that fill with water during the winter
27 rainy season, then dry out during the spring, becoming completely dry by late spring or early summer.
28 Vernal pools are typically underlain by a duripan (claypan or hardpan) layer or by impermeable
29 bedrock, which restricts percolation of water into the soil. As a general habitat type, vernal pools
30 typically exist as a complex of upland mounds (mima mounds) interlaced by a hydrologically associated
31 system of basins and swales (mima mound topography). A highly distinctive flora, consisting largely
32 of annual species, is associated with vernal pools and other ecologically related, vernal wet habitats
33 (i.e., vernal swales), including about 70 plant species considered to be endemic to vernal pools in
34 California (Holland and Jain, 1977; Stone, 1990). The highly distinctive flora of these habitat types
35 includes many special-status plant species. Several special-status invertebrate and amphibian species
36 are also associated with vernal pools (Eng et al., 1990).

37 Vernal swales are ecologically and floristically related to vernal pools. Vernal swales are drainage ways
38 or poorly defined depressions that are wet during the rainy season but hold standing water for only
39 relatively short periods. In vegetative composition, vernal swales are intermediate between upland
40 grassland and vernal pools and consist of a strong cover of facultative (i.e., utilizes both aerobic zone
41 & anaerobic zone) vernal pool species and a minimal cover of obligate (i.e., functioning or surviving
42 only in a particular condition) or “indicator” species.

43 The most striking ecological characteristic of vernal pools and related vernal wet habitats is their
44 seasonal transition from inundated (or very wet) conditions in winter and early spring to desiccated
45 conditions in summer and fall. Ecological conditions in vernal pools over the course of a year may be
46 subdivided into four phases (Zedler, 1987; Taylor et al., 1992): (1) the wetting phase, when the first
47 rains begin to saturate the soil; (2) the aquatic phase, when rainfall and inundation peaks and aquatic
48 invertebrates and amphibians are most active; (3) the drying phase, when many plants flower and

1 produce seed; and (4) the drought phase, when the soil dries and most plants senesce. The quality and
2 species composition of vernal pools and swales can vary greatly from year to year depending on the
3 pattern and quantity of annual rainfall and the consequent length of each phase (Biosystems Analysis,
4 Inc., 1994).

5 Wetlands are protected as a subset of the “waters of the U.S.” under Section 404 of the Clean CWA
6 and incorporate deep-water aquatic habitats and special aquatic habitats (including wetlands).
7 Wetlands, streams, reservoirs, sloughs, ponds, marshes, and vernal pools typically meet the criteria for
8 federal jurisdiction under Section 404 of the CWA. A policy of no-net loss of wetlands on military
9 installations applies to Travis AFB pursuant to EO 11990, *Protection of Wetlands* and DoDI 4715.3
10 (ENC 4, Paragraph B8, respectively). AFI 32-7064 addresses wetland management on USAF
11 installations. Pursuant to NEPA of 1969, as amended (42 USC 4321 et seq.), any long- and short-term
12 adverse impacts should be avoided to the maximum extent practicable. Pursuant to the Section 2(a)
13 of the EO, Travis AFB should avoid undertaking or providing assistance for new construction in
14 wetlands unless there are no practicable alternatives and that the proposed action includes all
15 practicable measures to minimize harm to wetlands that may result from such use.

16 The CWA was established to ensure the “restoration and maintenance of the chemical, physical, and
17 biological integrity of the Nation’s waters” (Section 402). Under the act, it is illegal to discharge
18 pollutants from a “point source” into any surface water without a National Pollutant Discharge
19 Elimination System (NPDES) permit. Furthermore, any applicant for a federal license or permit to
20 conduct activities that may result in the discharge of a pollutant into Waters of the United States must
21 also obtain certification from the state in which the discharge would originate or, if appropriate, from
22 the interstate water pollution control agency with jurisdiction over the affected waters at the point
23 where the discharge would originate.

24 Therefore, all projects that have a federal component and may affect state water quality (including
25 projects that require federal agency approval, such as issuance of a Section 404 permit) must
26 also comply with the CWA. The USEPA sets standards for the quality of wastewater discharges. For
27 projects at Travis AFB, the State of California implements and enforces the provisions of the CWA
28 through the State Water Resources Control Board (SWRCB), while the USEPA retains oversight
29 responsibilities.

30 Under the SWRCB, the NPDES stormwater program requires construction site operators engaged
31 in clearing, grading, and excavating activities that disturb one acre or more to obtain coverage
32 under an NPDES Construction General Permit (CGP) for stormwater discharges.

33 Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers,
34 to issue permits for the discharge of dredge or fill into wetlands and other Waters of the United
35 States. Any discharge of dredge or fill into Waters of the United States requires a permit from the
36 USACE.

37 Furthermore, EO 11990, *Protection of Wetlands*, requires federal agencies to minimize the destruction,
38 loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of
39 wetlands. Federal agencies must avoid, to the extent possible, destruction or modification of wetlands
40 wherever there is a practicable alternative. The “no net loss” requirement in the CWA and EO 11990,
41 *Protection of Wetlands* requires federal actions to protect natural values of all wetlands. Mitigation of
42 potential impacts by federal actions include approaches to avoid impacts first, minimize impacts if
43 avoidance is not possible, and mitigate at last resort by creation, restoration, or enhancement of
44 wetland function. Travis AFB attempts to either avoid or minimize impacts to wetlands. When
45 impacts to wetlands are unavoidable, the wetland habitat is mitigated through on-site restoration or
46 purchase of off-installation wetland mitigation credits.

1 **3.8.2 Affected Environment**

2 AFI 32-7041, *Water Quality Compliance*, instructs the Air Force on how to assess, attain, and sustain
3 compliance with federal, state, and local environmental regulations.

4 **3.8.2.1 Groundwater**

5 Travis AFB is not underlain by extensive water-bearing materials compared to the deposits of the
6 Great Valley (Putah Plain Area) to the northeast and Fairfield/Green Valley to the west. This is
7 evidenced by the absence of major water supply wells near the installation and the presence of
8 extensive well fields to the northeast and west. For this reason, wells five miles to the north on Cypress
9 Lakes Golf Course account for approximately 10 percent, or 75 million gallons, of potable water
10 supply annually. Groundwater occurs at the installation in shallow deposits and flows south of the
11 installation into the Suisun Marsh, to Suisun Bay, and ultimately into the San Francisco Bay, generally
12 following the surface topography. Recharge to the shallow groundwater table is from the foothills of
13 Cement Hill to the north, in-channel infiltration from the draining area of nearby creeks (Union Creek,
14 Denverton Creek, and smaller unnamed creeks northwest of the installation), and through direct
15 precipitation.

16 Each month, over four million gallons of groundwater are extracted from contaminated groundwater
17 plumes under Travis AFB, treated and discharged to Union Creek pursuant to two interim
18 Groundwater Records of Decision with the USEPA, the California Department of Toxic Substances
19 Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board (RWQCB). This
20 treated groundwater supplements the flow of the eastern branch of Union Creek (Travis AFB, 2016b).

21 **3.8.2.2 Surface Water**

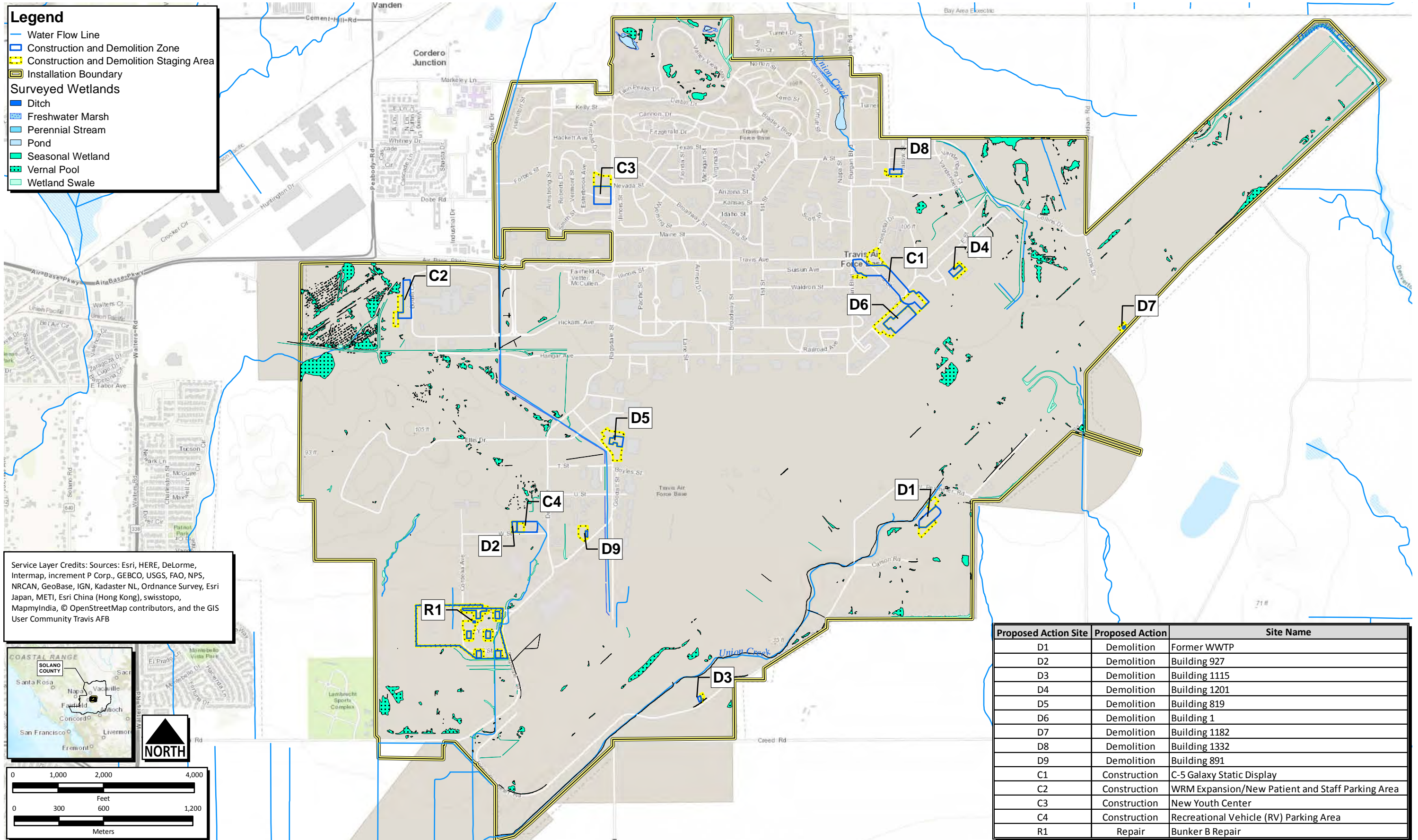
22 Surface water features on Travis AFB include man-made waters (e.g., pools, stockponds), and two
23 creeks (**Figure 3-4**).

24 Surface water flow onto Travis AFB mainly comprises the western and eastern branches of Union
25 Creek and little to no sheetflow from off installation. The western branch is part of Drainage Area II
26 and has been channeled like an open ditch for most of its route across Travis AFB. It occupies
27 approximately 8.6 acres and runs south along the western boundary in the Base housing area for
28 4,300 feet. It then proceeds along the eastern edge of the DGMC and continues south for 3,500 feet.
29 The channel then turns southeast and follows Ragsdale Road for 6,400 feet before it crosses under
30 Ragsdale Road. It then runs south until it ends at the edge of Taxiway 30, approximately 800 feet. This
31 channel fills with water during heavy rains and is the main drainage for a large area of the western side
32 of the installation. This segment of Union Creek is 15 to 25 feet wide, 15,000 feet long, and from 4 to
33 15 feet deep.

34 The eastern branch is approximately 25 acres in size and enters the installation from the north through
35 the center of the Patriot Village housing area and flows into the pond in North Gate Park. From there
36 it runs underground toward the south, collecting stormwater throughout drainage basin IV, and is
37 discharged to the surface on the south side of the flightline just west of Building 1175. From there, it
38 flows southwest parallel to the flightline where it eventually joins with the western branch at the
39 southwest corner and discharges from the installation at Outfall I. This segment of Union Creek is
40 approximately 17,000 feet long; the width and depth vary from 10 to 15 feet and from 4 to 15 feet,
41 respectively (Travis AFB, 2016b).

42

Figure 3-4:
Travis AFB Wetlands and Other Waters of the United States



1 **3.8.2.3 Stormwater**

2 Travis AFB is divided into eight distinct drainage basins based on topography and drainage patterns.
3 Six of these basins, designated as I, II, III, IV, V and VI, discharge through a series of underground
4 piping and open ditches to stormwater outfalls along Union Creek, Hill Slough and ultimately Suisun
5 and San Francisco Bays. Outfall locations are designated similarly to the drainage basin from which
6 the stormwater is collected. The other basins, which are designated as XE and XW, convey sheet flow
7 stormwater from around the former Aero Club and east portion of Runway 21L to adjacent property
8 outside Travis AFB. The sum of water leaving Travis AFB comprises surface water inflow in both
9 branches of Union Creek, stormwater collected from drainage basins I through VI, groundwater
10 extracted and treated, and sheet flow off Travis AFB to adjoining property from drainage basins XE
11 and XW (Travis AFB, 2016b). **Figure 3-5** shows the drainage basins and outfall locations on the
12 installation.

13 Impermeable areas total approximately 38 percent of the installation property and account for the
14 majority of stormwater collected and discharged from these basins. Travis AFB's storm drain capacity
15 is designed to handle a 10-year, 24-hour storm and only minor temporary flooding occurs during
16 extreme rain events in areas where storm drain piping is undersized or infiltrated by roots. Routine
17 maintenance minimizes flooding in these small areas and no damage occurs to structures (Travis AFB,
18 2016b).

19 Storm water discharges at Travis AFB are permitted under the General Permit for Storm Water
20 Discharges Associated with Industrial Activities, NPDES No. CAS000001, Order #2014-0057-DWQ
21 and the General Permit for Waste Discharge Requirements for Storm Water Discharges from Small
22 Municipal Separate Storm Sewer Systems (MS4s) NPDES No. CAS000004 Order No. 2013-0001-
23 DWQ. Regulations for storm water discharges based on CWA are administered by the SWRCB under
24 the jurisdiction of the San Francisco Bay RWQCB. Sites less than one acre are subject to Travis'
25 Industrial Stormwater Pollution Prevention Plan (SWPPP) BMPs. For sites equal to or greater than
26 one acre, Travis AFB must also obtain a site-specific construction stormwater permit as well as
27 develop a site-specific SWPPP. These SWPPPs are normally developed by construction contractors
28 and reviewed for sufficiency by Travis AFB personnel.

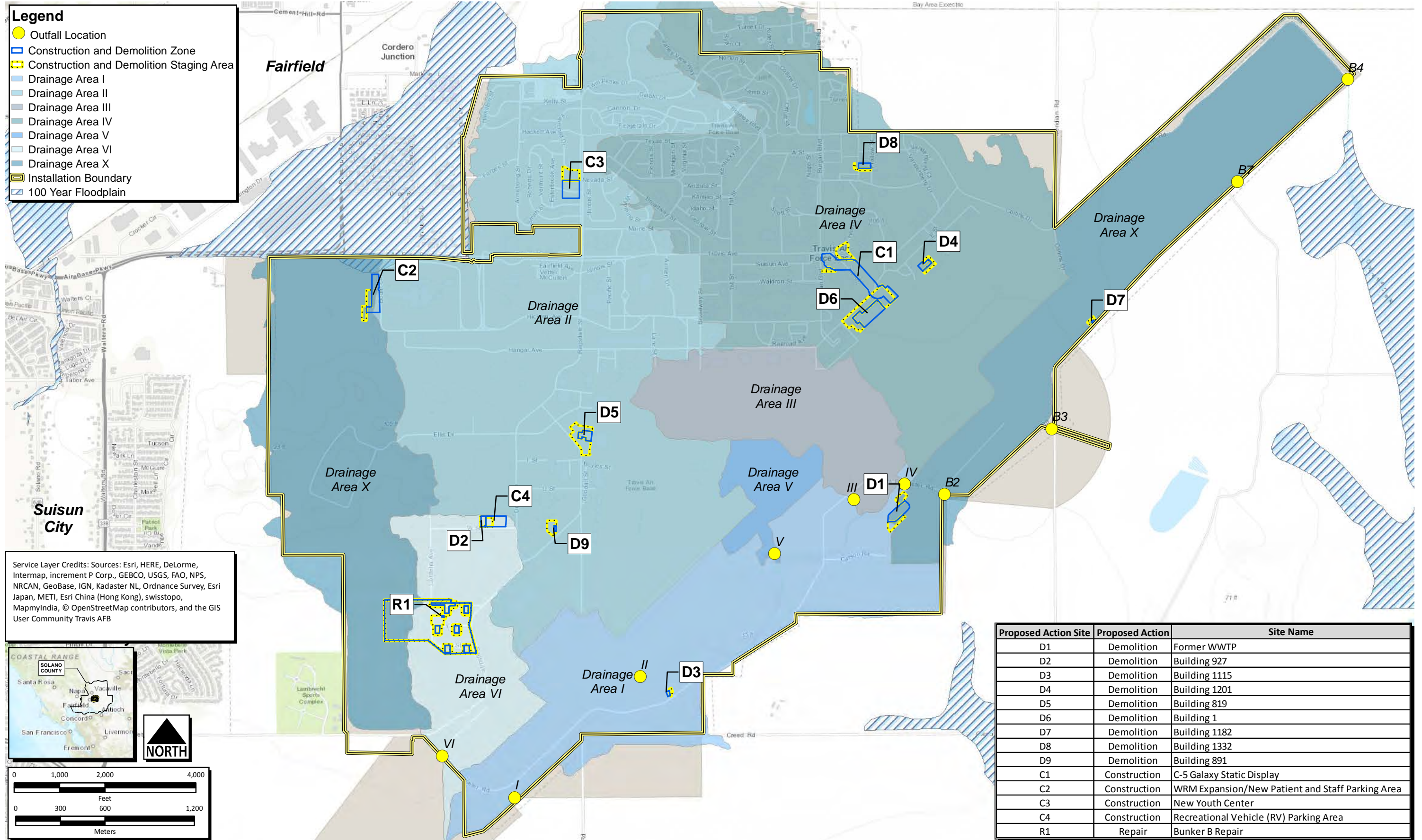
29 Runoff is managed in accordance with the 60 AMW SWPPP, which is a requirement of the permit.
30 The SWPPP is an engineering and management strategy prepared specifically for the 60 AMW to
31 improve the quality of the storm water runoff and thereby improve the quality of the receiving waters.
32 The SWPPP also works to minimize stormwater runoff through the utilization of appropriate BMPs
33 (e.g., temporary and/or permanent retention/detention ponds, sediment basins, silt fence/straw
34 wattles, temporary diversion dikes and drainage swales) thereby enhancing infiltration and subsequent
35 groundwater recharge.

36 This plan ensures implementation of BMPs and delineates monitoring, training, and documentation
37 requirements of the 60 AMW's NPDES storm water permit. The plan includes notification, permit
38 application, and erosion control requirements for any construction activity that will cause a
39 disturbance through clearing, grading, or excavating greater than one acre at the installation (Travis
40 AFB, 2017b).

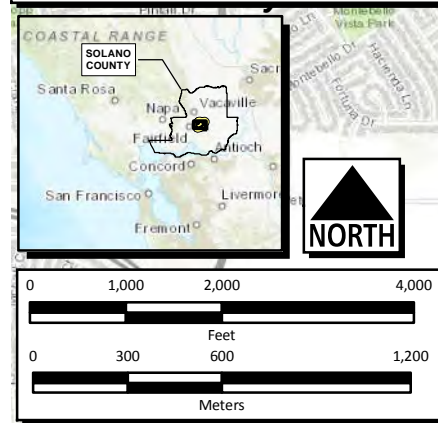
41 All construction sites are regulated and monitored to reduce contaminants in stormwater runoff.
42 Non-stormwater discharges are also regulated under the SWRBC's Statewide Industrial Activities
43 Storm Water Discharge Permit. Authorized non-stormwater discharges include hydrant flushing,
44 discharges from dust control and firefighting (Travis AFB, 2016b).

45

Figure 3-5:
Travis AFB Surface Water Drainage Areas, Outfall Locations, and Floodplains



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Travis AFB



3.8.2.4 Floodplains

According to the FEMA, Flood Insurance Rate Map, FEMA has not completed a study to determine flood hazard for Travis AFB; therefore, a flood map has not been published at this time (FEMA, 2017). The California DWR Best Available Map Web Viewer showing 100-year floodplains in Solano County does not indicate that a 100-year floodplain is located within the boundaries of Travis AFB (DWR, 2014).

According to the INRMP (Travis AFB, 2016b), the majority of the Base was stated to be within a 500-year floodplain; however, based on recent hydrological data from the Suisun City Department of Planning, Travis AFB has concluded that the installation is outside of the 500-year floodplain. Travis AFB plans to revise the INRMP to state this conclusion.

3.8.2.5 Wetlands

Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, unique flora and fauna niche provision, stormwater attenuation and storage, sediment detention, and erosion protection (Travis AFB, 2016b). Travis AFB contains over 90 acres of identified jurisdictional wetlands and waters of the US (Travis AFB, 2017). Seasonal wetland areas include vernal pools, seasonal wetlands, and swales. Species composition is variable among wetlands depending on the soil type, basin topography, level of disturbance, and duration of saturation or ponding. The seasonal wetlands at Travis AFB are generally classified into three different plant community types determined primarily by their floristic components. These wetland types include (1) Vernal Pool; (2) Seasonal Wetland and Swale; and (3) Freshwater Emergent Marsh (Travis AFB, 2017). Wetlands on base are primarily vernal pools and vernal swales associated with the bed and banks of surface water drainage features, and isolated depressions in low-lying areas. Wetlands occur across the base but are generally absent from the highly developed central and northern portions of the base.

Wetlands, including vernal pools and swales, are found within grassland habitat on Travis AFB and consist of shallow pools that fill with water during the rainy season and become dry during the summer months. The vernal pool wetland hydrology is determined primarily by direct inputs of precipitation. Timing and amount of rainfall, along with basin topography, are the primary factors that determine the depth and duration of standing water. Natural surface water flows in most years are limited to instances when pools are at capacity and overland sheet flow exceeds the water holding capacity of individual pools. These wetland habitats provide important nesting and foraging areas for a variety of water birds and breeding habitat for many terrestrial or semi-aquatic animals, such as frogs, salamanders, vernal pool fairy shrimp, and turtles. Vernal pools and other wetlands are discussed in further detail in **Section 3.4**.

Over 600 sites on the Installation have been identified that support vernal pool indicator species. These were either single pools or hydrologically associated pool clusters of varying size. Plant species commonly found in the vernal pool wetland areas include: foxtail, annual hairgrass, goldfields (*Lasthenia* spp.), Oregon woolly marbles (*Psilocarphus oregonus*), popcorn flower, downingia, meadow barley, coyote thistle, hyssop's loosestrife, spike rush, and flowering quillwort.

As part of the vernal pool compensation requirements (Collinge 1999), and in partial fulfillment of the USFWS Biological Opinion (BO) (File 1-1-99-F-84), 256 pools were created at the former Aero Club in November 1999. A five-year vernal pool monitoring project was subsequently conducted from 2000 to 2005 and resulted in the establishment of vernal pool endemic plant species such as the federally-endangered Contra Costa goldfield (*Lasthenia conjugens*) as well as four other native plant species. Five years after construction, the constructed pools appeared to function similarly to natural pools in terms of both hydrology and biology (Collinge, 2005). A 38.8-acre special natural area was

1 created in the Castle Terrace Housing area in partial fulfillment of a USFWS BO (File 1-1-99-F-84).
2 Wetlands were also created in this area as mitigation for the removal of wetlands on a former landfill
3 site (LF007) to comply with EO 11990, *Protection of Wetlands*. Surveys later determined that much of
4 these wetland creation attempts had failed and credits were purchased from off-installation wetland
5 mitigation banks to finally satisfy compliance with Executive Order 11990. Travis AFB is currently
6 conducting vernal pool monitoring of the Castle Terrace Housing area (CH2M Hill 2006) to assess
7 the success and failure of the created wetlands on the site (Travis AFB, 2016b).

8 **3.9 Hazardous Materials**

9 **3.9.1 Definition of the Resource**

10 Hazardous materials are defined by Title 49, Code of Federal Regulations, Section 171.8 (49 CFR §
11 171.8) as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials,
12 materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials
13 that meet the defining criteria for hazard classes and divisions” in 49 CFR § 173. Hazardous wastes
14 are defined by the RCRA at Title 42 USC Section 6903(5), as amended by the Hazardous and Solid
15 Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity,
16 concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly
17 contribute to an increase in, mortality or an increase in serious irreversible, or incapacitating reversible,
18 illness; or (B) pose a substantial present or potential hazard to human health or the environment when
19 improperly treated, stored, transported, or disposed of, or otherwise managed.”

20 AFI 32-7086, Hazardous Materials Management, establishes procedures and standards for managing
21 hazardous materials throughout the USAF to ensure compliance with the Emergency Planning and
22 Community Right-to-Know Act (EPCRA), and applies to all USAF personnel who authorize, procure,
23 issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those
24 activities. Under AFI 32-7086, USAF has established roles, responsibilities, and requirements for a
25 hazardous materials management program. The purpose of the hazardous materials management
26 program is to control the procurement and use of hazardous materials to support USAF missions,
27 ensure the safety and health of personnel and surrounding communities, and minimize USAF
28 dependence on hazardous materials.

29 Hazardous substances that might pose a risk to human health are addressed separately from other
30 hazardous substances and are referred to as special hazards. Special hazards include asbestos-
31 containing materials (ACMs), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). The
32 potential presence, location, quantity, and condition of special hazards assist the USAF in determining
33 the significance of a proposed action. The USEPA regulates these special hazard substances under the
34 authority of the Toxic Substances Control Act (TSCA; 15 USC § 53). USEPA has established
35 regulations regarding asbestos abatement and worker safety (40 CFR § 763), with additional emissions
36 regulations (40 CFR § 61). Whether from LBP abatement or other activities, depending on the quantity
37 or concentration, the disposal of the LBP waste is regulated by the RCRA at 40 CFR § 260. The
38 disposal of PCBs is addressed in 40 CFR §§ 750 and 761.

39 The Defense ERP was established by Section 211 of the Superfund Amendments and Reauthorization
40 Act of 1986 (10 USC §§ 2701-2707). The ERP was developed to facilitate thorough investigation and
41 cleanup of contaminated sites on military installations (i.e., active installations, installations subject to
42 Base Realignment and Closure, and Formerly Used Defense Sites). The Installation Restoration
43 Program (IRP) and Military Munitions Response Program (MMRP) are components of the ERP. The
44 IRP requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or
45 release sites. The MMRP addresses non-operational rangelands that are suspected or known to contain
46 unexploded ordnance, discarded military munitions, or munitions constituent contamination.

1 For the USAF, the management of hazardous materials, hazardous wastes, and special hazards is
2 covered in Air Force Policy Directive 32-70, Environmental Quality, and the Air Force Instruction
3 32-7000 series, which incorporates the requirements of all federal regulations and other AFIs and
4 DoD Directives.

5 **3.9.2 Affected Environment**

6 ***3.9.2.1 Hazardous Material and Petroleum Products***

7 Operations at Travis AFB require the use and storage of many hazardous materials. Each process
8 involving the use of hazardous materials and generation of waste streams is evaluated and authorized
9 through the installation's Hazardous Material Management Program (HMMP) using EESOH-MIS,
10 which provides centralized management of the procurement, handling, storage, and issuing of
11 hazardous materials, and turn-in, recovery, reuse, or recycling of hazardous materials (Travis AFB,
12 2016d).

13 Petroleum products and hazardous substances are stored, transferred, and used in significant
14 quantities at various locations. There are more than 100 ASTs consisting of large bulk storage tanks,
15 organizational fuel tanks, and generator (power production) tanks located across the facility, as well as
16 20 underground storage tanks (USTs), on the Installation. The largest USTs are the three 20,000-
17 gallon capacity USTs used to store diesel, biodiesel, and motor gasoline (MOGAS) at the Automated
18 Fuel Service Station and the AAFES Service Stations. The remaining USTs, ranging in capacity from
19 500 to 5,000 gallons, are used for product recovery at the various Hydrant Systems, used oil storage,
20 and backup generators. JP-8 is the largest quantity of petroleum bulk products handled. Resupply is
21 accomplished via pipeline from the Kinder Morgan Energy Partners LP facility inside the Installation.
22 Fuel receipt operations are typically conducted three to four times a week and pumped at a flow rate
23 of approximately 600 barrels per hour (25,200 gallons per hour). In the event the pipeline cannot be
24 used, fuel can be received via tanker truck at Area F. Normal yearly throughput of JP-8 is
25 approximately 52.5 million gallons. Diesel fuel and MOGAS storage tanks for military, government,
26 and AAFES operations are filled by commercial tanker trucks (Travis AFB, 2014).

27 Travis AFB has implemented and maintains an Integrated Contingency Plan for Oil and Hazardous
28 Substance Spill Prevention and Response designed to meet the combined regulatory requirements for
29 a USEPA Facility Response Plan (FRP); a USEPA Spill Prevention, Control and Countermeasures
30 (SPCC) Plan; a U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety
31 Administration (PHMSA) Response Plan for Onshore Oil Pipelines; and spill prevention and response
32 planning for the State of California. The plan also addresses the emergency planning, notification, and
33 response actions directed by the RCRA; the Comprehensive Environmental Response,
34 Compensation, and Liability Act (CERCLA); the EPCRA; and the Occupational Safety and Health
35 Administration (OSHA) (Travis AFB, 2014).

36 No existing ASTs or USTs are located within any of the 14 Proposed Action Areas.

37 ***3.9.2.2 Hazardous and Petroleum Wastes***

38 The management of hazardous wastes at Travis AFB is conducted in accordance with the installation's
39 Hazardous Waste Management Plan (HWMP) and Integrated Contingency Plan (ICP). The HWMP
40 establishes procedures and policies and assigns responsibilities associated with the generation,
41 handling, use, management, transportation, and disposal of hazardous materials and wastes at Travis
42 AFB (Travis AFB, 2016d). Travis AFB is classified as a large quantity generator of hazardous waste
43 under both the RCRA and California regulations because the installation typically generates more than
44 1,000 kilograms (kg) of hazardous waste in a calendar month. The installation is classified as a small-
45 quantity handler of universal waste because it does not accumulate more than 5,000 kg of universal
46 waste at any one time and is considered a Cathode Ray Tube material handler in accordance with
47 California regulations (Travis AFB, 2016d).

1 In accordance with HWMP requirements, hazardous waste is properly segregated, stored,
2 characterized, labeled, and packaged for collection at designated initial accumulation points. The
3 HWMP applies to any activity that generates hazardous waste on Travis AFB and to all Installation
4 organizations, including tenants and contractors (Travis AFB, 2016d).

5 The waste fuel bowzers are daily empty sites and are not intended for the long-term storage of waste
6 fuel. Reclaimable fuel containers must be marked “Reclaimable Fuel,” and fuels that are not
7 reclaimable must be managed as hazardous waste. Containers used for storage must be stored in an
8 approved storage area, grounded, and labeled as hazardous waste.

9 Waste from initial accumulation points is transferred and stored at one of three hazardous waste
10 accumulation sites (HWAS) at Travis AFB. The two 90-Day HWAS where hazardous wastes are
11 stored for disposal for up to 90 days are located at Building 831 (maintained by 60 CES/CEIE) and
12 Building 793 (maintained by a 60 MDG contractor and only MDG waste is accepted at this location).
13 The 1-Year RCRA Part B Permitted Hazardous Waste Storage Facility (HWSF) is located at Building
14 1365. Permitted hazardous waste may be stored up to the permitted quantity up to one year from the
15 date accepted at the HWSF. Universal Waste may be stored up to 6 months from the original
16 accumulation start date. Hazardous waste is transferred to an authorized off-installation treatment,
17 storage, and disposal facility (TSDF) before the time limit is reached. Defense Logistics Agency
18 (DLA)-approved contractors pick up the waste and transport it off the installation for disposal in a
19 licensed disposal facility.

20 Travis AFB has approximately 34 oil/water separators (OWS) that are used to remove oil from
21 wastewater and stormwater discharges. Wash racks, maintenance activities, fuel storage and transfer
22 sites, and other industrial activities are outfitted with OWS. Wastewater is routed to the Fairfield-
23 Suisun Sewer District for treatment. Stormwater is routed through the installed drainage system. OWS
24 are routinely inspected and are cleaned on an as-needed basis. All units are maintained for compliance
25 with the Fairfield-Suisun Sewer District Permit or the NPDES permit limitations as applicable (Travis
26 AFB, 2014).

27 No existing OWS or HWAS are located within any of the 14 Proposed Action areas.

28 ***3.9.2.3 Environmental Restoration Program***

29 In 1983, Travis AFB established an Installation Restoration Program, now called the ERP, to
30 investigate and clean up contamination from past installation activities. Releases of hazardous waste
31 occurred from leaking pipelines, spills, or waste disposal to landfills. Although the materials handling
32 and disposal practices of the past complied with environmental regulations at the time, they resulted
33 in soil and groundwater contamination and have since been stopped. Travis AFB now follows current
34 environmental guidelines for the management and disposal of hazardous materials and waste (Travis
35 AFB, 2015). The Travis AFB ERP is administered by the AFCEC. The goal of the Travis AFB ERP
36 is to remediate all accident, disposal, and spill sites (from 1984 or earlier) that may pose an immediate
37 or potential threat to public health, welfare, or the environment (AFCEC, 2017).

38 In 1989, Travis AFB was added to the USEPA’s National Priorities List and later entered into a Federal
39 Facilities Agreement (FFA) with USEPA and the State of California, to enact the CERCLA cleanup
40 process. The FFA provides procedures and schedules for the investigation and cleanup of
41 contamination at Travis AFB (Travis AFB, 2016b). The installation was subdivided for ERP coverage
42 into two geographic areas that contain sites with soil or groundwater contamination called Operable
43 Units (OUs), and each of these requires a separate schedule for completion of the cleanup process
44 under the FFA. The two OUs on Travis AFB, the West/Annexes/Basewide Operable Unit
45 (WABOU) and the North/East/West Industrial Operable Unit (NEWIOU) contain approximately
46 34 ERP sites (AFCEC, 2017). The ERP sites include landfills, fire protection training areas, spill sites,
47 waste disposal sites, drum storage areas, leaking underground storage tanks (LUSTs) and piping,

1 OWSs, waste treatment plants, and other areas (Travis AFB, 2016b). The following documents
2 describe the selected remedies for ERP sites:

- 3 • Final North/East/West Industrial Operable Unit Soil, Sediment and Surface Water Record of
4 Decision (ROD) (Travis AFB, 2006)
- 5 • Final Soil Record of Decision for the WABOU (Travis AFB, 2002a)
- 6 • Groundwater Interim Record of Decision North, East, and West Industrial Operable Unit
7 (Travis AFB, 1997)
- 8 • Groundwater Interim Record of Decision for the WABOU (Travis AFB, 1999)
- 9 • Environmental Restoration Program Final Proposed Plan for Groundwater Cleanup (Travis
10 AFB, 2012)

11 Two active ERP sites (FT005 and SD037) are present within two of the Proposed Action areas:

- 12 • D1 (Former WWTP) is located within the active ERP site FT005 (Fire Training Area #4),
13 which covers about 30 acres in the southern portion of the NEWIOU. The primary
14 groundwater contaminant is 1,2-dichloroethene, and metals, total petroleum hydrocarbons
15 (TPH), and polycyclic aromatic hydrocarbons (PAH) were also detected in the soil. Based on
16 human health and ecological assessments of the potential risks posed by the soil contaminants,
17 the NEWIOU Soil, Sediment, and Surface Water ROD selected excavation for the soil at this
18 site. The excavation of PAH-contaminated soil was completed in 2012. The plume of
19 contaminated groundwater was fully encapsulated in June 2002 and is being pumped back to
20 the installation and treated at the South Base Boundary Groundwater Treatment
21 Plant. Routine operation and maintenance and monitoring of the final groundwater remedy
22 are ongoing, and groundwater LUCs are in place to ensure that groundwater is not used for
23 potable purposes until it is remediated to below maximum contaminant levels allowing for
24 unlimited use and unrestricted exposure. Because the contaminant concentrations at FT005
25 are not high, the groundwater does not pose a potential indoor air vapor intrusion risk to
26 industrial or residential workers (AFCEC, 2016).

27 Any soil disturbance activities would adhere to applicable LUC provisions contained in the
28 NEWIOU ROD. Since the Proposed Action (D1) involves the excavation of some structures
29 that extend up to approximately 20 feet below ground surface, and the groundwater beneath
30 Travis AFB is located about 10 to 15 feet below ground surface (Travis AFB, 2018a), it is
31 possible that contaminated groundwater may be encountered during demolition activities.
32 Excavation and any associated dewatering activities during the demolition would be
33 coordinated with the Travis AFB ERP to ensure proper worker safety and environmental
34 controls are implemented, and any contaminated groundwater generated from dewatering
35 activities is properly managed and disposed.

- 36 • D4 (Building 891) is located within the active ERP site SD037 (B Sanitary Sewer System;
37 Facilities 837/838, 919, 977, and 981; Area G Ramp; and Ragsdale/V Area) within the
38 NEWIOU. The buildings contain an OWS, sumps, wash racks, and a fuel hydrant system. The
39 sanitary sewer, which includes about 22,000 feet of piping, continues to convey domestic and
40 industrial wastewater. A large groundwater plume beneath the site contains primarily
41 trichloroethene and fuels that may be a source of potential human health risks. PAH, TPH,
42 semi-volatile organic compounds (SVOC), and metals are present in the soil and may be a
43 source of potential ecological risks. The Travis AFB Groundwater ROD selected a
44 combination of Emulsified Vegetable Oil (EVO) injections in the portion of the plume with
45 the highest contaminant concentrations and Enhanced Attenuation in the downgradient
46 portion of the plume. The groundwater remedy was installed in 2015 and monitoring of the
47 final groundwater remedy is ongoing (Travis AFB, 2018b). The NEWIOU Soil, Sediment,

1 and Surface Water ROD selected LUCs for the soil at this site, and adherence to LUCs is
2 evaluated annually.

3 Building demolition associated with D4 poses little risk of contact with groundwater
4 contamination, since any demolition-related excavation would not be expected to reach
5 groundwater depth of 10 to 15 feet below ground surface. Soil disturbance activities associated
6 with the demolition of the Building 891 and any associated underground piping would adhere
7 to applicable land use control provisions contained in the NEWIOU Soil ROD and would be
8 coordinated with the Travis AFB ERP to ensure proper worker safety and environmental
9 controls are implemented.

10 A third ERP Site (SS035) is not currently undergoing active remediation and is under LUCs and
11 Monitored Natural Attenuation (MNA) for trace levels of TCE in groundwater; the existing levels of
12 TCE are below cleanup target levels. As a condition of the LUCs, groundwater associated with the
13 site is not to be used for potable purposes (Travis AFB, 2018b). Building demolition associated with
14 D5, Building 819, is not anticipated to result in contact with groundwater due to the surficial nature
15 of proposed activities. If site activities were to involve trenching or subsurface activities to a depth
16 where groundwater could be encountered, precautions including implementation of personal
17 protective gear and monitoring may be warranted.

18 ***3.9.2.4 Special Hazards (Asbestos, Lead Based Paint, PCBs)***

19 The nine buildings proposed for demolition are in poor condition and present safety hazards. Further,
20 since most of these buildings were constructed in the 1950s, there is a high potential for the presence
21 of hazardous materials.

22 ACM includes materials that contain more than 1 percent asbestos; it is categorized as either friable
23 or non-friable. Buildings constructed prior to 1980 are assumed to contain ACMs; therefore, due to
24 the age of all nine buildings, ACMs may be present. Although D2 (Building 927) was constructed in
25 1995, no ACM survey information is available, and the building is assumed to contain ACMs. Contact
26 or disturbance of ACM may occur during any demolition, construction, renovation, repair,
27 maintenance, or custodial activities.

28 The Travis AFB Asbestos Management Plan provides guidance on the identification and management
29 of ACM (Travis AFB, 2004). The plan requires comprehensive inspections be conducted for
30 renovation and demolition projects to ensure all exposed and concealed ACM can be detected,
31 identified, located, and quantified, and all asbestos removal must be performed by qualified asbestos
32 removal contractors. All asbestos containing waste material (ACWM) with an asbestos content equal
33 or greater than one percent is regulated. ACWM composed of non-friable ACM and/or ACM with
34 an asbestos content of less than 1.0 percent are not considered hazardous by the state of California.
35 However, non-hazardous ACWM must be manifested using a Non-Hazardous Waste Manifest and
36 disposed of at a permitted asbestos disposal site. Friable ACWM must be handled and disposed as
37 hazardous waste. Regulated waste generated during abatement activities by any outside abatement
38 contractor must be packaged in leak-proof containers, properly labeled, and transported to a disposal
39 facility permitted for asbestos disposal (Travis AFB, 2004).

40 *Lead-Based Paint*

41 The Federal government banned the use of most LBP in 1978, and buildings constructed prior to
42 1978 are assumed to contain LBP. Due to the age of buildings in the Proposed Actions (Projects D1
43 through D9), LBP may be present. Although Building 927 was constructed in 1995, no LBP survey
44 information is available, and the building is assumed to contain LBP.

45 The Travis AFB Lead-Based Paint Management Plan provides guidance on the identification and
46 management of LBP (Travis AFB, 2013). It requires buildings planned for renovation, demolition, or

1 major maintenance to be surveyed for LBP materials or hazards prior to any disturbance. The
2 identification and abatement of LBP associated with renovation, construction, and demolition projects
3 at Travis AFB must be performed by qualified testing and abatement contractors. In general,
4 California's requirements for Lead Containing Material (LCM) or LBP debris waste characterization
5 are more stringent than the USEPA requirements. LBP waste generated during maintenance, repair,
6 or renovation work at Travis AFB may be regulated as hazardous waste under the RCRA and/or state
7 of California hazardous waste regulations. Hazardous waste regulations describe the procedures
8 necessary to ensure that waste handling and disposal will not adversely impact the environment (Travis
9 AFB, 2013).

10 *PCBs*

11 In addition to asbestos and lead, demolition and renovation activities have the potential to disturb
12 mercury and polychlorinated biphenyls. These materials are also regulated under the TSCA. Buildings
13 may contain liquid mercury in thermostats and switches, and fluorescent lighting fixtures typically
14 contain elemental mercury in the fluorescent light bulbs; compact fluorescent lamps also contain
15 mercury. In addition, fluorescent lighting fixture ballasts have the potential to contain PCBs.

16 The Travis AFB HWMP requires all suspect PCB-containing items to be tested prior to disposal. In
17 addition to regulation under the TSCA, PCBs in California are regulated as Non-RCRA hazardous
18 waste. The Travis AFB HWMP also provides procedures for proper management and disposal of
19 mercury-containing items, such as fluorescent lamps, mercury switches, and thermostats as Universal
20 Waste (Travis AFB, 2016d).

21 **3.9.2.5 Radon**

22 Radon is an odorless, colorless, radioactive gas that develops from the natural breakdown of uranium
23 in soil and rock. Radon can migrate through permeable rocks and soils and seep into buildings or
24 structures, thereby posing an atmospheric human health risk. The national standard of concern for
25 indoor radon is 4 picocuries per liter (pCi/L) in the air (NRC, 1999). Solano County, California is in
26 a Zone 3 radon zone with predicted average indoor radon screening levels less than 2 pCi/L (USEPA,
27 2018); therefore, indoor radon levels in buildings within the Proposed Action areas are not expected
28 to exceed 4 pCi/L.

29 **3.10 Transportation**

30 **3.10.1 Definition of the Resource**

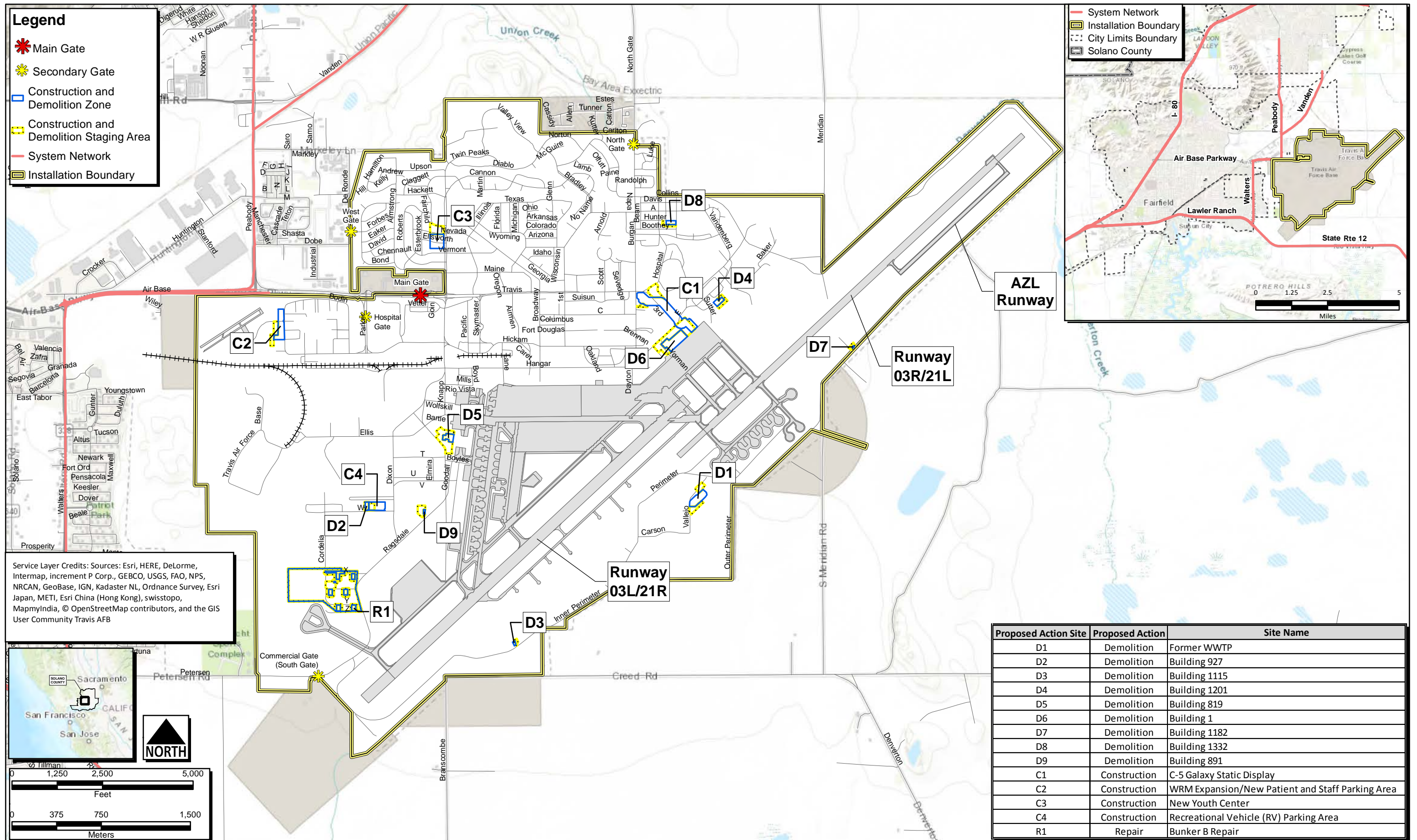
31 Transportation is defined as the movement of passengers or goods from place to place by way of air,
32 water, and ground modes. In general, transportation infrastructure refers to the man-made elements
33 necessary to accommodate movement via those modes. Roadways and airfields are examples of the
34 transportation complex present at Travis AFB. Roadways include off-installation major and minor
35 roads that feed into the installation, security entry control facilities (ECFs) on the installation, and
36 Travis AFB's internal roadways and parking areas. Public transit, rail, and multi-modal networks,
37 including pedestrian and bicycle paths, are also elements of transportation. Airfield infrastructure
38 includes all pavements, runways, overruns, aprons, ramps, and arm/disarm pads that are associated
39 with aircraft maintenance and aircraft operations.

40 **3.10.2 Affected Environment**

41 **3.10.2.1 Airfield**

42 Travis AFB operates two main runways, Runway 3R/21L and Runway 3L/21R, and an assault landing
43 zone (ALZ) runway that lies parallel to Runway 3R/21L (**Figure 3-6**). Runway 3L/21R is 11,001 feet
44 long by 150 feet wide and 3R/21L is 10,995 feet long by 150 feet wide. Both are Class B runways,
45 designed for sustained heavy aircraft landings and take-offs. The ALZ is 3,500 feet long by 90 feet

Figure 3-6:
Travis AFB Traffic Infrastructure



1 wide and is primarily used for C-17 assault landing practice. Runways 3R/21L and the ALZ are in very
2 good condition, while Runway 3L/21R was reported in 2016 to be in fair condition (Travis AFB,
3 2016a). Clear Zones (CZs) and APZs I and II have been established around the Airfield to protect the
4 installation population from flight related accidents. **Section 3.13** further discusses CZ and APZs on
5 Travis AFB.

6 The airfield also consists of roughly 258 acres of paved apron and ramp space for the aircraft assigned
7 to Travis AFB as well as common transient aircraft. These surfaces are cumulatively considered in fair
8 condition (Travis AFB, 2013a).

9 **3.10.2.2 Roadway/Streets**

10 *Roads of Local and Regional Importance*

11 Vehicular traffic into Travis AFB is likely to traverse numerous roads under jurisdiction of the state
12 of California or local municipalities, such as Solano County and the cities of Fairfield and Suisun City.
13 The Solano Transportation Authority (STA) was established in 1990 to integrate transportation
14 activities between the cities in Solano County and manage countywide transportation planning.

15 Near Travis AFB, the STA's Solano County Congestion Management Program (CMP) identifies
16 Interstate (I) 80, State Route (SR) 12, Air Base Parkway from Walters Road to Peabody Road, Walters
17 Road from Air Base Parkway to Fairfield city limits, and Peabody Road from Air Base Parkway to
18 Fairfield city limits as roadways subject to the CMP due to their significant regional importance. (STA,
19 2015).

20 The volume of traffic contributed by the installation on roadways off the installation is primarily a
21 function of the number of military personnel and their families permanently assigned to Travis AFB,
22 as well as civilian and contract employees who enter and exit the installation daily.

23 *Vehicular Entry Control Facilities*

24 Four ECFs provide vehicular access to Travis AFB (**Figure 3-6**). The Main Gate and Hospital Gate
25 provide access from the west, utilizing Air Base Parkway from the city of Fairfield. The North Gate
26 provides access from Vacaville and unincorporated areas of Solano County north of the installation,
27 utilizing Gate Road. Additionally, the South Gate is the principal point of access to Travis AFB for
28 commercial traffic utilizing Petersen Road from the southwest. Cumulatively, more than 2,700 vehicles
29 utilizing Gate Road. Additionally, the South Gate is the principal point of access to Travis AFB for
30 commercial traffic utilizing Petersen Road from the southwest. Cumulatively, more than 2,700 vehicles
31 can be processed through these gates during the peak hours of 0700 to 0830; however, delays of about
32 15 minutes may still be experienced at the Main Gate during this period (Travis AFB, 2016a). Upgrades
33 to the South Gate queueing area constructed in 2016 have improved the access for commercial
34 vehicles awaiting inspection and entry into the installation by providing a third queue lane outside the
35 travel lanes on Petersen Road leading to the ECF.

36 *Internal Road Network*

37 Travis AFB contains more than 190 miles of roadways within the installation, with approximately 76
38 miles of those roads considered arterial (**Figure 3-6**). The capacity of roadways on the installation is
39 generally good. Delays are limited to primarily to the gates during peak hours. The paving condition
40 is adequate for the traffic usage (Travis AFB, 2016a).

41 *Public Transit*

42 The Fairfield/Vacaville Train Station, situated approximately one mile north of Travis AFB's Main
43 Gate, provides intercity passenger train service along the Capitol Corridor between San Jose to the
44 southwest and Auburn to the northeast.
45

3.11 Infrastructure

3.11.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity for expansion are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include airfield, transportation, utilities, and solid waste management.

The airfield includes all pavements, runways, overruns, aprons, ramps, and arm/disarm pads that are associated with aircraft maintenance and aircraft operations. Transportation includes major and minor roadways that feed into the installation and the security gates, and roadways and parking areas on the installation. Public transit, rail, and pedestrian networks are also elements of transportation. Utilities include electrical supply, liquid fuel supply, natural gas supply, water supply, sanitary sewer, and wastewater systems, stormwater drainage, and communications systems. Solid waste management primarily relates to the availability of systems and landfills to support a population’s residential, commercial, and industrial needs. The infrastructure information contained in this section provides a brief overview of each infrastructure component and describes its general condition at Travis AFB.

3.11.2 Affected Environment

3.11.2.1 Electrical

The Western Area Power Administration (WAPA) provides 93 percent of electricity at Travis AFB, with the remaining seven percent provided by Pacific Gas & Electric. Within the installation, the electrical distribution system, which is owned, operated, and maintained by City Light & Power, Inc. (CLP), a private electric utility, includes three substations (A, B, and C) and overhead and underground transmission lines. Approximately 80 percent of the transmission lines are underground. The electrical system serving the DGMC is operated by a separate contractor, and the housing distribution system is owned by Balfour Beatty Communities. The electrical distribution system is in very good condition. However, standardization and efficiency of systems vary across the installation, and some systems, such as those at the TACAMO building and the older dormitories, are in poor condition and require upgrades (Travis AFB, 2016a).

The current electrical system at Travis AFB is operating at 54 percent of overall capacity and is adequate for existing demand. The installation has a total electrical capacity of 22.5 million volt-amperes (MVA) with a total demand of 12.1 MVA/Hour and a headroom of 10.4 MVA. Substation C has capacity for expansion while Substations A and B will have excess capacity following upgrades to 12 kilovolt (kV) power. Additionally, there is sufficient power for expansion within the regional grid. One concern is the lack of redundancy in the system; the single source of power to the installation represents a vulnerability (Travis, 2016a).

3.11.2.2 Communications

All outside plant copper and fiber optic cables designated for official use on Travis AFB are owned by the Air Force and consist of approximately 83.5 miles of copper and 242 miles of fiber cable. Cable maintenance is provided through an operations and maintenance Base Telecommunications System contract, and commercial cables are leased from AT&T. The copper and fiber-optic cable plant supports the following communications requirements: administrative telephones; C2 telephones; fire and crash systems; security alarm systems; radio systems; Energy Monitoring and Control Systems (EMCS); and low-speed point-to-point data systems (Travis, 2016a).

The existing communication systems at Travis AFB are adequate for current demand. These systems could support another 3,000 to 5,000 users with additional fiber backbone and bandwidth. Additional

1 users of secure internet protocol router networks (SIPRNET) and non-secure internet protocol router
 2 networks (NIPRNET) could be accommodated with some limitations. Most communication
 3 infrastructure is adequate, but upgrades are needed to ensure continued operability, and additional
 4 outside plant cable and manhole duct system capacity may be required to accommodate expansion
 5 (Travis, 2016a).

6 **3.11.2.3 Heating/Cooling**

7 The heating system is maintained in part by Heating, Ventilation, and Air Conditioning (HVAC) and
 8 by civilian contracting. Air conditioning systems on the installation are maintained by civilian
 9 contracting. The heating and cooling system are in marginal condition and were rated as degraded in
 10 2004/2005 based on the workload of maintenance personnel (Travis AFB, 2007).

11 The DGMC Power Plant (Building 779) provides emergency power, steam, compressed air, and
 12 chilled/hot water to the DGMC. The plant is operated by a contractor under direction of the DGMC
 13 (Travis AFB, 2014).

14 **3.11.2.4 Liquid Fuels**

15 Liquid fuels, including JP-8, diesel fuel, MOGAS, and biodiesel, are stored, transferred, and used in
 16 significant quantities at Travis AFB. Fuels are stored in both above- and below-ground tanks and are
 17 delivered via pipeline or fuel truck. JP-8 fuel is delivered via a 10-inch diameter pipeline operated and
 18 maintained by Kinder Morgan Energy Partners from the Kinder Morgan Concord Station to the
 19 Kinder Morgan Travis Station that consists of three 178,106-barrel ASTs, located on Travis AFB. JP-
 20 8 is pumped via pipeline from the on-installation Kinder Morgan Travis Station to the Bulk Fuels
 21 Storage Area (Area F) where it is stored in two 4.2 million-gallon and two 2.3 million-gallon field-
 22 erected ASTs. Several on-installation transfer lines, ranging in diameter from 6 inches to 18 inches,
 23 are used to move JP-8 fuel from Area F to the hydrant tanks and from the hydrant tanks to the
 24 flightline (Travis AFB, 2014).

25 Diesel fuel and MOGAS for military and government operations and the AAFES Service Station are
 26 delivered to storage tanks at Travis AFB by commercial tanker trucks. There are numerous ASTs
 27 throughout the Installation that supply diesel fuel for emergency generators and boilers in the event
 28 of power or natural gas interruptions (Travis AFB, 2014).

29 As shown in **Table 3-7**, the installation can store more than 34 million gallons of JP-8, 194,721 gallons
 30 of diesel, 123,000 gallons of MOGAS, and 20,000 gallons of biodiesel. This capacity exceeds the
 31 demand, and there is capacity for expansion if needed. Except for some exterior corrosion, fuel tanks
 32 and fuel lines are generally in excellent condition (Travis AFB, 2016a).

33 **Table 3-7 Liquid Fuels Capacities**

Liquid Fuels	Max Capacity (gallons)	Demand (gallons per day)	Headroom (gallons per day)
JP-8 Bulk Storage	34,872,242	114,000	34,758,242
Diesel Fuel Bulk Storage	194,721	276	194,445
Unleaded Gas Bulk Storage	123,000	408	122,592
Biodiesel Bulk Storage	20,000	No Data	No Data

34 Source: Travis AFB, 2016a

35 **3.11.2.5 Natural Gas**

36 Travis AFB receives approximately 90 percent of its gas supply from Shell Energy and 10 percent
 37 from Pacific Gas & Electric. With an extensive distribution system on the installation, a distribution
 38 capacity of 4.3 million cubic feet per year, and an annual demand of 213,326 cubic feet per year, there

1 is enough capacity to meet current and future mission needs. However, the natural gas distribution
2 system is one of the oldest systems on the installation, and the locations of some lines are unknown.
3 Several recent improvements have provided much-needed upgrades, but the system is still considered
4 to be in fair to degraded condition. Most projects have focused on maintaining the main lines, and
5 only about half of the smaller service lines have been replaced. Infrastructure conditions and gas leaks
6 are issues that must be addressed before growth could be effectively accommodated (Travis AFB,
7 2016a).

8 **3.11.2.6 Sanitary Sewer**

9 The sanitary sewer system serves approximately 2,006 acres within Travis AFB. Industrial and
10 domestic wastewater generated on the installation is collected and discharged to the Fairfield-Suisun
11 Wastewater Treatment Plant, a publicly owned treatment works (POTW) located off the installation
12 and operated by the Fairfield-Suisun Sewer District (FSSD) (Travis AFB, 2016a). The installation's
13 sanitary sewer system consists of pipes, OWSs, pump stations, and lift stations. Connections include
14 lavatories, shower rooms, janitorial sinks, floor drains, and wash racks from industrial facilities as well
15 as all family housing units (Travis AFB, 2016b).

16 Discharges to the POTW average approximately 1 million gallons per day and are regulated by the
17 Travis AFB Wastewater Discharge Permit issued and enforced by the FSSD. Industrial and domestic
18 wastewater from Travis AFB is discharged to the FSSD through the South Gate Manhole located on
19 the south side of the installation (Travis AFB, 2016b). Discharges to the POTW must comply with
20 the FSSD sewer use ordinance and Travis AFB's wastewater discharge permit. Travis AFB monitors
21 the wastewater discharged to the FSSD at the South Gate Manhole on the frequency set forth in the
22 discharge permit to ensure contaminant levels comply with permit limits (Travis AFB, 2016f).

23 The sanitary sewer system capacity, with an annual capacity of 580,000 thousand gallons (Kgal) and an
24 annual demand flow of 380,000 Kgal, is adequate for the current mission and could accommodate
25 future growth. Generally, the collection system is adequate, and a program for targeted upgrades is
26 underway to address problem areas (Travis AFB, 2016a).

27 **3.11.2.7 Stormwater Infrastructure**

28 Stormwater runoff flows through Travis AFB from approximately 2,900 acres of up-gradient land to
29 the north (Travis AFB, 2016a). Acreage within the installation has been altered with impervious
30 structures and/or pavement including more than 400 building structures covering more than 200
31 acres; paved areas associated with aircraft runways, taxiways, aprons, and shoulder areas covering more
32 than 600 acres; vehicle parking lots, driveways and sidewalks covering more than 700 acres; and,
33 almost 500,000 linear feet of roadways (Travis AFB, 2015b).

34 Surface water drainage on the installation flows from eight distinct drainage basins (sub-watersheds)
35 based on topography and drainage patterns into the stormwater collection system on Travis AFB
36 (Travis AFB, 2016b). The stormwater collection system consists of curb inlets, drop inlets,
37 underground storm drains and open ditches that support drainage areas that discharge to Outfalls I
38 through VI and B1 through B7. The storm drain system is designed to handle a 10-year, 24-hour storm
39 (Travis AFB, 2015b). **Figure 3-5** shows Surface Water Drainage Areas and Outfall locations.

40 Stormwater from Travis AFB discharges to the south, flowing into several swamps, marshy areas, and
41 troughs before discharging into Hill Slough and Loco Slough, and ultimately enters Suisun Bay, south
42 of Travis AFB. (Travis AFB, 2015b).

43 Stormwater discharges from Travis AFB industrial activities are regulated under a California General
44 Industrial Activities Storm Water Permit issued by the SWRCB. These activities, which have the
45 potential to contaminate stormwater runoff, include fueling, maintenance, cleaning, and parking areas
46 for aircraft, vehicles, and equipment; hazardous waste and hazardous material storage areas; and ASTs.

1 Operations at these locations are subject to the installation's Storm Water Pollution Prevention Plan
 2 (Travis AFB, 2017e). Urban storm water discharges from Travis AFB are regulated under the
 3 installation's Small MS4 Storm Water Permit (Travis AFB, 2013c).

4 Stormwater runoff from construction site and land disturbance activities is covered by the SWRCB's
 5 General Construction Activities Storm Water Permit. Sites smaller than one acre are subject to the
 6 installation's industrial SWPPP BMPs. For sites equal to or larger than one acre, Travis AFB must also
 7 obtain a site-specific construction stormwater permit as well as develop a site-specific SWPPP. These
 8 SWPPPs are normally developed by construction contractors and reviewed for sufficiency by
 9 installation personnel. All construction sites are regulated and monitored to reduce contaminants in
 10 stormwater runoff (Travis AFB, 2016b). **Table 3-8** shows the potential land disturbance areas
 11 associated with the Proposed Actions.

12 **Table 3-8 Land Disturbance Area of Proposed Actions**

Proposed Projects	Land Disturbance Area	
	SF	Acres
D1 - Demolish Infrastructure Associated with former WWTP	110,978	2.55
D2 - Demolish Building 927	23,826	0.55
D3 - Demolish Building 1115	6,823	0.16
D4 - Demolish Building 1201	35,382	0.81
D5 - Demolish Building 819	51,148	1.17
D6 - Demolish Building 1	184,230	4.23
D7 - Demolish Building 1182	2,244	0.05
D8 - Demolish Building 1332	29,786	0.68
D9 - Demolish Building 891	5,987	0.14
C1 – Construct C-5 Galaxy Static Display	465,901	10.70
C2 - Construct New WRM Warehouse and New Patient and Staff Parking Area	152,507	3.50
C3 - Construct New Youth Center	148,330	3.41
C4 - Construct RV Storage Area	500	0.01
R1 - Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter Lighting Addition	148,422	3.41

13 The stormwater system capacity is adequate during minor storm events, but often becomes
 14 overwhelmed during major storms. Flooding that occurs during storms can occasionally impede the
 15 use of the south end of the runway, and bank slump can impact the flow of stormwater through the
 16 creek. The condition of the stormwater drainage system is adequate overall (Travis, 2016a).

17 Union Creek is used heavily for stormwater discharge, but its condition is degraded because of
 18 vegetative growth, which slows the flow of stormwater (Travis AFB, 2016a). Travis AFB has an
 19 easement to clear vegetation at its expense on private property along the length of Union Creek located
 20 southwest of the installation; and some lineal easements for access to a plot of government owned
 21 property off the end of the runway in the middle of this private property. The vegetation easement's
 22 purpose is to ensure the "free flow of waters of Union Creek" through the private property. The width
 23 of the easement is 70 feet, with 50 feet to the left and 20 feet to the right of the center of the existing
 24 Union Creek. The easement provides that all spoils from the vegetation clearing shall be deposited
 25 within the 50-foot strip alongside Union Creek (Travis AFB, 2016b).

1 **Table 3-9** shows the change in impervious surface area associated with the Proposed Actions.

2 **Table 3-9 Change in Impervious Surface Area**

Proposed Projects	Change in Impervious Surface Area (SF)
D1 - Demolish Infrastructure Associated with former WWTP	-13,412
D2 - Demolish Building 927	-7,200
D3 - Demolish Building 1115	-428
D4 - Demolish Building 1201	0
D5 - Demolish Building 819	0
D6 - Demolish Building 1	0
D7 - Demolish Building 1182	-276
D8 - Demolish Building 1332	-13,940
D9 - Demolish Building 891	-988
Total Decrease	-36,244
C1 – Construct C-5 Galaxy Static Display	55,000
C2 - Construct New WRM Warehouse and New Patient and Staff Parking Area	52,700
C3 - Construct New Youth Center	30,104
C4 - Construct RV Storage Area	0
R1 - Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter Lighting Addition	1,300
Total Increase	139,104

3 **3.11.2.8 Solid Waste**

4 Non-hazardous (municipal) solid wastes and construction and demolition debris generated at Travis
 5 AFB are managed in accordance with the Travis AFB Integrated Solid Waste Management Plan
 6 (ISWMP) (Travis AFB, 2017c). The municipal solid waste generated at Travis AFB is collected and
 7 disposed of through contracted services. Under a MOA between the City of Fairfield and Republic
 8 Services (Formerly Solano Garbage) and in accordance with the Travis AFB Integrated Solid Waste
 9 Management contract, Republic Services collects refuse and recyclable materials from collection
 10 points on Travis AFB. Republic Services transports the refuse to the off-installation Potrero Hills
 11 Landfill for disposal at least once a week. Recyclable materials are transferred to off-installation
 12 processing centers and then sold (Travis AFB, 2017c).

13 The Potrero Hills Landfill (PHLF) is a permitted Class III solid waste facility approximately 2 miles
 14 southeast of Suisun City in Solano County, California. The PHLF accepts mixed municipal wastes,
 15 non-hazardous agricultural, construction and demolition (C&D) debris, industrial wastes, and tires.
 16 The landfill accepts wastes from Fairfield, Suisun City, Rio Vista, Travis AFB, and the surrounding
 17 unincorporated area of Solano County. As of March 18, 2016, PHLF has a remaining capacity of
 18 54,582,743 cubic yards or 37,374,017 tons, with a projected site life of approximately 31 years (Golder,
 19 2017).

20 Travis AFB does not have an active on-site solid waste disposal landfill. Six inactive solid waste
 21 disposal sites on the installation were investigated and remediated under the ERP. Four of these are
 22 abandoned landfills, one was a radioactive burial site, since cleaned up to residential standards, and

1 one was used for the disposal of sludge from the sewage treatment plant that was subsequently
2 determined to require no further remedial action (Travis AFB, 2016e).

3 C&D debris generated at Travis AFB is managed in accordance with the installation's ISWMP.
4 Recyclables and solid waste are to be separated at the C&D site, then transported to a state-approved
5 and permitted recycler or landfill by the installation's ISWM Contractor or another state approved
6 hauler. Since C&D debris may be contaminated with substances such as asbestos, lead-based paint,
7 polychlorinated biphenyls, mercury, creosote, and other hazardous material, the party conducting the
8 work must follow all applicable regulations and guidelines for abatement of asbestos, lead-based paint
9 or any other hazardous substance prior to any demolition or renovation in accordance with the Travis
10 AFB ISWMP. C&D debris contaminated with hazardous material may cause the debris to be handled
11 as a hazardous waste (Travis AFB, 2017e).

12 Travis AFB is following current Air Force program goals which are to recycle, compost, or reuse
13 (divert) 55 percent of all SW materials by 2015, 60 percent by 2018 and 65 percent by 2020. Travis
14 AFB is also following the DoD goal to divert 60 percent of all C&D debris by FY 2015 and thereafter
15 through FY 2020. All contractors working on the installation have specific clauses included in their
16 contracts for solid waste management and diversion (Travis AFB, 2017c).

17 **3.11.2.9 Potable Water**

18 The Travis AFB potable water system utilizes both surface water and groundwater from five wells,
19 and includes distribution piping, storage tanks, hydrants, and other appurtenances. Travis AFB
20 currently receives approximately 90 percent of its water from the Travis AFB Water Treatment Plant,
21 which is a conventional 7.5 million gallons per day plant with pre-ozonation owned and operated by
22 the City of Vallejo. Lake Berryessa and Barker Slough serve as the surface water sources for this water
23 (Travis AFB, 2016). Travis AFB purchases water from a California State Water Project that originates
24 in Lake Oroville and flows through the Sacramento River to the North Bay Aqueduct pumping facility
25 then to the water treatment plant located on the installation. The treatment plant also receives surface
26 water from the Solano Project, which provides water from Lake Berryessa transported by the Putah
27 South Canal to the terminal reservoir (Travis AFB, 2015b).

28 The remaining 10 percent of potable water is obtained from government-owned water wells. If the
29 Travis AFB water treatment plant is down for maintenance, water is obtained from the groundwater
30 wells at Cypress Lakes Golf Course a few miles north of the installation. Water from both sources is
31 then disinfected and fluoridated (Travis AFB, 2015b).

32 The water supply system is currently undergoing a major conversion. Historically, Travis AFB has
33 received water from the City of Vallejo water system. However, because of the City's water quality
34 problems, the installation plans to fully convert to a privatized well water system in 2017. Some
35 infrastructure will need to be upgraded, such as additional 22-inch pipes for better water flow (Travis
36 AFB, 2016a).

37 The condition of the water distribution system is generally adequate but there have been issues
38 associated with dead end runs and stagnation. An upgrade program is underway to address some of
39 these problems, but a new mission would likely require a more substantial upgrade. When the
40 installation converts to well water, the quality of the water is anticipated to be very good (Travis AFB,
41 2016a). California Water Service Company (Cal Water) has entered into a 50-year agreement with the
42 US DoD to acquire the water distribution assets of Travis AFB and provide water utility service.
43 Under the terms of the 50-year contract, Cal Water owns, operates, and maintains the water
44 distribution system at Travis AFB (Cal Water, 2017).

45 Currently, the installation has an adequate water supply with ample capacity to expand current and
46 support new missions at the installation and has not experienced water shortages during peak demand.
47 With the transition to well water, Travis AFB will be largely dependent on wells drawing from the

1 aquifer. Although there appears to be ample water in the aquifer, its size is unknown, and there are
 2 concerns about possible resource depletion in the future (Travis AFB, 2016a). **Table 3-10** provides a
 3 summary of water supply and current use at Travis AFB.

4 **Table 3-10 Water Supply Quantity**

	Water Supply (average GPD)	Water Demand (Average GPD)	% Headroom
Average Demand	7.5 M	2.1	72%
Peak Demand	7.5 M	2.7	64%

5 GPD = gallons per day

6 M = million

7 Source: Travis AFB, 2016a.

8 **3.12 Land Use**

9 **3.12.1 Definition of the Resource**

10 Land use refers to the classification of land based on natural conditions and the types of human activity
 11 occurring on that land. Land-use planning combines both natural environments and associated human
 12 activity. Proper land-use planning considers functional interrelationships between natural conditions
 13 and human activities; the type of human activities occurring; and land use of adjacent and proximal
 14 areas, conservation or preservation area, and natural or scenic area. A wide variety of land-use
 15 categories result from human activity, and generally include commercial, industrial, military,
 16 residential, agricultural, institutional, transportation, utilities, and recreation. The Future Development
 17 Planning element of the Travis IDP presents the established planning districts for all areas of Travis
 18 AFB, and areas are distinguished based on broad function, character, and intensity of development or
 19 type of facilities.

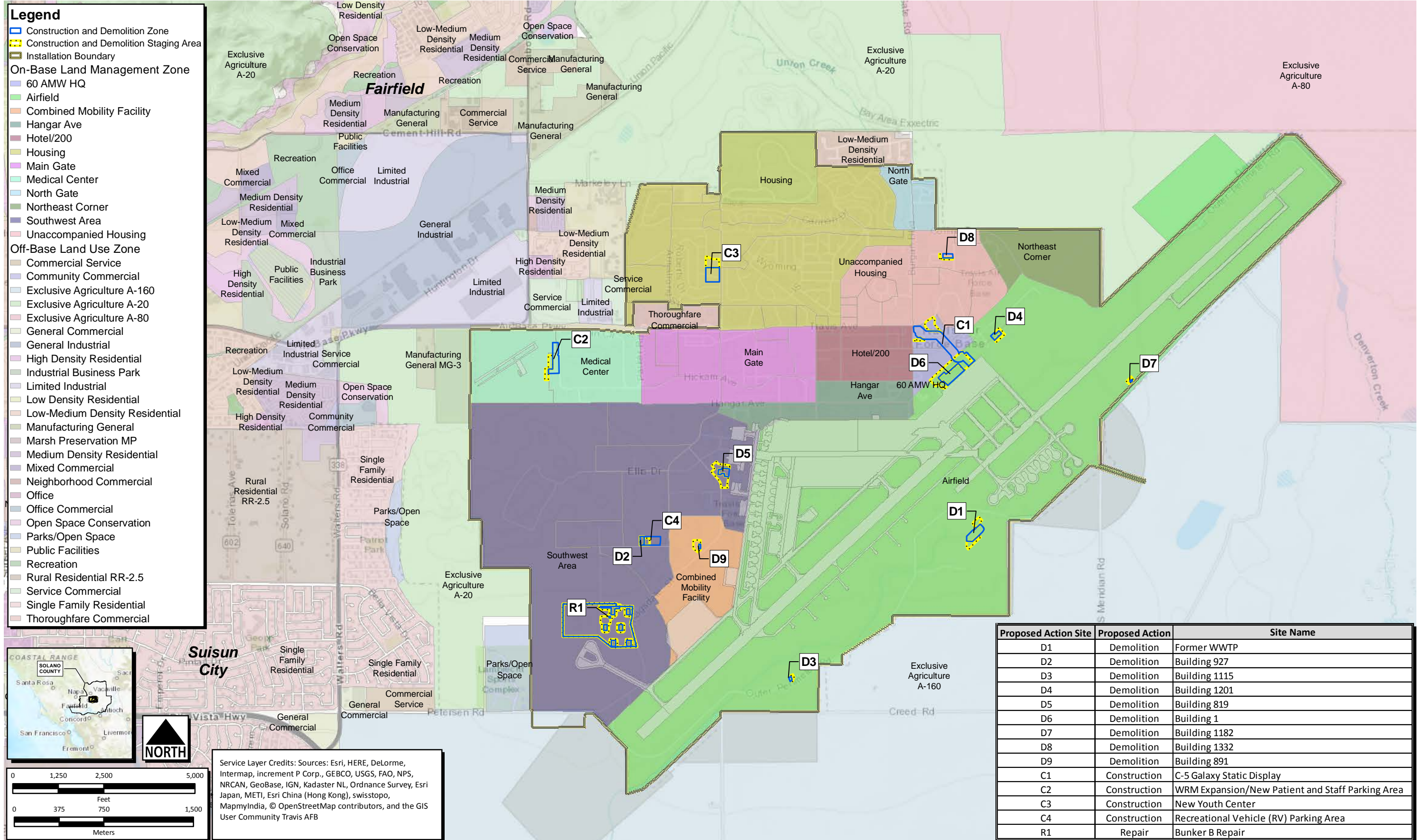
20 **3.12.2 Affected Environment**

21 Travis AFB occupies approximately 6,383 acres of land in Solano County (refer to **Figure 1-1**).
 22 Adjoining parcels are situated in the city of Fairfield, Suisun City, or unincorporated areas of Solano
 23 County (**Figure 3-7**). Travis AFB has a long history and close working relationship with the City of
 24 Fairfield and Solano County, which has resulted in land around the installation being preserved for
 25 open space or agricultural use (Travis AFB, 2016a).

26 Much of the land to the north and to the east of the installation is set aside for future expansion of
 27 Travis AFB as part of the Travis Reserve. Wilcox Ranch Preserve (1,845 acres), located to the east of
 28 the installation, was established as a joint purchase by Solano County and the City of Fairfield to
 29 preserve sensitive environmental resources such as vernal pools and to set aside land for potential
 30 expansion by the installation in the future (Travis AFB, 2016a).

31 The city of Fairfield, west of Travis AFB and north of Air Base Parkway, has been developed with
 32 low density residential, commercial, and industrial uses. West of Travis, but south of Air Base Parkway
 33 is Suisun City, which has been predominately developed for residential use, with areas of commercial
 34 and manufacturing use (**Figure 3-7**).
 35

Figure 3-7:
Travis AFB Regional Land Use and Zoning



1 Development within Travis AFB has focused core aircraft operations and maintenance functions
 2 adjacent to the airfield, with other industrial uses scattered throughout the installation. Generally, land-
 3 use patterns have been established to collocate functional and compatible uses to support the mission.
 4 In some cases, the industrial land uses have been mingled amongst administrative, community, and
 5 recreation land uses on the west side of the flightline. Residential uses are in the northern portion of
 6 the installation and medical uses are consolidated on the west side of the installation, south of Air
 7 Base Parkway (**Figure 3-8**).

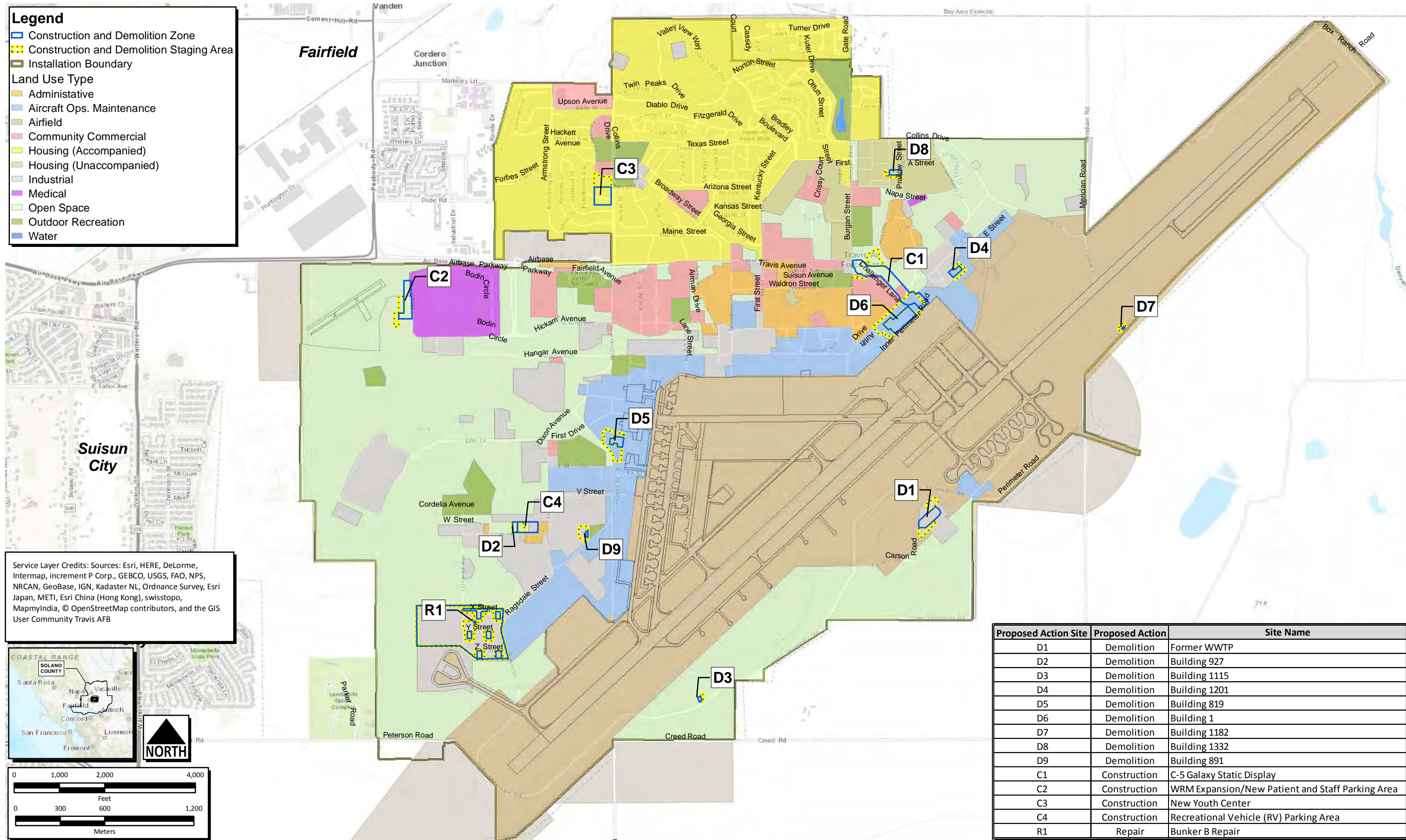
8 Seven Planning Districts identified by recognized land-use patterns have been established within the
 9 Travis AFB main installation (**Figure 3-9**). As outlined in the Travis AFB IDP, each district has
 10 permitted functions and facility types to allow planning flexibility while maintaining land-use
 11 compatibility (Travis AFB, 2016a). Additionally, objectives for each district have been identified to
 12 support long-range planning (Travis AFB, 2016a).
 13

14 **Table 3-11 Travis AFB Planning District Objectives**

Planning District	Objectives or Goals for District
Administrative District	Increase concentration of administrative functions at the heart of the installation and remove uses that do not require centralized location
North Flightline District	Maximize functions that required direct access to the airfield
South Flightline District	Relatively isolated portion of the main installation available for future development
Airfield District	Maximize/improve airfield functionality
Community District	Relocate/consolidate community facilities and recreation amenities that remain dispersed throughout other districts
Western District	Concentrate industrial uses to this district with exception of installation preserve areas
Medical District	Improve access to medical facilities in this district
*Note: Two additional districts, the Golf Course and Potrero Hills, are geographically separate from Travis AFB and not near the proposed projects.	

15
 16 Within each Planning District are areas of defined current and future Land Use Classifications as
 17 shown on **Figures 3-8** and **3-10** and detailed in **Table 3-12, respectively**. While not expected to
 18 change appreciably, future Land Use designations have been outlined for some areas of the main
 19 installation with the goal of efficient consolidation of functions within appropriate planning districts.
 20
 21
 22

Figure 3-8:
Travis AFB Land Use



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Travis AFB

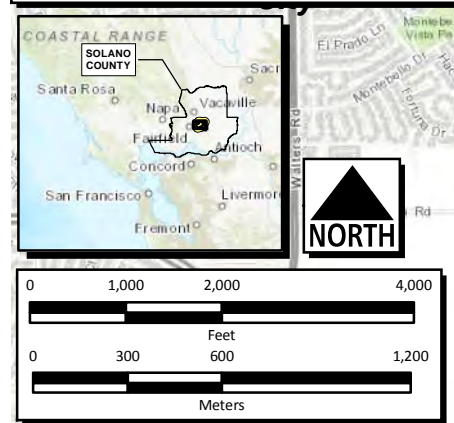
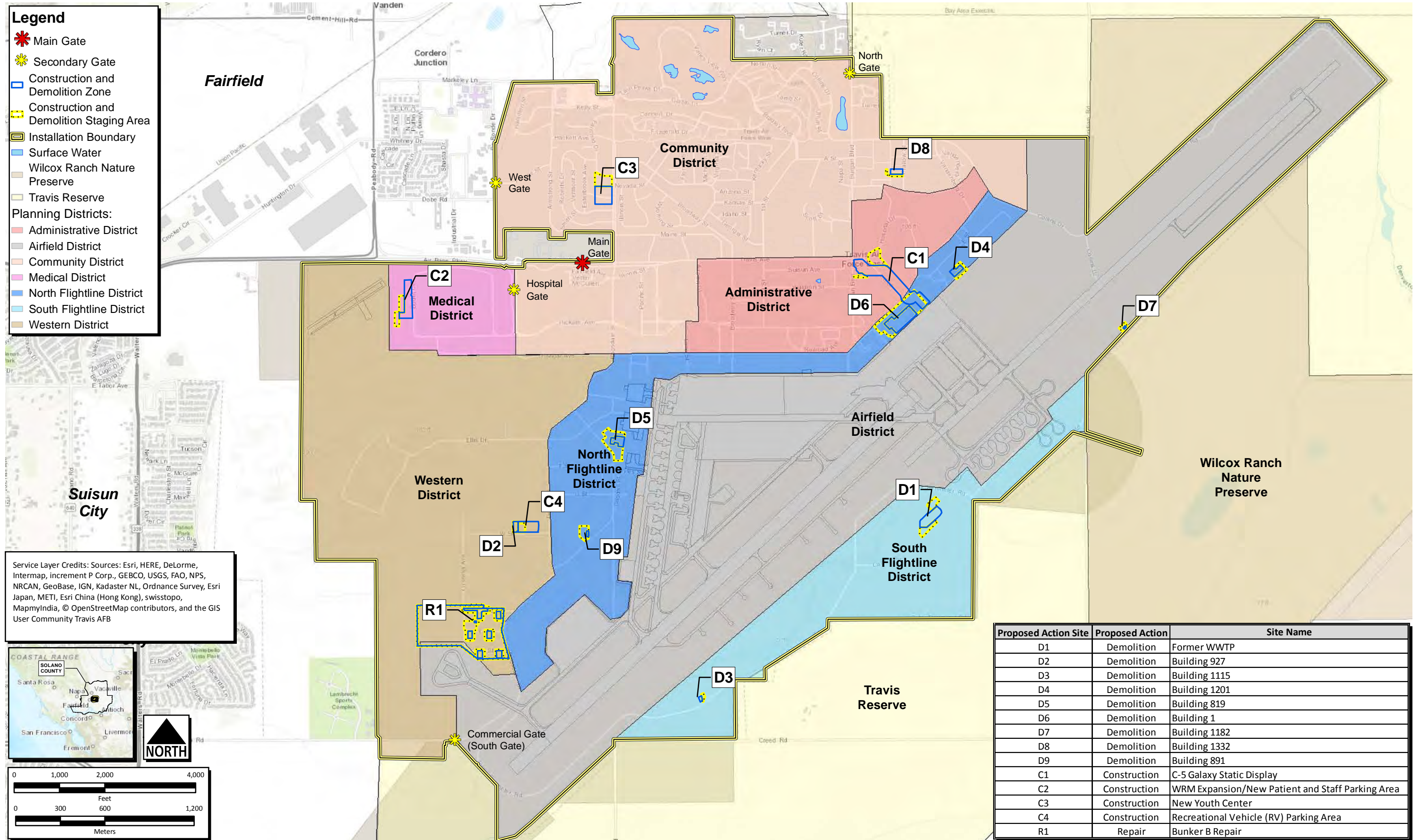


Figure 3-9:
Travis AFB Planning Districts



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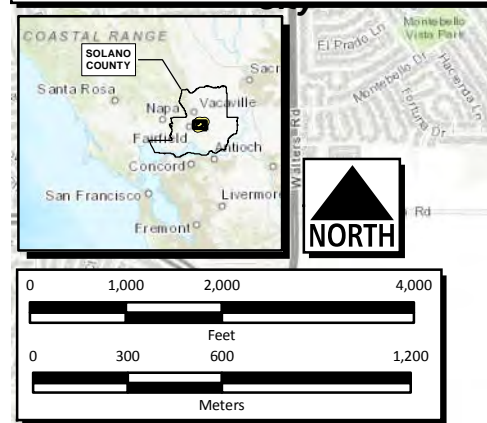
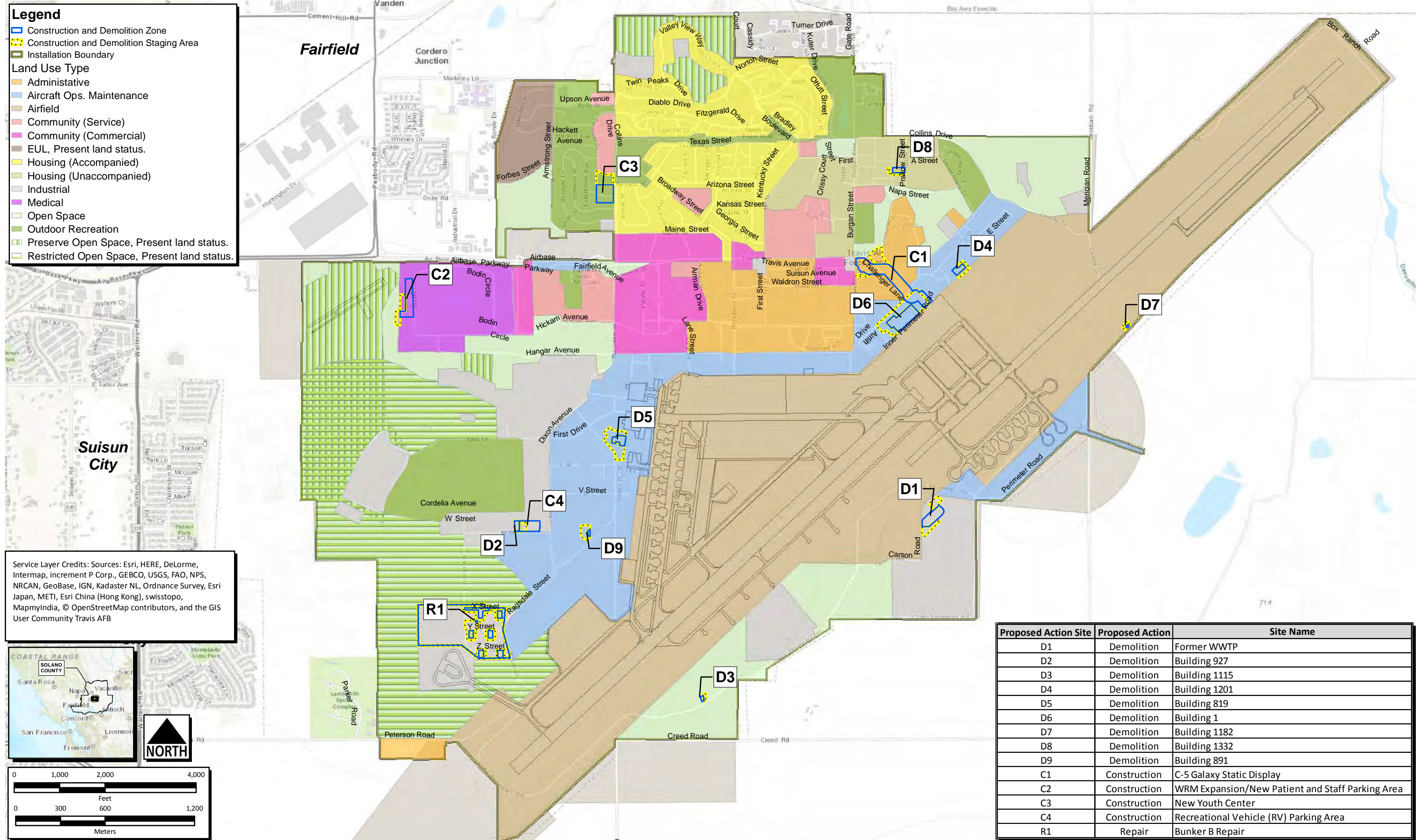
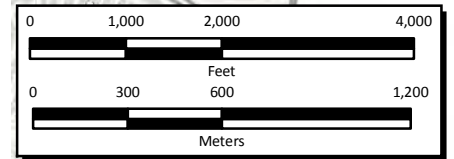


Figure 3-10:
Travis AFB Future Land Use



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1

Table 3-12 Current and Future Land Use Classification and Features

Land Use	Existing Area (acres)	Future Area (acres)	Difference (acres)	Typical Facilities/Features
Administrative	134.9	219.1	+84.2	Headquarters, Security Operations, Office
Aircraft Operations and Maintenance	310.2	463.8	+153.6	Hangars, Aircraft Maintenance Units (AMUs), Squadron Operations, Air Traffic Control Tower, Fire Station
Airfield	1,794.0	1,791.4	-2.6	Runways, Taxiways, Aprons, Overruns
Community (Commercial)	0.0*	141.8	+141.8	Commissary, Exchange, Clubs, Dining Facilities, Restaurants
Community (Service)	184.9	107.4	-77.5	Gym/Recreation Center, Arts and Crafts, Theater, Post Office, Youth Center, Child Development Center
Housing (Accompanied)	371.1	320.4	-50.7	Family Housing
Housing (Unaccompanied)	91.3	108.9	+17.6	Airman Housing, Visitor Housing – Visiting Quarters, Temporary Lodging Facilities
Industrial	651.9	439.0	-212.9	Civil Engineering, Maintenance Shops, Warehousing, Logistics
Medical	70.8	102.6	+31.8	Hospital, Clinic, Pharmacy, Dental
Open Space	1,243.6	1,080.6	-163	Conservation Area, Buffer Space, Undeveloped Land
Outdoor Recreation	411.6	489.1	77.5	Outdoor Courts, Athletic Fields, Golf Course

2 Locations of each Proposed Action with regard to current and future Land Use categories and
 3 Planning Districts are shown in **Table 3-13**, below.

4

Table 3-13 Planning and Land Use Categories

Proposed Action Site	Planning District	Current Land Use	Future Land Use
D1	South Flightline	Industrial	Industrial
D2	Western	Industrial	Industrial
D3	South Flightline	Open Space	Open Space
D4	North Flightline	Industrial	Aircraft Ops. and Maintenance
D5	North Flightline	Aircraft Ops. and Maintenance	Aircraft Ops. and Maintenance
D6	North Flightline	Aircraft Ops. and Maintenance	Aircraft Ops. and Maintenance

Proposed Action Site	Planning District	Current Land Use	Future Land Use
D7	Airfield	Airfield	Airfield
D8	Community	Housing (Unaccompanied)	Housing (Unaccompanied)
D9	North Flightline	Industrial	Aircraft Ops. and Maintenance
C1	North Flightline/ Administrative	Aircraft Ops. and Maintenance/ Community Service/ Open Space	Aircraft Ops. and Maintenance/ Administrative
C2	Medical	Medical	Medical
C3	Community	Open Space	Outdoor Recreation
C4	Western	Industrial	Industrial
R1	Western	Industrial	Industrial

1 Source – Travis AFB, 2016a

2 3.13 Safety

3 3.13.1 Definition of the Resource

4 A safe environment is one in which the potential for death, serious bodily injury, illness, or property
5 damage is reduced to the greatest extent practicable. Ground safety considers issues associated with
6 human activities, and operations and maintenance activities that support unit operations. A specific
7 aspect of ground safety addresses AT/FP considerations. Explosives and munitions safety addresses
8 the management and use of ordnance or munitions associated with installation operations and training
9 activities. Construction safety considerations include the prevention of mishaps related to demolition,
10 construction, and renovation/repair projects. Flight safety considers aircraft flight risks such as aircraft
11 mishaps and accidents.

12 The OSHA, through the Occupational Safety and Health Act (29 USC Section 651) and other relevant
13 laws, ensures safe and healthy working conditions by setting and enforcing standards, and by providing
14 health and safety training, outreach, education, and assistance. The health and safety of on-site military
15 and civilian workers are also safeguarded by numerous DoD and USAF regulations designed to
16 comply with the standards issued by OSHA and the USEPA. These standards specify the amount and
17 type of training required for industrial workers, the use of personal protective equipment (PPE) and
18 clothing, engineering controls, and maximum exposure limits for workplace stressors.

19 AFI 91-202, *U.S. Air Force Mishap Prevention Program*, “establishes mishap prevention program
20 requirements, assigns responsibilities for program elements, and contains program management
21 information.” To meet the goals of minimizing loss of USAF resources and protecting military
22 personnel, mishap prevention programs address groups at increased risk for mishaps, injury, or illness;
23 a process for tracking incidents; funding for safety programs; metrics for measuring performance;
24 safety goals; and methods to identify safety BMPs.

25 AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, “implements AFD 91-2, *Safety Programs*,
26 and consolidates all Air Force Occupational Safety and Health (AFOSH) 91-series standards.” The
27 purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF
28 personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the
29 USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety
30 and health requirements.

1 The ROI for safety is Travis AFB, and the land areas and airspace surrounding the airfield.

2 **3.13.2 Affected Environment**

3 **3.13.2.1 Ground Safety**

4 Day-to-day operation and maintenance activities conducted at Travis AFB are performed in
5 accordance with applicable USAF safety regulations, published Air Force Technical Orders, and
6 standards prescribed by AFOSH requirements. These are intended to reduce occupational risks to
7 government personnel and contractors, and to protect other individuals that reside on or visit the
8 installation or are near the installation.

9 **3.13.2.2 Anti-terrorism Force Protection (AT/FP)**

10 AT/FP is a security program designed to protect USAF active-duty personnel, civilian employees,
11 family members, and facilities and equipment in all locations and situations. The program is
12 accomplished through the planned and integrated application of anti-terrorism measures, physical
13 security, operations security, and personal protective services. These guidelines address a range of
14 considerations that include access to the installation, access to facilities on the installation, facility
15 siting, exterior design, interior infrastructure design, and landscaping. UFC 04-010-01, *DoD Minimum*
16 *Antiterrorism Standards for Buildings* (DoD, 2013), establishes minimum standoff distances that must be
17 maintained between several categories of structures and areas. The intent of AT/FP and design
18 guidance is to improve security, minimize fatalities, and limit damage to facilities and personnel in the
19 event of a terrorist attack at Travis AFB.

20 Many military installations, such as Travis AFB, were developed before such considerations became a
21 critical concern. Thus, under current conditions, many units are not able to comply with all present
22 AT/FP standards. New construction and modification of facilities would incorporate AT/FP
23 standards to the maximum extent practicable.

24 **3.13.2.3 Explosives and Munitions**

25 The explosives and munitions safety program at Travis AFB is conducted in accordance with AFMAN
26 91-201, *Explosive Safety Standards*. The purpose of the program is to provide the maximum possible
27 protection to personnel and property, both inside and outside the installation, from the damaging
28 effects of potential accidents involving ammunition and explosives. Ordnance is handled and stored
29 in accordance with USAF explosive safety directives and all munitions maintenance is carried out by
30 trained, qualified personnel using USAF-approved technical procedures.

31 AFMAN 91-201 establishes the size of the clearance zone around facilities used to store, handle, and
32 maintain munitions based on the quantity-distance (QD) criteria. ESQD arcs have been established at
33 Travis AFB to ensure that the minimum safety distance is incorporated where explosions could occur.
34 Activities within the ESQD include munitions storage, inspection, maintenance, shipping and
35 receiving, as well as other explosive operations. Currently there are 1,195 acres constrained by ESQD
36 Arcs at Travis AFB. Approximately 999 acres are located on-installation, with the remaining 196 acres
37 held in restrictive easements which extend beyond the installation boundary to ensure there is no
38 encroachment on safety areas around munitions storage facilities (Travis AFB, 2016a).

39 **3.13.2.4 Construction**

40 Construction job site safety and accident prevention are an ongoing activity on every Travis AFB job
41 site. All contractors performing construction activities are responsible for following workers'
42 compensation programs and complying with USAF safety requirements and OSHA regulations and
43 are required to conduct construction activities in a manner that does not pose undue risk to workers
44 or personnel. All personnel involved with USAF activities on Travis AFB are responsible for following
45 ground safety regulations.

1 Construction contractors are responsible for reviewing potentially hazardous workplace operations,
2 monitoring exposure to workplace chemicals (e.g., asbestos, lead, hazardous materials), physical
3 hazards (e.g., noise propagation, slips, trips, falls), and biological agents (e.g., infectious waste, wildlife,
4 poisonous plants). Construction contractors are required to recommend and evaluate controls (e.g.,
5 preventative, administrative, engineering) to ensure personnel are properly protected and to
6 implement a medical surveillance program to perform occupational health physicals for those workers
7 subject to any accidental chemical exposures.

8 **3.13.2.5 Flight Safety**

9 The primary public concern regarding flight safety is the potential for aircraft accidents. Such mishaps
10 may occur because of mid-air collisions, collisions with structures or terrain, weather-related accidents,
11 mechanical failure, pilot error, or bird-aircraft collisions. The USAF has established AICUZ around
12 Travis AFB to recommend compatible uses in areas subject to noise and accident hazards. The
13 designation of AICUZ ensures compatible development around the airfield and provides for the
14 health, safety, and welfare of personnel from noise and airfield hazards.

15 Clear Zones (CZs) are established at the ends of each runway and represent the area of highest accident
16 potential. APZs I and II lie beyond the CZs and represent areas of lesser accident potential but of a
17 magnitude great enough to warrant land use restrictions and recommendations (AFI32-7063, Air
18 Installations Compatible Use Zones Program). Airfield CZs at Travis AFB are 3,000 feet wide
19 centered on the runway and extend 3,000 feet beyond the end of the runways (approximately 826
20 acres). The CZs extend across the Travis AFB boundary; accident potential zones (APZ I and APZ
21 II) extend 5,000 feet and 7,000 feet beyond the end of the CZs, respectively, outside of the Installation
22 boundaries (approximately 1,377 acres and 1,927 acres, respectively) (Travis AFB, 2009 and 60 CES,
23 2016). Development is prohibited within the CZs, and any development within APZs must adhere to
24 limitations in UFC 3-260-01, *Airfield and Heliport Planning and Design*. Redevelopment/new
25 development initiatives strive to minimize waivers required for mission support.

26 Additional flight safety considerations include aircraft mishaps and bird-aircraft strikes. AFI 91-202
27 requires that Air Force units supporting a flying mission have a BASH Plan. The Travis AFB
28 Instruction 91-212, *Travis AFB Bird/Wildlife Aircraft Strike Hazard Reduction Program Instruction* provides
29 specific guidance in developing an effective bird strike hazard reduction for the installation and local
30 areas where flying operations are being conducted (Travis AFI, 2015).

31

4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4 presents an evaluation of the environmental impacts that could result from implementing the Proposed Actions or the No Action Alternatives. Potential impacts are addressed in the context of the scope of the Proposed Actions as described in Chapter 2 and in consideration of the potentially affected environment, as characterized in Chapter 3. The general approach for this section is to describe the criteria for determining a significant impact followed by a discussion of the impacts that would occur by implementing the Proposed Actions for each resource area. The extent to which an action might affect an environmental resource depends on many factors.

The specific criteria for evaluating the potential environmental effects of the No Action Alternatives or the Proposed Actions are discussed in the following text, identified by resource area. The significance of an action is also measured in terms of its context and intensity, as described in terms of duration, direct or indirect impacts, magnitude of the impact, and whether impacts are adverse or beneficial, summarized as follows:

- **Short- or long-term.** In general, short-term effects are those that would occur only with respect to an activity, for a finite period, or only during the time required for construction or demolition activities. Long-term effects are those that are more likely to be persistent and chronic.
- **Direct or indirect.** A direct effect is caused by an action and occurs around the same time and place. An indirect effect is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- **Negligible, minor, moderate, or significant.** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A moderate effect is obvious. Significant effects are those that, in their context and because of their magnitude (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR § 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation or the preparation of an EIS to fulfill the policies set forth in NEPA.
- **Adverse or beneficial.** An adverse effect is one having unfavorable or undesirable outcomes on the natural or man-made environment. A beneficial effect is one having positive outcomes on the natural or man-made environment.

Additionally, where applicable site-specific analysis is presented for the Proposed Actions and No Action Alternatives. Applicability is determined by a review of overall baseline conditions at each proposed site and determination of potential impacts from implementation of the Proposed Actions and No Action Alternatives. For some resources such as air quality, a collective analysis is appropriate as air quality conditions would not differ from one area of the Installation to another. Alternately, biological resources are site-specific and subsequently, warrant individual analysis.

4.1 Noise

Human response to noise depends on a variety of circumstances including the time of day, the individual's sensitivity, distance from the source, and environment. Noise impact analysis evaluates potential changes to the existing noise environment that would result from implementation of the Proposed Actions. The impacts associated with noise were evaluated based on the changes to the ambient noise environment that would be caused by the implementation of a Proposed Action.

- For the Proposed Action, noise levels of 65 dBA or greater would be considered an adverse effect.

- 1 • An action could have a significant effect with respect to noise if sensitive noise receptors
- 2 were exposed to noise more than applicable standards: maximum level 115 dBA, or
- 3 exceeding an 8-hour time weighted average (TWA) of 85 dBA
- 4 • An action could have a significant effect with respect to noise if noise levels created
- 5 permanent areas of incompatible land use.

6 **4.1.1 Proposed Actions**

7 The Proposed Action sites occur within developed areas where ambient noise such as traffic and
 8 aircraft could exceed 65 dBA (**Figure 2-1**). During construction and demolition, trucks would travel
 9 to and from the project area. Because of the existing ambient noise environment of the project sites
 10 and surrounding areas, negligible effects would be expected from the increase in truck noise, as those
 11 sounds would not incrementally increase existing ambient noise levels.

12 Equipment associated with demolition, construction, and renovation/repair activities would generate
 13 intermittent noise. Noise levels associated with typical construction equipment would vary by distance
 14 of the receptor from the work site. Performing a simple quantitative analysis using the following
 15 equation can be implemented to determine transmission loss over specified distance (FHWA, 2006).

$$TL=20*\log_{10}(\text{distance}/\text{reference distance})$$

17 Notes-

18 TL= transmission loss

19 Distance = distance between Proposed Action site and sensitive noise receptor

20 Reference Distance = 50-feet

21 Using this equation, the calculated predicted noise levels for common construction equipment is
 22 presented in **Table 4-1**, below.

23 **Table 4-1 Predicted Noise Levels at 50, 500, and 1,000 Feet**

Construction Equipment	Predicted Noise Level		
	50 feet	500 feet	1,000 feet
Equipment Powered by Internal Combustion Engines			
<i>Earth Moving</i>			
Compactors	80	60	53.9
Front Loader	80	60	53.9
Backhoe	80	60	53.9
Tractor	84	64	57.9
Scraper, Grader	85	65	58.9
Paver	85	65	58.9
Truck	84	64	57.9
<i>Materials Handling</i>			
Concrete Mixer	85	65	58.9
Concrete Pump	82	62	55.9
Cranes (mobile)	85	65	58.9
<i>Stationary</i>			
Pump	77	57	50.9
Generator	70	50	43.9
Compressor	80	60	53.9
Impact Equipment			
Pneumatic Wrenches	85	65	58.9
Jack Hammers	85	65	58.9
Pile Driver	95	75	68.9

24 Source: FHWA, 2006

1 Increases in noise levels would occur intermittently during demolition, construction, and
 2 renovation/repair activities. Noise would vary depending on the type of equipment being used, the
 3 area in which the action would occur, and the distance of the receptor from the noise source. Heavy
 4 construction equipment would be used periodically during construction; therefore, noise levels would
 5 fluctuate. Most equipment used would be expected to produce noise levels between 70 and 95 dBA
 6 at 50 feet (refer to **Table 4-2**). Noise levels at the upper end of this range would be associated with
 7 equipment such as pile drivers and limited to short durations of intermittent bursts. Sound levels on
 8 the lower end of the range would be more constant during construction and demolition activities.
 9 These noise levels would decrease with distance from the project areas.

10 Construction and demolition activities usually require several pieces of equipment to be used
 11 simultaneously. Considering a conservative 5 dBA for additive noise associated with multiple pieces
 12 of construction equipment operating simultaneously (USDOT, 2011), a maximum value of 100 dBA
 13 and a sustained value of 75 dBA are used for attenuation calculations.

14 **Table 4-2 Noise Attenuation**

Construction Equipment dBA at 50 feet	Predicted Attenuated Noise Levels (dBA)					
	100 feet	500 feet	1,000 feet	2,000 feet	2,500 feet	3,000 feet
100 max	93.9	80.0	73.9	67.9	66.0	64.4
75 sustained	68.9	55.0	48.9	42.9	41.0	39.4

15 Source – USEPA, 1971 and FHWA, 2006

16 Noise levels associated with typical construction equipment would noticeably attenuate to below 65
 17 dBA between approximately 500 and 3,000 feet from the source depending on the equipment used.

18 Using the transmission loss equation and distances from each Proposed Action site to the nearest
 19 noise sensitive receptor, the attenuated noise levels are shown in **Table 4-3**, below.

20 **Table 4-3 Noise Level Calculations**

Location	Approximate distance from nearest sensitive receptor (feet)	Cumulative Construction Equipment Value (dBA)	Attenuation (dBA)	Construction Equipment Noise Level (dBA)	Resulting Noise Level (dBA)
D1	6,360	100	42.0	58.0	<65
		75		33.0	<65
D2	5,150	100	40.3	59.7	<65
		75		34.7	<65
D3	9,270	100	35.1	54.6	<65
		75		29.6	<65
D4	2,850	100	36.8	64.9	<65
		75		39.9	<65
D5	3,475	100	33.6	63.2	<65
		75		38.2	<65
D6	2,400	100	41.5	66.4	66.4
		75		41.4	<65
D7	5,925	100	9.5	58.5	<65
		75		33.5	<65
D8	150	100	41.0	90.5	90.5

Location	Approximate distance from nearest sensitive receptor (feet)	Cumulative Construction Equipment Value (dBA)	Attenuation (dBA)	Construction Equipment Noise Level (dBA)	Resulting Noise Level (dBA)
		75		65.5	65.5
D9	5,625	100	41.0	59.0	<65
		75		34.0	<65
C1	1,250	100	27.9	72.1	72.1
		75		47.1	<65
C2	1,000	100	26.0	74.0	74.0
		75		49.0	<65
C3	300	100	15.6	84.4	84.4
		75		59.4	<65
C4	5,150	100	40.3	59.7	<65
		75		34.7	<65
R1	7,300	100	43.3	56.7	<65
		75		31.7	<65

Note: Green indicates noise level below 65 dBA
 Yellow indicates noise level greater than 65 dBA and less than 85 dBA
 Orange indicates noise level greater than 85 dBA and less than 115 dBA
 Red indicates noise level greater than 115 dBA

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2
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As shown in **Table 4-3**, noise from Proposed Actions D1-D5, D7, D9, C4, and R1 would not adversely affect sensitive noise receptors at Travis AFB.

7

Table 4-4 Noise Levels Exceeding 65 dBA

Location	Project Name	Approximate distance from nearest sensitive receptor	Construction Equipment Noise Level (DBA)	Resulting Noise Level (dBA)
D6	Demolition of Building 1	2,400 ft from Westwind Inn	100	66.4
			75	<65
D8	Demolition of vacant dormitory Building 1332	150 ft from other Dormitories	100	90.5
			75	65.5
C1	C-5 Galaxy Static Display	1,250 ft from Westwind Inn	100	72.1
			75	<65
C2	WRM Expansion / New Patient and Staff Parking Area	1,000 ft from the DGMC	100	74.0
			75	<65
			100	84.4

8

As shown in **Table 4-4**, noise from Proposed Actions D6, D8, and C1-C3 would potentially adversely affect sensitive noise receptors at Travis AFB.

For Proposed Actions D6 and C1-C3, noise at the lower end of the established range would be expected to attenuate to less than 65 dBA before reaching the nearest sensitive noise receptor as identified in Table 4-4. Noise levels at the upper end of the established range (100 dBA, equivalent to a garbage disposal or motorcycle) would be limited to short durations of intermittent bursts and could exceed 65dBA, resulting in a short term, moderate, adverse effect on the ROI for noise associated with Proposed Actions D6 and C1-C3.

1 Proposed Action D8 would occur within the Unaccompanied Housing area identified as a sensitive
2 noise receptor. Due to the infrastructure's location within this area, some level of noise effect would
3 be unavoidable during demolition activities. Noise levels at the upper end of the established range
4 (100 dBA, equivalent to a garbage disposal or motorcycle) would be limited to short durations of
5 intermittent bursts and could exceed 85 dBA. Noise at the lower end of the established range (75 dBA,
6 equivalent to a hair dryer or a television) would be more constant and could exceed 65dBA, resulting
7 in a short term, moderate, adverse effect on the ROI for noise associated with Proposed Action D8.

8 Temporary construction/demolition noise associated with each Proposed Action would occur.
9 However, noise impacts resulting from implementation of each Proposed Action would be limited to
10 the duration of construction/demolition activities and would occur only during normal working hours
11 between 7a.m. to 5p.m. Potential noise impacts from the active work phases of each Proposed Action
12 would be minimized by the employment of construction BMPs as specified in 23 CFR Part 772,
13 *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. Construction noise would be
14 temporary and localized to the areas immediately surrounding the demolition, construction, or
15 renovation/repair site. Due to the location of the Proposed Actions within the Installation boundary,
16 annoyance due to noise to off-installation residents would not be expected. Therefore, implementation
17 of the Proposed Actions (D1-D9, C1-C4, R1) would have an insignificant, long-term impact on noise
18 levels.

19 All applicable noise laws and guidelines would be followed to reduce effects from noise produced by
20 construction activities. Workers would be required to use proper personal hearing protection in
21 accordance with AFOSH Standard 48-20, *Operational Noise and Hearing Conservation Program*, to limit
22 exposure. Appropriate noise attenuation equipment would also be used where applicable.

23 **4.1.2 No Action Alternatives**

24 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
25 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

26 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
27 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
28 would not be constructed.

29 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
30 Bunker B Area.

31 Implementation of the No Action Alternatives would not be expected to result in significant impacts
32 as current noise conditions on Travis AFB would remain the same.

33 **4.2 Air Quality**

34 **4.2.1 Proposed Actions**

35 **4.2.1.1 Air Quality**

36 The Proposed Action would include:

- 37 • Demolition of nine existing facilities;
- 38 • Construction and operation of four new facilities; and
- 39 • Repair and renovations at one existing facility.

40 The Proposed Action is in a nonattainment area for 8-hour O₃ and PM_{2.5}, and in a maintenance area
41 for CO. As a result, federal actions that emit CO, PM_{2.5}, O₃, and their precursors (SO_x, ammonia
42 [NH₃], NO_x, VOC) are subject to general conformity requirements unless exempt under 40 CFR
43 93.153. A General Conformity Applicability Analysis was performed for the IDEA. Significance
44 criteria for the Proposed Action related to projected air pollutant emissions defines a significant impact

1 by exceedance of relevant General Conformity *de minimis* thresholds. In accordance with the air
2 conformity requirements of 40 CFR Sections 51.853 and 93.153(b)(1), the *de minimis* threshold for a
3 federal action in a marginal nonattainment area is 100 tpy for each O₃ precursor pollutant (NO_x and
4 VOCs) and 100 tpy for PM_{2.5} and SO₂ (a PM_{2.5} precursor). The *de minimis* threshold for a CO
5 maintenance area is also 100 tpy per federal action.

6 *Air Conformity Applicability Model*

7 The Air Conformity Applicability Model (ACAM) was used to perform the air quality analysis for the
8 project. ACAM is a computer model used by Air Force planners and EIAP personnel in the
9 determination of General Conformity applicability for proposed actions in nonattainment or
10 maintenance designated areas. This tool is used to identify proposed actions and alternatives that
11 would likely result in no or minimal emission increases, those actions that may result in no or minimal
12 emission increases, and those actions that may require further air quality analysis and undergo a
13 General Conformity determination. ACAM calculates criteria pollutants, HAPs, and GHG emissions
14 for the construction and operation of proposed Air Force actions while requiring minimal inputs from
15 the user. The resultant calculations are entered into standardized reports that follow the requirements
16 for the Air Force's ROCA reporting format (ACAM, 2017).

17 *Project Emissions*

18 To fully evaluate the impact of project emissions on the air basin, both direct and indirect emissions
19 are evaluated. Direct emissions, such as those generated during construction activities, as well as
20 indirect emissions, such as the construction workers' commute to the project site, are quantified in
21 ACAM. Representing total emissions includes both increases in emissions (adding heating system to
22 a newly constructed building) and decreases in emissions (removing heating system because of a
23 building demolition). This "netting" of emissions is captured within ACAM.

24 Along with construction emissions, operational emissions are evaluated as part of the Proposed
25 Actions. Long-term changes in heating buildings must be assessed. Finally, if the project creates or
26 eliminates workload, indirect emissions are calculated based on the change to the number of
27 personnel. Emissions associated with personnel are not included in the analysis if the workload was
28 or will be occurring elsewhere within the facility.

29 The Proposed Action projects are expected to be implemented over a five-year time frame. When
30 using ACAM, each project activity and estimated timeframe is entered directly into the model and the
31 analysis is made based off the greatest annual emissions for each pollutant of concern.

32 ACAM utilizes default values from representative projects to supplement details that may be difficult
33 to determine during the environmental assessment stage. Utilizing ACAM's default values also
34 provides AFCEC with a consistent methodology for streamlining uncertainties in the environmental
35 assessment process. Defaults in ACAM are dependent on the activities associated with the Proposed
36 Action and are scaled based on the magnitude of each activity and/or phase.

37 A combination of user-entered data and ACAM defaults were used to represent the IDEA. All 14
38 projects (nine demolition projects, four construction projects, and the bunker renovation), were
39 represented by selecting appropriate activities within ACAM. As applicable to the IDEA, these
40 activities include:

- 41 • Construction and Demolition (Phases may include demolition, site grading,
42 excavating/trenching, building construction, architectural coatings, and paving.)
- 43 • Changes in heating requirements associated with the addition or removal of buildings.
- 44 • Changes in operational personnel associated with the addition or removal of facilities.

1 The required data for the model used to represent the 14 Proposed Action projects are provided in
2 **Table 4-5**. Based on the user entries, ACAM produced default values for the following:

- 3 • Average days worked per week.
- 4 • Off-Road equipment selection.
- 5 • Average hauling truck capacity.
- 6 • Average hauling truck round trip commute.
- 7 • Average worker round trip commute.
- 8 • Average vendor round trip commute.
- 9 • Operating time per year of Boiler/Furnace.
- 10 • Average personnel round trip commute.
- 11 • Personnel work schedule.

12 A complete summary of user-entered data, the corresponding ACAM default values, and the equations
13 used for estimating emissions from the Proposed Action projects are provided in the ACAM Detail
14 Report (**Appendix C**).

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Table 4-5 Project Data Used for ACAM Modeling

Demolition Projects							
D1: Demolish WWTP Infrastructure							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Demolition	6/1/2019	9/15/2019	13,412 / 14	NA	NA	
	Site Grading	9/15/2019	10/1/2019	13,412	1,900	0	
D2: Demolish Building 927							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Demolition	6/1/2022	10/1/2022	7,200 / 15	NA	NA	
Heating	Add or Remove from Baseline		Timeline		Area of floorspace to be heated (ft ²)	Type of fuel	Type of boiler / furnace
	Add	Remove	Phase Start Date	Phase End Date			
			x	6/1/2022	NA	6,935	Natural Gas
D3: Demolish Building 1115							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Demolition	6/1/2022	10/1/2022	425 / 9	NA	NA	

1

D4: Demolish Building 1201							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Demolition	6/1/2022	9/1/2022	18,215 / 14	NA	NA	
	Paving	9/1/2022	10/1/2022	18,215	NA	NA	
Heating	Add or Remove from Baseline		Timeline		Area of floorspace to be heated (ft ²)	Type of fuel	Type of boiler / furnace
	Add	Remove	Phase Start Date	Phase End Date			
			x	6/1/2022	NA	18,215	Natural Gas
D5: Demolish Building 819							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Demolition	6/1/2022	9/1/2022	39,000 / 28	NA	NA	
	Paving	9/1/2022	10/1/2022	39,000	NA	NA	
Heating	Add or Remove from Baseline		Timeline		Area of floorspace to be heated (ft ²)	Type of fuel	Type of boiler / furnace
	Add	Remove	Phase Start Date	Phase End Date			
			x	6/1/2022	NA	30,896	Natural Gas
D6: Demolish Building 1							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Demolition	6/1/2022	9/1/2022	161,000 / 22	NA	NA	
	Paving	9/1/2022	10/1/2022	161,000	NA	NA	
Heating	Add or Remove from Baseline		Timeline		Area of floorspace to be heated (ft ²)	Type of fuel	Type of boiler / furnace
	Add	Remove	Phase Start Date	Phase End Date			
			x	6/1/2022	NA	62,049	Natural Gas

D7: Demolish Building 1182							
<i>Activity</i>	<i>Phase</i>	<i>Timeline</i>		<i>Area (ft²) / Height (ft)</i>	<i>Amt of material to be hauled onsite (yd³)</i>	<i>Amt of material to be hauled offsite (yd³)</i>	
		<i>Phase Start Date</i>	<i>Phase End Date</i>				
Construction and Demolition	Demolition	6/1/2022	10/1/2022	276 / 11	NA	NA	
D8: Demolish Building 1332							
<i>Activity</i>	<i>Phase</i>	<i>Timeline</i>		<i>Area (ft²) / Height (ft)</i>	<i>Amt of material to be hauled onsite (yd³)</i>	<i>Amt of material to be hauled offsite (yd³)</i>	
		<i>Phase Start Date</i>	<i>Phase End Date</i>				
Construction and Demolition	Demolition	6/1/2022	10/1/2022	25,120 / 46	NA	NA	
Heating	<i>Add or Remove from Baseline</i>		<i>Timeline</i>		<i>Area of floorspace to be heated (ft²)</i>	<i>Type of fuel</i>	<i>Type of boiler / furnace</i>
	<i>Add</i>	<i>Remove</i>	<i>Phase Start Date</i>	<i>Phase End Date</i>			
			x	6/1/2022	NA	50,240	Natural Gas
D9: Demolish Building 891							
<i>Activity</i>	<i>Phase</i>	<i>Timeline</i>		<i>Area (ft²) / Height (ft)</i>	<i>Amt of material to be hauled onsite (yd³)</i>	<i>Amt of material to be hauled offsite (yd³)</i>	
		<i>Phase Start Date</i>	<i>Phase End Date</i>				
Construction and Demolition	Demolition	6/1/2022	10/1/2022	1,608 / 15	NA	NA	
Construction Projects							
C1: C-5 Galaxy Static Display							
<i>Activity</i>	<i>Phase</i>	<i>Timeline</i>		<i>Area (ft²) / Height (ft)</i>	<i>Amt of material to be hauled onsite (yd³)</i>	<i>Amt of material to be hauled offsite (yd³)</i>	
		<i>Phase Start Date</i>	<i>Phase End Date</i>				
Construction and Demolition	Site Grading	6/1/2019	6/22/2019	52,650	0	0	
	Paving	6/1/2019	10/1/2019	55,000	NA	NA	

C2: WRM Expansion/New Patient and Staff Parking Area							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Site Grading	10/1/2020	11/1/2020	96,000	7,000	45,000	
	Building Construction	10/1/2020	4/1/2022	35,000 / 25	NA	NA	
	Paving	4/1/2021	10/1/2021	60,533	NA	NA	
Heating	Add or Remove from Baseline		Timeline		Area of floorspace to be heated (ft ²)	Type of fuel	Type of boiler / furnace
	Add	Remove	Phase Start Date	Phase End Date			
	x		4/1/2022	NA	35,000	Natural Gas	Commercial / Institutional
Personnel	Add or Remove from Baseline		Timeline		Number and Type of Personnel		
	Add	Remove	Phase Start Date	Phase End Date			
	x		NA	NA	1 Active Duty 14 support con		
C3: New Youth Center							
Activity	Phase	Timeline		Area (ft ²) / Height (ft)	Amt of material to be hauled onsite (yd ³)	Amt of material to be hauled offsite (yd ³)	
		Phase Start Date	Phase End Date				
Construction and Demolition	Site Grading	10/1/2018	10/22/2018	116,000	8,592	8,592	
	Building Construction	10/30/2018	4/30/2020	30,104/ 39	NA	NA	
	Paving	6/1/2019	8/1/2019	5,410	NA	NA	
Heating	Add or Remove from Baseline		Timeline		Area of floorspace to be heated (ft ²)	Type of fuel	Type of boiler / furnace
	Add	Remove	Phase Start Date	Phase End Date			
	x		4/30/2020	NA	30,104	Natural Gas	Commercial / Institutional
Personnel	Add or Remove from Baseline		Timeline		Number and Type of Personnel		
	Add	Remove	Phase Start Date	Phase End Date			
	x		4/30/2020	NA	20 Civilian		

C4: Recreational Vehicle Storage Area						
<i>Activity</i>	<i>Phase</i>	<i>Timeline</i>		<i>Area (ft²)</i>	<i>Amt of material to be hauled onsite (yd³)</i>	<i>Amt of material to be hauled offsite (yd³)</i>
		<i>Phase Start Date</i>	<i>Phase End Date</i>			
Construction and Demolition	Site Grading	6/1/2020	7/31/2020	5,000	0	0
	Paving	8/1/2020	10/1/2020	5,000	NA	NA
Renovation/Repair Project						
R1: Bunker B Roof and Electrical Repair & Security Gate Upgrade and Perimeter Lighting Addition						
<i>Activity</i>	<i>Phase</i>	<i>Timeline</i>		<i>Area (ft²)</i>	<i>Amt of material to be hauled onsite (yd³)</i>	<i>Amt of material to be hauled offsite (yd³)</i>
		<i>Phase Start Date</i>	<i>Phase End Date</i>			
Construction and Demolition	Site Grading	6/1/2020	7/9/2020	102,000	7,600	3,800
	Excavating/ Trenching	7/10/2020	8/19/2020	31,000	NA	NA
	Paving	8/20/2020	10/1/2020	1,100	NA	NA

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The total combined direct and indirect emissions associated with the demolition, construction, repairs, and operation were estimated using ACAM on a calendar-year (CY) basis and are provided in Table 4-5. Emissions associated with HAP are assumed to be minimal because the construction emissions are temporary, and the location is far from any sensitive receptors. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the Proposed Action according to the requirements of 40 CFR 93, Subpart B by comparing the project emissions to the general conformity *de minimis* thresholds.

Table 4-6 Estimated Action Emissions for the San Francisco Bay Area and San Francisco-Oakland-San Jose, CA Basins

Pollutant	2018 (ton/yr)	2019 (ton/yr)	2020 (ton/yr)	2021 (ton/yr)	2022 (ton/yr)	2023 and beyond (Steady State) (ton/yr)	GENERAL CONFORMITY	
							<i>De minimis</i> Threshold (tons/yr)	Exceedance (Yes or No)
VOC	0.098	0.697	0.458	0.500	0.543	0.016	100	No
NO _x	0.723	5.430	3.065	2.943	3.295	-0.322	100	No
CO	0.513	3.805	2.661	3.148	3.980	-0.062	100	No
SO _x	0.001	0.011	0.007	0.007	0.008	-0.002	100	No
PM ₁₀	0.834	6.057	2.881	0.159	1.454	-0.020	NA	NA
PM _{2.5}	0.033	0.248	0.143	0.152	0.143	-0.024	100	No
Pb	0.000	0.000	0.000	0.000	0.000	0.000	NA	NA
NH ₃	0.001	0.010	0.005	0.005	0.007	0.003	100	No

As shown in **Table 4-6**, general conformity requirements are not applicable to the project because the estimated emissions of ozone precursors (NO_x and VOC), PM_{2.5} and its precursors (SO_x and NH₃), and CO associated with the Proposed Actions are lower than their corresponding general conformity *de minimis* threshold values established at 40 CFR 93.153(b). Therefore, based on the conformity applicability criteria, the project is expected to conform to the most recent EPA-approved SIP; further conformity demonstration is not required. A complete summary of these findings along with the ACAM ROCA is provided as **Appendix C**.

4.2.1.2 Greenhouse Gas Emissions

Currently, no federal agency has adopted a quantitative threshold to evaluate the significance of an individual project's contribution to GHG emissions in the context of NEPA. Nevertheless, GHG emissions were estimated for the project construction and operation, and **Table 4-7** summarizes the project emissions of the GHG in terms of CO₂e. Using guidance from the USAF Air Quality EIAP Guide (AFI 32-7040), GHG emissions are evaluated in terms of CO₂e and are estimated as part of the emission analysis using ACAM. Information provided in **Table 4-7** indicates there will be temporary GHG emissions during project construction. However, once completed the project would have lower

GHG emissions compared to the No Action Alternative due to the removal of the old facilities and their associated GHG emissions. As such, construction GHG emissions will be offset by the GHG reductions in approximately nine years after the completion of construction. Therefore, the project would have a net decrease in GHG emissions compared to the No Action Alternative and consequently has long-term benefits to the environment.

Table 4-7 Estimated Action GHG Emissions

Pollutant	2018 (ton/yr)	2019 (ton/yr)	2020 (ton/yr)	2021 (ton/yr)	2022 (ton/yr)	2023 and beyond (Steady State) (ton/yr)
CO ₂ e	140.1	1131.0	755.7	747.5	691.2	-370.5

4.2.2 No Action Alternatives

Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927, 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display, WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area would not be constructed.

Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the Bunker B Area.

Because no demolition, construction, or renovation/repair activities would be conducted under the No Action Alternatives, no air pollutant emissions would be generated. Emissions from existing operations in the area would not change from current conditions; therefore, no significant impacts on air quality would be expected.

4.3 Biological Resources

The evaluation of impacts to biological resources is based on the type of activities that could occur in association with the various project actions (e.g., demolition of structures, construction of buildings, vegetation removal, and bunker repairs), and the general environmental and ecological conditions currently present in these areas. The analysis provided herein identifies how conservation measures could be applied to avoid, minimize, or mitigate these impacts to vegetation communities, wildlife species, and habitats.

4.3.1 Proposed Actions

Travis AFB developed a Programmatic Biological Assessment (PBA) (Travis AFB, 2018a) for consultation with USFWS under ESA Section 7 to address the “*Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species.*” Travis AFB proposed a tiered programmatic consultation approach to activities covered under the 2018 PBA, which includes all the projects in this EA. The PBA analyzed a variety of activities as a whole for impacts to six federally-listed species and their habitat. Based on this analysis, Travis AFB has proposed specific criteria for activities and projects that will have either *no effect*, *may affect but is not likely to adversely affect (NLAA)*, and *may affect and is likely to adversely affect*” for the federally-listed species and requested that USFWS provide “batched concurrence” for this subset of activities and projects. However, no individual projects were analyzed, as implementation of these projects requires authorization, funding, and/or implementation of site-specific actions that would be subject to future Section 7 consultation. Therefore, implementation of these activities and projects is considered a framework

1 programmatic action. As individual projects that meet the *may affect* level are proposed, Travis AFB
2 provided the Service with project-specific information for consultation, such as provided in this
3 IDEA (**Appendix D**). A Programmatic Biological Opinion (PBO) was issued on June 1, 2018 that
4 concurred with the findings in the PBA (USFWS, 2018c) (**Appendix E**). As part of the PBA/PBO,
5 conservation measures were developed and adopted by Travis AFB. Conservation measures applicable
6 to each project are provided in detail in Section 6.3.

7 **4.3.1.1 Vegetation**

8 Vegetation removal and disturbance of soils could have a variety of effects on vegetation communities,
9 ranging from changes in community structure to alteration of soil moisture or nutrient regimes.
10 Removal of protective vegetation would also expose soil to potential wind and water erosion. This
11 could result in further loss of soil and vegetation, as well as increased sediment input to water
12 resources. These impacts would be minimized by revegetating disturbed areas with Travis AFB
13 approved seed mix to prevent soil erosion.

14 Construction and use of each of the project actions could result in temporary damage to and/or
15 permanent loss of vegetation and disturbance to surface soils. These impacts would be less for projects
16 occurring within previously developed, landscaped, or cleared areas such as building sites to be
17 demolished or the RV storage area location. However, not all demolition projects are located
18 completely in previously disturbed areas. Sites can encompass not only buildings to be demolished but
19 also areas containing upland habitat that has been undisturbed and returned to a more natural
20 condition (Travis AFB, 2017d). The upland grasslands within and adjacent to the project areas are
21 included as part of the grounds maintenance contract and for airfield safety reasons, receives periodic
22 mowing and maintenance activity. Higher levels of impact would be associated with construction of
23 the Youth Center and the C-5 Galaxy Static Display, where vegetation removal, which includes tree
24 removal, would be required. For several of the demolition projects, the disturbances to the grassland
25 areas would be temporary, and with soil restoration and reseeded these areas would likely revegetate
26 over time.

27 The loss of trees would be a short-term disturbance due to construction. Travis AFB has established
28 a “no net loss of trees” policy, such that although trees may be removed for construction operations,
29 an equal number of trees would be planted in a designated area away from the airfield on Arbor Day
30 the year following the project.

31 Sensitive vegetation communities, including grassland, wetlands, vernal pools, and freshwater marshes
32 are located at Travis AFB (Travis AFB, 2016b). Potential impacts to these sensitive communities could
33 occur, including damage or loss of protected plants and wildlife that occur within the grasslands and
34 vernal pools.

35 Most of the proposed project sites are contained within developed areas, paved parking lots, training
36 areas or former treatment areas, and are therefore highly disturbed and/or already developed. While
37 most non-developed lands consist of previously disturbed habitats characterized by non-native
38 grassland, ornamental vegetation, or ruderal habitats, there are areas of non-developed land that have
39 reverted to primarily natural conditions. Proposed project actions include vernal pool and wetland
40 swales communities near several of the sites. Impact area footprints would avoid wetlands and when
41 necessary and feasible, sites would be backfilled with native soils. Sites would be accessed by existing
42 paved roads. Wetland swales and vernal pools, which currently convey stormwater, would likely be
43 subjected to some alteration of stormwater flows because of new impervious surfaces a few of the
44 project actions. Construction of a new youth center, expansion of the WRM and parking areas, and
45 RV storage could alter the groundwater/stormwater flows.

1 Implementation of conservation measures would be required to minimize impacts to these
2 communities and reduce effects to insignificant levels. These measures are described in the 2018 PBA
3 (Travis AFB, 2018a) and PBO (USFWS, 2018c) are listed in detail in **Section 6.3**.

4 **4.3.1.2 Wildlife**

5 Direct impacts on wildlife anticipated because of the Proposed Actions include the removal of
6 vegetation that would result in the temporary loss of wildlife habitat along with the displacement
7 and/or potential mortality of resident wildlife species, especially those that are less mobile such as
8 snakes, amphibians, and small mammals. Alteration of the composition of wetlands, including vernal
9 pools and swales, could occur from construction debris, habitat disturbance, or drainage. Clearing and
10 grading for road or building construction, including the removal of trees, would generate the greatest
11 potential construction impacts on wildlife. Injury or death of wildlife could result from the presence
12 of construction vehicles, and subsequent use of roads. Fossorial species, such as small burrowing
13 animals (e.g., salamanders, owls, and small mammals) may be harmed through the crushing of
14 burrows, the loss of refugia, and direct mortality from construction activities. However, operational
15 mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of
16 any small mammal burrows. Various wildlife species could be trapped in holes or trenches created for
17 construction purposes. Construction could also result in an increase in accidental road-killed wildlife
18 due to increased vehicle traffic along existing and new roads. More mobile species like birds and larger
19 mammals are expected to disperse into adjacent habitat areas during project construction.

20 Construction activities and human presence can alter, displace, or disrupt the breeding and foraging
21 behavior of wildlife. Wildlife species are most vulnerable to construction-related disturbances during
22 their breeding seasons when disturbances could result in nest, roost, or territory abandonment, and
23 subsequent loss of reproductive effort.

24 Local wildlife could temporarily disperse during project construction but are expected to return to
25 their pre-construction levels following the restoration of the disturbed areas. For project actions that
26 would be demolished/constructed within previously developed areas, most of the wildlife present
27 would already be likely habituated to some level of on-going disturbance. Also, because construction
28 is of short duration and limited to relatively small areas within a large expanse of grassland and wetland
29 habitats, wildlife would likely quickly return as work is completed. Nocturnally active wildlife would
30 be affected less by construction than would diurnally active species.

31 In addition to temporary wildlife disturbance during construction activities, vegetation removal would
32 represent long-term habitat loss to wildlife. Trees and other vegetation subject to clearing could
33 support foraging, nesting, and other behaviors for mammals, birds, which includes migratory birds,
34 and reptiles.

35 Conservation measures, as described in **Section 6.3**, and project BMPs (**Section 6.0**) would minimize
36 the effects to wildlife due to project activities. Replacement of trees, seasonal restrictions on Project
37 activities, biological monitors during construction activity, flagging of sensitive areas, covering of
38 trenches, and limited access of construction vehicles to project sites would reduce the potential of
39 wildlife disturbances.

40 **4.3.1.3 Special Status Species**

41 **4.3.1.3.1 California Tiger Salamander**

42 CTS are known to breed in ponds and utilize grassland habitat for aestivation throughout Travis AFB.
43 Travis AFB (see **Figure 2-2**) developed a CTS Landscape Resistance and Habitat Suitability Mapping
44 model to categorize areas of the Base based on the potential for occurrence of CTS. Potential habitat
45 has been classified as high, medium, or low risk of CTS being present according to the PBA (Travis
46 AFB, 2018). Projects D1, D3, D4, D7, C1 (haul road portion of the project), and R1 occur within high

1 risk CTS habitat. C3 and D8 occur in medium risk, while D2, D5, D6, D9, C2, and C4 are within low
2 risk areas (see **Figures 2-4** through **2-11**).

3 CTS have been documented near two sites: Demolition of Building 1182 (D7) and the Demolition of
4 the Former WWTP (D1). During the 2017 CTS Relocation Effort (Marty, 2017), CTS were found on
5 the runway approximately 900 feet north of Building 1182 and relocated to the west and east of this
6 location. These occurrences are clustered in the northeastern portion of the Base and breeding ponds
7 are located on offsite lands to the south and north. A relocation area for CTS was designated
8 approximately 0.3 mile from the Former WWTP site. CTS have been documented dispersing up to
9 1.3 miles from breeding sites to utilize upland refugia such as small mammal burrows during the dry
10 season. Suitable upland refugia and dispersal habitat are present within the project area for all sites.

11 Project activities have the potential to result in direct and indirect effects on CTS and their habitat.
12 Ground disturbance and construction activities associated with the projects may result in loss of
13 upland habitat used for refugia, dispersal, and foraging. CTS that are using small burrows or other
14 temporary locations could be crushed or trapped during demolition, grading, and compaction of soils.
15 Temporary impacts to water quality with water bodies that CTS use and that are in close proximity to
16 the project area may occur due to construction activities (D1, D3, and R1). Noise and vibration could
17 cause CTS to leave their upland refugia, increasing the risk of desiccation, predation, or danger from
18 construction activities. However, demolition of obsolete buildings and return of the land to natural
19 conditions could afford the salamander additional upland grassland habitat for future use.

20 Based on the location of the project and the risk level for CTS to be present, different levels of effects
21 to CTS are anticipated as well as the degree of consultation with USFWS that would be required.
22 **Table 4-8** shows the various impacts and the potential effects that each project poses.

23 Travis AFB continues to consult with USFWS regarding specific analyses required for CTS assessment
24 and conservation measures.

25 Conservation measures were developed to reduce potential project-related impacts to CTS. The
26 current conservation measures are required for the protection of the CTS and are listed in **Section**
27 **6.3**. There are likely some small mammal burrows and soil cracks within the project action areas;
28 however, based on the implementation of the conservation measures potential CTS refugia would be
29 avoided to the extent possible. A Service-approved Biologist would be present with the crews to direct
30 work away from potential upland refugia sites and monitor demolition and construction activities.
31 Demolition and construction activities would be redirected if evidence of potential underground
32 refugia is present (e.g., gopher mounds). All activities would occur during daylight hours and during
33 the dry season when CTS are in their burrows and movement is reduced. Consequently, effects to
34 CTS utilizing upland refugia as well as migrating CTS would be reduced.
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Table 4-8 Project Risk Levels for Federally-Listed Species and Conservation Measures

ID	Project Name	Level of Consultation – VP Branchiopods, CCG, and DGGB	Level of Consultation - CTS	PBO Conservation Measures
D1	Demolish Infrastructure Associated with former WWTP	Level 2 (NLAA) – Demo work within 250 feet of wetlands but will have appropriate BMPs to protect wetland features (SW.SU.094 and SW.SU.005). Staging within 250 feet of wetlands but will have appropriate BMPs to protect wetland features (VP.FL.512 and VP.FL.513)	Level 3 (May Adversely Affect) – temporary ground disturbance (3 acres) of upland habitat within High Risk Areas	MM1-MM11, MM13-MM14, MM17-MM18; VP4; CTS1-CTS8, CTS10-CTS12, CTS16-CTS17, CTS19;
D2	Demolish Building 927	Level 1 – No Effect. Demo work within 250 feet of wetlands, but physical barrier present between work area and wetland (W Street)	Level 1b (No Effect with Conservation Measures) – Temporary and permanent disturbance of upland habitat in Low Risk Areas	MM1, MM3, MM5-MM7, MM9-MM11, MM13, MM 14, MM 17; GM1-2
D3	Demolish Building 1115	Level 2 (NLAA) – Demo work and staging within 250 feet of wetlands but will have appropriate BMPs to protect wetland features (SW.SU.548, SW.SU.547, and SW.SU.694).	Level 3 (May Adversely Affect) – temporary ground disturbance (0.22 acre) of upland habitat within High Risk Areas	MM1-MM11, MM13-MM15, MM17, MM18; VP1, VP4; CTS1-CTS8, CTS10-CTS12, CTS16-CTS17, CTS19
D4	Demolish Building 1201	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 3 (May Adversely Affect) – temporary ground disturbance (0.26 acre) of upland habitat within High Risk Areas	MM1-MM4, MM6-MM-11, MM13-MM15, MM17-MM18; CTS1-CTS8, CTS10-CTS12, CTS16-CTS17, CTS19
D5	Demolish Building 819	Level 1 - No Effect. Demo work within 250 feet of wetlands, but physical barrier present between work area and wetland (Ragsdale Street)	Level 1b (No Effect with Conservation Measures) – Temporary and permanent disturbance of upland habitat in Low Risk Areas	All equipment and excess soil must stay on paved/gravel surfaces.
D6	Demolish Building 1	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 1a (No Effect)	All equipment and excess soil must stay on paved/gravel surfaces.

ID	Project Name	Level of Consultation – VP Branchiopods, CCG, and DGGB	Level of Consultation - CTS	PBO Conservation Measures
D7	Demolish Building 1182	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 3 (May Adversely Affect) – temporary ground disturbance (0.34 acre) of upland habitat within High Risk Areas	MM1-MM11, MM13-MM14, MM17-MM18; CTS1-CTS8, CTS10-CTS12, CTS 16-CTS17, CTS19
D8	Demolish Building 1332	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 2 (Not Likely to Adversely Affect). Temporary disturbance of upland habitat in Medium Risk Area.	MM1-MM4, MM6-MM11, MM13-MM15, MM17-MM18; CTS1-CTS5, CTS7-CTS8, CTS10-CTS12, CTS 16-CTS17, CTS19
D9	Demolish Building 891	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 1b (No Effect with Conservation Measures) – Temporary and permanent disturbance of upland habitat in Low Risk Areas	All equipment and excess soil must stay on paved/gravel surfaces.
C1	C-5 Galaxy Static Display	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 1b (No Effect with Conservation Measures) – 95% of project within Low Risk Area. Work within High Risk Area limited to 0.22 acre of upland habitat	All equipment and excess soil must stay on paved/gravel surfaces.
C2	WRM Expansion/New Patient and Staff Parking Area	Level 2 (NLAA) – Construction work and staging within 250 feet of wetlands but will have appropriate BMPs to protect wetland features (VP.AC.635, VP.AC.636, VP.AC.637, VP.AC.396, VP.AC.401, and VP.AC.411).	Level 1b (No Effect with Conservation Measures) – Temporary and permanent disturbance of upland habitat in Low Risk Areas	MM1-MM11, MM13-MM14, MM17-MM18; VP4

ID	Project Name	Level of Consultation – VP Branchiopods, CCG, and DGGB	Level of Consultation - CTS	PBO Conservation Measures
C3	New Youth Center	Level 1 – No Effect. No wetlands within 250 feet of Project Area	Level 3 (May Adversely Affect) – temporary and permanent ground disturbance (acre) of upland habitat within Medium Risk Areas	MM1-MM11, MM13-MM15, MM17-MM18; CTS1-CTS8, CTS10-CTS12, CTS16-CTS19
C4	RV Storage Area	Level 1 (No Effect). Wetlands present, but physical barrier present between work area and wetland (W Street)	Level 1b (No Effect with Conservation Measures) – Temporary and permanent disturbance of upland habitat in Low Risk Areas	MM1, MM3, MM5-MM7, MM9-MM11, MM13-MM14, MM17; GM1-GM2
R1	Bunker B Roof and Electrical Repair & Security Gate upgrade	Level 2 (NLAA) – Construction work and staging within 250 feet of wetlands but will have appropriate BMPs to protect wetland features (WS.GA.709, VP.GA.869, VP.GA.871, WS.GA.710, VP.GA.532, WS.GA.711, WS.GA.712, WS.GA.714, and WS.GA.715).	Level 3 (May Adversely Affect) – temporary ground disturbance (4.81 acres) of upland habitat within High Risk Areas	MM1-MM11, MM13-MM14, MM17-MM18; VP1, VP3-VP4; CTS1-CTS12, CTS16-CTS19

1 4.3.1.3.2 Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

2 Vernal pool fairy shrimp (VPFS) and vernal pool tadpole shrimp (VPTS) occur on Travis AFB in
3 vernal pools distributed on and adjacent to the Base. Vernal pools within the project action areas are
4 known to support suitable habitat for VPFS. During the 2016 non-protocol wet season survey
5 conducted by Marty Ecological Consulting, VPFS were identified in 16 vernal pools/wetlands on the
6 Base; therefore, presence in all suitable habitat in the project area is assumed for this project
7 (Marty, 2016). Although no listed vernal pool species have been documented within the impact area
8 footprints of each site, project activities have the potential to result in direct and indirect effects on
9 fairy and tadpole shrimp and their habitat. Loss/degradation of vernal pools from construction
10 activities could result in reduced habitat, loss of eggs, and injury and mortality. Of these seven sites,
11 five designated work area footprints (D1, D2, D3, C4, and R1) are within 50 feet from identified
12 aquatic features; however, the one wetland within 50 feet of C4 and R1 is separated from these project
13 areas by W Street. Vernal pool fairy shrimp (VPFS) have been documented in pools to the north of
14 Building 1201 (D4) during 2016 surveys. However, based on available data, no listed branchiopod
15 species have been documented within the impact area footprint beyond the 250-foot buffer for vernal
16 pools. Temporary, short-term impacts to water quality within water bodies that shrimp use and that
17 are in close proximity to the project area may occur due to construction activities. Siltation from
18 exposed land following construction and rains can change the hydrologic regime of vernal pools and
19 reduce the viability of shrimp in the pool.

20 Alteration of adjacent upland habitat (e.g., increase of impervious surfaces, change in topography from
21 grading/backfilling, increase in groundwater retention) and change in the vernal pool hydrology and
22 dynamics can disrupt the shrimp. The introduction of water to their vernal pool habitat in the summer
23 and the resulting changes in the hydrologic patterns are particularly detrimental because these changes
24 disrupt the life cycle of the shrimp species by subjecting it to greater levels of predation, changes in
25 water temperature fluctuations, and disturbance to cyst development. Increased water also converts
26 vernal pools to unsuitable marsh habitat dominated by emergent vegetation.

27 Critical habitat has been designated for the two-shrimp species and occurs on Travis AFB outside the
28 fenced perimeter as noted in the INRMP and PBA (**Figure 3-1**). No critical habitat would be impacted
29 by proposed project activities; therefore, the project would not result in adverse modification to critical
30 habitat.

31 The proposed projects occur within the known range of these vernal pool crustaceans and there is
32 potentially suitable habitat present for both species within some of the proposed boundaries for the
33 proposed projects. Project activities could impact potential VPFS and VPTS habitat. The proposed
34 projects could result in either direct or indirect effects to vernal pool crustaceans or to their potentially
35 suitable habitat. **Table 4-8** shows the level of disturbance that would occur due to each project and
36 the effects associated with the project on the VPFS and VPTS. The PBA evaluated the effects of
37 these types of projects on these species and USFWS concurred with the PBA findings in the PBO
38 issued June 1, 2018 (USFWS, 2018c). However, per the PBA, previously developed conservation
39 measures are in place for VPFS and VPTS (**Section 6.3**). As part of the project conservation measures,
40 aquatic features within the project area would be protected and avoided by marking the boundaries of
41 these features with flagging and designating these areas as off-limits prior to the start of construction
42 activities. Since no wetlands are within the boundaries for the proposed projects, no direct or indirect
43 effects to any wetland features would be anticipated with these measures in place. Implementation of
44 proposed avoidance (marking and avoiding construction activity to prevent disturbance to the
45 surrounding soils) would minimize disturbance in accordance with EO 11990. The proposed actions
46 are scheduled to occur during the dry season, to minimize effects to VPFS and VPTS and potential
47 habitats for these species. A Service-approved Biologist would be present with the crews to monitor
48 vernal pool/wetland protection measures and site activities. These effects can be significantly reduced

1 through the proper implementation of the proposed avoidance (i.e., marking and avoiding
2 construction activity to prevent disturbance to the surrounding soils), minimization measures (e.g.,
3 construction activity would take place in the dry season), and by limiting disturbance from projects.

4 4.3.1.3.3 *Delta Green Ground Beetle*

5 The closest known population of the DGGB to Travis AFB is on the Wilcox Ranch, which lies
6 adjacent to the eastern boundary of Travis AFB. Potential habitat occurs in playa pools on private
7 lands adjacent to the Installation but have not been surveyed or reported. Critical habitat has been
8 designated on the Northern Railroad Right-of-Way GSU, owned by Travis AFB (**Figure 3-1**). A one-
9 mile buffer for potential DGGB habitat has been established by Travis AFB due to the uncertainty of
10 habitat and dispersal behavior for the beetle. Although Travis AFB is not anticipated to support
11 suitable habitat for the DGGB, proposed action D7 (Building 1182) occurs within the one-mile buffer.
12 D1 is just beyond the buffer, but within the 250 feet buffer of known or potential vernal pools (**Figure**
13 **2-4**). The PBA discussed the effects of project related impacts on the DGGB and **Table 4-8** shows
14 what level of effect (NLAA or May Adversely Affect) each project would have on the DGGB. USFWS
15 concurred with the PBA findings in the PBO issued June 1, 2018 (USFWS, 2018c). Conservation
16 measures are in place for other vernal pool species (see vernal pool shrimp species and CTS above) as
17 well as those listed specifically for the beetle (**Section 6.3**) and would be expected to maintain habitat
18 requirements for this invertebrate. Mowing in and around vernal pool habitat during the dry season is
19 anticipated to provide a beneficial effect for this species.

20 4.3.1.3.4 *Contra Costa Goldfields*

21 This annual plant species grows in vernal pools and mesic grasslands on Travis AFB. Critical habitat
22 has been designated on Travis AFB outside the fenced perimeter on 13 acres of habitat near the south
23 gate (**Figure 3-1**). None of the proposed projects occur in or adjacent to known locations of
24 goldfields. Proposed Action C2 (the WRM Warehouse/New Patient and Staff Parking Area) is east
25 of documented CCG, beyond 250 feet of known or potential habitat (**Figure 3-1**). The PBA discussed
26 the effects of project related impacts on the CCG and **Table 4-8** shows what level of effect (NLAA
27 or May Adversely Affect) each project would have on the plant. USFWS concurred with the PBA
28 findings in the PBO issued June 1, 2018 (USFWS, 2018c). Conservation measures are in place for
29 other vernal pool species (see vernal pool shrimp species above) and would be expected to maintain
30 habitat requirements for this plant.

31 4.3.1.3.5 *Western Burrowing Owl*

32 According to the 2016 INRMP and 2018 PBA, much of the annual grassland on Travis AFB provides
33 suitable nesting and/or wintering habitat for burrowing owls (Travis AFB, 2016b and 2018) (**Figure**
34 **2-2**). Project-related modification of these habitats could impact this species, especially if vegetation
35 removal or alteration would occur during the nesting season. Projects C2, C3, C4, D2, and D5 occur
36 near or within (C2) known burrowing owl habitat.

37 The California Burrowing Owl Consortium established buffer zone guidelines for activities occurring
38 in areas that contain occupied burrows (California Burrowing Owl Consortium, 1993). A minimum
39 buffer zone of 165 feet would be maintained around an occupied burrow during the non-breeding
40 season (1 September – 31 January), and a buffer zone of 250 feet would be maintained around an
41 active burrow during the breeding season (1 February – 31 August). Additionally, the guidelines state
42 that at least 6.5 acres of foraging habitat would be maintained around occupied burrows year-round.

43 Following the BMPs and conservation measures provided in **Section 6.3**, measures would assist in
44 the protection of the Western burrowing owl and its habitat near the project site (BUOW-1 and
45 BUOW-2). The WRM Expansion/New Patient and Staff Parking Area (C2) in the northwest section
46 of the Base is in close proximity of the burrowing owl. Because this burrowing owl habitat is both

1 within the non-breeding and breeding season buffer zones, the burrowing owl would be affected by
2 the presence of construction personnel and equipment moving in and out of the C2 construction
3 area, and by the noise generated for those activities; therefore, measures would be implemented (refer
4 to Table 4-8). The effect would be a temporary and not likely to result in a loss of viability.

5 A monitoring program would be implemented prior to construction to protect the burrowing
6 owls from any detrimental effects. A monitoring plan would be developed to recommend that
7 construction be performed during the non-breeding season (1 September – 31 January) if possible,
8 and the placement of appropriate visual barriers and/or screens should also be recommended.

9 *4.3.1.3.6 Tricolored Blackbird*

10 According to the 2016 INRMP, much of the annual grassland on Travis AFB provides suitable nesting
11 and/or wintering habitat for tricolored blackbirds (Travis AFB, 2016b). Project-related modification
12 of these habitats could impact this species, especially if vegetation removal or alteration would occur
13 during the nesting season (**Figure 2-2**). Conservation measures provided in **Section 6.3** include
14 measures (restrictions to modification of wetlands and seasonal restrictions) that would assist in the
15 protection of the blackbird and its habitat near project sites.

16 *4.3.1.3.7 Swainson's Hawk*

17 According to the 2016 INRMP, much of the annual grassland on Travis AFB provides suitable
18 foraging for Swainson's hawks, while nesting occurs in riparian vegetation and in trees (Travis
19 AFB, 2016b). Project-related modification of these habitats could impact this species, especially if
20 vegetation removal (i.e., tree removal) or alteration would occur during the nesting season. As noted
21 in **Section 4.3.1.1**, Travis AFB has established a "no net loss of trees" policy, such that although trees
22 may be removed for construction operations, an equal number of trees would be planted in a
23 designated area away from the airfield on Arbor Day the year following the project. Conservation
24 measures provided in **Section 6.3** include measures, including restrictions to modification of wetland
25 and seasonal restrictions, that would assist in the protection of this raptor and its habitat near project
26 sites. If construction occurred during breeding season, preconstruction surveys would be conducted
27 for Swainson's hawks to avoid nesting birds.

28 *4.3.1.4 Migratory Birds*

29 The various habitats present at Travis AFB support a wide variety of bird species. Specifically, riparian
30 and grassland habitats offer foraging and nesting potential for several state species of special concern.
31 Swainson's hawk nest and forage in the grassland and riparian communities, respectively. Tricolored
32 blackbirds utilize the dense riparian and emergent wetland communities for roosting and nesting, while
33 western burrowing owls make their nests in burrows located in grassland habitat.

34 With the exception of a few non-native bird species, active nests are fully protected against take for
35 over 800 species of birds pursuant to the MBTA. It is unlawful to take, possess, or destroy the nest or
36 eggs of any such bird. Impacts could occur if trees and/or shrubs were removed that contained an
37 active nest or burrows were disturbed or crushed. The removal of habitat during the breeding season
38 would likely result in the displacement of breeding birds and the abandonment of active nests. To
39 reduce the possibility of avian mortality, disturbance or clearing of vegetation would not occur during
40 the breeding season, which is between March and August.

41 To the extent practicable, Travis AFB would time vegetation removal to occur outside of the nesting
42 season. While any habitat loss could adversely affect individual birds, the amount of impacted habitat
43 is relatively small compared to similar habitat available within the immediate vicinity of the proposed
44 project areas. Overall, population-level effects to any species are not expected.

4.3.1.5 *Natural Resources Area of Concern*

No refuges or other areas of concern near Travis AFB were identified; therefore, no impacts to natural resource areas of concern would occur as a result of the proposed actions.

4.3.2 **No Action Alternatives**

Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927, 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display, WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area would not be constructed.

Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the Bunker B Area.

As no demolition, construction, or renovation/repair activities would be conducted under the No Action Alternatives, there would be no potential to affect biological resources. Habitat distribution and quality would remain similar to present conditions. With no changes to habitats, no new impacts are expected to special status species, including the endangered CTS and threatened vernal pool species. However, mitigation measures established through the INRMP and previous consultation with USFWS would remain in place.

4.4 **Cultural Resources**

4.4.1 **Proposed Actions**

Impact analysis for cultural resources focuses on assessing whether implementation of the Proposed Actions would have the potential to affect archaeological, architectural, and/or Native American resources that are listed in, or eligible for listing in, the NRHP (i.e., historic properties), or would have significant effects to Native American Traditional Cultural Properties (TCPs). For this IDEA, impact analysis utilizes, but is not limited to, guidelines and standards set forth in the NHPA's Section 106 implementing regulations (36 CFR 800). Under Section 106, the proponent of the action is responsible for determining whether any historic properties are in the APE, assessing whether the proposed undertaking would adversely affect any identified historic properties, and notifying the California SHPO of any potential adverse effects. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP. If an adverse effect is identified, the federal agency consults with the SHPO and the federally recognized tribes affiliated with the installation to develop measures to avoid, minimize, or mitigate those adverse effects. The assessment of effects considers the potential for physical damage or destruction of historic properties and the potential adverse effects of visual intrusions, noise, and vibration on historic properties.

Archaeological and historic architectural resources at Travis AFB were characterized using existing survey data and analysis in the Travis AFB ICRMP (Travis AFB, 2016c), archaeological survey reports, historic buildings survey reports, installation histories, and records of the NRHP and National Historic Landmarks program, all of which provided information about the locations of any Travis AFB historic properties. In compliance with Section 106 of the NHPA, the USAF consulted with the California SHPO regarding the APE and potential cultural resources concerns relative to the IDEA Proposed Actions.

The potential for Native American sacred sites and/or traditional resources at Travis AFB was identified using the ICRMP, previous consultation with the NAHC (**Appendix A**), and previous and current contact with the two tribes affiliated with Travis AFB.

1 Based on the status of cultural resources at Travis AFB, the USAF has determined that there will be
2 *no historic properties affected* from the implementation of IDEA projects D1, D3, D4, D5, D6, D7, D8,
3 D9, C1, C2, C3, and R1. Archaeological and architectural surveys of these areas are complete, and no
4 historic properties have been identified. The SHPO concurred with these findings on July 2, 2018 and
5 July 10, 2014 (**Appendix A**).

6 Based on the status of cultural resources at Travis AFB and as described in more detail in **Sections**
7 **4.4.1.1, 4.4.1.2, and 4.4.1.3**, the USAF has determined that there will be *no adverse effects on historic*
8 *properties* from the implementation of IDEA projects D2, and C4. Archaeological and architectural
9 surveys of these project areas are complete, and the demolition and infrastructure projects as described
10 would not diminish the integrity of the AFSWP/SAC Q historic buildings or the integrity of the
11 Historic District as a whole (D2 and C4). Because Building 927 (D2) is a modern intrusive feature
12 within the Historic District boundary, demolition of that structure would be a positive visual effect.
13 The SHPO concurred with these findings on July 2, 2018 and October 26, 2015 (**Appendix A**).

14 **4.4.1.1 Architectural Resources**

15 Nine of the Proposed Actions would involve building demolitions (refer to **Tables 1-1 and 2-1**). One
16 of the nine buildings to be demolished (D8, Building 1332) has been determined Eligible for inclusion
17 in the NRHP; however, that property is covered under the ACHP's Program Comment discussed in
18 **Section 3.5.2.1** of this IDEA and no further consultation or analysis is required. In addition, in 2014,
19 Building 1332 was re-reviewed by the SHPO as part of consultation for a group of 19 buildings
20 scheduled for future demolition. Results of the consultation indicated no historic properties would be
21 affected, including Building 1332 (**Appendix A**). Building 1332 is no longer in use and has deteriorated
22 beyond the point of economical repair. Adjacent dormitories of the same age, design, condition, and
23 construction, and within the same UPH complex also have been previously demolished, including
24 Building 1328, which was demolished pursuant to an IDEA for Travis AFB in 2007 (SAIC 2007). As
25 a result, there would be no historic properties affected with the demolition of Building 1332. The
26 SHPO concurred with these findings on July 10, 2014 (**Appendix A**).

27 Building 927 was determined to be Not Eligible with SHPO concurrence on October 26, 2015 (SHPO
28 Reference No. USAF_2015_0928_001); however, it is situated within the AFSWP/SAC Q Area
29 Historic District. The small, modern, modular building was constructed as a temporary facility and
30 has been abandoned since 2014 and is in an advanced deteriorated condition. Removal of this intrusive
31 non-contributing feature from the Historic District would not have an adverse physical or visual effect
32 on the individual AFSWP/SAC Q Area historic buildings or the integrity of the Historic District as a
33 whole. Rather, the removal of this out-of-character building will have a positive effect on the viewshed
34 and overall integrity of the Historic District. The SHPO concurred that "no historic properties would
35 be affected" from the demolition of Building 927 on October 26, 2015 (**Appendix A**).

36 Proposed Action C4 (RV Storage Area) would repurpose an unused parking area adjacent to and south
37 of the existing RV Storage area. Approximately 3 acres of partially paved area would be repurposed
38 to centralize and better accommodate the increased demand for RV storage. This area is situated
39 within the boundary of the Cold War-era AFSWP/SAC Q Area National Register-eligible Historic
40 District and east of Building 927, which is unoccupied and proposed for demolition under Proposed
41 Action D2. Repurposing of the parking lot would have no direct/physical adverse effect on the
42 individual AFSWP/SAC Q historic buildings or the integrity of the Historic District as a whole. The
43 existing, larger RV storage area is immediately north of Proposed Action C4 and within the boundary
44 of the AFSWP/SAC Q Historic District; therefore, the viewshed would remain the same with no new
45 or additional visual effects. The SHPO concurred that there would be "no adverse effects on historic
46 properties" from implementation of this project on July 2, 2018 (**Appendix A**).

1 Implementation of the remaining Proposed Actions would not affect NRHP-listed or eligible
2 buildings or structures; therefore, there would be no effects on any architectural resources. SHPO
3 concurrence with these findings was provided on July 2, 2018.

4 **4.4.1.2 Archaeological Resources**

5 All demolition, new construction, and renovation/repair activities have ground disturbing elements
6 (refer to **Tables 1-1** and **2-1**). Archaeological survey of Travis AFB Main Base has been completed
7 and 12 archaeological sites have been recorded (refer to Section 8.3, Table 1, of Travis AFB, 2016c);
8 however, no confirmed NRHP-listed or -eligible sites are located within the boundary of the
9 installation. Based on the history of the base, a predictive model that was completed in 2017 (Meyer,
10 2017) (refer to section 3.5.2.2 of this IDEA), historical changes to the topography, and past and
11 ongoing operational use, there is low probability for archaeological resources to be present and none
12 of the 12 sites previously recorded are within the ground-disturbing areas of any of the projects
13 proposed in this IDEA; therefore, there would be no effects on archaeological properties from
14 implementation of the Proposed Actions (see **Sections 3.5.2.2 and 4.4.1.2**) and the SHPO concurred
15 on July 2, 2018 (**Appendix A**).

16 **4.4.1.3 American Indian Sacred Site and Traditional Resources**

17 No known properties of traditional, cultural, or religious significance to Native American Tribes are
18 located within the vicinity of Travis AFB (Travis AFB, 2016c); therefore, impacts on these types of
19 resources are not expected from implementation of the Proposed Actions. Tribal consultation was
20 completed with the Cortina Indian Rancheria of Wintun Indians of California on June 15, 2018.
21 Chairman Charlie Wright verbally confirmed his review of the draft IDEA and expressed no concerns
22 at that time. The USAF will continue to consult with Chairman Wright as the project progresses.
23 Tribal consultation with the Yocha Dehe Wintun Nation was completed on July 19, 2018, during a
24 site visit to Travis AFB for the IDEA project. The tribe expressed no concerns with the IDEA but
25 requested that a treatment protocol be followed at each of the project sites and that cultural resources
26 awareness training be conducted at each project site during preconstruction meetings.

27 **4.4.1.4 Unexpected Discoveries**

28 In the event archaeological resources, tribal resources, or human remains are unexpectedly
29 encountered during activities associated with any of the 14 Proposed Actions described in this IDEA,
30 all work in the immediate vicinity of the discovery would be halted and the procedures outlined in
31 Section 7 of the Travis AFB ICRMP (Travis AFB, 2016c) would be followed.

32 **4.4.2 No Action Alternatives**

33 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
34 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

35 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
36 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
37 would not be constructed.

38 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
39 Bunker B Area.

40 As no demolition, construction, or renovation/repair activities would be conducted under the No
41 Action Alternatives, there would be no potential to affect architectural, archaeological, or tribal
42 resources. Existing identified resources would continue to be managed in accordance with the Travis
43 AFB ICRMP (Travis AFB, 2016c); therefore, significant impacts to cultural resources would not be
44 expected.

4.5 Earth (Geological Resources)

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards and soil limitations are considered when evaluating the potential impacts associated with the implementation of a proposed action on geological resources. If a proposed action were to substantially affect or be substantially affected by any of these features, impacts would be considered significant. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering design are incorporated into project development.

Analysis of potential impacts to geologic resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resource, assessment of the significance of potential impacts, and provision of management measures if potentially significant impacts are identified. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that would expose soil to wind or water erosion.

Adverse impacts to soils and the associated potential indirect impacts to water resources can be minimized through the implementation of BMPs such as those typically required to comply with the CWA as outlined in **Section 6.6.2**. The NPDES program, administered by the USEPA or state environmental quality departments, requires a Construction General Permit for surface disturbance of one acre or more. Compliance with this permit involves development and implementation of a SWPPP and erosion and sediment control plan that includes site-specific management measures.

4.5.1 Proposed Actions

4.5.1.1 Topography

Land surface on Travis AFB is generally flat; therefore, implementation of Proposed Actions (D1-D9, C1-C4, and R1) is not anticipated to cause or create changes to the topography of Travis AFB or the surrounding area. There would be no significant impacts to topography.

4.5.1.2 Geology

Implementation of the proposed actions would not have a significant impact on geology. Significant alteration of the stratigraphy and geological structures that control groundwater quality is not anticipated.

4.5.1.3 Soils

Under the Proposed Actions, demolition, construction, and renovation/repair activities, such as grading, excavating, and re-contouring of the soil, would result in soil disturbances. Implementation of the Proposed Actions would result in a net increased area of impervious surfaces (2.47 acres) for the building footprints and pavements of the proposed facilities. Any potential impacts resulting from erosion during construction activities would be controlled using standard erosion control measures, such as soil compaction, water, sandbags, silt fencing, earthen berms, or temporary sedimentation basins. Consequently, impacts from erosion would be minimal. It is likely that grading of existing soils and placement of structural fill for proposed facilities would not substantially alter existing soil conditions at Travis AFB because much of the property has been previously disturbed from prior development and no longer includes the naturally occurring surface soils.

Additionally, several of the new construction footprints under the Proposed Actions are located on other existing building footprints or previously disturbed soils. Impacts to earth resources would be expected to be minimal under the Proposed Actions. None of these soil types require special management considerations or cause limitations to management actions.

1 The soils of Travis AFB area do not present any specific constraints to future Installation
2 development. Implementation of Proposed Actions, D1-D9, C1-C4, and R1 would not cause or create
3 changes to the soils of Travis AFB. Therefore, significant impacts to soils would not be expected.

4 **4.5.1.4 Geologic Hazards**

5 The Proposed Actions are unlikely to affect the local geology of the Travis AFB area or be affected
6 by potential geologic hazards. No sedimentation patterns would be significantly altered due to
7 implementation of Proposed Actions, D1-D9, C1-C4, and R1, and no structural movements or
8 changes in seismicity would result. Therefore, significant impacts to geologic hazards would not be
9 expected.

10 However, the possibility of an earthquake continues to exist because of the proximity of the
11 Installation to the San Andreas, Hayward, and Calaveras fault zones and the Green Valley Fault located
12 20 and 10 miles from the Installation perimeter, respectively. To determine the potential and
13 likelihood of property damage at a specific site, a geotechnical investigation by a qualified professional
14 could evaluate potential hazards. Various hazard-reduction techniques (i.e., BMPs) are available, such
15 as soil improvement or special foundation design, which, if implemented would minimize impacts
16 from such an event.

17 **4.5.2 No Action Alternatives**

18 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
19 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

20 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
21 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
22 would not be constructed.

23 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
24 Bunker B Area.

25 As no demolition, construction, or renovation/repair activities would be conducted under the No
26 Action Alternatives, and existing identified resources would continue to be managed in accordance
27 with the Travis SWPPP (Travis AFB, 2017e), no significant impacts to geological resources would be
28 expected.

29 **4.6 Recreation and Visual**

30 The significance of potential recreation and visual impacts is based on the level of sensitivity in areas
31 affected by a proposed action and the compatibility of proposed actions with existing conditions. In
32 general, a recreation or visual impact would be significant if it were to cause the following:

- 33 • Be inconsistent or in noncompliance with future plans or policies
- 34 • Interfere with the use or function or otherwise diminish the value of recreation areas
- 35 • Have a substantial adverse impact on a scenic vista or viewshed
- 36 • Substantially damage scenic resources, including, but not limited to, primary/secondary
37 ridgelines, trees, rock outcroppings, and historic buildings
- 38 • Substantially degrade the existing visual character or quality of the site and its surroundings
- 39 • Create a new source of substantial light or glare that would adversely impact day or nighttime
40 views in the area, or interfere with flightline operations

4.6.1 Proposed Actions

4.6.1.1 Recreation

Implementation of Proposed Actions D1-D9, C1-C3, and R1 would have no effect on recreational resources at Travis AFB, as these facilities do not have recreational functions on Travis AFB. Construction of the proposed RV Storage Area (C4) would enhance the MWR program through an increase in RV storage capacity for personnel at Travis AFB. Implementation of C4 would also add 60 percent more area and accommodate an increased number of large rigs (up to 55'). This increase would allow Travis AFB MWR to address the current waiting list and would result in a minor beneficial impact.

4.6.1.2 Visual Resources

Proposed Actions C1-C4 would add structures on the landscape at Travis AFB. However, each new facility would be designed to be consistent with the current appearance and character of the area and landscaped in accordance with Travis AFB's Facilities Excellence Guide (Travis AFB, 2008).

Addition of the C-5 Galaxy Static Display (C1) would be an attribute to the Travis AFB Heritage Center and would become a contributing element to the landscape. A small stand of trees currently in the path of the haul route for the C-5 would be removed, however the stand of trees is small and is not considered a contributing element to the visual character of the area. Additionally, the trees would be replaced one per one in a designated location away from the airfield (Craig, 2017).

Proposed Actions D1-D9 would remove deteriorated, functionally obsolete buildings from developed areas across the installation. Demolition of these structures would have a negligible, beneficial impact to visual resources. Proposed Action R1 (Bunker B Area) would not affect visual resources, as it only entails repair and renovation to an existing facility.

There would not be significant impacts to visual resources as a result of the 14 Proposed Actions.

4.6.2 No Action Alternatives

4.6.2.1 Recreation

Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927, 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished. These facilities do not contribute to recreation activities on Travis AFB; therefore, no significant impacts would be expected.

Under the No Action Alternatives C1-3, C2-2, and C3-7, the proposed C-5 Static Galaxy Display, WRM Expansion and New Patient and Staff Parking Area, and New Youth Center would not be constructed. These facilities do not contribute to recreational activities on Travis AFB; therefore, no significant impacts would be expected.

Under No Action Alternative C4-4, the RV storage area would not be constructed. This would result in an insignificant adverse effect due to an on-going shortfall of available RV storage availability.

Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the Bunker B Area. This area does not contribute to recreational activities on Travis AFB; therefore, no significant impacts would be expected.

4.6.2.2 Visual Resources

Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927, 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished. Deteriorated, functionally obsolete buildings would remain in place, resulting in an insignificant adverse impact to visual resources.

1 Under the No Action Alternatives C2-2, C3-7 and C4-4, the proposed WRM Expansion and New
2 Patient and Staff Parking Area, New Youth Center, and RV Storage Area would not be constructed.
3 These facilities do not contribute to visual resources on Travis AFB; therefore, no significant impacts
4 would be expected.

5 Under No Action Alternative C1-3, the proposed C-5 Galaxy Static Display would not be constructed.
6 As this aircraft is a lasting patriotic symbol of the Travis AFB mission, inclusion of the C-5 into the
7 current heritage display on Travis AFB would result in a positive impact to visual resources on Travis
8 AFB. Therefore, implementation of the No Action Alternative would be expected to result in
9 insignificant, minor effects to visual resources on Travis AFB.

10 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
11 Bunker B Area. The Bunker B Area does not contribute to visual resources on Travis AFB; therefore,
12 no significant impacts would be expected.

13 **4.7 Water Resources**

14 Evaluation criteria for impacts associated with implementation of the Proposed Actions on water
15 resources are based on water availability, quality, and use; existence of floodplains; and associated
16 regulations. Implementation of the Proposed Actions would have adverse effects if it were to do one
17 or more of the following:

- 18 • Reduce water availability to or interfere with the supply of existing users;
- 19 • Create or contribute to overdraft of groundwater basins or exceed safe annual yield of water
20 supply sources;
- 21 • Endanger public health by creating or worsening adverse health hazard conditions;
- 22 • Threaten or damage unique hydrologic characteristics; or
- 23 • Violate established laws or regulations that have been adopted to protect or manage water
24 resources of an area.

25 Impacts of flood hazards related to proposed actions can be significant if such actions are in areas
26 with high probabilities of flooding or if such actions would in some way alter flood conveyance.

27 **4.7.1 Proposed Actions**

28 The primary concerns associated with implementing Proposed Actions (D1-D9, C1-C4 and R1)
29 related to water resources include effects on water quality during construction, demolition, and repair
30 activities, and changes to surface water drainage and groundwater recharge due to increased
31 impermeable surface.

32 **4.7.1.1 Groundwater**

33 No sensitive groundwater resources are known to occur in areas of the Proposed Actions. No existing
34 or proposed wells are near the proposed sites. Excavation associated with the proposed construction,
35 demolition, and renovation/repair activities would not be anticipated to intersect the local
36 groundwater table. Any incidental contaminant discharges (e.g., fuel, lubricants) from construction
37 equipment would not be anticipated to reach the groundwater table and all appropriate BMPs would
38 be implemented to avoid such discharges (refer to **Section 6.6.2**).

39 The rate of groundwater recharge of the shallow aquifer located directly beneath Travis AFB would
40 have minor impacts because of the increase in impermeable surfaces because of implementation of
41 the Proposed Actions. Any temporary increase in surface water runoff because of individual projects
42 would be attenuated using permit-related temporary and/or permanent drainage management actions,
43 such as detention/retention basins and BMPs. A potential management strategy to further minimize

1 adverse impacts includes the integration of water harvesting and open natural space into the design of
2 the proposed sites such that discharge exiting each site post-construction would be equal to or less
3 than existing conditions. The use of these features would also increase groundwater recharge through
4 direct percolation offsetting the loss of pervious surface due to future construction.

5 **4.7.1.2 Surface Water**

6 Overall, individual construction activities would have the potential for minor adverse effects on
7 surface water quality, but the use of BMPs specified in the 60 AMW SWPPP and development of site-
8 specific SWPPPs (as required) would minimize adverse effects. There is a potential for erosion and
9 associated sedimentation to flow into surface water features during construction.

10 All construction activities resulting in ground disturbance would be conducted in accordance with the
11 applicable stormwater discharge permit to control erosion and prevent sediment, debris, or other
12 pollutants from entering the stormwater system. Construction activities that disturb one acre or more
13 would need coverage under the NPDES General Permit and are not included in the existing SWPPP.
14 No construction activities would begin until a project-specific SWPPP is completed.

15 New construction could result in a potential increase in surface runoff due to an increase in
16 impermeable surfaces. The proposed disturbed area would result in a net increase of 2.47 acres of
17 impermeable surfaces, which includes the area for new construction demolition, and repair). All
18 required BMPs contained within the SWPPP would be implemented during construction.

19 **4.7.1.3 Stormwater**

20 The Proposed Actions would increase the volume of stormwater flow post-construction due to
21 increased area of impermeable surfaces (2.47 acres). This increase is not expected to contribute
22 significantly to any flooding. Major storm events have little effect on the stormwater infrastructure's
23 ability to drain Travis AFB and natural and manmade barriers, such as elevation changes and roads,
24 prevent flood waters from Union Creek from reaching developed areas of Travis AFB.

25 Stormwater discharges are managed in compliance with the NPDES requirements for construction
26 activity under a program administered by the USEPA as outlined in **Section 3.8.2.3**. Travis AFB has
27 certification under the NPDES General Permit for Stormwater Discharges. Stormwater runoff from
28 construction site activity is covered by the SWRCB's General Construction Activities Storm Water
29 Permit. Sites less than one acre are subject to Travis' Industrial SWPPP BMPs. For sites equal to or
30 greater than one acre, Travis AFB must also obtain a site-specific construction stormwater permit as
31 well as develop a site-specific SWPPP. These SWPPPs are normally developed by construction
32 contractors and reviewed for sufficiency by base personnel. All construction sites are regulated and
33 monitored to reduce contaminants in stormwater runoff. Non stormwater discharges are also
34 regulated under the State Water Resources Control Board's Statewide Industrial Activities Storm
35 Water Discharge Permit. Authorized non stormwater discharges include hydrant flushing, discharges
36 from dust control and firefighting.

37 **4.7.1.4 Floodplains**

38 In accordance with EO 11988 *Floodplain Management*, the USAF must demonstrate that there are no
39 practicable alternatives to construction within floodplains if construction is proposed within a
40 floodplain. None of the Proposed Actions would occur within the 100-year floodplain.
41 Implementation of the Proposed Actions would increase the amount of impermeable surface by 2.47
42 acres, increasing Travis AFB's total impermeable surface by approximately 0.05 percent.

43 To comply with the Travis AFB MS4 Phase II permit for projects that create and/or replace 5,000 SF
44 or more of impervious surface, low impact development site design measures to reduce site runoff are
45 required, and runoff from any remaining impervious areas must be directed to one or more facilities
46 designed to infiltrate, evapotranspire, and/or biotreat the amount of runoff specified in the permit.

1 The increase in impervious surface area would be considered less than significant and is not expected
2 to contribute significantly to flooding on the installation is not expected to affect the 100-year or 500-
3 year predicted flood elevations of Union Creek. It is not anticipated that stormwater runoff from the
4 site would cause localized flooding and impacts to flooding would be considered less than significant.

5 **4.7.1.5 Wetlands**

6 Swales and/or marsh are not located within any of the individual project areas. Individual
7 construction/demolition activities would have the potential for minor adverse effects on surface water
8 quality entering wetlands (i.e., swales and marsh), but the use of BMPs specified in the 60 AMW
9 SWPPP and development of site-specific SWPPPs (as required) would minimize adverse effects. A
10 swale located east of R1 could be affected by short-term impacts to water quality, though the presence
11 of vegetation and implementation of BMPs would minimize disturbance. The wetlands located in the
12 northwest corner of the Base near Proposed Action C2 (WRM Warehouse/New Patient and Staff
13 Parking Area) as well as the swale east of Proposed Action C4 (RV Storage Area) could be subjected
14 to some increased stormwater flows as a result of the new impervious surfaces created by these
15 projects; however, any increased flow from this site is not expected to significantly alter hydrology of
16 these wetlands due to previous disturbance in that area (i.e., existing building and/or parking lot) and
17 the surrounding grassland habitat to intercept waters during rain events. Effects to these wetlands are
18 considered insignificant.

19 Seven of the sites are within a 250-foot buffer from vernal pool habitat. To avoid or minimize
20 disturbances, conservation measures would be implemented. No work would occur during the rainy
21 season (October 16 through April 30 unless pools are inspected, the USFWS is notified of any off-
22 pavement work, and an approved biologist would mark the habitat and a reasonable buffer. Mowing
23 during the dry season could occur because this is considered beneficial to maintain appropriate
24 conditions for vernal pool species. Equipment would be located to avoid vernal pool habitat (staging
25 platforms or locations outside of habitat) and would be designed to minimize impacts (use of
26 pneumatic tires). Impacts to vernal pools and other wetlands are discussed in further detail in **Section**
27 **4.3.1.**

28 **4.7.2 No Action Alternatives**

29 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
30 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

31 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
32 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
33 would not be constructed.

34 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
35 Bunker B Area.

36 Implementation of the No Action Alternatives would not result in significant impacts effects to water
37 resources. New facilities would not be constructed, dilapidated structures would not be demolished,
38 repairs would not be made, and the sites would not be altered from their current conditions. Any soil
39 erosion that presently occurs at the Installation due to stormwater runoff would continue at the same
40 rate and would be maintained in accordance to the procedures outlined in the SWPPP. No additional
41 activities would be performed that would impact water resources.

42 **4.8 Hazardous Materials**

43 Travis AFB has guidelines in place for the handling, storage, and disposal of hazardous materials and
44 wastes that are detailed in the following instructions and management plans:

- 45 • Travis AFB Hazardous Waste Management Plan (Travis AFB, 2016d)

- 1 • Travis AFB Asbestos Management Plan (Travis AFB, 2004)
- 2 • Travis AFB Lead-Based Paint Management Plan (Travis AFB, 2013b)
- 3 • AFI 32-7042 Waste Management (USAF HQ, 2014)
- 4 • AFI 32-7086 Hazardous Materials Management (USAF HQ, 2015)

5 Activities under all 14 Proposed Actions would comply with these guidelines, and compliance with
6 hazardous materials and waste management procedures would minimize potential impacts.

7 The following thresholds were used to determine if an impact to hazardous materials would be
8 significant:

- 9 • Impacts constitute a substantial risk to human health or an environmental exposure;
- 10 • Impacts would substantially increase solid waste or increase the quantity or toxicity of
11 hazardous substances used or generated; or,
- 12 • Impacts would change the quantity or types of hazardous substances or solid waste in such a
13 way that current management systems cannot accommodate the change.

14 **4.8.1 Proposed Actions**

15 ***4.8.1.1 Hazardous Material and Petroleum Products***

16 Demolition, construction, and renovation/repair activities associated with the 14 Proposed Actions
17 would result in short- and long-term, negligible, adverse impacts on hazardous materials and
18 petroleum products. Any hazardous materials or petroleum products proposed for use during the
19 construction or maintenance would be authorized and approved through the Travis AFB HMMP.
20 Implementation of processes established for proper hazardous materials and petroleum products
21 management during demolition, construction, and renovation/repair would reduce any potential
22 adverse impact that would result from a spill or release. All hazardous materials and petroleum
23 products would be managed in accordance with applicable USAF regulations and federal, state, and
24 local requirements as well as the Travis AFB HWMP and ICP.

25 ***4.8.1.2 Hazardous and Petroleum Wastes***

26 Demolition, construction, and renovation/repair activities associated with the 14 Proposed Actions
27 would result in short- and long-term, negligible, adverse impacts on hazardous and petroleum wastes.
28 Small quantities of hazardous wastes would be generated from proposed demolition, construction,
29 and renovation/repair projects. Equipment used in demolition, construction, and renovation/repair
30 activities could result in spilled petroleum, oils, or fuel; however, such spills would be immediately
31 contained and remediated in accordance with the Travis AFB ICP and the HWMP so that no
32 substantial contamination could occur. Disposal of all hazardous and petroleum wastes would be in
33 accordance with federal, state, and local laws and regulations, and the Travis AFB HWMP. This
34 increase in generation of hazardous waste would not be expected to affect the management plans or
35 capacities for handling this waste.

36 ***4.8.1.3 Environmental Restoration Program***

37 Coordination with the Travis AFB ERP Manager would be undertaken prior to any demolition,
38 construction, and renovation/repair activities to ensure suitability of proceeding with Proposed
39 Actions with regard to status of ERP site cleanups near proposed project sites.

40 Short-term, minor, adverse impacts on the ERP would be associated with Proposed Action D1
41 (former WWTP) since the project involves the excavation of some structures that that may possibly
42 encounter contaminated groundwater during demolition activities. Excavation and any associated
43 dewatering activities during the demolition would be coordinated with the Travis AFB ERP Manager

1 to ensure proper worker safety and environmental controls are implemented and groundwater
2 generated from dewatering activities is properly managed and disposed.

3 Short-term, negligible, adverse impacts on the ERP would be associated with Proposed Action D9
4 (Building 891) since any demolition-related excavation poses little risk of contact with groundwater
5 contamination, and soil disturbance activities associated with the demolition of the buildings and any
6 associated underground piping would adhere to applicable land use control provisions contained in
7 the NEWIOU Soil ROD. Activities would be coordinated with the Travis AFB ERP Manager to
8 ensure proper worker safety and environmental controls are implemented.

9 No impacts to ERP would be expected from the implementation of the other 12 Proposed Actions.

10 **4.8.1.4 Special Hazards (Asbestos, Lead Based Paint, PCBs)**

11 *Asbestos*

12 USAF regulations prohibit the use of ACM for new construction; therefore, there would be no adverse
13 impacts from ACM during new construction activities (C1-C4). The buildings in 8 of the 9 demolition
14 projects (D1, and D3-D9) are of an age in which ACM could be present. All buildings proposed for
15 demolition or renovation (D1-D9 and R1) would be surveyed for ACM prior to commencing
16 demolition or renovation activities. The removal of friable ACM would be performed by a licensed
17 asbestos abatement contractor and all notification and abatement would be done according to federal,
18 state, and USAF regulations.

19 *Lead-Based Paint*

20 USAF regulations prohibit the use of LBP for new construction; therefore, there would be no adverse
21 impacts from LBP during construction activities associated with the Proposed Actions (C1-C4). The
22 buildings in 8 of the 9 demolition projects (D1, and D3-D9) are of an age in which LBP could be
23 present. All buildings proposed for demolition or renovation (D1-D9 and R1) would be surveyed for
24 LBP prior to commencing demolition or renovation activities. All LBP abatement would be
25 performed according to federal, state, and USAF regulations.

26 *PCBs*

27 PCBs are not used during construction activities according to USAF regulations; therefore, there
28 would be no adverse impacts from PCBs during construction activities associated with the Proposed
29 Actions (C1-C4). PCBs are found in electrical equipment such as transformers and capacitors,
30 hydraulic systems, and fluorescent light ballasts. There is the potential to encounter PCBs in the
31 buildings proposed for demolition and renovation (D1-D9 and R1). Surveys of these buildings for
32 PCBs would occur prior to any demolition or renovation activities and the removal and disposal of
33 PCBs would be conducted according to all federal, state, and USAF regulations.

34 **4.8.1.5 Radon**

35 No impacts on radon would be expected from the implementation of any of the 14 Proposed Actions
36 since Travis AFB is in a Zone 3 radon zone with predicted average indoor radon screening levels less
37 than 2 pCi/L.

38 **4.8.2 No Action Alternatives**

39 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
40 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished. Facilities currently
41 containing hazardous materials such as asbestos and LBP would not be remediated. This would result
42 in an insignificant adverse effect.

1 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
2 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
3 would not be constructed.

4 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
5 Bunker B Area.

6 As no construction, or renovation/repair activities would be conducted under the No Action
7 Alternatives, there would be no potential to affect hazardous materials. Therefore, no significant
8 impacts would be expected.

9 **4.9 Transportation**

10 **4.9.1 Proposed Actions**

11 Impacts on transportation are evaluated based on their potential for disruption or improvement of
12 existing transportation patterns and circulation. Impacts might arise from physical changes to
13 circulation, construction activities, introduction, and usage of construction-related traffic on local
14 roads or changes in daily or peak-hour traffic volumes, and needs created by either direct or indirect
15 workforce and population changes related to installation activities. An effect might be considered
16 significant if a proposed action resulted in any of the scenarios identified above.

17 **4.9.1.1 Transportation**

18 *4.9.1.1.1 Airfield*

19 Proposed Actions D2, D5, D8, D9, and C2-C4, and R1 would not affect the Travis AFB Airfield.
20 Proposed Actions DI, D3, D4, D6, D7, and C1 could affect the Travis AFB airfield operations as they
21 are situated within the airfield operations CZ (**Figure 2-1**). Proposed Actions within the CZ must be
22 coordinated well in advance to ensure safe operations of both aircraft and the equipment in use for
23 the duration of the demolition and construction work. Work within the CZ could generate short-term,
24 adverse impacts to the airfield if not minimized through proper coordination.

25 *4.9.1.1.2 Roadway/ Streets*

26 Each of the 14 Proposed Actions would require delivery of materials to, and removal of debris from,
27 the proposed sites. This traffic would compose a small percentage of the total existing traffic entering
28 and exiting the Base and would be concentrated along the SR 12 corridor due to predominant use of
29 the South Gate by commercial traffic. As none of the Proposed Action activities would cause an
30 increase in permanent military, civilian, or contract personnel assigned to Travis AFB, the increase in
31 traffic would be temporary and limited to the individual durations of each project which are anticipated
32 to occur over a five-year period. Therefore, impacts to roadways off the Base would be short-term,
33 direct, negligible, adverse impacts.

34 *Vehicular Entry Control Facilities*

35 Short-term, direct, minor, adverse impacts are expected at the ECF located at the South Gate due to
36 increased commercial traffic associated with each of the 14 Proposed Actions. The ECF was renovated
37 to accommodate increased commercial traffic queues in 2016 and the negligible increase in volume of
38 commercial traffic generated by the activities which are anticipated to occur over a five-year period
39 are unlikely to exceed that increased queueing capacity.

40 *Internal Road Network*

41 The 14 Proposed Actions would occur at various times and locations on Travis AFB over a five-year
42 period. As a result, the internal roadways would be expected to experience increased traffic and parking
43 lot use associated with demolition and construction activities, staging of equipment, and contractor
44 vehicles. The most notable temporary impact to internal transportation would be associated with the

1 temporary haul road required to transport the C-5 airframe to the static display location under C1. In
2 addition to constructing a temporary haul road, Challenger Lane would be unavailable to typical traffic
3 during the operation as well as a large portion of the parking lot between Inner Perimeter Road and
4 Airlift Drive (**Figure 2-7**). Any potential increases in traffic volume associated with the proposed
5 demolition and construction activities would be temporary, and installation-wide traffic changes due
6 to intermittent road or parking area closures would be communicated to installation staff via electronic
7 signs, bulletins, and memos in advance.

8 Some vehicle trips would be permanently rerouted within the Base due to demolition activities under
9 the Proposed Action. These include demolition of Building 819 (D5) and Building 1 (D6) since they
10 are currently occupied, and their occupants would require relocation to another existing facility within
11 Travis AFB.

12 Impacts to the internal road network resulting from the activities included in the Proposed Action
13 would be short-term, direct, minor, adverse impacts.

14 **4.9.2 No Action Alternatives**

15 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
16 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

17 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
18 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
19 would not be constructed.

20 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
21 Bunker B Area.

22 New construction traffic would not be generated by implementation of the No Action Alternatives
23 and existing transportation patterns and capacity would be expected to remain the same; no significant
24 impacts would be expected under the No Action Alternatives.

25 **4.10 Infrastructure**

26 Impacts on infrastructure are evaluated based on their potential for disruption or improvement of
27 existing levels of service and additional needs for energy and water consumption, sanitary sewer, and
28 wastewater systems. Impacts might arise from utility needs created by either direct or indirect
29 workforce and population changes related to installation activities. An effect might be considered
30 adverse if a proposed action exceeded capacity of a utility. A proposed action could have a significant
31 effect with respect to infrastructure if the following were to occur:

- 32 • Exceed capacity of a utility
- 33 • Long-term interruption of the utility
- 34 • Violation of a permit condition
- 35 • Violation of an approved plan for that utility

36 **4.10.1 Proposed Actions**

37 **4.10.1.1 Electrical**

38 Short-term, negligible, adverse impacts on the electrical system would be expected during activities
39 associated with all 14 Proposed Actions. Short-term electrical interruptions could be experienced
40 when facilities are disconnected from or connected to the Travis AFB electrical distribution system.
41 However, the discontinuation of electrical services would be temporary and coordinated with area
42 users prior to disconnection.

1 Long-term, minor, beneficial impacts on electrical systems would be expected from Proposed Actions
2 D1-D9 by demolishing old facilities with outdated electrical systems, construction of new facilities
3 with updated electrical systems (C1-C4) and updating electrical systems during renovations (R1).

4 Long-term, minor, adverse impacts on the electrical system would occur from an increase in electrical
5 demand associated with new facilities (C1-C4).

6 **4.10.1.2 Communications**

7 Short-term, negligible, adverse impacts on the communications systems at Travis AFB would be
8 expected from implementation of all 14 Proposed Actions. Short-term interruptions could be
9 experienced when facilities and buildings are disconnected from and connected to the
10 communications systems during demolition, construction, and renovation/repair activities. However,
11 work on the communications systems would be temporary and coordinated with area users prior to
12 the start of work activities.

13 Long-term, minor, beneficial impacts on communication systems would be expected from
14 implementation of Proposed Actions D1-D9 due to removal of outdated communications systems
15 and introduction and use of new upgraded communications systems associated with renovation and
16 construction (C2, C3, and R1).

17 No impacts to communications systems would be anticipated from implementation of Proposed
18 Actions (C1 and C4) since no communications systems are present or proposed.

19 **4.10.1.3 Heating/Cooling**

20 Short-term, negligible, adverse impacts on heating/cooling systems would be expected during
21 construction, renovation, and demolition activities associated with all 14 Proposed Actions. Short-
22 term interruptions of heating/cooling systems could be experienced when facilities are disconnected
23 from or connected to Travis AFB heating/cooling systems. However, disruption of heating/cooling
24 systems would be temporary and coordinated with area users prior to disconnection.

25 Long-term, minor, beneficial impacts on heating/cooling systems would be expected from the
26 Proposed Actions by demolishing old facilities with outdated heating/cooling systems (D2-D9),
27 construction of new facilities with updated, more energy-efficient heating/cooling systems (C2 and
28 C3).

29 No impacts to heating/cooling systems would be anticipated from implementation of Proposed
30 Actions D1, C1, C4 and R1 since no heating/cooling systems are present or proposed.

31 **4.10.1.4 Liquid Fuels**

32 There would be no expected effect on the liquid fuels infrastructure due to implementation of any of
33 the 14 Proposed Actions.

34 **4.10.1.5 Natural Gas**

35 Short-term, negligible, adverse effects on the natural gas infrastructure would be expected during
36 demolition and construction associated with all 14 Proposed Actions. Short-term interruptions could
37 be experienced when buildings are disconnected from or connected to the Travis AFB natural gas
38 infrastructure. The discontinuation of natural gas services would be temporary and coordinated with
39 area users prior to disconnection.

40 Long-term, negligible, beneficial effect on the natural gas infrastructure would be expected due to
41 implementation of the Proposed Actions due to removal of outdated natural gas systems associated
42 with demolition (D2-D9) and introduction and usage of new upgraded natural gas systems associated
43 with construction (C2 and C3).

4.10.1.6 Sanitary Sewer

Short-term, negligible, adverse impacts on the sanitary sewer system would be expected from the Proposed Actions (D2-D9, C2 and C3). Short-term interruptions could be experienced when facilities are disconnected from or connected to the sanitary sewer system. However, disruption of components of the sanitary sewer system would be temporary and coordinated with area users prior to starting the work.

Long-term, negligible, beneficial impacts on the sanitary sewer system are expected from Proposed Actions D2-D9, C2 and C3) due to the increase in water use efficiency associated with construction of new modern facilities and removal of old facilities from the sanitary sewer system.

D1, D4, C1, C4 and R1 would not be expected to have any effects on the sanitary sewer system.

4.10.1.7 Stormwater

Short-term, negligible, adverse effects would be expected from Proposed Actions (D2-D9, C2, C3, and R1). Temporary disturbance of the stormwater systems could be experienced during project activities. Adverse effects to the stormwater system would be minimized through the installation, implementation, and maintenance of BMPs in accordance with the Travis AFB SWPPP for land disturbance activities of less than one acre (D2, D3, D4, D7, D8, D9, and C4) or a site-specific construction permit for land disturbance activities of one acre or more (D1, D5, D6, C1, C2, C3, and R1). Refer to **Section 6.6.2** for associated BMPs.

Long-term, negligible, adverse impacts to the stormwater system would be expected due to an increase of impervious surface area (144,104 SF) associated with Proposed Actions C1-C4 and R1. Adverse impacts would be partially offset by demolition of approximately 36,244 SF of existing impervious areas associated with the existing facilities (D1-D9). In addition, adverse impacts would be minimized through the use of federally required design practices that require project sites maintain or restore predevelopment site hydrology.

4.10.1.8 Solid Waste

Short-term, minor, adverse impacts would result from increased C&D debris generation associated with all 14 Proposed Actions. Solid waste generated from project activities would consist of building materials such as concrete, asphalt, sheet rock, scrap metals, and lumber. Contractors would be required to recycle C&D debris to the maximum extent practicable in accordance with applicable Air Force policies and the installation ISWMP, thereby diverting it from landfills. The contractor would dispose of non-recyclable C&D debris at an offsite permitted landfill facility, which would have a long-term, negligible, adverse effect on solid waste management by permanently using landfill capacity because of solid waste generation.

As indicated in **Table 4-9** below, approximately 22,402 tons of solid waste would be generated from implementing all 14 Proposed Actions. Clean C&D debris (e.g., concrete, asphalt) would be ground, recycled, and used for fill and roadwork rather than disposed of in a landfill, whenever possible.

Table 4-9 Anticipated Generation of Construction and Demolition Debris

Proposed Projects Addressed in this IDEA	Project Size (SF)	Total C&D Waste Generated	
		Pounds	Tons
D1 - Demolish Infrastructure Associated with former WWTP	13,412	2,119,096	1,060
D2 - Demolish Building 927	7,200	1,137,600	569
D3 - Demolish Building 1115	428	67,624	34
D4 - Demolish Building 1201	18,215	2,877,970	1,439

Proposed Projects Addressed in this IDEA	Project Size (SF)	Total C&D Waste Generated	
		Pounds	Tons
D5 - Demolish Building 819	39,000	6,162,000	3,081
D6 - Demolish Building 1	161,000	25,438,000	12,719
D7 - Demolish Building 1182	276	43,608	22
D8 - Demolish Building 1332	25,120	3,968,960	1,984
D9 - Demolish Building 891	988	156,104	78
C1 – Construct C-5 Galaxy Static Display	55,000	241,450	121
C2 - Construct New WRM Warehouse and New Patient and Staff Parking Area	95,533	419,390	210
C3 - Construct New Youth Center	30,104	132,157	66
C4 - Construct RV Storage Area	98,450	432,196	216
R1 - Bunker B Area Roof and Electrical Repair, Security Gate Upgrade, and Perimeter Lighting Addition	148,422	1,608,895	804
TOTAL			22,402

- 1 Demolition waste multiplier = 158 pounds/ SF
2 Construction waste multiplier = 4.39 pounds/ SF
3 Renovation waste multiplier = 10.84 pounds/SF
4 Source: USEPA 2009.
5

6 **4.10.1.9 Potable Water**

7 Short-term, negligible, adverse effects on the water supply systems would be expected from all 14
8 Proposed Actions. Short-term interruptions could be experienced when buildings are disconnected
9 from or connected to the Travis AFB water supply system. Any potential disruption of components
10 of the water supply system would be temporary and coordinated with area users prior to starting the
11 work. Construction water needs would be limited and have a negligible effect on the installation's
12 water supply system. Water necessary for construction would be obtained from the existing water
13 supply system.

14 Long-term, minor, beneficial impacts on the water supply system would be expected from all nine
15 demolition Proposed Actions due to removal of outdated water system fixtures and the introduction
16 and use of new upgraded water system fixtures associated with construction of new facilities C2 and
17 C3.

18 C1, C4, and R1 would not be expected to have any effects on the potable water system.

19 The Proposed Actions do not include an increase in personnel; therefore, no long-term increase in
20 water consumption would be expected.

21 **4.10.2 No Action Alternatives**

22 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
23 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

24 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
25 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
26 would not be constructed.

1 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
2 Bunker B Area.

3 Implementation of the No Action Alternatives would not be expected to result in significant impacts
4 as current infrastructure present on Travis AFB would remain the same.

5 **4.11 Land Use**

6 The significance of potential land use impacts is based on the level of land use sensitivity in areas
7 affected by a proposed action and the compatibility of proposed actions with existing conditions. In
8 general, a land use impact would be significant if it were to cause the following:

- 9 • Be inconsistent or in noncompliance with future land use plans or policies
- 10 • Preclude the viability of existing land use
- 11 • Preclude continued use or occupation of an area
- 12 • Be incompatible with adjacent land use to the extent that public health or safety is threatened
- 13 • Conflict with planning criteria established to ensure the safety and protection of human life and
14 property
- 15 • Interfere with the use or function or otherwise diminish the value of recreation areas.

16 **4.11.1 Proposed Actions**

17 All 14 Proposed Actions further goals and objectives included in the IDP to ensure continued mission
18 efficiency. Several demolition projects (D1, D3- D7, and D9) would further the goals of the IDP by
19 removing non-airfield dependent structures from the North/South Flightline and Airfield Planning
20 Districts. Additionally, demolition of obsolete infrastructure would provide opportunities for
21 redevelopment of areas in line with their future Planning District goals by making land available for
22 potential infill development. Each construction Proposed Action (C1-C4) would locate new facilities
23 adjacent to similar or co-dependent uses within appropriate Planning Districts. Renovating the existing
24 bunkers (R1) limits the impact of the explosive safety quantity distance within other Planning Districts.

25 Impacts to the Land Use at Travis AFB resulting from each Proposed Action would be long-term,
26 direct, minor, and beneficial.

27 **4.11.2 No Action Alternatives**

28 Under the No Action Alternatives (D10-D18), the former WWIP Infrastructure and Buildings 927,
29 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished.

30 Under the No Action Alternatives C1-3, C2-2, C3-7 and C4-4, the proposed C-5 Galaxy Static Display,
31 WRM Expansion and New Patient and Staff Parking Area, New Youth Center, and RV Storage Area
32 would not be constructed.

33 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
34 Bunker B Area.

35 As no demolition, construction, or renovation/repair activities would occur under the No Action
36 Alternatives existing conditions would remain the same. Non-Airfield dependent structures (Project
37 IDs D1, D3, D4, D6, and D7) would remain in the North/South Flightline and Airfield Planning
38 Districts, and obsolete infrastructure (Project IDs D2, D5, D8, and D9) would continue to exist in
39 their current locations. Therefore, no significant impacts would be expected.

40 **4.12 Safety**

41 Impacts on safety would be considered significant if human health would be placed in jeopardy or
42 undue risk by the implementation of the Proposed Actions.

4.12.1 Proposed Actions

4.12.1.1 Ground Safety

Operations and maintenance procedures, as they relate to ground safety, are conducted by installation personnel and would not change from current conditions. Activities under each of the 14 Proposed Actions would continue to be conducted in accordance with applicable regulations, technical orders, and AFOSH standards. No aspects of the Proposed Actions at Travis AFB are expected to create new or unique ground safety issues.

4.12.1.2 AT/FP

The AT/FP security program would continue in accordance with regulations and force protection standards at Travis AFB.

Long-term, minor, beneficial effects would occur with newly constructed buildings (Projects C1-C4) and addition of the security gate and perimeter lighting to the Bunker B Area (R1) in compliance with current AT/FP requirements (DoD 2013) and demolition of obsolete facilities (Projects D1-D9) removing structures that do not comply with current AT/FP requirements.

4.12.1.3 Explosives and Munitions

The explosives and munitions safety program at Travis AFB would continue to be conducted in accordance with AFMAN 91-201.

Short-term, minor, adverse effects could occur during proposed renovation/repair activities within the ESQD arc associated with Bunker B (R1). Contractors working within an ESQD arc could be at an increased risk of potential explosions. Coordination with the installation Safety Office would occur to prevent handling or transportation of hazardous materials within ESQD arcs while construction workers are in these areas. This would minimize explosive safety risks to construction workers. Any construction activities within the existing munitions storage area should be monitored for potential unexploded ordnance (UXO). All proposed projects within ESQD arcs would be mission-necessary and consistent with current land uses inside established QD arcs.

Renovation/Repair of the ECMs within the Bunker B Area (R1) would have a long-term, minor, positive impact on explosives and munitions safety at Travis AFB by bringing the bunkers into compliance with safety requirements under AFMAN 91-201 5.58.1.

Proposed Actions D1-D9, and C1-C4 would have no effect on explosive and munitions at Travis AFB.

4.12.1.4 Construction

Each of the 14 Proposed Actions would result in short-term, minor, adverse impacts on health and safety during project activities.

Construction activities on Travis AFB are conducted in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by AFOSH Program. Construction contractors are also required to follow applicable OSHA requirements. Construction activities on the Base are required to have appropriate Site Safety Plans detailing safety policies and procedures. During construction and demolition, most ground safety issues would be associated with the potential for slips, trips, falls, unfamiliar working environments, and task-specific hazards such as working with hand tools, power tools, and heavy equipment. Construction is an inherently dangerous activity due to the use of large, powerful, and noisy pieces of equipment; however, hazards would be minimized with BMPs (refer to **Section 6.7.2**) at each phase of each project to help ensure the safety of all involved. Clear demarcation of the work area as well as fencing would be needed to keep construction activities and debris in the construction area and bystanders out of the potentially dangerous work areas. Construction employees would be given the proper training to identify hazards as well as all necessary PPE to do their jobs safely. The PPE would include hard hats, steel toed boots,

1 hearing protection, work gloves, reflective vests, safety harnesses, signaling flags, communication
2 devices and any other equipment deemed necessary. The use of PPE and signage at the construction
3 site would protect workers and bystanders from sharp or heavy tools and construction materials, loose
4 construction debris, large and noisy moving equipment, as well as biological hazards such that an
5 increase in the number or severity of construction accidents would not be expected under the 14
6 Proposed Actions.

7 **4.12.1.5 Flight Safety**

8 Current safety policies and procedures at the Base ensure the lowest possible potential for aircraft
9 mishaps. These safety policies and procedures would continue upon implementation of any of the 14
10 Proposed Actions. UFC 3-260-01 would continue to limit the location and heights of objects (i.e.,
11 buildings) in the immediate vicinity (i.e., CZ and APZs) of the Travis AFB airfield.

12 Demolishing the former WWTP infrastructure and Buildings 1115, 1201, 1, and 1182 (D1, D3, D4,
13 D6, and D7) would have a positive impact on flight safety by removing structures from the CZs and
14 APZs.

15 Projects D2, D5, D8, D9, C1-C4, and R1 would have no effect on Flight Safety.

16 **4.12.2 No Action Alternatives**

17 Under the No Action Alternatives (D10-D18), the former WWTP Infrastructure and Buildings 927,
18 1115, 1201, 819, 1, 1182, 1332, and 891 at Travis AFB would not be demolished. The former WWTP
19 and Buildings 1115, 1201, 1, and 1182 (Projects D1, D3, D4, D6, and D7) would continue to require
20 permanent CZ waivers IAW UFC 3-260-01. Buildings 927, 1115, 819 and 1182 (Projects D2, D3, D5
21 and D7) would remain in poor, unstable condition. Not implementing Proposed Actions D8 and D9
22 would have no significant impact on safety at Travis AFB.

23 Under the No Action Alternatives C1-3, C2-2, and C4-4, the proposed C-5 Galaxy Static Display,
24 WRM Expansion and New Patient and Staff Parking Area and RV Storage Area would not be
25 constructed; no significant impacts would be expected. The New Youth Center (C3-7) would not be
26 constructed and the current youth center would continue to be out of compliance with USAF safety
27 regulations and have fire safety deficiencies.

28 Under No Action Alternative R1-4, there would be no renovation or repair activities conducted in the
29 Bunker B Area. Conditions of the Bunkers and electrical system in the Bunker B Area (R1) would
30 remain poor and in violation of AFMAN 91-201, and the lack of perimeter lighting would be in
31 violation of AFI 31-101.

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5.0 CUMULATIVE IMPACTS/IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 Cumulative Impacts

The CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental consequences resulting from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7).

Actions that have a potential to interact with the proposed actions at Travis AFB are included in this cumulative effect analysis. This approach enables decision makers to have the most current information available so that they can evaluate the range of environmental consequences that would result from implementation of the proposed actions at Travis AFB.

In this chapter, the USAF has identified past and present actions in the region of Travis AFB. In addition, this analysis also evaluated reasonably foreseeable future actions that are in the planning phase in this region.

The assessment of cumulative effects begins with defining the scope of other project actions and the potential interrelationship with the proposed action (CEQ 1997). The scope of the analysis must consider other projects that coincide with the location and timetable of implementation of the proposed projects at Travis AFB. Cumulative effects can arise from single or multiple actions and through additive or interactive processes acting individually or in combination with each other. Actions that are not part of the proposal, but that could be considered as actions connected in time or space (40 CFR 1508.25) (CEQ 1997), could include projects that affect areas on or near Travis AFB. This analysis addresses three questions to identify cumulative effects:

1. Does a relationship exist such that elements of the proposed action or alternatives might interact with elements of past, present, or reasonably foreseeable actions?
2. If one or more of the elements of the alternatives and another action could be expected to interact, would the alternative affect or be affected by impacts of the other action?
3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the alternative is considered alone?

For the proposed actions under consideration to have cumulatively significant impacts on an environmental resource, two conditions must be met. First, the combined impacts of all identified past, present, and reasonably foreseeable projects, activities, and processes on a resource, including the impacts of the proposed action, must be significant. Second, the proposed action must make a substantial contribution to that significant cumulative impact. Proposed actions of limited scope do not typically require as comprehensive an assessment of cumulative impacts as proposed actions that have significant environmental impacts over a large area (CEQ 2005).

In the following sections, the cumulative significance is based on the context, intensity, and timing of the projects discussed in **Chapter 4**, related to the past, present, and reasonably foreseeable actions. A summary of the cumulative effects is provided in a table, followed by a discussion of the resource areas that have potentially significant cumulative effects based on the above evaluation criteria.

5.1.1 Past, Present, and Reasonably Foreseeable Actions

This section provides decision makers with the cumulative effects of the projects proposed at Travis AFB, as well as the incremental contribution of past, present, and reasonably foreseeable actions.

Table 5-1 summarizes past, present, and reasonably foreseeable actions within the region that could interact with implementation of the proposed projects at Travis AFB. **Table 5-1** briefly describes each

1 identified action, presents the proponent or jurisdiction of the action and the timeframe (e.g.,
 2 present/ongoing, future), and indicates which resources could potentially interact with the projects at
 3 Travis AFB. No other actions were identified during the data gathering and field survey phases at
 4 Travis AFB for this IDEA.

5
 6 For the purposes of this analysis, past project activities are defined as actions that occurred on the
 7 installation earlier than the 5-year timeframe before the Proposed Actions (i.e., occurred earlier than
 8 FY 2013) that have shaped the current environmental conditions of the installation project areas. For
 9 many resource areas, such as biological resources, infrastructure, and hazardous materials and waste,
 10 the effects of past actions are now part of the existing environment and are incorporated in the
 11 descriptions of the affected environment in **Chapter 3**.

12 Therefore, past actions will not be considered further for cumulative impacts analysis.

13 **Table 5-1 Present, and Reasonably Foreseeable Actions at Travis AFB and Associated**
 14 **Region**

Action	Proponent/ Location	Timeframe	Description	Resource Interaction
Military Actions				
Transportation Working Capital Fund	Travis AFB	present, future	Repair parking ramp PH-2-PH-11; construct new weigh-in motion scale system; renovate room 107 for hydraulic test equipment in Hanger 16; construct catwalks for fuel tanks in Building 564; replace 7.5-ton overhead crane in Building 818; renovate first floor restroom in Building 977; repair HVAC units and exhaust system in Building 803; repair hangar doors in Buildings 837 and 810; repair broken windows in Building 810; repair insufficient interior lighting in Building 812; design fire suppression systems in Building 800 area.	water, air quality
KC-46A Beddown	Travis AFB	future	Currently being considered as an alternative location for beddown of KC-46A aircraft.	Transportation, infrastructure, land use, water resources, and biological resources.
State and Local Actions				
Bogle Wind Turbine Project	Yolo County	future	Construct and operate a single wind turbine that would generate up to 2.3 megawatts of electricity used to power the Bogle wine production facility (Yolo County 2017).	noise, biological resources
Roberts' Ranch Master Planned Community	City of Vacaville	future	Construct Robert's Ranch, a 248-acre master planned community within the East of Leisure Town Growth Area in the City of Vacaville. This	biological resources, socioeconomics,

Action	Proponent/ Location	Timeframe	Description	Resource Interaction
(City of Vacaville 2017)			community will offer a variety of housing choices within a planned system of parks and trails providing connections throughout the project, with a buffer sensitive to nearby agriculture.	
Vine Glen Estates	City of Vacaville	future	Construct 145 residential lots on a 9-acre site	biological resources, socioeconomics, land use
Bay Delta Conservation Plan (CDWR 2016)	Sacramento-San Joaquin Delta (Delta), east of Travis AFB.	future	Plan proposes to use canals or tunnels to convey 15,000-cubic feet per second of water from the Sacramento River (north delta) to Clifton Court Forebay (south delta).	biological resources, socioeconomics, soils, and geology

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5.1.2 Cumulative Impacts Analysis

This section evaluates the cumulative effects from the past, present and reasonably foreseeable future actions (see **Table 5-1**) and the proposed projects at Travis AFB. **Table 5-2** provides a summary of the cumulative effects. As shown in **Table 5-2**, safety, cultural resources, and land use are not anticipated to contribute to cumulative effects. Cumulative effects are discussed for noise, air quality, biological resources, earth resources, and water resources.

Table 5-2 Summary of Cumulative Effects for Travis AFB

Resource Area	Infrastructure Development Projects	Present and Reasonably Foreseeable Actions	Cumulative Effects
Noise	■	■	■
Air Quality	■	■	■
Biological Resources	■	■	■
Cultural Resources	○	○	○
Earth (Geological Resources)	■	■	■
Recreation and Visual	○	○	○
Water Resources	■	■	■
Hazardous Materials	○	○	○
Transportation and Infrastructure	○	○	○
Land Use	○	○	○
Safety	○	○	○
Socioeconomics	○	○	○

Resource Area	Infrastructure Development Projects	Present and Reasonably Foreseeable Actions	Cumulative Effects
Environmental Justice	○	○	○

1 Key: ○ – not affected or beneficial impacts, ■ - affected but not significant, short to medium term impacts that range from
 2 low to high intensity

3 **5.1.2.1 Noise**

4 Due to the short-term nature of the demolition, construction, and renovation/repair activities, the
 5 likelihood of past, present, or reasonably foreseeable future actions causing significant adverse
 6 cumulative impacts to noise affecting Sensitive Receptors at Travis AFB (the DGMC, Travis Child
 7 Development Center, Travis Youth Center, Twin Peaks Chapel, Base Housing, Unaccompanied
 8 Housing, and the Temporary Lodging Facility) is low. No significant adverse cumulative impacts on
 9 noise levels would be expected.

10 **5.1.2.2 Air Quality**

11 The entire action area is within Travis AFB, and no state or private actions are planned or are likely
 12 to occur within this USAF installation that would not include a federal nexus. The Proposed Actions
 13 include demolition, construction, and renovation/repair activities that will occur over a limited period
 14 (estimated one to five years) and would not have a cumulative effect on air quality in the San Francisco
 15 Bay Area. The projects would result in short-term, intermittent increases in air pollutant levels during
 16 those phases of work. The estimated emissions from the Proposed Actions are not significant based
 17 on the location, intensity, and timing of the projects. No significant long-term cumulative impacts on
 18 air quality are expected from the Proposed Actions.

19 Potential incremental impacts of the Proposed Actions on air quality must be considered, ‘when added
 20 to other past, present and reasonably foreseeable future actions regardless of what agency or person
 21 undertakes such other actions.’ The potential effects of GHG emissions are by nature global and
 22 cumulative impacts, as worldwide sources of GHGs contribute to climate change. The USAF and
 23 Travis AFB take proactive measures to reduce their overall emissions of GHGs.

24 **5.1.2.3 Biological Resources**

25 The demolition and repair projects described in **Tables 1-1 and 2-1** would be anticipated to have
 26 similar types of impacts to vegetation, wildlife, and special status species as those impacts described
 27 for the proposed infrastructure development projects. Cumulative impacts resulting from
 28 implementation of the proposed infrastructure development in conjunction with present and
 29 reasonably foreseeable future actions on biological resources at Travis AFB would not be significant.

30 **5.1.2.4 Earth (Geological Resources)**

31 Demolition, construction, and renovation/repair activities and demolition projects associated with the
 32 Proposed Actions would take place near other ongoing and future construction and demolition
 33 projects during the same time periods. These projects have been and will continue to be a regular
 34 occurrence on and near installations such as Travis AFB.

35 These construction projects would increase the amount of soil disturbed and have the potential to
 36 increase erosion and sedimentation into surface water features. Cumulative impacts resulting from
 37 implementation of the proposed infrastructure development projects in conjunction with present and
 38 reasonably foreseeable future actions on the soil resources at Travis AFB would not be significant.

39 **5.1.2.5 Water Resources**

40 The Proposed Actions could result in impacts to water resources during demolition, construction, and
 41 renovation/repair activities. Earth-moving activities associated with multiple construction projects

1 occurring simultaneously could affect water resources by decreasing the quality of surface water runoff
2 during storm events. Travis AFB currently has a Basewide stormwater permit for industrial activity
3 and a Basewide SWPPP (Travis AFB, 2017e). Impacts from multiple actions would be reduced to less
4 than significant levels by adhering to the Basewide permits and programs that are currently in place
5 and would be implemented under the Proposed Actions. MS4 Phase II permit requirements, Section
6 F.5.g.2 *Low Impact Development (LID) Design Standards*, will be implemented to effectively reduce runoff
7 and pollutants associated with runoff from development projects. These include regulated sites
8 (greater than 5,000 square feet of created/replaced impervious surface) with the following project
9 requirements:

10 (a) Where a redevelopment project results in an increase of more than 50 percent of the
11 impervious surface of a previously existing development, runoff from the entire project,
12 consisting of all existing, new, and/or replaced impervious surfaces, must be included to the
13 extent feasible.

14 (b) Where a redevelopment project results in an increase of less than 50 percent of the
15 impervious surface of a previously existing development, only runoff from the new and/or
16 replaced impervious surface of the project must be included.

17 A construction SWPPP would be prepared for each project. Consequently, no significant cumulative
18 impacts are anticipated. No changes to floodplains or wastewater would occur with implementation
19 of the Proposed Actions; therefore, the Proposed Actions when combined with other present or
20 reasonably foreseeable projects on Travis AFB would not be cumulatively significant and no
21 cumulative impacts would occur.

22 **5.2 Irreversible and Irrecoverable Commitment of Resources**

23 The irreversible environmental changes that would result from implementation of the Proposed
24 Actions at Travis AFB involve the consumption of material resources and energy resources. The use
25 of these resources is considered permanent. Irreversible and irretrievable resource commitments are
26 related to the use of nonrenewable resources and the impacts that use of these resources will have on
27 future generations. Irreversible impacts primarily result from use or destruction of a specific resource
28 that cannot be replaced within a reasonable timeframe (e.g., energy and minerals).

29 Irrecoverable resource commitments also involve the loss in value of an affected resource that cannot
30 be restored because of the action. For the Proposed Actions at Travis AFB, most resource
31 commitments would be neither irreversible nor irretrievable. Most impacts would be short-term and
32 temporary (e.g., air emissions from construction), or longer lasting but negligible. Those limited
33 resources that could involve a possible irreversible or irretrievable commitment would be used in a
34 beneficial manner.

35 The Proposed Actions would require the consumption of limited amounts of material typically
36 associated with interior renovations (wiring, insulation, windows, and drywall) and exterior
37 construction (concrete, steel, sand, mortar, brick, and asphalt). An undetermined amount of energy to
38 conduct demolition, construction, renovation/repair, and operation of these facilities would be
39 expended and irreversibly lost, but energy would be used in an efficient and sustainable manner
40 throughout the useful life cycle of the facilities. Additionally, demolition of older, deteriorating
41 buildings would free up energy resources used to maintain and operate these facilities.

42 The Proposed Actions would continue to involve the consumption of nonrenewable resources, such
43 as gasoline used in vehicles and equipment. None of these activities are expected to significantly
44 decrease the availability of minerals or petroleum resources. Personal vehicle use by construction
45 contractors and those continuing to support the existing missions would consume fuel, oil, and
46 lubricants. The amount of these materials used would increase slightly; however, this additional use is

1 not expected to significantly affect the availability of the resources in the region surrounding Travis
2 AFB.
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6.0 BEST MANAGEMENT PRACTICES AND ENVIRONMENTAL PROTECTION MEASURES

BMPs and environmental protection measures are discussed to describe how the level of impact of a project on a resource area could be minimized. BMPs are actions required by statutes, regulations, or to fulfill permitting requirements that reduce potential impacts. Environmental protection measures are those actions that are used to minimize impacts that are not required as a part of statutes, regulations, or to fulfill permitting requirements, but are typically measures taken during design and construction phases of a project to reduce impacts on the environment.

6.1 Noise

6.1.1 Environmental Protection Measures

- All noise impacts to the Proposed Action would be limited to the duration of demolition activities and would occur only during normal working hours between 7a.m. to 5p.m.
- All construction equipment would be maintained to the manufacturer's specification to minimize noise impacts.

6.1.2 Best Management Practices

- Construction BMPs as specified in 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise
- AFOSH Standard 48-20, Operational Noise and Hearing Conservation Program.

6.2 Air Quality

6.2.1 Environmental Protection Measures

- During demolition, construction, renovation/repair, and land-clearing activities, the following precautions would be taken to prevent fugitive dust emissions:
- Water or suitable chemicals for control of dust would be used, where possible, during construction or demolition operations and land clearing. Water would be on site daily prior to beginning work.
- Water or suitable chemicals would be applied on dirt roads, material stockpiles, and other surfaces that may create airborne dust.
- Hoods, fans, and fabric filters would be installed and used to enclose and vent the handling of dusty materials.
- Open equipment for conveying or transporting materials likely to create objectionable air pollution would be covered or treated in an effective manner always when in motion.
- Spilled or tracked dirt or other materials would be removed promptly from paved streets.

6.3 Biological Resources

The following conservation measures would be implemented on Travis AFB as outlined in the 2016 Travis INRMP, and the 2018 PBA and PBO (Travis AFB, 2018a; USFWS, 2018c):

Conservation measures specific to all the Proposed Actions would be implemented as follows:

- PM-1. Project activities would be timed to occur during the dry season (May 1 – October 15) to minimize potential effects to listed species.

- 1 • PM-2. All burrows, native plant populations, soil cracks, vernal pools, and other
2 basins/depressions would be avoided by vehicle and foot traffic to avoid impacts to listed
3 species.

4 The mitigation measures (MM) and species-specific conservation measures presented below (including
5 measure numbering) are from the 2018 PBA and PBO (Travis AFB, 2018; USFWS, 2018c). Changes
6 to the conservation measures presented in the PBA and PBO that were made for this section are
7 shown as **bold** (additions) and *italicized* (deleted) text.

- 8 • *General Conservation Measures* GM-1. Designated areas for construction project material storage,
9 staging, trailers, and laydown areas will be on a paved surface or an area approved by 60
10 CES/CEIE.
- 11 • GM-2. At least 14 days prior to the start of work, a biologist will conduct a bird survey to
12 identify any active bird nests. If bird nesting is present, Conservation Measures will be put in
13 place such as establishing a buffer between the active nest and the project site or waiting until
14 birds have fledged the nest before starting the project. Conservation Measures from the Travis
15 Burrowing Owl Management Plan will be implemented for any active Burrowing Owl nests.

16 *Monitoring*

- 17 • MM-1. A Service-approved biologist will conduct preconstruction surveys of all ground
18 disturbance areas within sensitive habitats to determine if any federally-listed species may be
19 present prior to the start of construction. These surveys will be conducted prior to the start of
20 construction activities in and around any sensitive habitat. If any federally-listed species are
21 found during the preconstruction surveys, the Service-approved biologist will contact the
22 Service to determine how to proceed. At least 10 business days prior to the onset of activities,
23 Travis AFB will submit the name(s) and credentials of biologists who will conduct these
24 preconstruction surveys if they have not previously received Service approval for similar
25 surveys. See the Biological Monitor Qualifications section 1.4.3 of the programmatic biological
26 assessment for the minimum experience and qualifications required to serve as a Service-
27 approved biologist or a Natural Resource Monitor. No project activities will begin until Travis
28 AFB has received written approval from the Service that the biologist(s) is qualified to conduct
29 the work. (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4, R1)
- 30 • MM-2. A Service-approved biologist will monitor construction activities in or adjacent to
31 sensitive habitats as required. The biologist will ensure compliance with all applicable
32 avoidance and minimization measures required to protect federally-listed species and their
33 habitats. If federally listed species are found that are likely to be affected by work activities,
34 the Service-approved biologist will have the authority to stop any aspect of the project that
35 may result in unauthorized take of a federally-listed species. If the biologist exercises this
36 authority, they must coordinate this with Travis 60 CES/CEIE who will notify the Service *and*
37 *the California Department of Fish and Wildlife* by telephone within 1 working day and in writing
38 within 5 working day. (Projects D1, D3, D4, D7, D8, C2, C3, R1)
- 39 • MM-3. A Service-approved Biologist would conduct environmental awareness training for all
40 construction personnel working within and near sensitive habitat on Installation. Training
41 would be provided at the start of work and within 15 days of any new worker arrival. The
42 program would consist of a briefing on environmental issues relative to the proposed project.
43 The training program would include an overview of the legal status, biology, distribution,
44 habitat needs, and compliance requirements for each federally-listed species that may occur in
45 the project area. The presentation would also include a discussion of the legal protection for
46 endangered species under the Act, including penalties for violations. A fact sheet conveying

1 this information would be distributed to all personnel who enter the project site. Upon
2 completion of the orientation, employees would sign a form stating that they attended the
3 program and understand all avoidance and minimization measures. These forms would be
4 maintained at Travis AFB and would be accessible to the appropriate resource agencies.
5 (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4, R1)

6 *Buffers and Site Restoration*

- 7 • MM-4. Travis AFB will track the areal extent and location of impacts resulting from projects
8 covered under the programmatic biological opinion and will submit an annual report to the
9 Service listing each project covered and summarizing effects to each federally-listed species
10 and their habitat on a project by project basis. Travis AFB will submit an annual report to the
11 Service by February 15 of each year, for the previous year (over the next 5-years), that
12 documents the following information:

- 13 ○ Summary of projects covered under the programmatic biological opinion;
- 14 ○ Federally-listed species occurrences and potentially suitable habitat in each proposed
15 project area; and
- 16 ○ A summation of the total effect, including beneficial effects and associated
17 compensation, on listed species and their habitat for each proposed project.

18 (Projects D1, D3, D4, D7, D8, C2, C3, R1)

- 19 • MM-5. Wetlands/drainages/vernal pools, if present, would have erosion control measures
20 (straw wattles, silt fencing) installed where hydrological continuity exists between the
21 construction activities and the wetland. A Service-approved biologist will determine whether
22 erosion control measures should be utilized, weighing the potential for effects to federally-
23 listed species. Construction boundaries within the buffer will be designated with fencing or
24 other suitable means to ensure no equipment and/ or construction workers access protected
25 wetland resources. (Projects D1, D2, D3, D7, C2, C3, C4, R1)

- 26 • MM-6. All areas of upland ground disturbance or exposed soil would be reseeded with a native
27 “weed-free” seed mix approved by the 60 CES/CEIE. *Ground disturbance within vernal pools will*
28 *require a restoration plan and two years of follow-up monitoring by a USFWS-approved Biologist. Note: direct*
29 *impacts to wetlands require a Clean Water Act Section 404 permit issued by the US Army Corps of Engineers*
30 *and Section 401 permit from the State Regional Water Quality Control Board.* (Projects D1, D2, D3,
31 D4, D7, D8, C2, C3, C4)

32 *Additional Measures*

- 33 • MM-7. Off-road travel outside of the demarcated construction boundaries would be
34 prohibited. (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4, R1)
- 35 • MM-8. Prior to initiation of construction activities, sensitive areas, such as vernal pools,
36 wetlands, riparian areas, and potential habitat for federally-listed species (i.e., vernal pool fairy
37 shrimp, tadpole shrimp, CTS, and Contra Costa goldfields), will be staked and flagged as
38 exclusion zones where construction activities will not take place. Orange construction barrier
39 fencing (or an appropriate alternative method) will designate exclusion zones where
40 construction activities are prohibited. Flagging and fencing will be clearly marked as an
41 "Environmentally Sensitive Area". The contractor will remove all fencing, stakes and flagging
42 within 60 days of construction completion. (Projects D1, D3, D4, D7, D8, C2, C3, R1)
- 43 • MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one
44 injured or trapped, would immediately report the incident to the on-site Biologist. The

1 Biologist would inform the Travis Natural Resource Manager (NRM) immediately
2 (60 CES/CEIE). The Travis NRM would verbally notify the Sacramento Fish and Wildlife
3 Office within one day and would provide written notification of the incident within five days.
4 (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4, R1)

- 5 • MM-10. Motor vehicles and equipment would only be fueled and serviced in designated
6 service areas. All fueling and maintenance of vehicles and other equipment and staging areas
7 would occur in a designated area with appropriate spill containment. Any newly established,
8 project specific fueling and maintenance areas would be located at least 250 feet from any
9 wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB would ensure
10 a plan to allow a prompt and effective response to any accidental spills is in place. All workers
11 would be informed of the importance of preventing spills and of the appropriate measures to
12 take should a spill occur. (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4, R1)
- 13 • MM-11. During construction activities, all trash that may attract predators would be properly
14 contained, removed from the work site daily, and disposed of properly. Following
15 construction, all refuse and construction debris would be removed from work areas. All
16 garbage and construction-related materials in construction areas would be removed
17 immediately following project completion. (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4,
18 R1)
- 19 • MM-13. The number of access routes, number and size of staging areas, and the total area of
20 the activity would be limited to the minimum necessary to achieve the project goal. Routes
21 and boundaries would be clearly demarcated, and these areas would avoid wetlands/drainage
22 areas whenever feasible. (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4, R1)
- 23 • MM-14. All vehicle operators would follow the posted speed limit on paved roads and a 10-
24 mile per hour speed limit on unpaved roads. (Projects D1, D2, D3, D4, D7, D8, C2, C3, C4,
25 R1)
- 26 • MM-15. No pets or non-military firearms would be allowed in the project area. (Projects D3,
27 D4, D8, C3)
- 28 • MM-17. No trenches would be left open at the end of the day; trenched areas would be
29 compacted and restored to normal grade once the project is completed. (Projects D1, D2, D3,
30 D4, D7, D8, C2, C3, C4, R1)
- 31 • MM-18. No work requiring vehicles/equipment would be done when the ground is soft
32 enough where travel would cause depressions. (Projects D1, D3, D4, D7, D8, C2, C3, R1)

33 California Tiger Salamander

34 The following measures would be implemented for sites to avoid or minimize disturbances and
35 adverse effects to CTS:

- 36 • CTS-1. Within 14 days of the start of construction activities, a Service-approved Biologist
37 would perform a pre-construction survey and identify potential refuge habitats (burrows)
38 suitable for CTS. In the unlikely event that a CTS is encountered, the Biologist would contact
39 the Service for instructions. (Projects D1, D3, D4, D7, D8, C3, R1)
- 40 • CTS-2. A Service-approved Biologist would be on-site during all activities that could result in
41 the take of CTS *listed species*. The qualifications of the biologist(s) would be presented to the
42 Service for review and approval at least 10 working days prior to any groundbreaking activity
43 at the project site. If any of the requirements associated with these measures are not being

1 fulfilled, the Biologist would have the authority to stop project activities, through
2 communication with the Project Manager. (Projects D1, D3, D4, D7, D8, C3, R1)

- 3 • CTS-3. Construction personnel would be instructed to exercise caution when commuting
4 within the area to be disturbed. (Projects D1, D3, D4, D7, D8, C3, R1)
- 5 • CTS-4. Construction activities would occur between 30 minutes after sunrise and 30 minutes
6 before sunset unless otherwise specific in the Project Analysis. (Projects D1, D3, D4, D7, D8,
7 C3, R1)
- 8 • CTS-5. At the end of every work day, trenches, pits, and excavations shall be provided with
9 escape ramps constructed of earth fill or wooden planks at a 3:1 slope. Before such trenches,
10 pits, and excavations are filled, they would be thoroughly inspected for trapped wildlife.
11 (Projects D1, D3, D4, D7, D8, C3, R1)
- 12 • CTS-6. If exclusion barriers or fencing are used, a Service-approved Biologists will be on-site
13 to conduct morning inspections of the barrier fencing before construction activities begin each
14 day of work activity on work days and within 30 minutes of dawn on non-work days (includes
15 weekends and holidays). If a CTS is observed within or near the barrier fencing, the individual
16 will be relocated outside of the project area following the procedure provided in Section 4.4.5)
17 and the Sacramento Fish and Wildlife Office will be contacted. (Projects D1, D3, D4, D7, C3,
18 R1)
- 19 • CTS-7. Seasonal Avoidance /Wet Season Procedures (October 15-April 30): Work will not be
20 conducted in the rain. The Service-approved Biologist will monitor the weather forecast and
21 authorize work when the forecast indicates a period of dry days (5 – 10 days of no rain) before
22 starting the project. The Travis Environmental Office will document through email
23 notification to the Service when work will commence. The weather forecast and hourly
24 weather data for Travis AFB will be monitored and can be found by entering the zip code
25 94535 (Travis AFB) at <http://www.weather.gov/srh/>. A Service-approved Biologist will be
26 on-site for morning inspections before the start of work. Morning inspections consist of
27 examination of all trenches, pits, excavations, equipment, California tiger salamander
28 exclusionary barriers (if present), all suitable upland habitat including refugia habitat such as
29 small woody debris, refuse, burrow entries, etc. will be properly inspected and all other areas
30 within the project site. In addition, the project work crew will be notified to maintain vigilance
31 regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s).
32 Modifications to this timing may be approved on a case-by-case basis by the Service. (Projects
33 D1, D3, D4, D7, D8, C3, R1)
- 34 • CTS-8. Seasonal Avoidance Dry Season Rain/High Humidity Procedures (May 1 to
35 October 15): Work will not be conducted if raining. The Service-approved Biologist will check
36 the National Weather Service by 6:00 AM on the day prior to a scheduled workday to see if
37 there is a 50% or greater probability of rain forecasted overnight. If there is, then before work
38 begins the next morning, the Service-approved Biologist will conduct an even more extensive
39 morning inspection. The inspection will include searching the work area and a wider perimeter
40 of the area for presence of CTS. In addition, the work crew will be notified to maintain
41 vigilance regarding CTS activity. If feasible, the work crew will participate in the morning
42 inspection(s). Modifications to this timing may be approved on a case-by-case basis by the
43 Service. The weather forecast and hourly weather data for Travis AFB should be monitored
44 and can be found by entering the zip code 94535 (Travis AFB) at
45 <http://www.weather.gov/srh/> (Projects D1, D3, D4, D7, D8, C3, R1)

- 1 • CTS-9. If dry season (May 1 – October 15) nighttime work is necessary, the following
2 additional conservation measures shall be implemented:
- 3 a. Work would only occur within paved areas (greater than 20 feet from uplands)
- 4 b. A 6-inch high CTS exclusionary barrier will surround the work area during work, with
5 ingress/egress access being the only break in the barrier.
- 6 c. A Service-approved Biologist will be onsite during all nighttime work and will routinely
7 monitor the CTS exclusionary barrier and the project site.
- 8 d. Work will not be conducted at nighttime if there is a 50% or more chance of rain
9 predicted overnight.
- 10 (Project R1)
- 11 • CTS-10. Water shall not be pumped, sprayed, or allowed to flow over undisturbed uplands
12 that can support CTS as part of planned project activities outside of pre-approved
13 requirements (i.e. dust control). Water applied for pre-approved requirements shall be applied
14 in the minimum quantities necessary only to disturbed soils. If excess water accumulates as
15 the result of construction activity, water may be pumped through a screened pump and
16 removed from the construction area as deemed necessary by the on-site biologist in
17 coordination with Travis NRM staff. If water inadvertently or purposefully enters construction
18 trenches, pits, or excavations, a Service-approved Biologist would remain on site until water is
19 pumped from the trench, pit, or excavation. Following pumping, the Biologist shall inspect
20 the trench, pit, or excavation area and the surrounding uplands to determine if disturbance to
21 CTS has occurred and implement any other measures necessary (e.g., placement of cover
22 boards, exclusionary fencing) to protect CTS that may emerge due to the wet soil. (Projects
23 D1, D3, D4, D7, D8, C3, R1)
- 24 • CTS-11. Pipes laid underground or stored on the ground shall be capped, covered, or taped
25 in a manner that exclude CTS from entering the pipe prior to the completion of the
26 construction project. Long-term storage of pipes and other construction material should be
27 placed on asphalt and raised above the ground by no less than 1.5 inches (on top of 2 by 4
28 inch supports). (Projects D1, D3, D4, D7, D8, C3, R1)
- 29 • CTS-12. Trenches, pits, and excavations shall be covered in a manner that exclude CTS from
30 entering during weekends, holidays, humid days, rain events, etc. Specifically, gaps no greater
31 than one inch shall be allowed within cover materials if biologists would not be present the
32 following day or if rain events or high humidity days are expected to occur. Before such
33 trenches, pits, and excavations are filled, they would be thoroughly inspected for trapped
34 wildlife. (Projects D1, D3, D4, D7, D8, C3, R1)
- 35 • CTS-16. Erosion Control Best Management Practices implemented in accordance with the
36 Travis AFB Storm Water Pollution Prevention Plan would be placed so as not to create a
37 hazard to CTS. (Projects D1, D3, D4, D7, D8, C3, R1)
- 38 • CTS-17. A Service-approved Biologist or Natural Resources Monitor (depending on effect
39 level of project) shall perform construction site inspections to ensure the contractor completes
40 the proposed action as described and complies with all proposed minimization measures.
41 (Projects D1, D3, D4, D7, D8, C3, R1)
- 42 • CTS-18. Concrete waste and water from curing operations would be collected in washouts
43 and would be disposed of properly and not allowed into watercourses or CTS upland habitat.
44 (Projects C3, R1)

- CTS-19. In the event that CTS are encountered on the project site, the Service-approved Biologist or Natural Resource Monitor will contact the Travis AFB Natural Resource Manager who will then contact the Service. If CTS are captured, they should be released as near as possible to the point of capture, in a manner that maximizes their survival. Refer to the CTS Relocation Plan described in Section 4.4.5 of the PBO. (Projects D1, D3, D4, D7, D8, C3, R1)

Vernal Pool Fairy Shrimp and Contra Costa Goldfields

Within 250 feet of known or potential CCG or VPFS habitat, the following measures would be implemented to avoid or minimize disturbances and adverse effects to the species:

- VP-1. No work would be conducted in the vicinity of vernal pool species' habitat between 16 Oct and 30 Apr, unless specifically approved by the Travis AFB NRM who would field verify soil saturation, visual ponding, and expected surface disturbance. The Service would be notified of any off-pavement work within 250 feet approved between 16 October and 30 April. (Projects D3, R1)
- VP-3. Projects that occur on road surfaces and along road shoulders would avoid direct impacts to wetland habitats. (Project R1)
- VP-4. A Service-approved Biologist would mark vernal pool species' habitat and a reasonable buffer to be avoided with flagging material. The area would be protected by placing construction fencing or other appropriate protective fencing around the pools including a buffer. Fencing would be used in locations where project equipment and/or personnel would be situated adjacent to or in the near vicinity of suitable vernal pool species habitat. If in a High or Medium Risk CTS area, small mammal burrows would be avoided when placing stakes or posts. (Projects D1, D3, C2, R1)

6.4 Cultural Resources

6.4.1 Environmental Protection Measures

- In the event archaeological or tribal resources or human remains are unexpectedly encountered during any of the project activities described in this IDEA, all work in the immediate vicinity of the discovery would be halted and the procedures outlined in Section 7 of the Travis AFB ICRMP (Travis AFB, 2016c) would be followed.
- At the request of the Yocha Dehe Wintun Nation, cultural resources awareness training will be conducted during preconstruction meetings at each of the 14 IDEA project sites.

6.5 Earth (Geological Resources)

6.5.1 Environmental Protection Measures

- Before work begins, clearly delineate (e.g., stake, fence, or flag) the disturbance boundaries and prohibit any off-road traffic. All equipment would be confined to these designated work zones (including access roads and laydown) within the action area;
- Project laydown is to be on a paved surface or other pre-designated location as approved, i.e., Contractor Row. If proposing to use other than a paved surface, coordinate with 60 CES/CEIE Water Program Manager;
- The project would utilize dust control measures whenever necessary. These measures include, but are not limited to, use of a water truck to spray project areas during construction activities and covering of soil piles with plastic whenever they are not in use. No water would be allowed to run-off the site. If connecting to a hydrant, a backflow preventer is required; and

- If concrete would be used, there must be a designated concrete washout area or equivalent.
- Design buildings and parking areas to avoid or minimize the direct conversion of Important Farmland to nonagricultural uses and compensate for unavoidable Important Farmland conversion impacts.

6.5.2 Best Management Practices

- Erosion control BMPs in accordance with the Travis AFB SWPPP would be implemented as required, including but not limited to, grading during the dry season, compaction of upland soils, silt fencing, sediment traps, and seeding and mulching areas of exposed soil as determined necessary by the 60 Civil Engineering Squadron (CES)/Civil Engineering Installation Environmental (CEIE) Water Program Manager for projects that disturb less than one acre. All other projects must follow NPDES Construction Permit's approved SWPPP.

6.6 Water Resources

6.6.1 Environmental Protection Measures

- Ground asphalt, if not reused in the road or parking lot base, would be removed. Do not blade out to form shoulders. Do not use tack oil on AB or asphalt edges before rain events. Install appropriate storm water BMPs around the perimeter of site to prevent AB or other material from leaving the site.

6.6.2 Best Management Practices

- Stormwater discharge at the Installation is regulated under the Travis Air Force Base General Permit for Storm Water Discharges Associated with Industrial Activities NPDES No. CAS000001 Order #2014-0057-DWQ (Travis AFB, 2016f), the General Permit for Waste Discharge Requirements for Storm Water Discharges from Small MS4s NPDES No. CAS000004 Order No. 2013-0001-DWQ, and an erosion and sediment control plan would be prepared to control short-term and long-term erosion and sedimentation.
- The Proposed Actions would comply with all applicable restrictions in the stormwater permit, the SWPPP, and the erosion and sediment control plan. Compliance with the permit and implementation of BMPs would reduce potential impacts on water quality resulting from construction sediment discharged to Union Creek during storm events to less than significant levels.
- BMPs to control runoff and sedimentation would be required by the construction SWPPP and the erosion and sediment control plan would include regular and documented site inspections, the use of silt fences, minimization of earth-moving activities during wet weather, and revegetation with appropriate plant materials in disturbed areas.
- For sites less than 1 acre disturbed, follow the Travis AFB SWPPP and the California Storm Water Association's "Storm Water Best Management Practices Handbook – Construction" at a minimum. Include the following areas in disturbed area calculations if not placed on impermeable surfaces: staging areas, equipment/vehicular access lanes, contractor lay down areas and material storage areas, and contractor concrete wash-out areas. Use appropriate BMPs to prevent excavated soil from entering storm drains, ditches, or swales where it can contaminate storm sewer systems and sanitary sewer systems.
- For sites equal to 1 acre or more disturbed or phased work that combined would be equal to 1 acre or more disturbed, a NPDES construction permit is required. Send documentation of permit required inspections to 60 CES/CEIE weekly.

- 1 • Secondary containment would be installed for temporary storage of hazardous materials to
2 prevent or minimize spills or leaks into groundwaters. Measures from the installations SPCC
3 plans or ICP would be implemented to avoid incidental contaminant discharges into ground
4 and surface waters.

5 **6.7 Safety**

6 **6.7.1 Environmental Protection Measures**

- 7 • Physical barriers and “no trespassing” signs would be placed around the demolition and
8 construction sites to deter children and unauthorized personnel. All construction vehicles and
9 equipment would be locked or otherwise secured when not in use.
- 10 • All construction equipment would be maintained to the manufacturer’s specification to
11 minimize effects associated with safety.

12 **6.7.2 Best Management Practices**

- 13 • All renovation and construction activities would be conducted in compliance with all
14 applicable OSHA regulations to protect workers. USAF and OSHA excavation safety
15 procedures and regulations would be followed.
- 16

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33 Marine, Inc. Plano, Texas.
- 34 Weitze, K. J. 1996b. *Travis Air Force Base, Solano County, CA. Background Information, Cold War Resources,*
35 *Section 110 Survey, Inventory, and Eligibility Determination Activities*. Document includes the
36 following attachments:
- 37 • Memorandum of Agreement 1997 Regarding Demolition of Buildings 370, 902, 903, and
38 943, Travis Air Force Base, Solano County, California.

- 1 • Memorandum of Agreement 2000 Regarding the Recordation of Two Cold War Era
2 Historic Districts and a Cold War Era Hangar, (Building 810), Travis Air Force Base,
3 Solano County, California.
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7 Fish and Wildlife Service Biological Report 85 (7.11).
- 8

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1 **8.0 LIST OF PREPARERS**

2

Author	Years of Experience	Educational Background
Melissa A. Hoover, PMP	21	M.S. Environmental Quality B.S. Biology
Kim Tayloe	24	M.S. Environmental Management B.S. Biology
Jennifer Poirier-O'Brien	15	B.S. Geography
Danielle Cemprola	12	B.S. Geography M.S. Community Development
Robyn Peterson, PE	22	B.S. Biological Engineering
Paige Peyton, Ph.D., RPA	33	Ph.D. History and Archaeology M.A. Interdisciplinary Studies (focus Cultural Resources Management) B.A. Anthropology A.A. Liberal Studies
Bruce Palmer	38	B.S. Biology
Jill Harris	27	M.S. Environmental Resources B.S. Wildlife and Fisheries Management
Darcy Anderson	30	M.S. Meteorology M.S. Hydrology
Patrick Lawler	15	B.S. Geography
Marjorie Eisert	29	B.S. Wildlife and Fisheries Biology
Sara Van Klooster	15	M.S. Atmospheric Sciences B.S. Atmospheric Sciences and Mathematics
Hong Zhuang	21	M.S. Environmental Science and Engineering M.Phil. Chemical Engineering
Christy Beatty	18	B.S. Natural Science A.A.S. Geomatics
Craig Kish	32	M.S. Mineral Resource Ecology J.D. Law B.A. Chemistry/Biochemistry

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4

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APPENDICES

1
2
3
4

APPENDIX A

AGENCY CORRESPONDENCE



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



16 April 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 570
Travis AFB CA 94535-2001

State Clearinghouse
P.O. Box 3044
Sacramento CA 95812

SUBJECT: Intergovernmental Coordination for Environmental Planning (IICEP), Installation Development Environmental Assessment, Travis Air Force Base, California

The United States Air Force (Air Force) proposes fourteen (14) projects at Travis AFB CA (Figure1). Projects fall under three categories: demolition, infrastructure, and renovation/repair. To address potential environmental impacts associated with the project and for compliance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), an Installation Development Environmental Assessment (IDEA) is being prepared.

Since the establishment of Travis AFB, installation development has been a continual activity where structures are demolished, facilities are constructed, infrastructure is upgraded, and resources are studied. In an effort to improve installation planning, streamline compliance with the NEPA and CEQA, and accomplish multiple installation development projects, the Air Force Headquarters Air Mobility Command and 60th Air Mobility Wing typically initiate an IDEA encompassing all reasonably foreseeable projects that are planned and programmed for the next five years. Accordingly, this IDEA is being initiated and completed to address a multitude of projects.

Demolition Projects: Travis AFB proposes nine (9) demolition projects that could occur over the next five years to eliminate surplus facilities, achieve efficiency, and make previously disturbed acreage available to support growth associated with its mission requirements. The facilities scheduled for demolition have been deemed too costly to repair or renovate, and no longer meet the needs of Travis AFB. Demolition of these facilities would reduce the footprint of unnecessary and redundant facilities in accordance with the Air Force requirements. The proposed demolition projects would affect 264,509 square feet (SF) (6.07 acres); these facilities have previously disturbed the general area, but some proposed demolition projects include or are adjacent to critical habitat. See Table 1 for project details and Figure 2 for project locations on Travis AFB

Table 1: Proposed Demolition Projects

Project Number	Proposed Action Site Number	Project Title	Estimated Facility (SF)	Project Description
XDAT051034	D1	Demolish Infrastructure Associated with former Wastewater Treatment Plant (WWTP)	13,412	Demolish former WWTP process structures, including digester tanks, Imhoff secondary digesters, settling basins, and associated piping
XDAT121004	D2	Demolish Building 927	6,800	Demolish Civil Engineer Semi-Permanent Mobile Trailer Building
XDAT131013	D3	Demolish Building 1115	398	Demolish old Tactical Air Navigation (TACAN) building
XDAT071136	D4	Demolish Building 1201	18,215	Demolish Consolidated Flight Kitchen
XDAT081039	D5	Demolish Building 819	39,000	Demolish Aircraft Shop General Purpose Building and relocate current building occupant to another available existing facility at the Base
XDAT111018	D6	Demolish Building 1	161,000	Demolish Squadron Operations & Warehouse Building and relocate current building occupant to another available existing facility at the Base
XDAT991008	D7	Demolish Building 1182	276	Demolish abandoned dilapidated electrical shed
XDAT111016	D8	Demolish Building 1332	25,120	Demolish vacant dormitory
XDAT171040	D9	Demolish Building 891	288	Demolish former gas vaporizer building, perimeter fence, propane tanks, and associated piping

Infrastructure Projects: Travis AFB proposes four (4) infrastructure projects over the next five years. These projects include (1) erecting a permanent aircraft static display; (2) expanding a war reserve materiel (WRM) warehouse and paving a parking lot; (3) constructing a youth center facility; and (4) constructing additional recreational vehicle (RV) parking area. Infrastructure development and improvement would affect a total of approximately 283,029 SF (6.49 acres). See Table 2 for project details and Figure 2 for project locations on Travis AFB.

Table 2: Proposed Infrastructure Projects

Project Number	Proposed Action Site Number	Project Title	Estimated Facility (SF)	Project Description
XDAT879190	C1	C-5 Static Display	55,000	Construct a permanent C-5 airframe static display and concrete pad and a temporary haul road to facilitate airframe movement to the display
XDAT740353	C2	New Patient and Staff Parking Lot and WRM Warehouse Expansion	99,475	Construct a new WRM warehouse facility and a permanent, paved parking lot to accommodate increased patient care and staffing for the David Grant Medical Center (DGMC)
XDAT085011	C3	Youth Center	30,104	Construct a youth facility that would consist of 12 classrooms, a partially covered outdoor recreation area, administrative offices, multipurpose gym, kitchen, and parking lot
NA	C4	RV Parking Area	98,450	Re-purpose un-used parking lot adjacent to existing RV storage lot

Renovation/Repair Project: Travis AFB proposes one (1) renovation/repair project over the next five years. This project would occur in the Bunker B Area and includes repairing bunker soil roofs and electrical infrastructure and upgrading access control via an electric security gate. The proposed renovation/repair project would affect up to 127,422 SF (2.93 acres), which is considered “high risk” upland habitat for California tiger salamander (*Ambystoma californinense*). See Table 3 for project details and Figure 2 for project location on Travis AFB.

Table 3: Proposed Renovation/Repair Project

Project Number	Proposed Action Site Number	Project Title	Estimated Facility (SF)	Project Description
XDAT087366	R1	Bunker B Roof and Electrical Repair and Security Gate Upgrade	127,422	Replace soil-covered roofs of all bunkers (earth-covered magazines [ECMs]) in the Bunker B Area; correct electrical system deficiencies in the Bunker B Area; and improve access control with the addition of an electronic gate

The nine demolition projects, four infrastructure projects, and one renovation/repair project are located throughout Travis AFB (Figure 2).

Travis AFB is a steward to sensitive environmental habitats, such as numerous wetlands known as vernal pools that are home to the federally endangered Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) and Vernal Pool Tadpole Shrimp (*Lepidurus packardi*), widespread upland grasslands considered habitat for the federally threatened California Tiger Salamander (*Ambystoma californinense*), and habitat for Contra Costa Goldfields (*Lasthenia conjugens*). An IDEA is necessary to evaluate the potential for impacts to these sensitive resources and describe best management practices used to mitigate potential impacts.

The environmental analyses for the Proposed Action are being conducted by the 60th AMW in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act (NEPA) of 1969. In addition to the NEPA analysis, the IDEA will be California Environmental Quality Act-compliant. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we solicit your comments concerning the proposal identified above and early identification of potential environmental consequences of these actions. We also request information regarding other recently completed, on-going, or reasonably foreseeable future projects in the vicinity that may create cumulative impacts when combined with the Proposed Action. Please provide any comments you may have within 30 days of receipt of this letter.

Please forward your written comments, further questions, or if you would like to discuss the proposal further to Matt Blazek at (707) 424-5127 or matthew.blazek@us.af.mil. Thank you for your assistance.

 Recoverable Signature

X *Brian L. Sassaman*

BRIAN L. SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management
Signed by: SASSAMAN.BRIAN.L.1080522793

Figure 1
Location of Travis Air Force Base and Surrounding Area

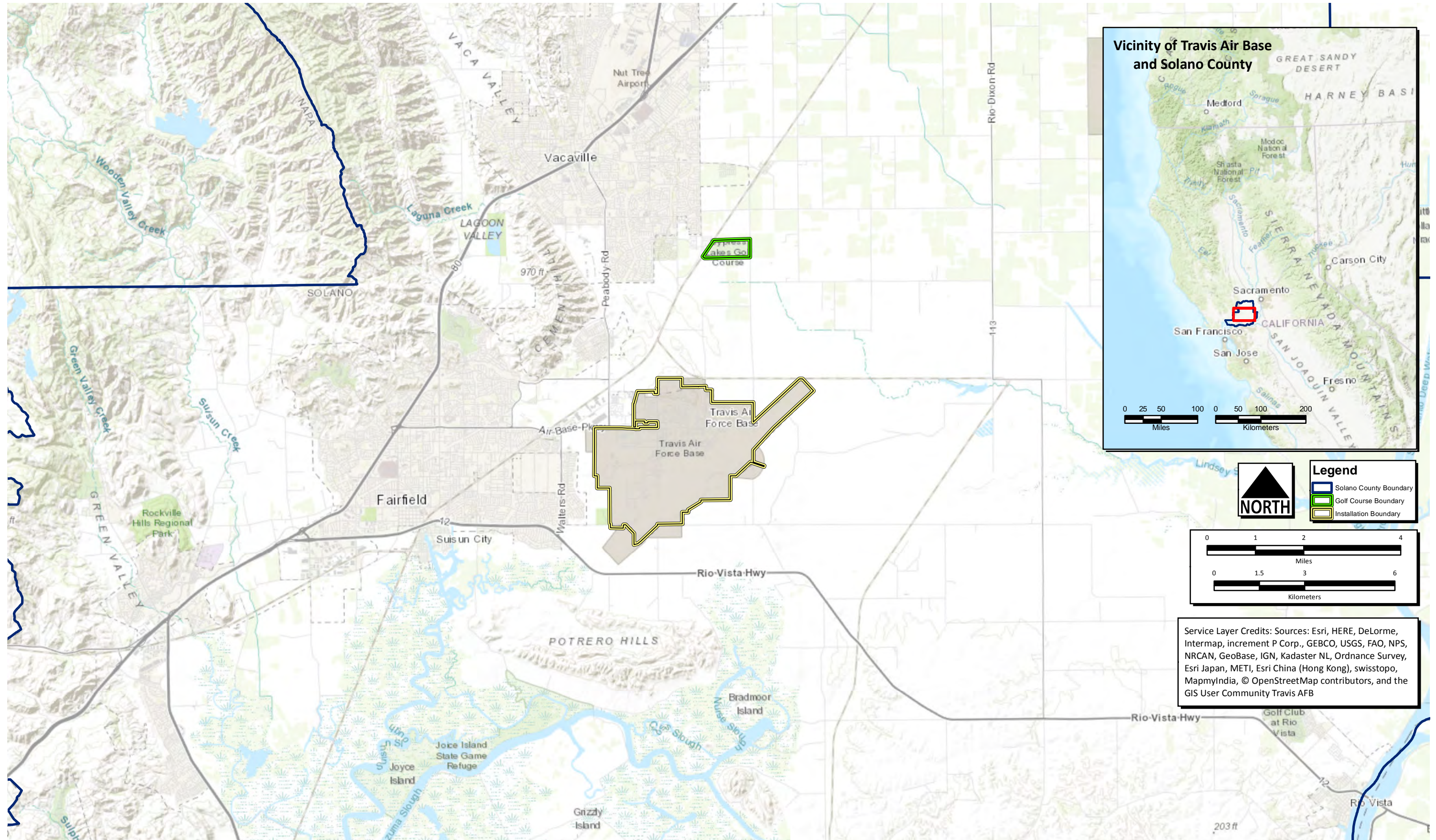
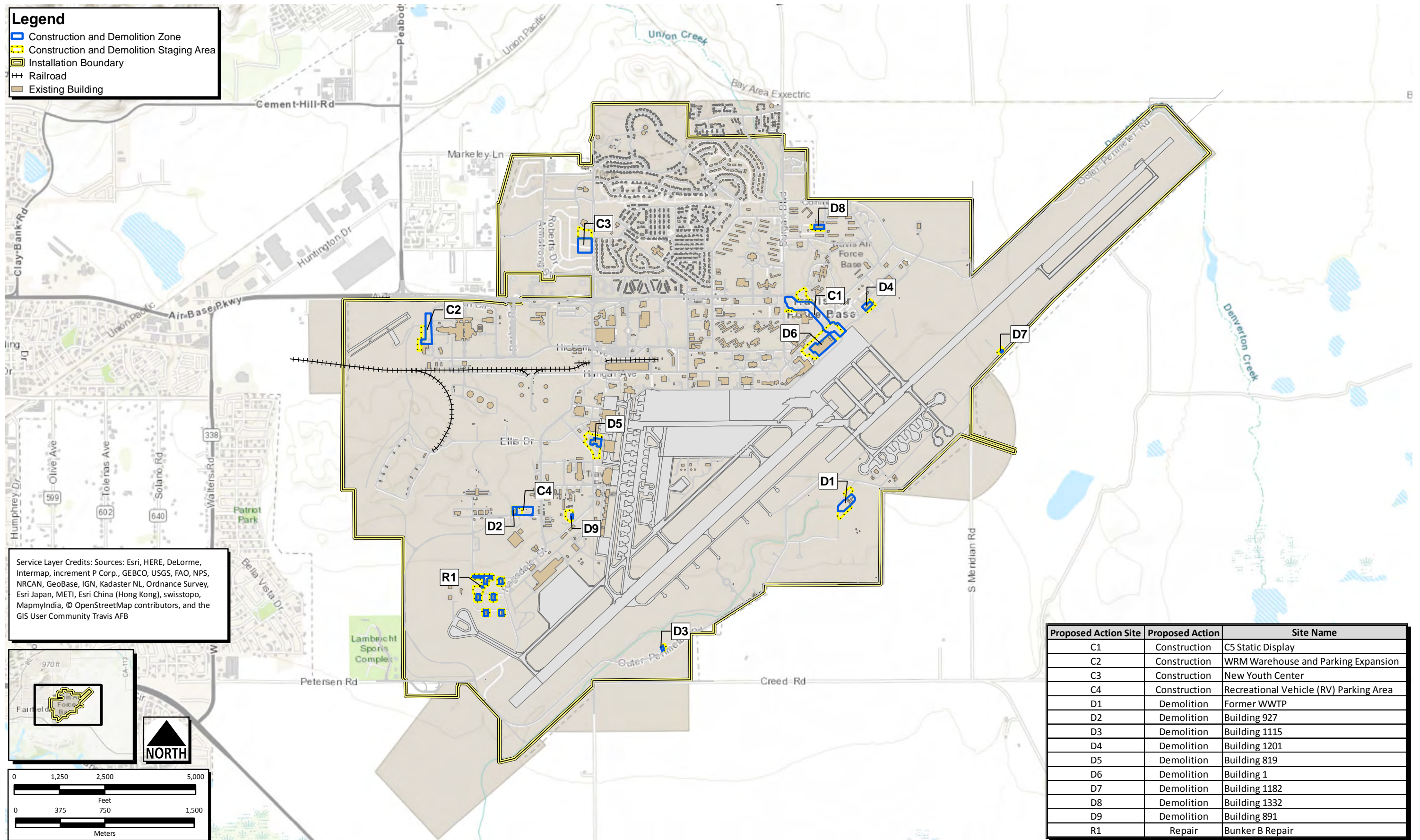


Figure 2:
IDEA Proposed Action Location Map





Edmund G. Brown Jr.
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit



Ken Alex
Director

**NEPA Notice of Intent
Review and Comment by State Agencies**

April 18, 2018

To: Reviewing Agencies

Re: **Installation Development Environmental Assessment, Travis Air Force Base, California**
SCH# 2007054003

Attached for your review and comment is the Notice of Intent (NOI) for the Installation Development Environmental Assessment, Travis Air Force Base, California draft Environmental Assessment (EA).

State Responsible agencies must transmit their comments on the scope and content of the EA, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOI from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Matt Blazek
U.S. Air Force
411 Airmen Drive, B-570, CES/CEIE
Travis AFB, CA 94535

Please provide a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

SCH# 2007054003
Project Title Installation Development Environmental Assessment, Travis Air Force Base, California
Lead Agency U.S. Air Force

Type NOI Notice of Intent
Description The installation development projects that are proposed to be implemented over the next 5 years at Travis AFB include: 9 demolition projects for facilities that no longer meet mission requirements; four new construction projects required to support the future mission; and one repair project required to bring a set of explosive storage bunkers into safety compliance.

Lead Agency Contact

Name Matt Blazek
Agency U.S. Air Force
Phone (707) 424-5127 **Fax**
email
Address 411 Airmen Drive
City Travis AFB **State** CA **Zip** 94535-2001

Project Location

County Solano
City Fairfield, Suisun City
Region
Cross Streets Hangar Ave & Ragsdale St
Lat / Long 38° 16' 18.7" N / 121° 57' 25.1" W
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways 12
Airports Travis AFB airfield
Railways
Waterways Union Creek
Schools Travis and Scandia ES
Land Use Travis Air Force Base

Project Issues

Reviewing Agencies Resources Agency; Department of Conservation; Cal Fire; Central Valley Flood Protection Board; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 3; Office of Emergency Services, California; Delta Protection Commission; Delta Stewardship Council; Native American Heritage Commission; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 4; Air Resources Board; Resources, Recycling and Recovery; State Water Resources Control Board, Division of Drinking Water; Department of Toxic Substances Control; State Water Resources Control Board, Division of Water Quality; Regional Water Quality Control Bd., Region 5 (Sacramento)

Date Received 04/17/2018 **Start of Review** 04/18/2018 **End of Review** 05/17/2018

Notice of Completion & Environmental Document Transmittal

2007054003

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Installation Development Environmental Assessment, Travis Air Force Base, California

Lead Agency: U.S. Air Force Contact Person: Matt Blazek
Mailing Address: 411 Airmen Drive, B-570, CES/CEIE Phone: 707-424-5127
City: Travis AFB Zip: 94535 County: Solano

Project Location: County: Solano City/Nearest Community: Fairfield
Cross Streets: Hangar Ave & Ragsdale St. Zip Code: 94535
Longitude/Latitude (degrees, minutes and seconds): 38 ° 16 ' 18.7 " N / 121 ° 57 ' 25.1 " W Total Acres: 5,016
Assessor's Parcel No.: NA Section: NA Twp.: NA Range: NA Base: NA
Within 2 Miles: State Hwy #: 12 Waterways: Union Creek
Airports: Travis AFB airfield Railways: Schools: Travis and Scandia Elem

Document Type:

CEQA: [] NOP [] Draft EIR NEPA: [x] NOI [] EA [] Draft EIS [x] FONSI
[] Early Cons [] Supplemental/Subsequent EIR [] Final Document
[] Neg Dec (Prior SCH No.) [] Other:
[] Mit Neg Dec Other:

Government Office of Planning & Research
APR 17 2018

Local Action Type:

[x] General Plan Update [] Specific Plan [] Rezone [] Annexation
[] General Plan Amendment [] Master Plan [] Prezone [] Redevelopment
[] General Plan Element [] Planned Unit Development [] Use Permit [] Coastal Permit
[] Community Plan [] Site Plan [] Land Division (Subdivision, etc.) [] Other:

STATE CLEARINGHOUSE

Development Type:

[] Residential: Units Acres
[] Office: Sq.ft. Acres Employees
[] Commercial: Sq.ft. Acres Employees
[] Industrial: Sq.ft. Acres Employees
[] Educational:
[] Recreational:
[] Water Facilities: Type MGD
[] Transportation: Type
[] Mining: Mineral
[] Power: Type MW
[] Waste Treatment: Type MGD
[] Hazardous Waste: Type
[x] Other: Travis AFB 5-yr Installation Development Plan

Project Issues Discussed in Document:

[x] Aesthetic/Visual [] Fiscal [] Recreation/Parks [x] Vegetation
[] Agricultural Land [x] Flood Plain/Flooding [] Schools/Universities [x] Water Quality
[x] Air Quality [] Forest Land/Fire Hazard [] Septic Systems [] Water Supply/Groundwater
[x] Archeological/Historical [x] Geologic/Seismic [] Sewer Capacity [x] Wetland/Riparian
[x] Biological Resources [] Minerals [x] Soil Erosion/Compaction/Grading [] Growth Inducement
[] Coastal Zone [] Noise [x] Solid Waste [x] Land Use
[x] Drainage/Absorption [] Population/Housing Balance [] Toxic/Hazardous [x] Cumulative Effects
[x] Economic/Jobs [] Public Services/Facilities [] Traffic/Circulation [] Other:

Present Land Use/Zoning/General Plan Designation:

Air Force Base

Project Description: (please use a separate page if necessary)

The installation development projects that are proposed to be implemented over the next five years at Travis AFB include: nine demolition projects for facilities that no longer meet mission requirements; four new construction projects required to support the future mission; and one repair project required to bring a set of explosive storage bunkers into safety compliance.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

<input checked="" type="checkbox"/> Air Resources Board	<input checked="" type="checkbox"/> Office of Historic Preservation
<input type="checkbox"/> Boating & Waterways, Department of	<input type="checkbox"/> Office of Public School Construction
<input type="checkbox"/> California Emergency Management Agency	<input type="checkbox"/> Parks & Recreation, Department of
<input type="checkbox"/> California Highway Patrol	<input type="checkbox"/> Pesticide Regulation, Department of
<input type="checkbox"/> Caltrans District # _____	<input type="checkbox"/> Public Utilities Commission
<input type="checkbox"/> Caltrans Division of Aeronautics	<input checked="" type="checkbox"/> Regional WQCB #2 _____
<input type="checkbox"/> Caltrans Planning	<input type="checkbox"/> Resources Agency
<input type="checkbox"/> Central Valley Flood Protection Board	<input type="checkbox"/> Resources Recycling and Recovery, Department of
<input type="checkbox"/> Coachella Valley Mtns. Conservancy	<input type="checkbox"/> S.F. Bay Conservation & Development Comm.
<input type="checkbox"/> Coastal Commission	<input type="checkbox"/> San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
<input type="checkbox"/> Colorado River Board	<input type="checkbox"/> San Joaquin River Conservancy
<input type="checkbox"/> Conservation, Department of	<input type="checkbox"/> Santa Monica Mtns. Conservancy
<input type="checkbox"/> Corrections, Department of	<input type="checkbox"/> State Lands Commission
<input type="checkbox"/> Delta Protection Commission	<input type="checkbox"/> SWRCB: Clean Water Grants
<input type="checkbox"/> Education, Department of	<input checked="" type="checkbox"/> SWRCB: Water Quality
<input type="checkbox"/> Energy Commission	<input type="checkbox"/> SWRCB: Water Rights
<input checked="" type="checkbox"/> Fish & Game Region #3 _____	<input type="checkbox"/> Tahoe Regional Planning Agency
<input type="checkbox"/> Food & Agriculture, Department of	<input type="checkbox"/> Toxic Substances Control, Department of
<input type="checkbox"/> Forestry and Fire Protection, Department of	<input type="checkbox"/> Water Resources, Department of
<input type="checkbox"/> General Services, Department of	Other: _____
<input type="checkbox"/> Health Services, Department of	Other: _____
<input type="checkbox"/> Housing & Community Development	
<input type="checkbox"/> Native American Heritage Commission	

Local Public Review Period (to be filled in by lead agency)

Starting Date 7/18/18 Ending Date 8/16/18

Lead Agency (Complete if applicable):

Consulting Firm: <u>Trinity Analysis & Development Corp.</u>	Applicant: _____
Address: <u>1002 N. Eglin Parkway</u>	Address: _____
City/State/Zip: <u>Shalimar, FL 32579</u>	City/State/Zip: _____
Contact: <u>Jennifer Poirier-O'Brien</u>	Phone: _____
Phone: <u>850-855-4082</u>	

Signature of Lead Agency Representative: Brian L. Sassaman, GS-13, DAFC, *Brian L. Sassaman* Date: 18 April 2018

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

County: Solano

NOI Distribution List

Table with 2 main columns: Resources Agency and Regional Water Quality Control Board (RWQCB). The Resources Agency column lists various departments such as Fish & Wildlife, Fish & Boating & Waterways, California Coastal Commission, etc. The RWQCB column lists corresponding regional offices such as Caltrans District 9, Air Resources Board, Caltrans District 10, etc.



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



18 April 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 570
Travis AFB, CA 94535-2001

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691

SUBJECT: Request for Sacred Lands File Search on Travis Air Force Base, California

Dear Sir or Madam,

Trinity Inc. has been contracted to prepare an Installation Development Environmental Assessment (IDEA) to address improvement and operational changes at Travis AFB. In accordance with the National Environmental Policy Act (NEPA) requirements, the IDEA is being prepared to evaluate the Proposed Actions and Alternatives, including the No Action Alternatives, for each of the following projects: C-5 Static Display; WRM Expansion/New Patient and Staff Parking Area; New Youth Center; RV Parking Area; Bunker B Roof and Electrical Repair and Access Gate Upgrades; and Nine (9) Building Demolitions.

In accordance with Executive Order 13175 and Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Sections 800.2, 800.3 and 800.4), the Air Force would like to initiate Government-to-Government consultation regard this proposed action with potentially interested federally recognized tribes.

We are requesting that you conduct a search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) for Travis AFB and notify us of any SLFs that are located on Base. We are also requesting that you provide contact information for any federally recognized tribes that may have ancestral ties to the land upon which Travis AFB is situated. The information will be used to facilitate Native American Consultation for the current project as well as future proposed actions on Travis AFB.

As shown on the enclosed figure, Travis AFB is located in Solano County, and is found on USGS Elmira and Denverton, California 7.5-minute topographic quadrangles. It encompasses the following Sections (Sections are completely in the Elmira quadrangle unless otherwise noted):

- Township 5 North, Range 1 East: Sections 12, 17, and 19
- Township 5 North, Range 1 West: Sections 13, 14, 15, 21, 22, 23, 24, 25, 26 (Denverton), 27 (Denverton), 28, 24 (Denverton), and 35

Thank you for your cooperation and assistance. I look forward to your earliest possible replay. Please direct your questions to Mr. Matthew Blazek at (707) 424-5127 or matthew.blazek@us.af.mil.

Sincerely

 Recoverable Signature

X *Brian L. Sassaman*

BRIAN L. SASSAMAN, GS-13, DAFC

Flight Chief, Installation Management

Signed by: SASSAMAN.BRIAN.L.1080522793

2 Attachments:

USGS Map of Proposed Area_IDEA Projects
Proposed Action Locations on Travis AFB

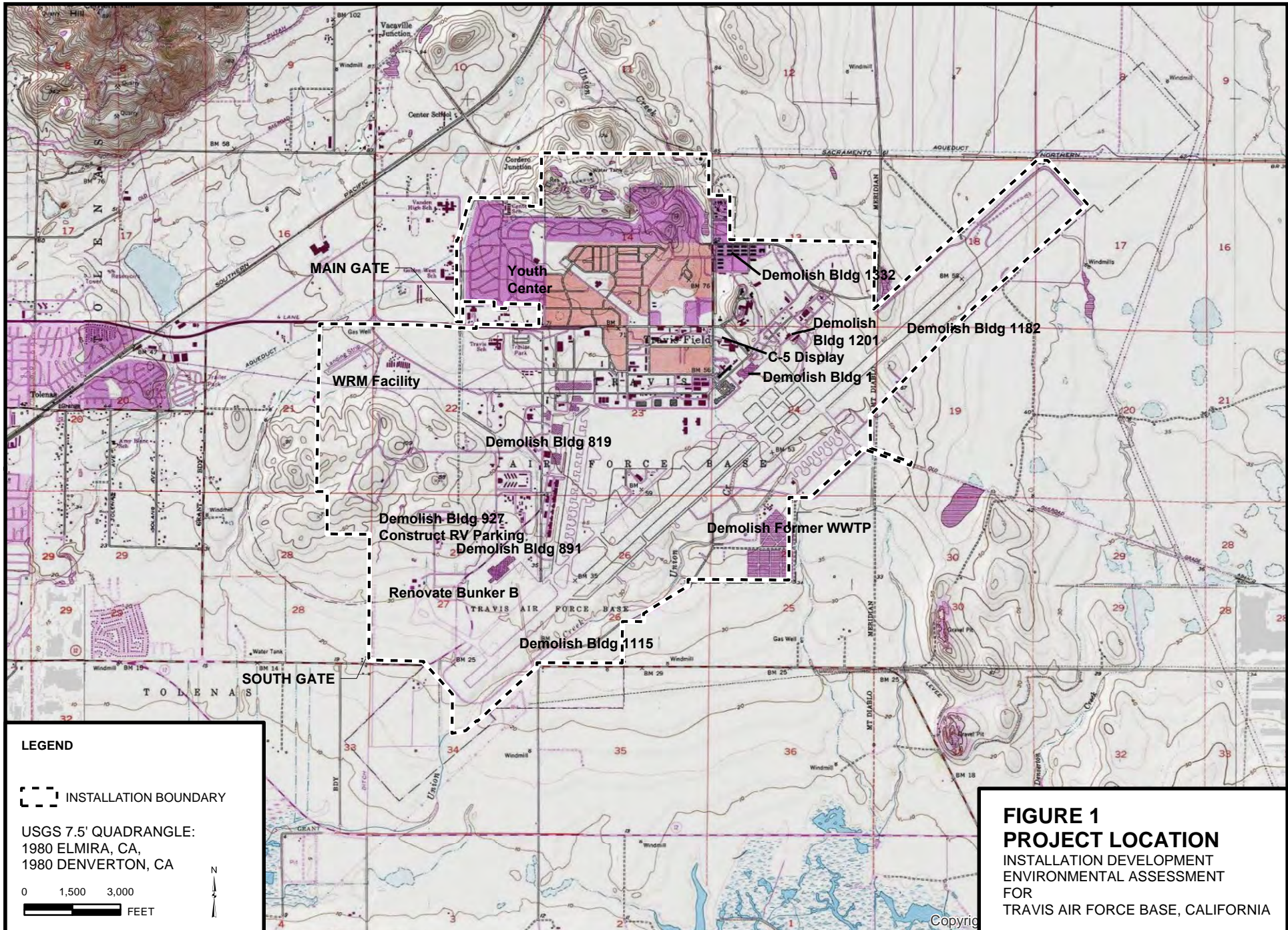
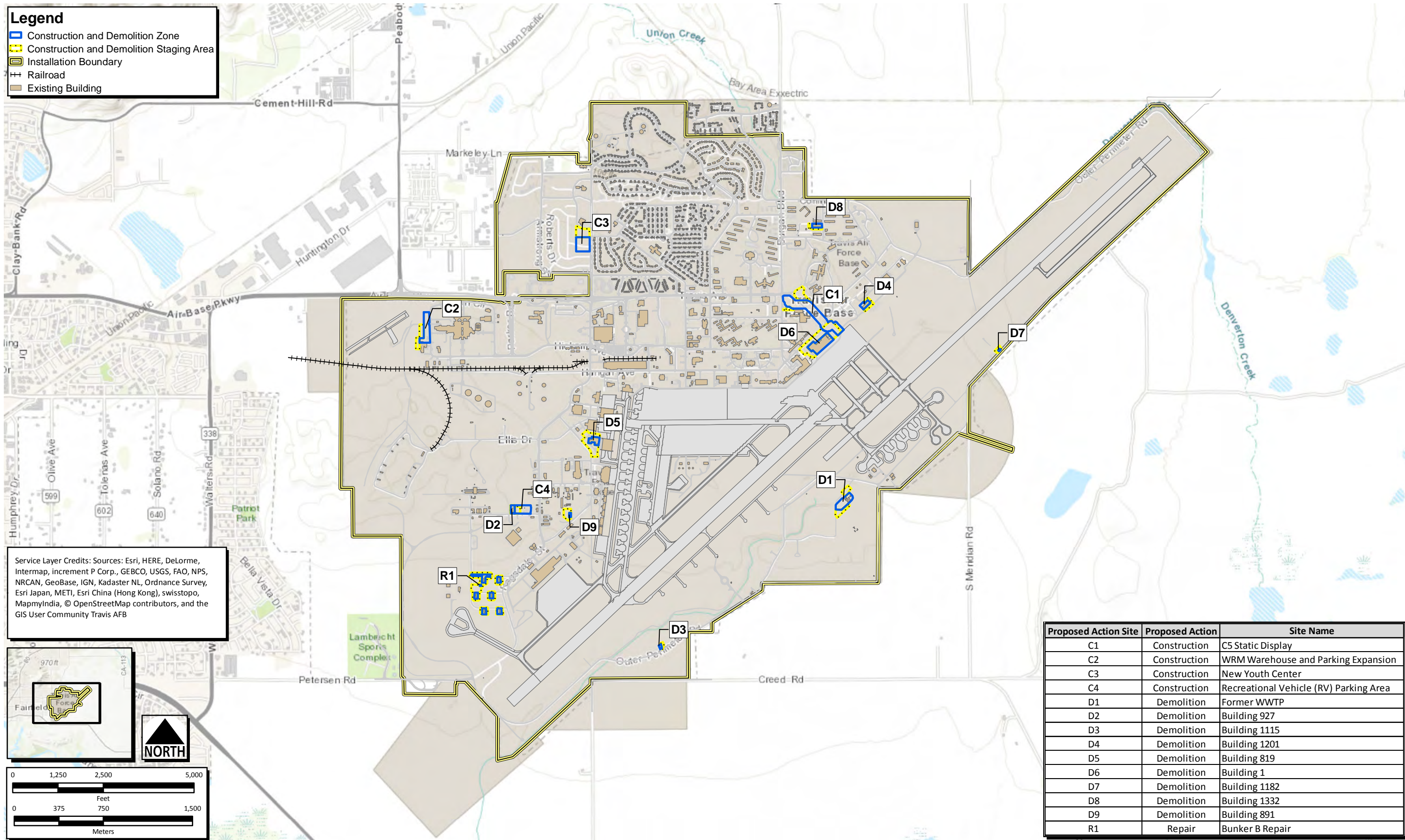
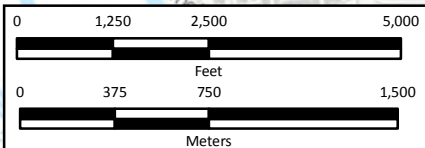
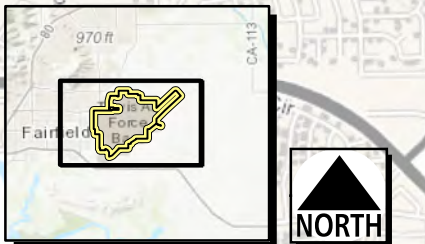


Figure 2:
IDEA Proposed Action Location Map



- Legend**
- Construction and Demolition Zone
 - Construction and Demolition Staging Area
 - Installation Boundary
 - Railroad
 - Existing Building

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Travis AFB



Proposed Action Site	Proposed Action	Site Name
C1	Construction	C5 Static Display
C2	Construction	WRM Warehouse and Parking Expansion
C3	Construction	New Youth Center
C4	Construction	Recreational Vehicle (RV) Parking Area
D1	Demolition	Former WWTP
D2	Demolition	Building 927
D3	Demolition	Building 1115
D4	Demolition	Building 1201
D5	Demolition	Building 819
D6	Demolition	Building 1
D7	Demolition	Building 1182
D8	Demolition	Building 1332
D9	Demolition	Building 891
R1	Repair	Bunker B Repair

**Native American Heritage Commission
Native American Contacts
4/26/2018**

Yocha Dehe Wintun Nation
Anthony Roberts, Chairperson
P.O. Box 18
Brooks, CA 95606
Wintun (Patwin)
aroberts@yochadehe-nsn.gov
(530) 796-3400
(530) 796-2143 Fax

Cortina Indian Rancheria of Wintun Indians
Charlie Wright, Chairperson
P.O. Box 1630
Williams, CA 95987
Wintun / Patwin
(530) 473-3274 Office
(530) 473-3301 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed:
Travis Air Force Base IDEA, Elmira and Denverton, Solano County.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 60TH AIR MOBILITY WING (AMC)



Colonel John M. Klein, Jr.
Commander
60th Air Mobility Wing
400 Brennan Circle
Travis AFB, CA 94535-5000

MAY 14 2018

Honorable Anthony Roberts
Chairman
Yocha Dehe Wintun Nation
P. O. Box 18
Brooks, CA95606

Dear Chairman Roberts

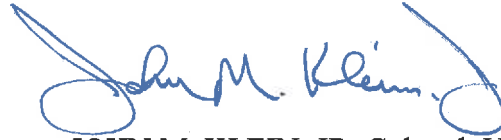
The United States Air Force (USAF) is preparing an Installation Development Environmental Assessment (IDEA) at Travis AFB, California. The IDEA identifies installation development projects that would be implemented over the next five years (2018-2023) to support missions of the 60th Air Mobility Wing (60 AMW) and its tenant units. The IDEA is being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) Part 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations (CFR) Parts 1500-1508); and USAF NEPA policies and procedures (32 CFR Part 989).

In accordance with Executive Order (EO) 13175 *Consultation and Coordination with Indian Tribal Government*; the NEPA; Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) (36 CFR Part 800); and Department of Defense Instruction (DoDI) 4710.02, which implements the *Annotated Department of Defense American Indian and Alaska Native Policy* (27 October 1999); the USAF would like to initiate Government-to-Government consultation with the Yocha Dehe Wintun Nation regarding the proposed IDEA activities. We would like to discuss the proposed IDEA activities with you in detail, so that we may understand and consider any comments, concerns, and suggestions you may have; to request your assistance in identifying any Native American resources that may be within the Areas of Potential Effects (APEs); and to determine if you would like to be considered as a consulting party during the EA process. Travis AFB has conducted various cultural resource studies across the Base and is not aware of any properties of religious or cultural significance within the APE; nonetheless, we ask for your assistance in identifying any such properties of which we may be unaware, particularly those that may be affected by the projects described in the attached table and shown on the attached figure. The projects include nine demolition projects, four infrastructure projects, and one renovation and repair project. For more details of the IDEA projects and their associated environmental and cultural analyses, we've attached the Preliminary Draft IDEA and a letter from the Native American Heritage Commission (NAHC) for your evaluations.

TERMINI NON EXISTENT ... THERE ARE NO BOUNDS

We request your review of the attached materials and your participation in consultation on this proposal. If you have questions, my point of contact for this consultation is Mr. Matthew Blazek, Installation Tribal Liaison Officer, matthew.blazek@us.af.mil, telephone 707-424-5127. I look forward to receiving any input you may have regarding our efforts to protect any sensitive resources considered important to your tribe.

Sincerely

A handwritten signature in blue ink, reading "John M. Klein, Jr.", with a stylized flourish at the end.

JOHN M. KLEIN, JR. Colonel, USAF
Commander

3 Attachments:

1. Description of Proposed Projects Actions
2. Proposed Action Sites
3. Preliminary Draft IDEA and NAHC Letter



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 60TH AIR MOBILITY WING (AMC)



Colonel John M. Klein, Jr.
Commander
60th Air Mobility Wing
400 Brennan Circle
Travis AFB, CA 94535-5000

MAY 14 2018

Honorable Charlie Wright
Chairman
Cortina Rancheria Band of Wintun Indians
P. O. Box 1630
Williams, CA 95987-0018

Dear Chairman Wright

The United States Air Force (USAF) is preparing an Installation Development Environmental Assessment (IDEA) at Travis AFB, California. The IDEA identifies installation development projects that would be implemented over the next five years (2018-2023) to support missions of the 60th Air Mobility Wing (60 AMW) and its tenant units. The IDEA is being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 US Code (USC) Part 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations (CFR) Parts 1500-1508); and USAF NEPA policies and procedures (32 CFR Part 989).

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Sincerely

A handwritten signature in blue ink that reads "John M. Klein, Jr." with a stylized flourish at the end.

JOHN M. KLEIN, JR. Colonel, USAF
Commander

3 Attachments:

1. Description of Proposed Projects Actions
2. Proposed Action Sites
3. Preliminary Draft IDEA and NAHC Letter

From: usarmy.redstone.rdecom-amrdec.mbx.safe-team@mail.mil
To: [BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE](mailto:BLAZEK.MATTHEW.F.GS-12.USAF.AMC.60.CES/CEIE)
Subject: AMRDEC Safe Access File Exchange Submittal Notice
Date: Wednesday, May 16, 2018 3:28:04 PM

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You uploaded the following file(s) on 5/16/2018 1:59:07 PM Central Time Zone, USA: Electronic copy of Travis AFB Government-to-Government Initiation Request Letter and attachments for the Installation Development Environmental Assessment (IDEA)

Package ID: 13685921

The file will be available until 5/26/2018

You can check the status of the files uploaded at:

<https://safe.amrdec.army.mil/safe/StatusLogIn.aspx?PackageID=13685921>

The Password is: z\$#8N362k*6cF?c

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Thank you.

This message may be forwarded to usarmy.redstone.rdecom-amrdec.mbx.safe-team@mail.mil for technical support purposes.

From: [BLAZEK, MATTHEW F.GS-12 USAF AMC 60 CES/CEIE](#)
To: ["Charlie Wright"](#)
Subject: Travis AFB G2G Initiation Request - IDEA
Date: Wednesday, May 16, 2018 11:58:00 AM

Hello Mr. Wright,

I hope you are doing well! I'm emailing to give you a heads up that Travis AFB is sending the Cortina Rancheria Band of Wintun Indians a new Government-to-Government Consultation Initiation Request Letter for projects being evaluated in our draft Installation Development Environmental Assessment (IDEA). Around the base, there are 9 proposed building demolition projects, 4 proposed construction projects, and one proposed repair project being evaluated. We believe these projects will have no impacts to cultural resources based on previous surveys across the base for potential surface and buried prehistoric archaeological deposits. However, we would like to hear from you as well and see if there are any concerns or input you may have.

In addition to receiving the letter in the mail, I'm also sending you an electronic copy through our AMRDEC system and so you should be receiving a link from that soon. Please let me know if you do not receive an AMRDEC link and feel free to contact me if you have any questions about the proposed projects in the IDEA. Thank you and have a good day!

Best,

Matt

Matthew Blazek, M.S.
NEPA Program Manager &
Installation Tribal Liaison Officer
CES/CEIE, Bldg 570, Travis AFB
707-424-5127 | DSN 837-5127

From: [BLAZEK, MATTHEW F.GS-12 USAF AMC 60 CES/CEIE](#)
To: ["Laverne Bill"](#)
Subject: Travis AFB G2G Initiation Request - IDEA
Date: Wednesday, May 16, 2018 11:54:00 AM

Hello Mr. Bill,

I hope you are doing well! I'm emailing to give you a heads up that Travis AFB is sending the Yocha Dehe Wintun Nation a new Government-to-Government Consultation Initiation Request Letter for projects being evaluated in our draft Installation Development Environmental Assessment (IDEA). Around the base, there are 9 proposed building demolition projects, 4 proposed construction projects, and one proposed repair project being evaluated. We believe these projects will have no impacts to cultural resources based on previous surveys across the base for potential surface and buried prehistoric archaeological deposits. However, we would like to hear from you as well and see if there are any concerns or input you may have.

In addition to receiving the letter in the mail, I'm also sending you an electronic copy through our AMRDEC system and so you should be receiving a link from that soon. Please let me know if you do not receive an AMRDEC link and feel free to contact me if you have any questions about the proposed projects in the IDEA. Thank you and have a good day!

Best,


Matt

Matthew Blazek, M.S.
NEPA Program Manager &
Installation Tribal Liaison Officer
CES/CEIE, Bldg 570, Travis AFB
707-424-5127 | DSN 837-5127

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 IDEA
 Anthony Roberts
 Yuba Debe Winter Ncton
 P.O. Box 18
 Brooks, CA 95606


 9590 9403 0686 5196 7435 27
 Article Number (Transfer from service label)

7015 1730 0001 4858 1722

S Form 3811, April 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature Agent
 X Susan Lavouré
 B. Received by (Printed Name) Addressee
 Susan Lavouré
 C. Date of Delivery
 5-21-18
 D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No


3. Service Type
- Priority Mail Express®
 - Adult Signature
 - Registered Mail™
 - Certified Mail®
 - Collect on Delivery
 - Return Receipt for Merchandise
 - Signature Confirmation™
 - Restricted Delivery
- Adult Signature Restricted Delivery
- Certified Mail® Restricted Delivery
- Collect on Delivery Restricted Delivery
- Return Receipt for Merchandise Restricted Delivery
- Signature Confirmation™ Restricted Delivery

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 IDEA
 Charlie Wright
 Centine Lechner Band of Winter Id
 P.O. Box 1630
 Williams, CA 95987-0018


 9590 9403 0686 5196 7433 05
 Article Number (Transfer from service label)

7015 1730 0001 4858 1715

PS Form 3811, April 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature Agent
 X [Signature]
 B. Received by (Printed Name) Addressee
 Charlie Wright
 C. Date of Delivery
 5-21-18
 D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- Priority Mail Express®
 - Adult Signature
 - Registered Mail™
 - Certified Mail®
 - Collect on Delivery
 - Return Receipt for Merchandise
 - Signature Confirmation™
 - Restricted Delivery
- Adult Signature Restricted Delivery
- Certified Mail® Restricted Delivery
- Collect on Delivery Restricted Delivery
- Return Receipt for Merchandise Restricted Delivery
- Signature Confirmation™ Restricted Delivery

Domestic Return Receipt



YOCHA DEHE
CULTURAL RESOURCES

June 4, 2018

60th Air Mobility Wing
Attn: Matthew Blazek, Tribal Liaison
400 Brennan Circle
Travis AFB, CA 94535

RE: IDEA at Travis AFB Project

Dear Mr. Blazek:

Thank you for your project notification letter dated, May 14, 2018, regarding cultural information on or near the proposed IDEA at Travis AFB Project, Travis AFB, California. We appreciate your effort to contact us and wish to respond.

The Cultural Resources Department has reviewed the project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed project area and would like to initiate a formal consultation with the lead agency. At the time of consultation, please provide our Cultural Resources Department with a project timeline, detailed project information and the latest cultural study for the proposed project.

Please contact Mr. Rouse at your earliest convenience to coordinate a date and time for the consultation meeting.

Reimann Rouse, GIS Analyst
Yocha Dehe Wintun Nation
Office: (530) 723-2805
Email: rrouse@yochadehe-nsn.gov

Please refer to identification number YD - 06042018-03 in any correspondence concerning this project.

Thank you for providing us the opportunity to comment.

Sincerely,

Marilyn Delgado
Director of Cultural Resources

From: [BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE](#)
To: "Laverne Bill"
Cc: [Marilyn Delgado](#); [Robert J. Geary](#); [Lawrence Longee Jr.](#); [Reimann Rouse](#)
Subject: RE: Travis AFB G2G Initiation Request - IDEA
Date: Friday, June 15, 2018 2:56:00 PM

Hi Laverne,

Sounds good! I have you in for July 12th, starting at 10:00am. Please let me know who will be attending so I can get them access to the base as well as what IDEA project sites you would like to discuss and visit.

See you in a few weeks!

Best,

Matt

-----Original Message-----

From: Laverne Bill [<mailto:LBill@yochadehe-nsn.gov>]
Sent: Friday, June 15, 2018 2:49 PM
To: BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE <matthew.blazek@us.af.mil>
Cc: Marilyn Delgado <MDelgado@yochadehe-nsn.gov>; Robert J. Geary <RGeary@yochadehe-nsn.gov>; Lawrence Longee Jr. <LLongee@yochadehe-nsn.gov>; Reimann Rouse <RRouse@yochadehe-nsn.gov>
Subject: [Non-DoD Source] RE: Travis AFB G2G Initiation Request - IDEA

Matt, it was great talking to you again. Per our conversation, we would to have a consultation at your location to go over the many projects on the base. We are looking for a consultation/site visit on July 12 @ 10a. We will go over the information you submitted and go over our concerns. As the date gets closer I will have a better idea of the attendees. Thanks again.

Laverne Bill
Cultural Resources Department Manager &
Cultural Resources Manager

Tewe Kewe Cultural Center
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov
www.yochadehe.org

-----Original Message-----

From: BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE [<mailto:matthew.blazek@us.af.mil>]
Sent: Wednesday, May 16, 2018 12:16 PM
To: Laverne Bill
Subject: Travis AFB G2G Initiation Request - IDEA

Hello Mr. Bill,

I hope you are doing well! I'm emailing to give you a heads up that Travis AFB is sending the Yocha Dehe Wintun Nation a new Government-to-Government Consultation Initiation Request Letter for projects being evaluated in our draft Installation Development Environmental Assessment (IDEA). Around the base, there are 9 proposed building demolition projects, 4 proposed construction projects, and one proposed repair project being evaluated. We believe these projects will have no impacts to cultural resources based on previous surveys across the base for potential

surface and buried prehistoric archaeological deposits. However, we would like to hear from you as well and see if there are any concerns or input you may have.

In addition to receiving the letter in the mail, I'm also sending you an electronic copy through our AMRDEC system and so you should be receiving a link from that soon. Please let me know if you do not receive an AMRDEC link and feel free to contact me if you have any questions about the proposed projects in the IDEA. Thank you and have a good day!

Best,

Matt

Matthew Blazek, M.S.
NEPA Program Manager &
Installation Tribal Liaison Officer
CES/CEIE, Bldg 570, Travis AFB
707-424-5127 | DSN 837-5127

From: Kristin Jensen
To: [BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE](#)
Cc: [Marilyn Delgado](#); [Robert J. Geary](#)
Subject: [Non-DoD Source] Updated Treatment Protocol for Yocha Dehe Wintun Nation
Date: Tuesday, July 24, 2018 1:30:13 PM
Attachments: [Treatment Protocol.doc](#)

Good Morning Matt,

Robert asked me to send you a copy of our most recent Treatment Protocol as the one you currently have on file is from 2014. Even though the attached Treatment Protocol in this instance is singular to Yocha Dehe, we continue to be joined together with Cachil Dehe and Kletsel Dehe in supporting and strengthening our shared interest in the preservation and protection of Patwin history and culture.

Please let me know if you have any questions.

Thank you,

Kristin Jensen

CRD Administrative Assistant

Yocha Dehe Wintun Nation

PO Box 18 | Brooks, CA 95606

p 530.796.3400 | f 530.796.2143

kjensen@yochadehe-nsn.gov <<mailto:kjensen@yochadehe-nsn.gov>>

www.yochadehe.org <<http://www.yochadehe.org/>>

From: Laverne Bill
To: [BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE](#)
Cc: [Robert J. Geary](#); [Travis Lang](#)
Subject: [Non-DoD Source] RE: Travis AFB G2G Initiation Request - IDEA
Date: Wednesday, July 18, 2018 2:07:26 PM

Matt, I will not be able to attend but two tribal monitors will be present. I have listed their names below:

Robert Geary
Travis Lang

Laverne Bill
Cultural Resources Department Manager &
Cultural Resources Manager

Tewe Kewe Cultural Center
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov
www.yochadehe.org

-----Original Message-----

From: BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE [<mailto:matthew.blazek@us.af.mil>]
Sent: Wednesday, July 18, 2018 11:11 AM
To: Laverne Bill
Subject: RE: Travis AFB G2G Initiation Request - IDEA

Hi Laverne,

I hope you're feeling better! Just checking in, are we still on for tomorrow at 10:00am? If so, please try arriving at the visitor's center at our main gate on Air Base Parkway around 9:30am in case there is a line. Also, please make sure folks driving vehicles bring a copy of their car insurance and vehicle registration, sometimes the front gate asks for those.

Were you able to determine which project site(s) in the IDEA you want to see? I can be sure to let the pertinent folks on my end know for scheduling purposes. Please let me know and see you tomorrow!

Matt

-----Original Message-----

From: Laverne Bill [<mailto:LBill@yochadehe-nsn.gov>]
Sent: Thursday, July 5, 2018 2:57 PM
To: BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE <matthew.blazek@us.af.mil>
Subject: [Non-DoD Source] Re: Travis AFB G2G Initiation Request - IDEA

Matt, I am still on vacation but will answer all your questions when I return on Monday. Thanks for the reminder and I will confirm the attendees also. Thanks and have a great weekend

Laverne Bill
Cultural Resources Department Manager
Tewe Kewe Cultural Center
PO Box 18, Brooks, CA 95606
c 530-723-3891

f 530-796-2143

Sent from my iPhone

> On Jul 5, 2018, at 12:57 PM, BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE
<matthew.blazek@us.af.mil> wrote:

>

> Hi Laverne,

>

> I hope you had a good 4th of July! I was able to relax pool side for the day, other than a little sunburn, it was great! Anyways, I am putting together the agenda and invites to folks for next Thursday's site visit and I was wondering which projects from the IDEA you all had questions on and/or would like to see? Please let me know and I'll get everything coordinated.

>

> Also, are the folks you copied in the email below the people coming with you next Thursday? If so, I'll make sure they get access to our main gate.

>

> Thank you!

>

> Matt

>

> -----Original Message-----

> From: Laverne Bill [<mailto:LBill@yochadehe-nsn.gov>]

> Sent: Friday, June 15, 2018 2:49 PM

> To: BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE

> <matthew.blazek@us.af.mil>

> Cc: Marilyn Delgado <MDelgado@yochadehe-nsn.gov>; Robert J. Geary

> <RGeary@yochadehe-nsn.gov>; Lawrence Longee Jr.

> <LLongee@yochadehe-nsn.gov>; Reimann Rouse <RRouse@yochadehe-nsn.gov>

> Subject: [Non-DoD Source] RE: Travis AFB G2G Initiation Request - IDEA

>

> Matt, it was great talking to you again. Per our conversation, we would to have a consultation at your location to go over the many projects on the base. We are looking for a consultation/site visit on July 12 @ 10a. We will go over the information you submitted and go over our concerns. As the date gets closer I will have a better idea of the attendees. Thanks again.

>

> Laverne Bill

> Cultural Resources Department Manager & Cultural Resources Manager

>

> Tewe Kewe Cultural Center

> PO Box 18 | Brooks, CA 95606

> p 530.796.3400 | c 530.723.3891

> f 530.796.2143

> lbill@yochadehe-nsn.gov

> www.yochadehe.org

>

>

> -----Original Message-----

> From: BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE

> [<mailto:matthew.blazek@us.af.mil>]

> Sent: Wednesday, May 16, 2018 12:16 PM

> To: Laverne Bill

> Subject: Travis AFB G2G Initiation Request - IDEA

>

> Hello Mr. Bill,

>

> I hope you are doing well! I'm emailing to give you a heads up that Travis AFB is sending the Yocha Dehe Wintun Nation a new Government-to-Government Consultation Initiation Request Letter for projects being evaluated in our draft Installation Development Environmental Assessment (IDEA). Around the base, there are 9 proposed building demolition projects, 4 proposed construction projects, and one proposed repair project being evaluated. We believe these projects will have no impacts to cultural resources based on previous surveys across the base for potential surface and buried prehistoric archaeological deposits. However, we would like to hear from you as well and see if there are any concerns or input you may have.

>

> In addition to receiving the letter in the mail, I'm also sending you an electronic copy through our AMRDEC system and so you should be receiving a link from that soon. Please let me know if you do not receive an AMRDEC link and feel free to contact me if you have any questions about the proposed projects in the IDEA. Thank you and have a good day!

>

> Best,

>

> Matt

>

> *****

>

> Matthew Blazek, M.S.

> NEPA Program Manager &

> Installation Tribal Liaison Officer

> CES/CEIE, Bldg 570, Travis AFB

> 707-424-5127 | DSN 837-5127

>

>

> *****

>

>

From: usarmy.redstone.rdecom-amrdec.mbx.safe-team@mail.mil
To: [BLAZEK, MATTHEW F GS-12 USAF AMC 60 CES/CEIE](mailto:BLAZEK.MATTHEW.F.GS-12.USAF.AMC.60.CES/CEIE)
Subject: AMRDEC Safe Access File Exchange Submittal Notice
Date: Wednesday, May 16, 2018 12:26:01 PM

DO NOT FORWARD

Please note, IAW Para 4-5.a(8) and 4-12.c, AR 25-2, it is a violation of SAFE security policy to share/forward Package passwords.

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You uploaded the following file(s) on 5/16/2018 1:55:52 PM Central Time Zone, USA: Electronic copy of Travis AFB Government-to-Government Initiation Request Letter and attachments for the Installation Development Environmental Assessment (IDEA)

Package ID: 13685837

The file will be available until 5/26/2018

You can check the status of the files uploaded at:

<https://safe.amrdec.army.mil/safe/StatusLogIn.aspx?PackageID=13685837>

The Password is: ?!uU8zq39xBD6hu

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Thank you.

This message may be forwarded to usarmy.redstone.rdecom-amrdec.mbx.safe-team@mail.mil for technical support purposes.



NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED INSTALLATION DEVELOPMENT PROJECTS AT TRAVIS AIR FORCE BASE, CALIFORNIA

Interested parties are hereby notified that the United States Air Force, Travis Air Force Base, California has completed a Draft Environmental Assessment (EA) that resulted in a Finding of No Significant Impact (FONSI) for the proposed Installation Development Projects planned over the next five years. The EA documents the proposed action components for the project, including the demolition of nine unused and obsolete facilities and construction of five infrastructure projects located at Travis Air Force Base in support of its present and future mission.

The Draft EA and FONSI, dated July 2018, are available for review at the following locations:

Fairfield Civic Center Library 1150 Kentucky Street Fairfield, California 94533	Suisun City Library 601 Pintail Drive Suisun City, California 94585
Vacaville Public Library Cultural Center 1020 Ulatis Drive Vacaville, California 95688	Mitchell Memorial Library 510 Travis Boulevard Travis AFB, California 94535

The Draft EA and FONSI can also be obtained at:

<http://www.travis.af.mil/About-Us/Environment/>

Written comments and inquiries on the EA and FONSI should be directed to:

**Mr. Matthew Blazek
60th Civil Engineer Squadron
411 Airman Drive, Building 570
Travis AFB, CA 94535**

Comments may also be faxed to the attention of Mr. Blazek at (707) 424-2948. Emailed comments will not be accepted. The public review and comment period for this EA is 30 days from the publication date of this Notice of Availability. If you have questions, please contact Mr. Blazek at (707) 424-5127.

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4
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APPENDIX B

CULTURAL RESOURCES DATA



**DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to the Demolition of Infrastructure Features associated with the former Waste Water Treatment Plant at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with the demolition of infrastructure features associated with the former Waste Water Treatment Plant (WWTP – Buildings 1150 and 1151).

This consultation combines a discussion of the Area of Potential Effects (APE) for the undertaking (per 36 CFR 800.4) with our finding of No Historic Properties Affected. Travis AFB requests your concurrence with the APE; with our determination that remnant infrastructure features associated with the WWTP are Not Eligible for listing in the National Register of Historic Places (NRHP); and that there will be No Historic Properties Affected from the proposed WWTP demolition project.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base,

which is under the operational control of the Air Mobility Command. The 60th Air Mobility Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves the demolition of remnant infrastructure features associated with the former WWTP, which was constructed in 1946; added to, and redesigned several times; and active until approximately 1980. The facility continues to function as a sewerage lift station, but is no longer a sewerage treatment plant. The WWTP is situated along the south side of the Travis AFB airfield in a remote area that is designated for industrial use and approximately 900 feet from the southeastern installation boundary.

The APE shall be limited to the WWTP project footprint, plus a 50-foot (15.2-meter) buffer zone that defines the work area around the former WWTP and allows for the impacts of deconstruction, grading, and other demolition activities. The WWTP APE is, therefore, the entire work area (facility footprint plus buffer), but the Area of Direct Impact (ADI) shall be limited to the project footprint (demolition zone) and any work areas within the buffer that are actually impacted (Attachment 2). Except for the WWTP project footprint and buffer zone, there are no other APEs associated with the demolition of these facility features.

As shown on Attachment 2, all staging and equipment maintenance activities shall take place on existing roads (paved, gravel, dirt) or parking areas within the project site, all of which have been heavily disturbed from previous construction and operational use. Stockpiling of waste materials and rubble shall occur on existing disturbed surfaces and shall not affect undisturbed soils.

Based on the above information, Travis AFB is requesting your concurrence on the APE as delineated herein for the current WWTP demolition project.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery will be used to demolish the WWTP infrastructure features. The demolition encompasses two Imhoff tanks, two digesters, a primary settling tank, manhole structures, and other associated inactive equipment and piping. As currently proposed, the active wastewater treatment equipment and pump house would remain. Existing underground utility services (pipes, cables, etc.) shall be cut, capped, and left in place. If compactable soil, topsoil, gravel, or other materials are needed for fill, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO).

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During demolition activities, if any archaeological deposits, anomalies, or potential

historic properties are encountered, all work will stop in the vicinity and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, the WWTP project area is located in heavily graded and disturbed areas adjacent to the built up flightline and it is extremely unlikely that intact, buried archaeological deposits will be encountered. After demolition of the WWTP infrastructure features is complete, the ground shall be graded and seeded to appear similar to the surrounding area and precautions will be taken to control post-demolition erosion of the disturbed ground surface.

36 CFR 800.11(d)(2) – Identification of Historic Properties

Two previous cultural resources surveys with NRHP evaluations have encompassed the WWTP facility. These include *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, which was completed by the Argonne National Laboratory in March 1996, and *Travis Air Force Base Architectural Inventory*, which was completed by the U. S. Army Corps of Engineers Engineering Research and Development Center of the Construction and Engineering Research Laboratory (ERDC/CERL) in February 2013. These reports recommended the WWTP (Buildings 1150 and/or 1151 [1151 no longer extant]) as Not Eligible for inclusion in the NRHP. Concurrence was received from your office in 1996 regarding the eligibility of the WWTP facility (Attachment 3) and in 2014 that there would be No Historic Properties Affected for the demolition of Building 1150 (Attachment 4). A California Department of Parks and Recreation (DPR) structure record form for Building 1150 was provided as Attachment 4 to the 2014 consultation, which included notes about conditions at the time of survey, as well as photographs of the facility taken in May 2014.

While the Argonne and ERDC/CERL reports considered WWTP Buildings 1150 and/or 1151, Not Eligible, neither of the reports nor the subsequent SHPO consultations are entirely clear as to the eligibility status of all of the associated infrastructure features; therefore, Travis AFB is requesting your review and concurrence that all of the infrastructure features associated with the WWTP are also Not Eligible (including, digesters, primary settling tank, holding/settling ponds, manhole structures, inactive equipment and piping, still active equipment, pump house) and as described in the DPRs and Attachment 4 of the previous 2014 consultation letter. Having been abandoned since 1980, these ancillary WWTP elements do not meet the criteria for NRHP eligibility required under 36 CFR 60.4 and retain only a marginal degree of integrity of design, materials, and workmanship. None of the infrastructure features would contribute to a better understanding of the World War II or Cold War-era military missions at Travis AFB (NRHP criterion A) and all of the features also are of minor importance in the historical development of the base as a whole. The WWTP and all of its ancillary infrastructure are not known to be associated with a person or persons of historical importance (NRHP criterion B); do not embody the distinctive characteristics of a type, period, or method of construction, do not represent the work of a master or possess high artistic value; and are not contributing elements of an existing or proposed historic district (Criterion C). Given its utilitarian base support function and design, the remnant infrastructure features associated with

the former WWTP (Buildings 1150 and 1151) are also not likely to yield information important in prehistory or history (Criterion D).

In addition to the Argonne National Laboratory report, which also included archaeological resources, there have been several other small archaeological surveys, and a recent predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California*. This report was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 5). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of landform age, type, slope, and other physical characteristics, and considered water sources, sedimentation, drainage, and other processes and ground disturbances, less than 16 acres (out of 5,317, or less than 0.3%) was identified as having “high” or “moderate” potential for buried sites. As a result, archaeological surveys and modeling have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and the presence of unknown buried prehistoric archaeological deposits is extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 3). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and DPR forms have been prepared (Attachment 6); however, neither of these two sites is near the proposed WWTP demolition project area. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Potos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site is approximately 1.75 miles north of the WWTP project area.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site is approximately 2.1 miles north of the WWTP project area.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB and the location of the WWTP infrastructure features within a heavily graded and disturbed area adjacent to the built up flightline, the unexpected discovery of archaeological resources during the demolition of the WWTP is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although demolition projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about this demolition, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties* and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB), the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National Historic Preservation Act (NHPA). The required documentation was completed in 2002; however, the two Historic Districts continue to be treated as eligible, pending additional SHPO consultation.

The Air Force Special Weapons Project (AFSWP) Q Area Historic District is situated in the southwestern area of Travis AFB and approximately 1.27 miles west of the WWTP. The Air Defense Command (ADC) Historic District is situated in the northeastern area of Travis AFB and is approximately 1.23 miles to the northeast of the WWTP. Both Historic Districts are shown on Attachment 7 and are well removed from the proposed demolition of the WWTP infrastructure features; therefore, neither of the Historic Districts would be affected by the WWTP project.

36 CFR 800.11(d)(3) – Determination of No Historic Properties Affected

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the proposed demolition of the WWTP infrastructure features. There are no prehistoric, ethnographic, or traditional cultural properties within the WWTP APE and Native American tribes affiliated with Travis AFB have been contacted about this proposed demolition project. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native American or public concerns are raised about the proposed WWTP demolition project, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Based on the above discussions about the ancillary infrastructure features associated with former WWTP Buildings 1150 and 1151, Travis AFB requests your concurrence that none of the described infrastructure features (including, digesters, primary settling tank, holding/settling

ponds, manhole structures, inactive equipment and piping, still active equipment, pump house) would be eligible for inclusion in the NRHP, and that there would be No Historic Properties Affected as a result of the proposed demolition of these remnant WWTP infrastructure features.

36 CFR 800.13 – Post-Review Discoveries

If during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, Travis AFB personnel shall conform to the requirements of 36 CFR 800.13. All work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be immediately contacted.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

 Recoverable Signature

X 

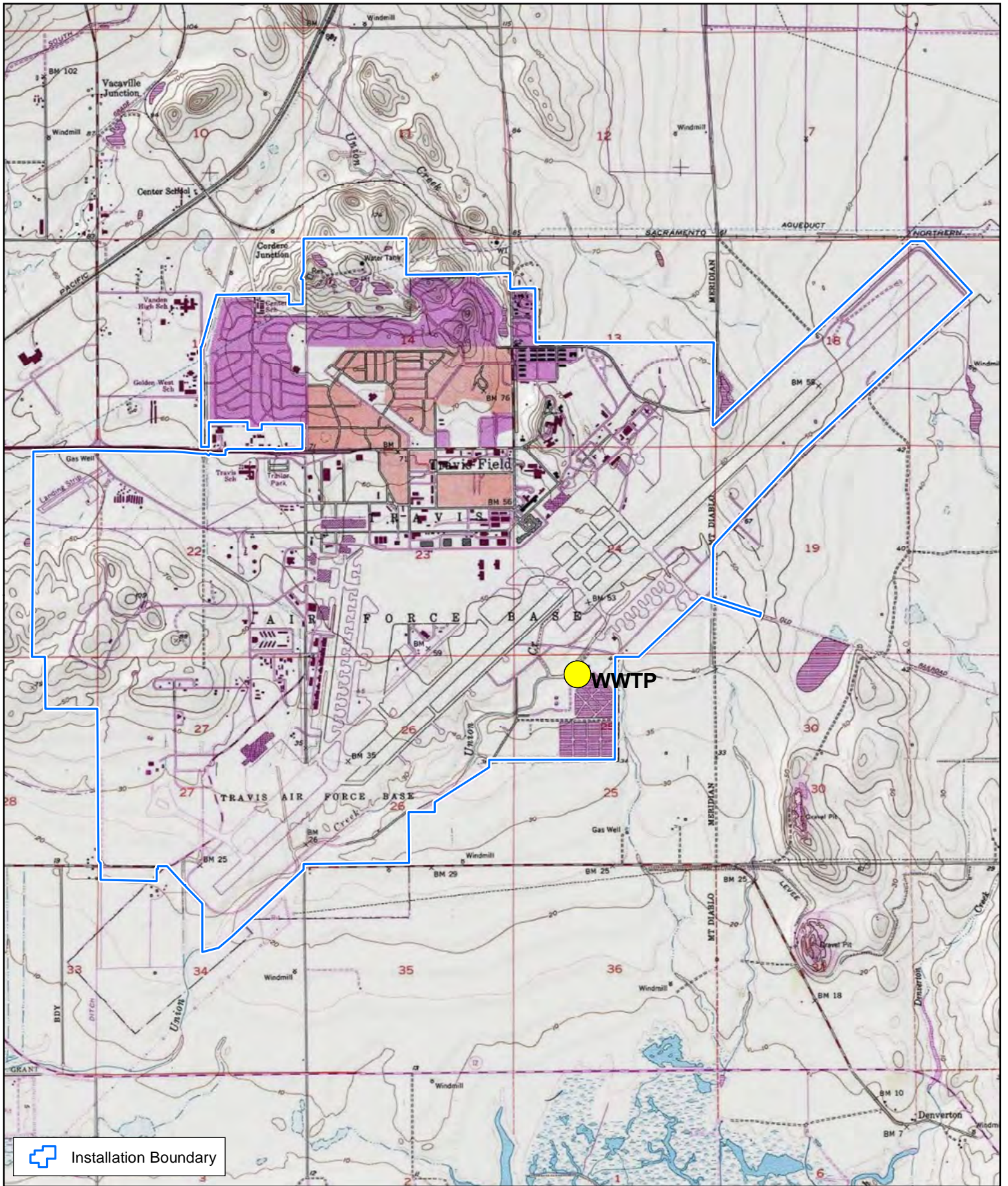
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

7 Attachments:

1. WWTP Project Location Map
2. WWTP Demolition Project APE
3. SHPO Concurrence Letters (1995/1996), Argonne National Laboratory Report Excerpts
4. SHPO Concurrence Letter (2014), Demolition of WWTP Building 1150
5. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
6. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
7. WWTP Project Location / Historic Districts Locations Map

DEMOLITION OF
WASTEWATER TREATMENT PLANT
INFRASTRUCTURE FEATURES

SECTION 106 LETTER ATTACHMENTS



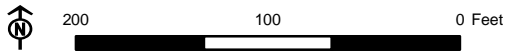
Attachment 1

Travis Air Force Base
Installation Boundary
and Location of the WWTP



Google™

Imagery ©2018, DigitalGlobe, U.S. Geological Survey



- Demolition Zone
- Staging and Stockpiling

Attachment 2

Travis Air Force Base
 Area of Potential Effects
 Demolition of WWTP Infrastructure Features

ATTACHMENT 3

SHPO LETTERS and excerpts from the 1996 ARGONNE REPORT

Moeller, K, B.T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California. Environmental Assessment Division, Argonne National Laboratory.

Included in this Attachment are three items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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1 Extant Structures at Travis AFB Constructed prior to 1947 44

**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

ATTACHMENT 4

SHPO LETTER

and Table of 19 Travis AFB Facilities

Proposed for Demolition

Section 106 Consultation June/July 2014

Included in this Attachment are two items:

- 1) A letter from the California SHPO dated July 10, 2014, indicating concurrence with Travis AFB proposed demolition of 19 buildings.
- 2) A table included in the June 25, 2014, request from Travis AFB to the SHPO showing the 19 facilities proposed for demolition.

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

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calshpo@parks.ca.gov
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July 10, 2014

Reply in Reference To: USAF_2014_0702_001

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Re: Section 106 Consultation for Fiscal Year 2015 19 Building Demolition Program, Travis Air Force Base, Solano County

Dear Mr. Sassaman:

Thank you for initiating consultation regarding the United States Air Force's (USAF) efforts to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF has identified the undertaking as the demolition of 19 buildings and structures at Travis Air Force Base. Project activities include capping of utilities, removal of floor slabs and basements (where applicable) and debris removal and transport.

Identification and National Register of Historic Places (NRHP) evaluation efforts determined that of the 19 buildings subject to this undertaking (as listed in Table One of the USAF's submittal), three have previously been determined not eligible for NRHP inclusion through consensus with my office and two are subject to the *Program Comment for Cold War Era Unaccompanied Personnel Housing (1946-1974)*, a document that permits the USAF to alter or demolish the subject property type without consultation with the State Historic Preservation Officer. The USAF is requesting my concurrence with their determination that the remaining 14 buildings are not eligible for NRHP inclusion. Furthermore, due to the lack of historic properties within the undertaking's area of potential effects, the USAF has determined that no historic properties will be affected by the undertaking.

After reviewing the information provided by the USAF, I concur the 14 subject buildings are not NRHP eligible and that a finding of no historic properties affected is appropriate for this undertaking pursuant to 36 CFR Part 800.4(d)(1). Please be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for seeking my comments and considering historic properties. If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 / Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in black ink that reads "Carol Roland-Nawi, Ph.D.".

Carol Roland-Nawi, PhD
State Historic Preservation Officer

800.4(a)(1) - Description of the Area of Potential Effects

This undertaking involves the demolition of 19 separate buildings or facilities (Atch2). Table 1, below, identifies each facility and groups them by NRHP status. In general, the Area of Potential Effects shall be limited to the building or facility footprint, plus a buffer zone that allows for the impacts of deconstruction, grading, and other demolition activities. A minimum 15-meter buffer shall define the work zone around each facility; the APE is the entire work area (facility footprint plus buffer) but the Area of Direct Impact (ADI) shall be limited to the building footprint and any work areas within the buffer that are actually impacted. Except for the facility footprints and buffer zones, there are no other APEs.

TABLE 1

Group & Number	Facility	NRHP Status	Reference	Comments
1 1	250 OPS Building	DNE*	SHPO consult	Have DPR* forms
2	480 Recreation Facility	DNE	SHPO consult	Have DPR forms
3	1150 Waste Treatment	DNE	SHPO consult	Have DPR forms
2 4	1331 Dorm; Unaccompanied Personnel Housing	UPH* Program Comment; DNE	See photograph	ACHP Comment dated August 18, 2006
5	1332 Dorm; Unaccompanied Personnel Housing	UPH Program Comment; DNE	See photograph	ACHP Comment dated August 18, 2006
3 6	8 Airfield Light Vault	Recommended Not Eligible	CERL* Evaluation	Have DPR forms
7	242 Squadron Operations Building	Recommended Not Eligible	CERL Evaluation	Have DPR forms
8	404 Barracks; Reserve Forces / Training	Recommended Not Eligible	CERL Evaluation	Have DPR forms
9	713 Warehouse, Supply and Equipment	Recommended Not Eligible	CERL Evaluation	Have DPR forms
10	819 General Purpose Aircraft Shop	Recommended Not Eligible	CERL Evaluation	Have DPR forms
11	1115 TACAN; Tactical Air Navigation Station, Fixed	Recommended Not Eligible	CERL Evaluation	Have DPR forms
12	1201 Terminal, Air Freight	Recommended Not Eligible	CERL Evaluation	Have DPR forms
13	1322 Heating Plant, Dorms	Recommended Not Eligible	CERL Evaluation	Have DPR forms
4 14	40 / 42 Wash Rack	Less than 50 yrs old	See photograph	Constructed <i>circa</i> 1999; common facility; not historic
15	720 Kennel, Military Working Dog	Less than 50 yrs old	See photograph	Constructed <i>circa</i> 1990; common facility; not historic
16	773 Aviation Gas Storage Tank	Less than 50 yrs old	See photograph	Constructed 1993; common facility; not historic
17	774 Aviation Gas Storage Tank	Less than 50 yrs old	See photograph	Constructed 1993; common facility; not historic
18	793 Hazardous Storage	Less than 50 yrs old	See photograph	Constructed <i>circa</i> 1988; common facility; not historic

***NOTES:**

1. DNE = Determined not Eligible in consultation with the SHPO; have dated letter.
2. DPR = Department of Parks and Recreation; site record forms available from SHPO.
3. UPH = Unaccompanied Personnel Housing; Program Comment from the ACHP for dormitory structures.
4. CERL = Construction and Engineering Research Laboratory, US Army Corps of Engineers.

ATTACHMENT 5

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air
Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of WWTP added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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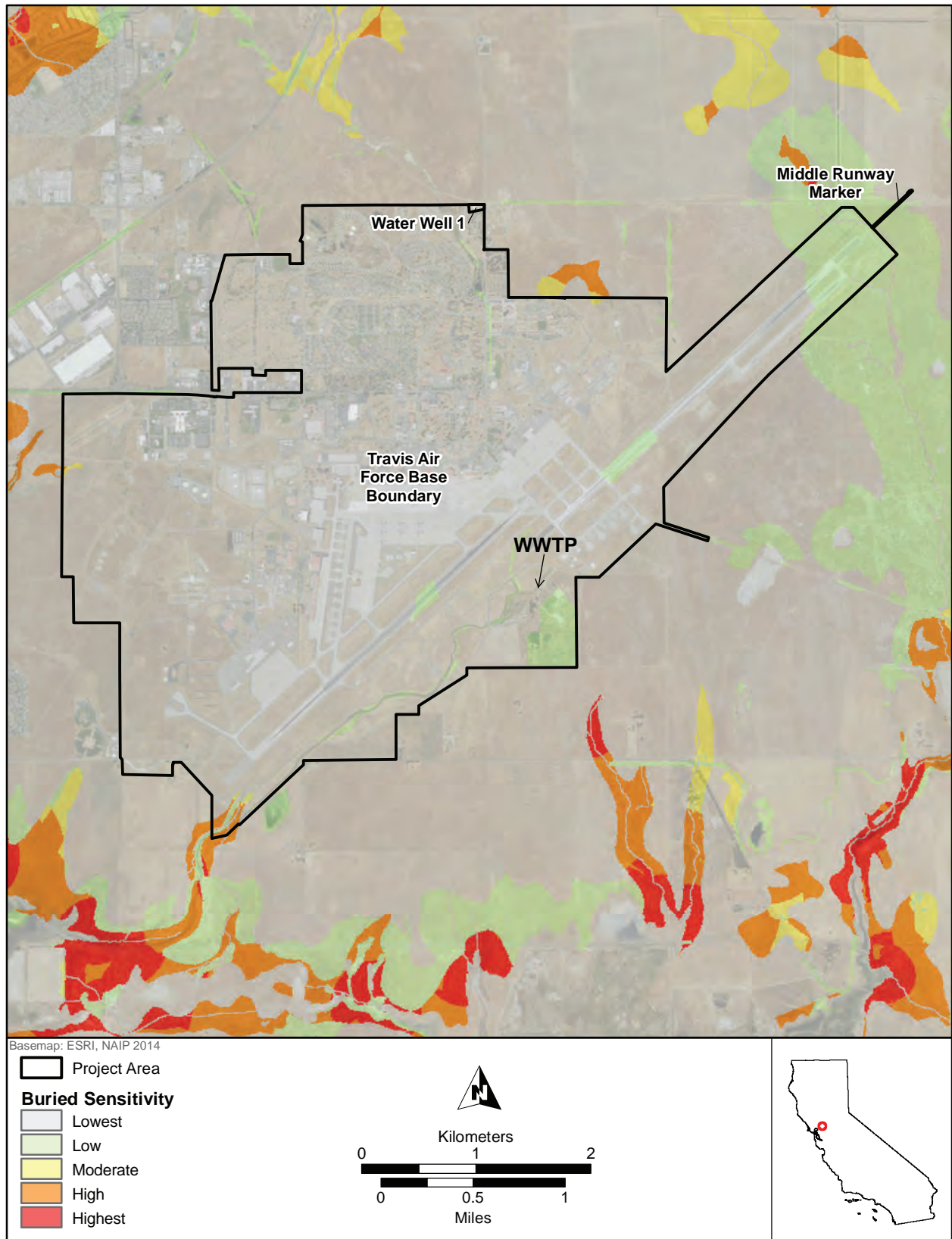


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 6

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-383H</u> NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
*P2. Location: Not for Publication Unrestricted *a. County Solano
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad Elmira, CA Date 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
c. Address City Fairfield Zip
d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE/ 4237690 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

*P6. Date Constructed/Age and Source: Historic Prehistoric Both



*P7. Owner and Address:
Travis Air Force Base
Fairfield, CA

*P8. Recorded by: (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

*P9. Date Recorded: May 16, 2013

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project. Travis Air Force Base, Solano County, California

*Attachments: NONE Location Map Continuation Sheet Building, Structure, and Object Record
Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

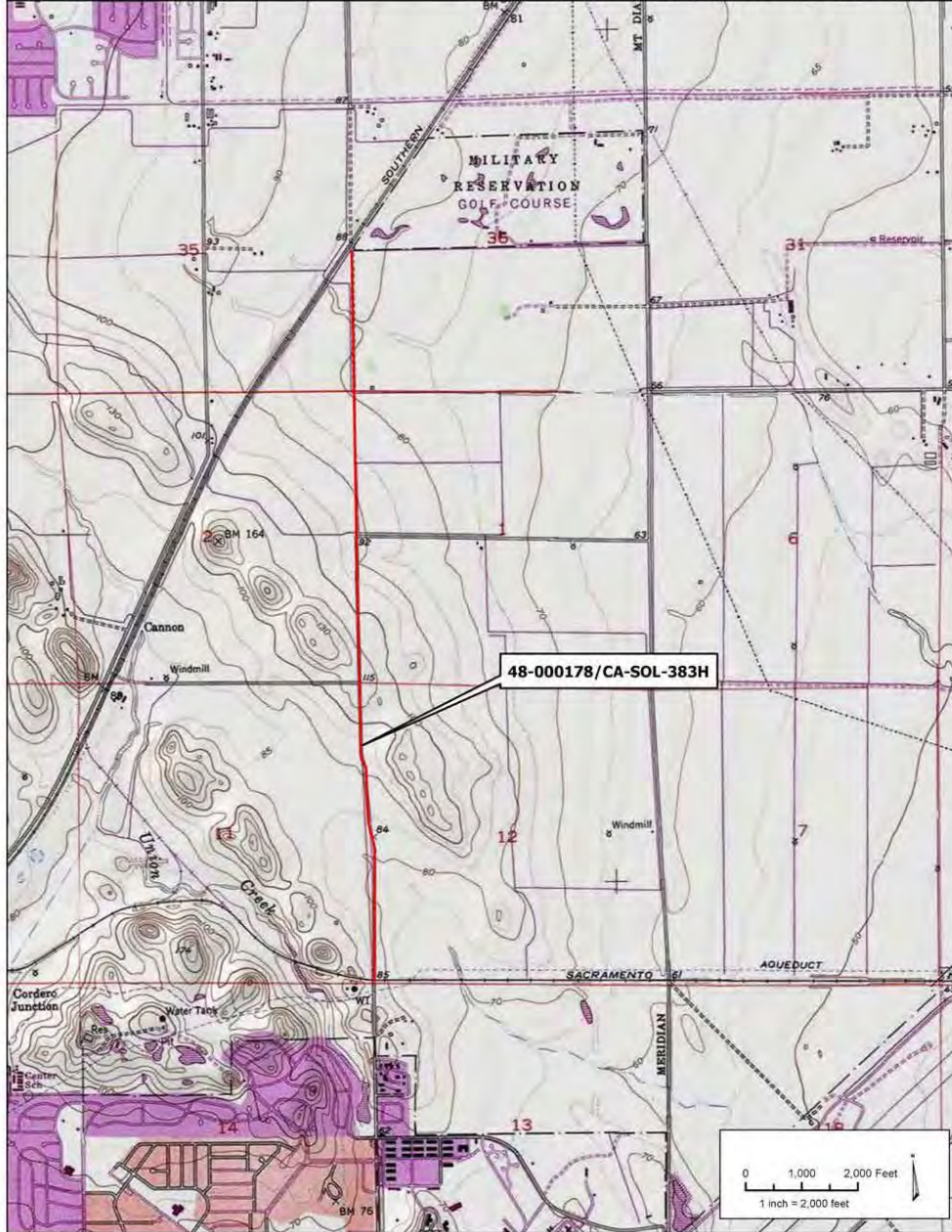
Primary # P-48-000178 UPDATE
HRI#
Trinomial CA-SOL-383H

Page 2 of 4

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE

*Map Name: Elmira, CA

*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
CONTINUATION SHEET	

Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-424H</u> NRHP Status Code
		Reviewer Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 **T** 5 N ; **R** 1W ; **SW ¼ of SW ¼ of Sec 12**
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
 c. **Address** _____ **City** Fairfield **Zip** _____
 d. **UTM:** (Give more than one for large and/or linear resources) **Zone** 10 , 0593440 mE/ 4238018 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
 This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.
 Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7
***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



***P6. Date Constructed/Age and Source:** Historic
 Prehistoric Both
***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA
***P8. Recorded by:** (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111
***P9. Date Recorded:** May 16, 2013
***P10. Survey Type:** (Describe)
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California
EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

DPR 523A (1/95)

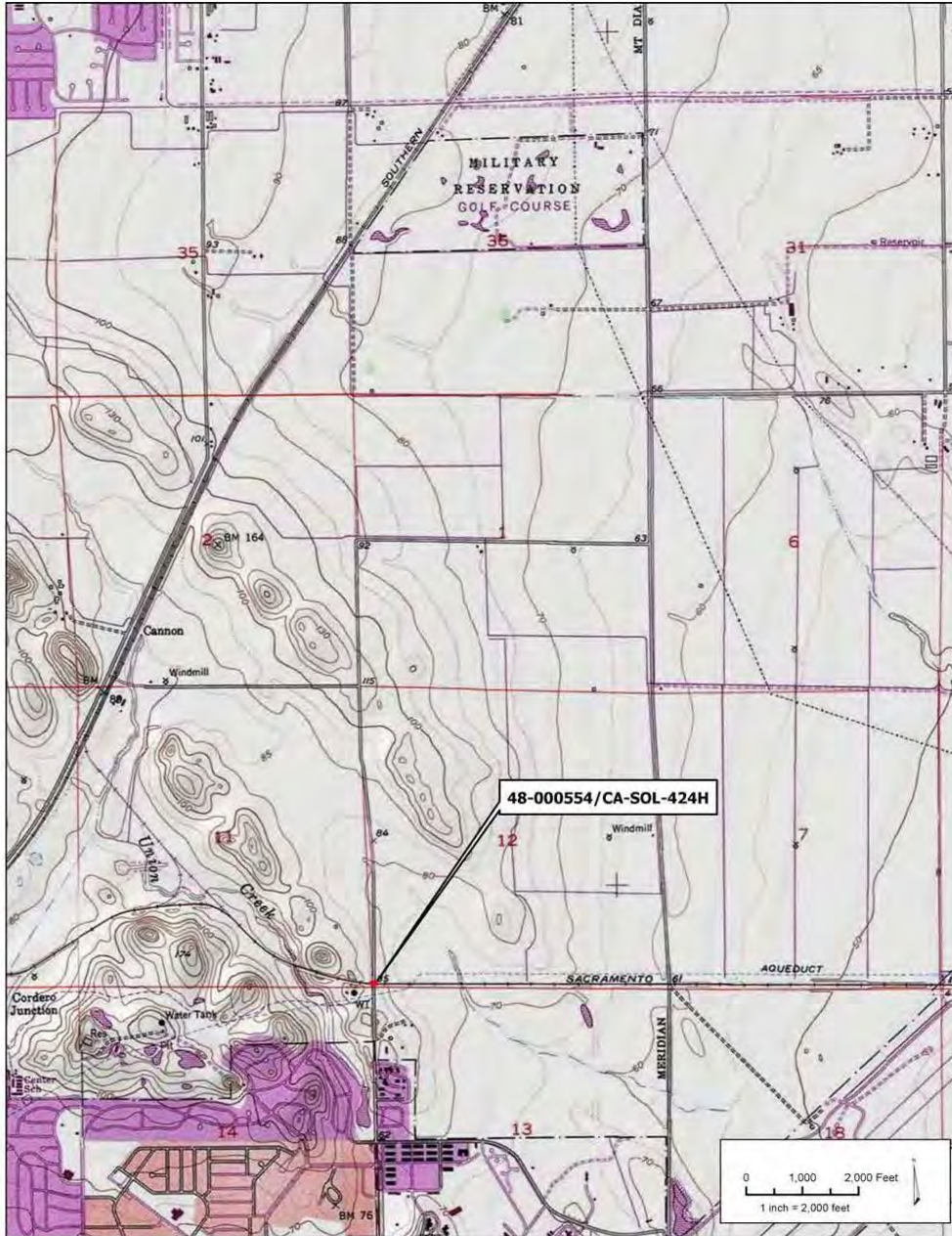
*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

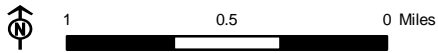
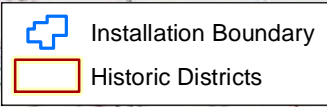
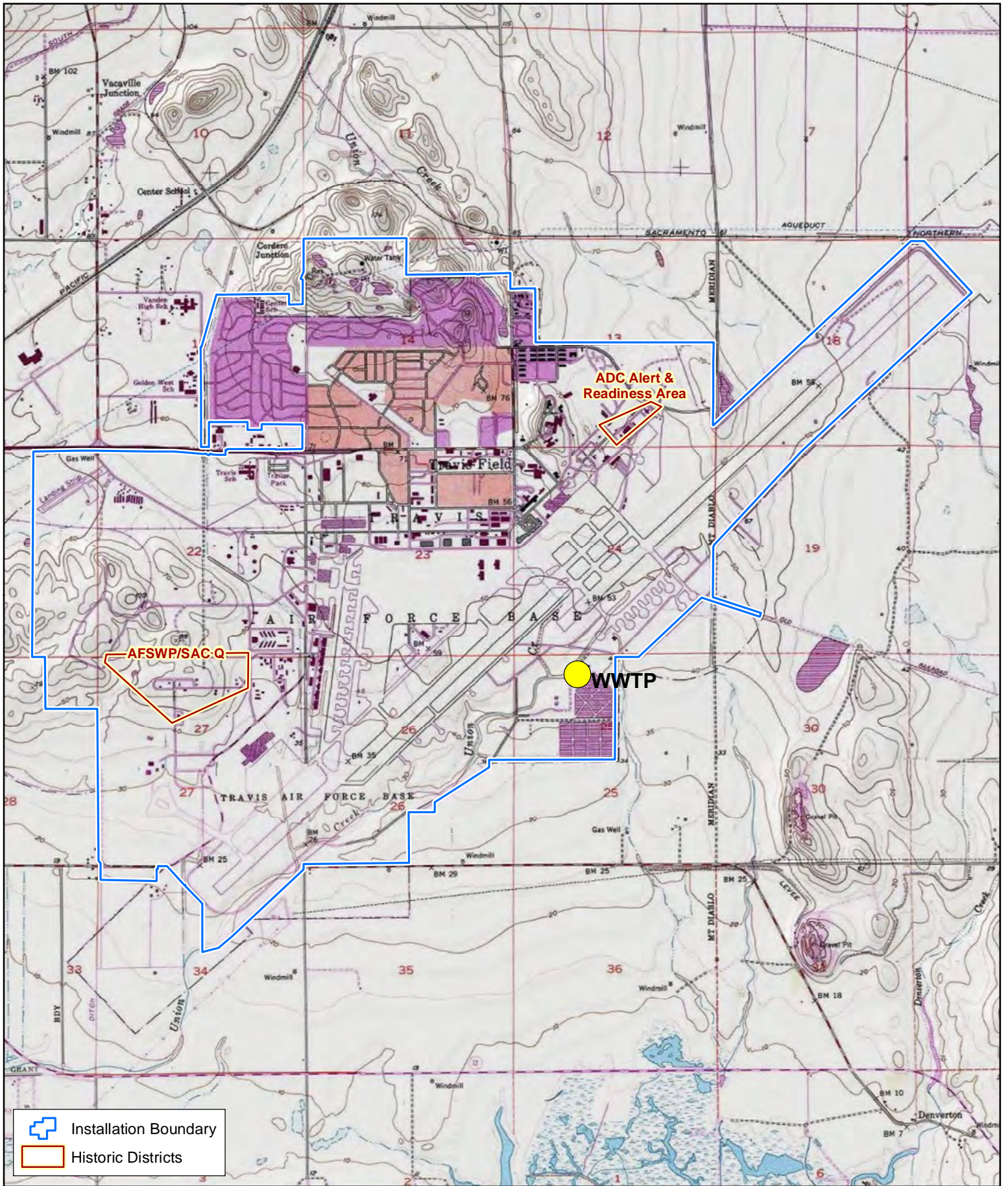
Page 2 of 2
*Map Name: Elmira, CA
1980

*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised



DPR 523J (1/95)

*Required information



Attachment 7

Travis Air Force Base
 WWTP Demolition Project Area in Relationship to
 the two Cold War-Era Historic Districts



**DEPARTMENT OF THE AIR FORCE
60th CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to the Demolition of Building 1 (Squadron Operations & Warehouse Building) at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with the demolition of Building 1 (Squadron Operations & Warehouse Building).

This consultation combines a discussion of the Area of Potential Effects (APE) for the undertaking (per 36 CFR 800.4) with our finding of No Historic Properties Affected. Travis AFB requests your concurrence with the APE and that there will be No Historic Properties Affected from the proposed Building 1 demolition project.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base, which is under the operational control of the Air Mobility Command. The 60th Air Mobility

Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves the demolition of Building 1, which was constructed in 1946 as an air freight terminal, later used as a traffic management facility, and currently used as the Travis AFB Squadron Operations & Warehouse building. Building 1 is a two and three-story, reinforced concrete office and warehouse building with a flat roof. This building is situated along the north side of the airfield and in an area designated for aircraft operations and maintenance. The building is surrounded on all four sides by either paved parking lots or airfield runway/taxiway. Building 1 has been extensively modified since its original construction, including several additions, and many of the large overhead doors have been infilled with concrete block. Building 1 is outdated and in constant need of repair.

The APE shall be limited to the Building 1 project footprint, plus a 50-foot (15.2-meter) buffer zone that defines the work area around the building and allows for the impacts of deconstruction, grading, and other demolition activities. The Building 1 APE is, therefore, the entire work area (facility footprint plus buffer), but the Area of Direct Impact (ADI) shall be limited to the project footprint (demolition zone) and any work areas within the buffer that are actually impacted (Attachment 2). Except for the Building 1 project footprint and buffer zone, there are no other APEs associated with the demolition of this facility.

As shown on Attachment 2, all staging and equipment maintenance activities shall take place on existing paved areas. Stockpiling of waste materials and rubble shall occur on the existing paved surfaces and shall not affect undisturbed soils.

Based on the above information, Travis AFB is requesting your concurrence on the APE as delineated herein for the current Building 1 demolition project.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery will be used to demolish Building 1. The demolition would include removal of the 161,000 square-foot building and the associated infrastructure to grade (foundation and utilities). Existing underground utility services (pipes, cables, etc.) shall be cut, capped, and left in place. If compactable soil, topsoil, gravel, or other materials are needed for fill, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO).

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During demolition activities, if any archaeological deposits, anomalies, or potential historic properties are encountered, all work will stop in the vicinity and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, the Building 1 project area is located in a heavily graded and disturbed area currently surrounded by, and covered with pavement and the flightline, and it is extremely unlikely that intact, buried archaeological deposits will be encountered. Due to its proximity to the airfield and airfield pavements, the footprint of the demolished building would be graded and filled with asphalt, as opposed to hydroseeding. This would minimize grassy areas that birds could use for feeding to help reduce bird strikes and to help eliminate sources of Foreign Object Debris (FOD) and improve runway safety.

36 CFR 800.11(d)(2) – Identification of Historic Properties

One previous cultural resources survey with NRHP evaluations has encompassed Building 1. The survey, *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, was completed by the Argonne National Laboratory in March 1996. The report recommended Building 1 as Not Eligible for inclusion in the NRHP and concurrence was received from your office regarding the eligibility of the building in 1996. A copy of the concurrence letter and the California Department of Parks and Recreation (DPR) structure record form for Building 1 is provided as Attachment 3 to this consultation letter.

While the Argonne report considered Building 1 Not Eligible, with your concurrence, the building has not been previously proposed for demolition or other alteration; therefore, based on the above discussion, Travis AFB is requesting your review and concurrence that there would be No Historic Properties Affected by the demolition of Building 1 and the associated utilities.

In addition to the Argonne National Laboratory report, which also included archaeological resources, there have been several other small archaeological surveys, and a recent predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California*. This report was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 4). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of landform age, type, slope, and other physical characteristics, and considered water sources, sedimentation, drainage, and other processes and ground disturbances, less than 16 acres (out of 5,317, or less than 0.3%) was identified as having “high” or “moderate” potential for buried sites. As a result, archaeological surveys and modeling have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and the presence of unknown buried prehistoric archaeological deposits is extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 3). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and DPR forms have been prepared (Attachment 5); however, neither of these two sites is near the proposed Building 1 demolition project area and neither would be affected by the current project. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Puntos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site is approximately 1 mile northwest of the Building 1 project area.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site is approximately 1.3 miles north of the Building 1 project area.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB and the location of Building 1 within heavily graded, disturbed, and paved areas adjacent to the built up flightline, the unexpected discovery of archaeological resources during the demolition of Building 1 is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although demolition projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about this demolition, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties* and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB),

the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National Historic Preservation Act (NHPA). The required documentation was completed in 2002; however, the two Historic Districts continue to be treated as eligible, pending additional SHPO consultation.

The Air Force Special Weapons Project (AFSWP) Q Area Historic District is situated in the southwestern area of Travis AFB and approximately 1.7 miles southwest of Building 1. The Air Defense Command (ADC) Historic District is situated in the northeastern area of Travis AFB and is approximately 0.4 mile to the northeast of Building 1. Both Historic Districts are shown on Attachment 6 and are well removed from the proposed demolition of Building 1; therefore, neither of the Historic Districts would be affected by the current project.

36 CFR 800.11(d)(3) – Determination of No Historic Properties Affected

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the proposed demolition of Building 1 and its associated utilities. There are no prehistoric, ethnographic, or traditional cultural properties within the Building 1 APE and Native American tribes affiliated with Travis AFB have been contacted about this proposed demolition project. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native American or public concerns are raised about the proposed Building 1 demolition project, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.


Based on the previous determination that Building 1 is Not Eligible for inclusion in the NRHP for which your office concurred in 1996, Travis AFB requests your concurrence that there would be No Historic Properties Affected as a result of the proposed Building 1 demolition project.

36 CFR 800.13 – Post-Review Discoveries

If during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, Travis AFB personnel shall conform to the requirements of 36 CFR 800.13. All work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be immediately contacted.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

 Recoverable Signature

X 

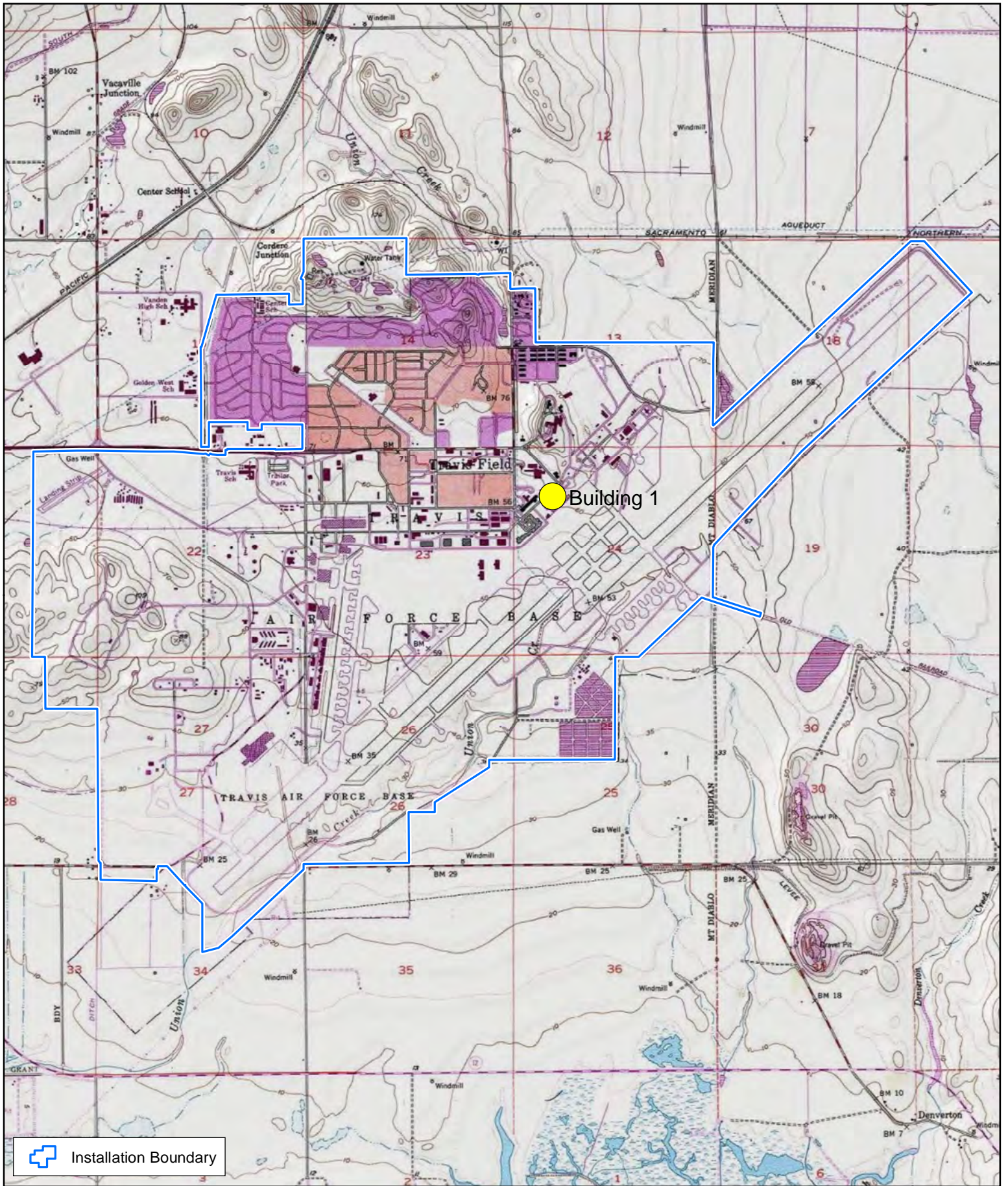
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

6 Attachments:

1. Building 1 Project Location Map
2. Building 1 Demolition Project APE
3. SHPO Concurrence Letters and Building 1 DPR form, Argonne National Laboratory Report Excerpts
4. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
5. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
6. Building 1 Project Location / Historic Districts Locations Map

DEMOLITION OF
BUILDING 1

SECTION 106 LETTER ATTACHMENTS



Attachment 1

Travis Air Force Base
Installation Boundary
and Location of Building 1

Map Date: 4/5/2018

B1

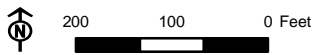


Bidwell Street



Google

Imagery ©2018, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency



Attachment 2

Travis Air Force Base
 Area of Potential Effects
 Demolition of Building 1

- Demolition Zone
- Staging and Stockpiling

ATTACHMENT 3

SHPO Letters and excerpts from the 1996 Argonne Report

Moeller, K, B. T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis
Air Force Base, Solano and Contra Costa Counties, California. Environmental
Assessment Division, Argonne National Laboratory.

Included in this Attachment are four items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.
- 4) California DPR Form for Building 1.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION

HISTORIC RESOURCES INVENTORY

IDENTIFICATION AND LOCATION

1. Historic name Building 1, Air Freight Terminal
- * 2. Common or current name Building 1, Traffic Management Facility
- * 3. Number & street 640 E Street Cross-corridor _____
City Travis Air Force Base Vicinity only _____ Zip 94535 County Solano
4. UTM zone _____ A _____ B _____ C _____ D _____
5. Quad map No. _____ Parcel No. _____ Other _____

Ser. No. _____
National Register status _____
Local designation _____

DESCRIPTION

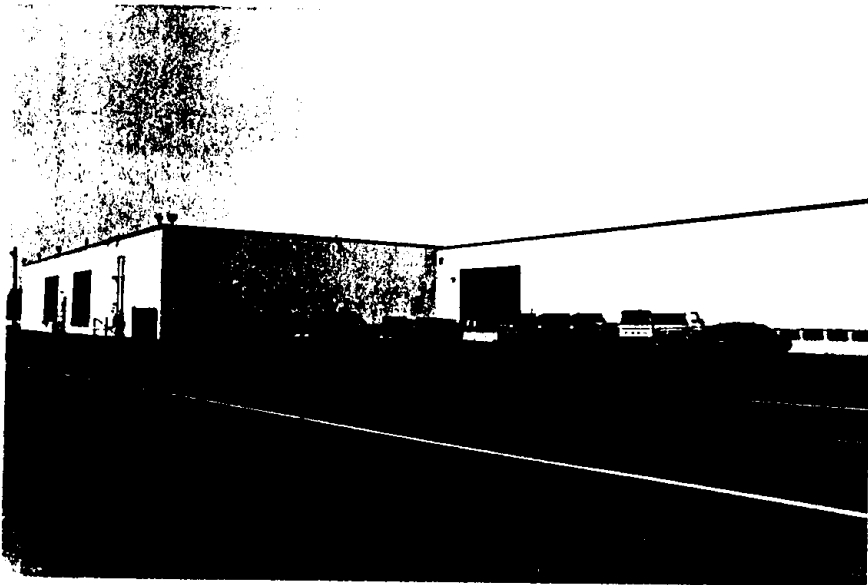
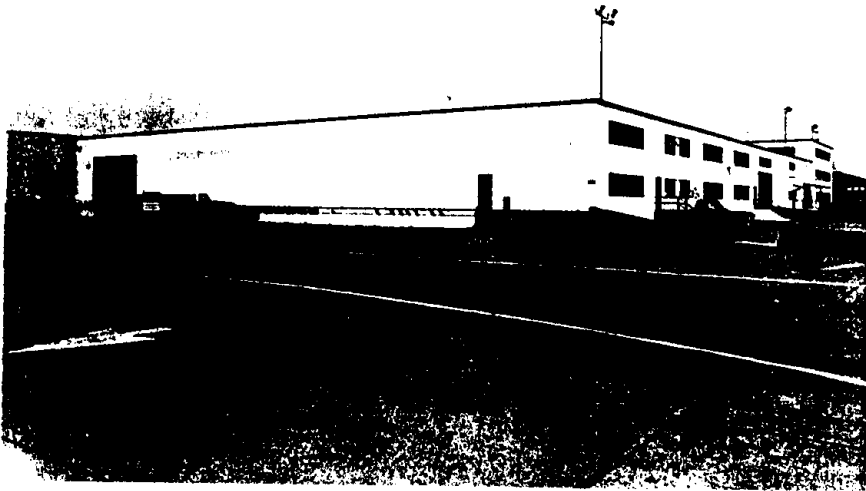
6. Property category Building If district, number of documented resources _____
7. Briefly describe the present physical appearance of the property, including condition, boundaries, related features, surroundings, and (if appropriate) architectural style.

Building 1 is an irregularly massed, two- and three-story, reinforced-concrete office and warehouse building with a flat roof, originally constructed as an air freight terminal. The building has been modified from its original condition to include several additions. Most recently, several of its many overhead bay doors have been enclosed with concrete block. The building is located along a runway margin and is set among other aircraft related support facilities.

*Attach photo envelope here
Put address and photo date on rear of photo

8. Planning agency USAF
9. Owner & address USAF
60 AW
Travis AFB, CA
94535-2041
10. Type of ownership Federal
11. Present use Military/Commercial
(Office/Warehouse)
12. Zoning N/A
13. Threats None

Building 1



ATTACHMENT 4

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of Building 1 added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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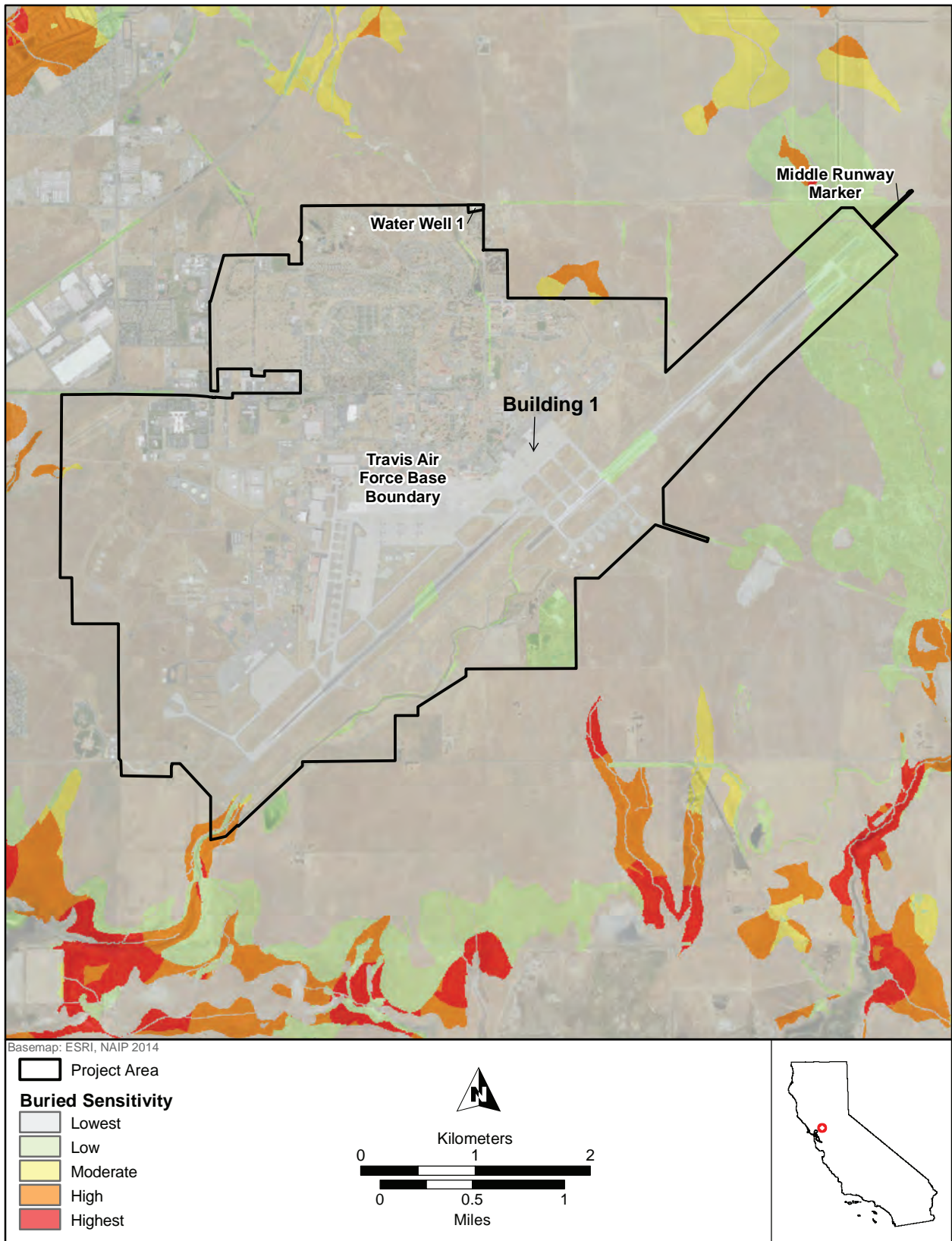


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 5

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial CA-SOL-383H NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
 c. Address City Fairfield Zip
 d. UTM: (Give more than one for large and/or linear resources) **Zone** 10, 0593440 mE/ 4237690 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

***P6. Date Constructed/Age and Source:** Historic Prehistoric Both



***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA

***P8. Recorded by:** (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

***P9. Date Recorded:** May 16, 2013

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project. Travis Air Force Base, Solano County, California

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

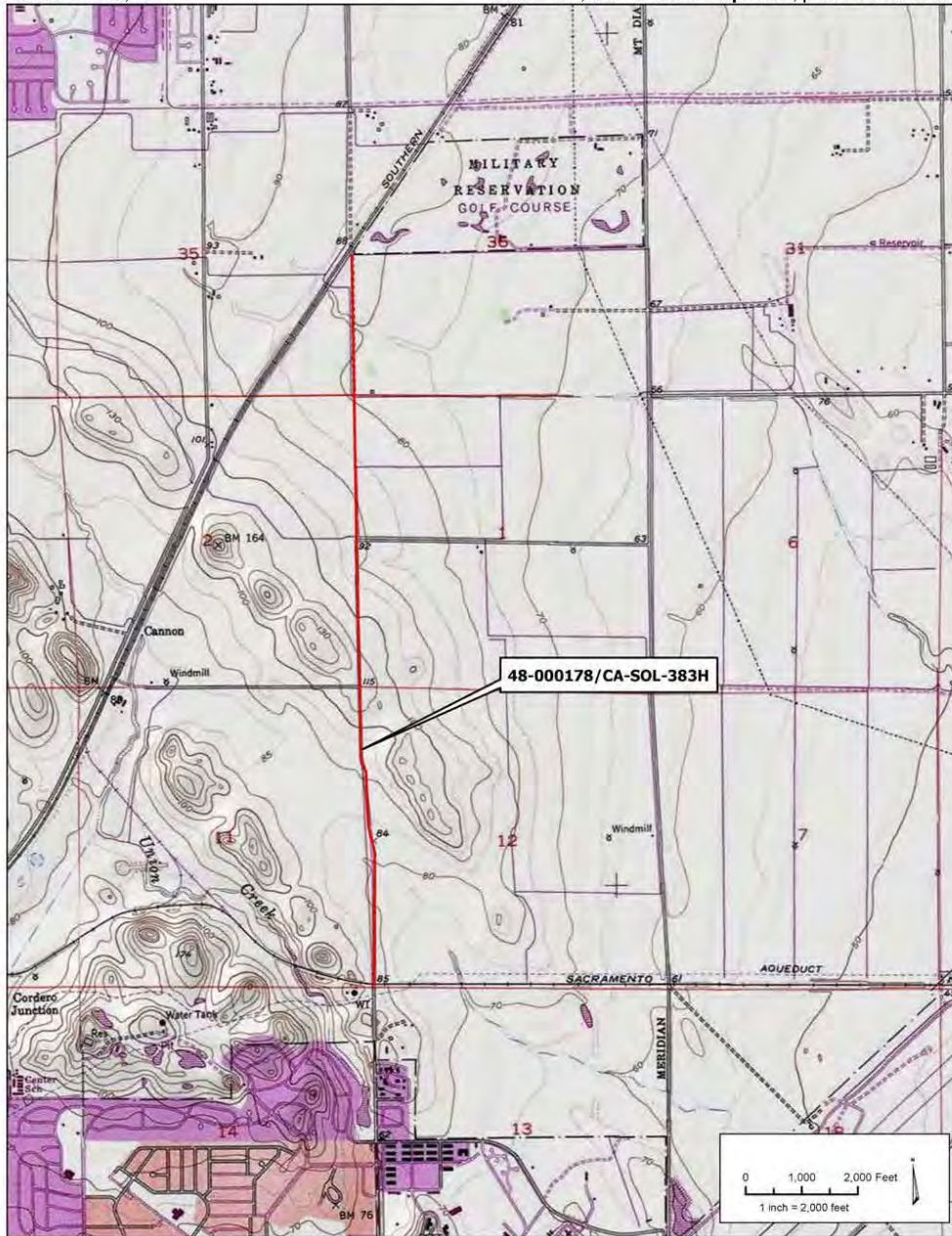
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000178 UPDATE
HRI#
Trinomial CA-SOL-383H

Page 2 of 4

*Map Name: Elmira, CA

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
CONTINUATION SHEET	

Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION CONTINUATION SHEET	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
Page 4 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 <input checked="" type="checkbox"/> Continuation <input checked="" type="checkbox"/> Update	
*P3a. Description (Continued)	
Integrity is measured by the degree to which the resource retains its historical properties and conveys its historical character. As noted in 2002 and confirmed during a recent pedestrian survey (May 16, 2013), the segment considered in this update maintains its context (location); however, its use and maintenance as a modern, asphalt road represents significant alteration (EDAW, Inc. 2002). In addition, the historic age Leisure Town Road alignment measured approximately 12.65 miles in length as originally recorded in 1993 (CRU 1993). At this time, the segment considered in this update is no longer connected to modern Leisure Town Road. Instead, it is presently separated from the remaining portions of the alignment by the UPRR ROW and there is no formal railroad crossing. Therefore, the segment considered in this update no longer functions as a portion of the larger thoroughfare.	
Recommendations 48-000178/CA-SOL-383H appears to be potentially eligible for inclusion in the NRHP under Criterion A. However, it is recommended that the segment addressed in this update be considered ineligible for the NRHP. This recommendation is based on a lack of integrity as well as the fact that this segment is not associated with the actual Rancho Los Puntos grant line. Thus, this segment does not appear to be a contributing element to the potential NRHP eligibility of 48-000178/CA-SOL-383H.	
References Bureau of Land Management (BLM). 2013. General Land Office Patent Searches, including: BLM Serial No. CACAAA 000076. Searches completed May 2013. http://www.glorerecords.blm.gov/search/detail.aspx and http://www.glorerecords.blm.gov/details/patent/default.aspx?accession=CACAAA_000076&docClass=SER&sid=oqbg30ev.5x2 Cultural Resources Unlimited (CRU). 1993. Archaeological Site Record for 48-000178/CA-SOL-383H. Form on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA. EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014. S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.	
DPR 523L (1/95) *Required Information	

1
2

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
		HRI #
		Trinomial <u>CA-SOL-424H</u>
		NRHP Status Code
Other Listings Review Code	Reviewer	Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 **T** 5 N ; **R** 1W ; **SW ¼ of SW ¼ of Sec 12**
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
 c. **Address** _____ **City** Fairfield **Zip** _____
 d. **UTM:** (Give more than one for large and/or linear resources) **Zone** 10 , 0593440 mE/ 4238018 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
 This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.
 Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7
***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



***P6. Date Constructed/Age and Source:** Historic
 Prehistoric Both
***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA
***P8. Recorded by:** (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111
***P9. Date Recorded:** May 16, 2013
***P10. Survey Type:** (Describe)
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California
EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

DPR 523A (1/95)

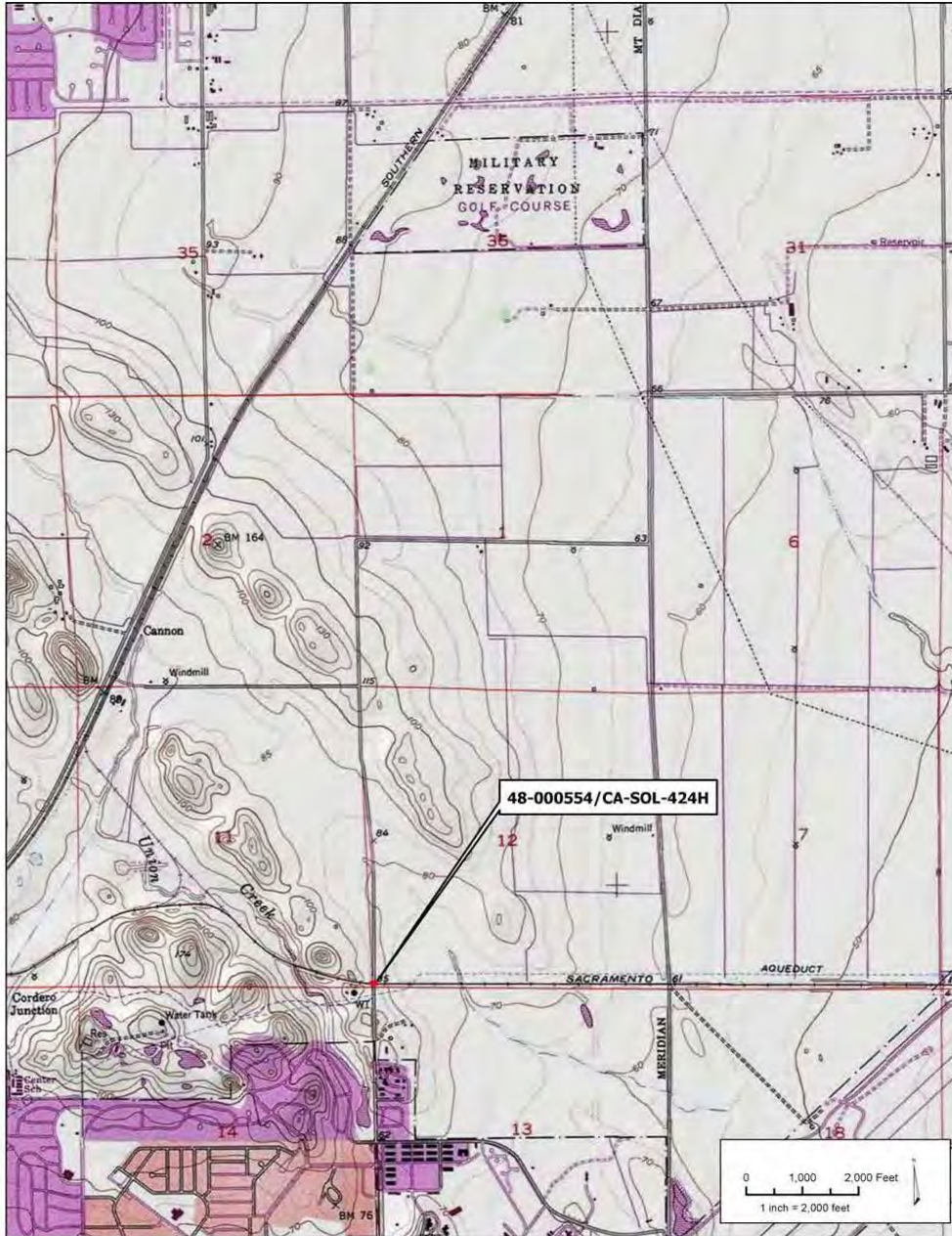
*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

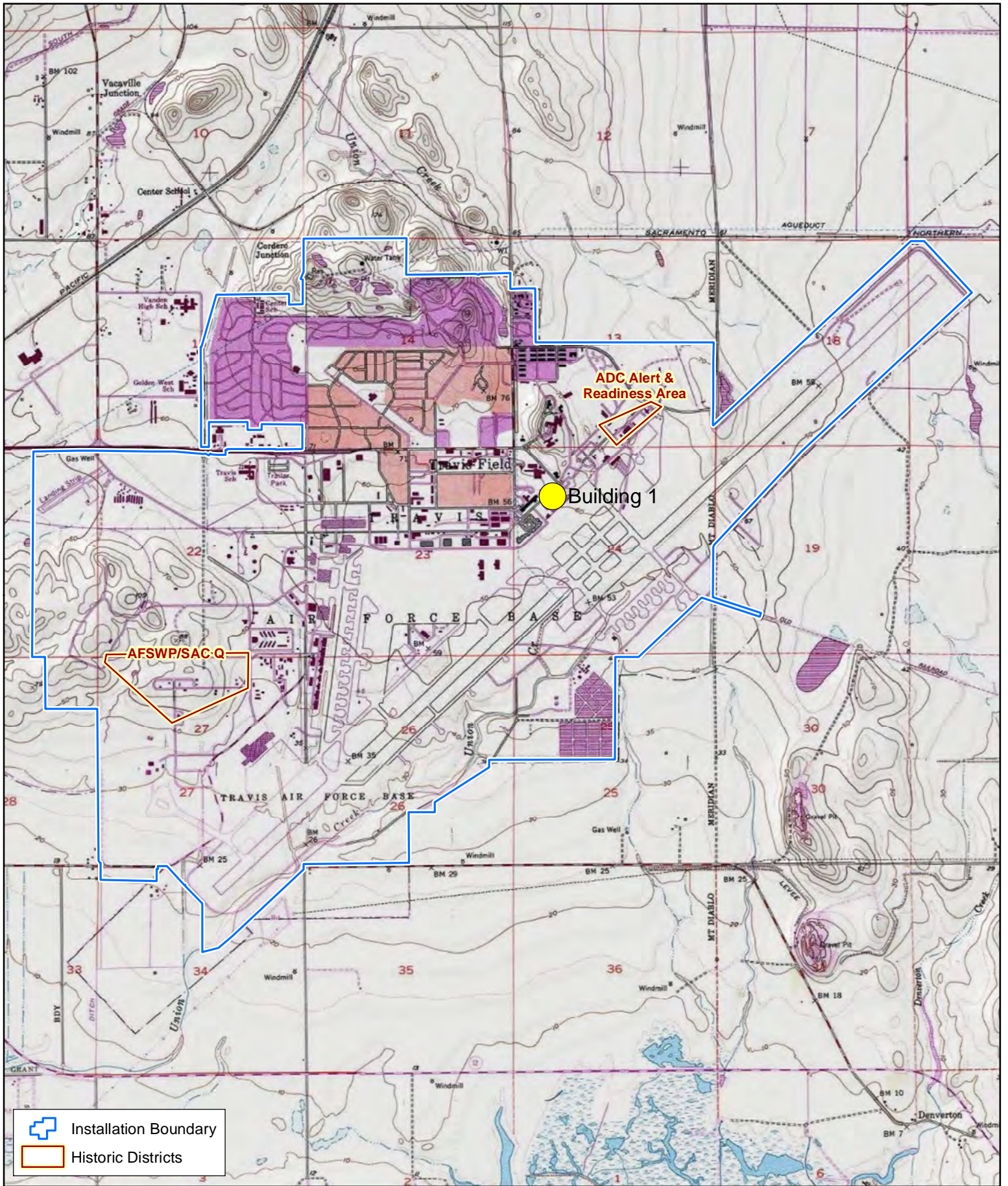
Page 2 of 2
*Map Name: Elmira, CA
1980



*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised

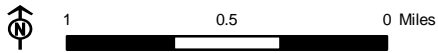


DPR 523J (1/95)

*Required information



 Installation Boundary
 Historic Districts



Attachment 6

Travis Air Force Base
 Building 1 Demolition Project Area in Relationship to
 the two Cold War-Era Historic Districts



**DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to the Demolition of Building 891 (Gas Vaporizer Building) at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with the demolition of Building 891 (Gas Vaporizer).

This consultation combines a discussion of the Area of Potential Effects (APE) for the undertaking (per 36 CFR 800.4) with our finding of No Historic Properties Affected. Travis AFB requests your concurrence with the APE; with our determination that Building 891 is not eligible for listing in the National Register of Historic Places (NRHP); and that there will be No Historic Properties Affected from the proposed Building 891 demolition project.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base, which is under the operational control of the Air Mobility Command. The 60th Air Mobility

Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves the demolition of Building 891 (former Gas Vaporizer Building) and its associated propane tanks, perimeter fence, and underground piping. Building 891 is situated within the airfield support area and within an operational/maintenance support district. The Building 891 demolition project area is located on the north side of Ragsdale Street, approximately 1,000 feet northeast of the intersection with Dixon Avenue. Building 891 is approximately 288 square feet in size and was constructed in the Cold War-era (1957), but has been abandoned for many years. The small, Butler-type, single-story, rectangular-in-plan building is sheathed in corrugated metal, has a sheet metal gable roof, and sets on a concrete slab. Three propane tanks are situated immediately north of the building (Attachment 2).

The APE shall be limited to the Building 891 demolition project footprint, plus a 50-foot (15.2-meter) buffer zone that defines the work area around the building and allows for the impacts of deconstruction, grading, and other demolition activities. The Building 891 APE is, therefore, the entire work area (facility footprint plus buffer), but the Area of Direct Impact (ADI) shall be limited to the project footprint (demolition zone) and any work areas within the buffer that are actually impacted. Except for the Building 891 footprint and buffer zone, there are no other APEs associated with the demolition of this facility.

As shown on Attachment 2, all staging and equipment maintenance activities shall take place on existing roads (paved, gravel, dirt) or parking areas within the project site that have been heavily disturbed from previous and ongoing construction and operational use. Stockpiling of waste materials and rubble shall occur on existing disturbed surfaces, shall not affect undisturbed soils, and will be away from Ragsdale Road.

Based on the above information, Travis AFB is requesting your concurrence on the APE as delineated herein for the current Building 891 demolition project.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery will be used to demolish Building 891 and its associated infrastructure features. The demolition encompasses the building itself, three propane tanks, and a chain-link fence. Existing underground utility services (pipes, cables, etc.) shall be cut, capped, and left in place. If compactable soil, topsoil, gravel, or other materials are needed for fill, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO).

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During demolition activities, if any archaeological deposits, anomalies, or potential historic properties are encountered, all work will stop in the vicinity and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, the Building 891 project area is located in heavily graded and disturbed areas within an operational/maintenance support area and it is extremely unlikely that intact, buried archaeological deposits will be encountered. After demolition of Building 891, the three propane tanks, and the fencing is complete, the ground shall be graded and seeded to appear similar to the surrounding area and precautions will be taken to control post-demolition erosion of the disturbed ground surface.

36 CFR 800.11(d)(2) – Identification of Historic Properties

One previous architectural resources survey with NRHP evaluations has encompassed the Building 891 project area. The survey report *Travis Air Force Base Architectural Inventory*, was completed by the U. S. Army Corps of Engineers Engineering Research and Development Center of the Construction and Engineering Research Laboratory (ERDC/CERL) in February 2013. The report recommended Building 891 and its associated propane tanks as Not Eligible for inclusion in the NRHP. A California Department of Parks and Recreation (DPR) structure record form for Building 891 is provided as Attachment 3 to this consultation that includes photographs as of the date of the survey (2011-2012).

Recommendations of the 2013 ERDC/CERL report and the associated DPR form indicate that Building 891 is Not Eligible for inclusion in the NRHP. While the ERDC/CERL report acknowledges that the Gas Vaporizer facility retains a good degree of integrity of location, design, setting, materials, workmanship, feeling, and association, the building and its associated infrastructure features (three propane tanks and chain-link fence) do not meet the criteria for NRHP eligibility required under 36 CFR 60.4. Building 891 would not contribute to an understanding of the Cold War-era military airlift mission at Travis AFB (NRHP criterion A), is a minor, utilitarian element constructed to support a range of base operations (BASOPs), and is of minor importance in the development of the base as a whole. The building is not known to be associated with a person or persons of historical importance (NRHP criterion B); does not embody the distinctive characteristics of a type, period, or method of construction, does not represent the work of a master or possess high artistic value; and is not a contributing element of an existing or proposed historic district (Criterion C). Given its mundane function and utilitarian design, Building 891 is also not likely to yield information important in prehistory or history (Criterion D). For these reasons, Travis AFB agrees with the 2013 ERDC/CERL report recommendation that Building 891 is Not Eligible for inclusion in the NRHP and requests your concurrence.

Travis AFB has been completely surveyed for archaeological resources. Among the surveys are *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, which was completed by the Argonne National Laboratory in March 1996 (Attachment 4), and most recently a predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for*

Travis Air Force Base, Solano County, California, which was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 5). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of landform age, type, slope, and other physical characteristics, and considered water sources, sedimentation, drainage, and other processes and ground disturbances, the study identified less than 16 acres (out of 5,317, or less than 0.3%) as having “high” or “moderate” potential for buried prehistoric sites. As a result, the surveys have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant, unknown buried prehistoric archaeological deposits are extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 4). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and DPR forms have been prepared (Attachment 6); however, neither of these two sites is near the proposed Building 891 demolition project and neither would be affected by the current consultation. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Puntos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site is situated approximately 2.1 miles northeast of the Building 891 demolition project area.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site is situated approximately 2.4 miles northeast of the Building 891 demolition project area.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB and the location of Building 891 within a heavily disturbed area associated with installation operations and maintenance, the unexpected discovery of archaeological resources during the demolition of Building 891 is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although demolition projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about the demolition of Building 891, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties* and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB), the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National Historic Preservation Act (NHPA). The required documentation was completed in 2002; however, the two Historic Districts continue to be treated as eligible, pending additional SHPO consultation.

The Air Force Special Weapons Project (AFSWP) Q Area Historic District is situated in the southwestern area of Travis AFB and approximately 0.15 miles west of Building 891. The Air Defense Command (ADC) Historic District is situated in the northeastern area of Travis AFB and is approximately 2 miles to the northeast of Building 891. Both Historic Districts are shown on Attachment 7 and are well removed from the proposed demolition of Building 891; therefore, neither of the Historic Districts would be affected by the current project.

36 CFR 800.11(d)(3) – Determination of No Historic Properties Affected

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the proposed demolition of the Building 891 facility. There are no prehistoric, ethnographic, or traditional cultural properties within the Building 891 APE and Native American tribes affiliated with Travis AFB have been contacted about this proposed demolition project. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native American or public concerns are raised about the proposed Building 891 demolition project, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Based on the above discussions and letter attachments, Travis AFB is requesting your concurrence that Building 891 is Not Eligible for inclusion in the NRHP, and that there will be No Historic Properties Affected for the proposed demolition of Building 891 and its associated infrastructure features.

36 CFR 800.13 – Post-Review Discoveries

If during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, Travis AFB personnel shall conform to the requirements of 36 CFR 800.13. All work will stop in the vicinity of the find and the Contracting Officer, project

manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be immediately contacted.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

 Recoverable Signature

X 

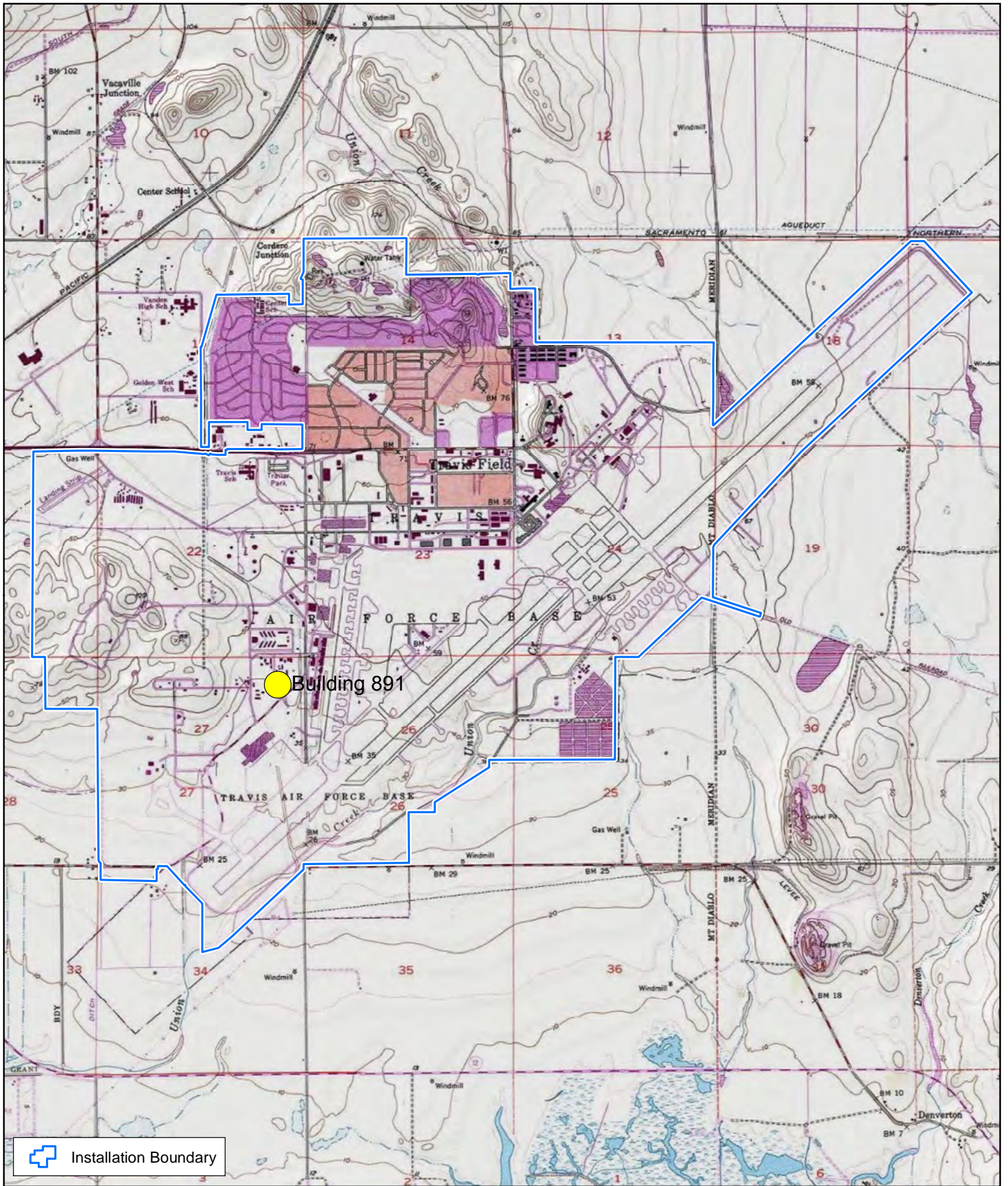
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

7 Attachments:

1. Building 891 Project Location Map
2. Building 891 Demolition Project APE
3. Excerpt from 2013 ERDC/CERL Report and DPR Forms
4. SHPO Concurrence Letters (1995-1996), Argonne National Laboratory Report Excerpts
5. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
6. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
7. Building 891 Project Location / Historic Districts Locations Map

DEMOLITION OF
BUILDING 891

SECTION 106 LETTER ATTACHMENTS



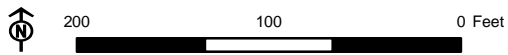
Attachment 1

Travis Air Force Base
Installation Boundary
and Location of Building 891





Google

Imagery ©2018, DigitalGlobe, U.S. Geological Survey



Attachment 2

Travis Air Force Base
Area of Potential Effects
Demolition of Building 891

-  Demolition Zone
-  Staging and Stockpiling

ATTACHMENT 3

ERDC/CERL 2013 Architectural Survey Excerpts and DPR Form Proposed Demolition of Building 891

Included in this Attachment are two items:

- 1) ERDC/CERL Report cover through Table of Contents.
- 2) ERDC/CERL Report DPR Form for Building 891

Travis Air Force Base Architectural Inventory

Adam D. Smith, Susan I. Ensore, and Sunny E. Adams

*Construction Engineering Research Laboratory
U.S. Army Engineer Research and Development Center
2902 Newmark Drive
PO Box 9005
Champaign, IL 61826-9005*

Final report

Approved for public release; distribution is unlimited.

Prepared for Travis Air Force Base
400 Brennan Circle
Travis AFB, CA 94535

Under Project Number 369998,
“Section 110 Architectural Evaluation at Travis AFB, CA”

Abstract

This document is an architectural and landscape survey of 314 buildings, structures, and landscapes located at Travis Air Force Base, California, for eligibility to the National Register of Historic Places (NRHP). The list contains 2 buildings and structures dating to World War II; 5 buildings dating from post-World War II; 72 buildings dating from the early Cold War-Strategic Air Command (SAC) era; and 36 buildings dating from the late Cold War era. The remainder of the buildings, structures, and landscapes were previously evaluated and determined ineligible for the NRHP or else could not be located. This survey satisfies Section 110 of the National Historic Preservation Act of 1966 as amended, and it was used to determine the eligibility of these buildings and landscapes for inclusion on the NRHP. As a result of this work, no buildings, structures, or landscapes were recommended for nomination to the NRHP.

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Report Documentation Page

Facility Number	Date Built	Name	Contributing Status
848	1965	CMPRS AIR PLT BLDG	Not eligible
865	1975	BE STOR CV FCLTY	Not eligible
870	1977	BE STOR CV FCLTY	Not eligible
871	1953	BE MAINT SHP	Not eligible
872	1953	BE PAV GRND FCLTY	Not eligible
873	1957	BE MAINT SHP	Not eligible
874	1953	BE MAINT SHP	Not eligible
876	1953	BE MAINT SHP	Not eligible
878	1953	BSE ENGR ADMIN	Not eligible
879	1953	BE MAINT SHP	Not eligible
880	1955	BE MAINT SHP	Not eligible
882	1957	BE MAINT SHP	Not eligible
886	1953	BE STOR SHED	Not eligible
891	1957	GAS VAPORIZOR	Not eligible
892	1953	GAS STORAGE	Not eligible
971	1987	TRML, AIR FRT	Not eligible
977	1972	TRML, AIR FRT	Not eligible
1115	1957	TACAN S FIXED	Not eligible
1125	1956	COMM, RCVR	Not eligible
1130	1954	COMM, TMTR	Not eligible
1185	1963	RAPCON CEN	Not eligible
1201	1968	TRML, AIR FRT	Not eligible
1290	1957	ELEC PWR STN BLDG	Not eligible
1322	1954	HTG FCLTY BLDG	Not eligible
1348	1954	HSG SUP&STOR FCLTY	Not eligible
1360	1956	RAD, MARS	Not eligible
1365	1963	BE STOR CV FCLTY	Not eligible
1366	1963	HQ WG	Not eligible

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 7

*Resource Name or #: Building 891, Travis AFB

P1. Other Identifier: Gas Vaporizer

***P2. Location:** Not for Publication Unrestricted

*a. County: Solano

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Elmira

Date: 2000 T 5N ; R 1W ; ¼ of ¼ of Sec 23 ; M.D. B.M.

c. Address: 249 V Street, Travis Air Force Base

City: Fairfield

Zip: 94535

d. UTM: Zone: 10 ; 591553E/ 4234676N (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

Building 891 is northwest of Ragsdale Street. V Street is to the north and Dixon Avenue is to the west of the building.

Building 860 is located to the northwest, Building 1849 is located to the northeast, and Building 920 is located to the south.

Building 891 is surrounded chain-link fence.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 891 is a one-story structure with a rectangular footprint, a concrete foundation, a gable roof, sheet metal exterior walls, four pane fixed windows, and metal entry doors. There are four metal vents protruding from the north side of the gable roof. The north side of the building is connected by pipes to a large tank. Building 891 is surrounded by a fence. The building has an approximate area of 288 square feet (see continuation sheet).

***P3b. Resource Attributes:** (List attributes and codes) HP34

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



***P5b. Description of Photo:**
Southeast Oblique, January 2012

***P6. Date Constructed/Age and Sources:** 1957; Real Property

Cards

Historic

Prehistoric Both

***P7. Owner and Address:**

Travis Air Force Base

Headquarters

400 Brennan Circle

Travis AFB, CA 94535

***P8. Recorded by:**

Sunny Adams, Adam Smith, and
Andrea Sforza

Engineering Research and

Development Center

Construction Engineering Research

Laboratory

2902 Newmark Drive

Champaign, IL 61822

***P9. Date Recorded:** March 2012

***P10. Survey Type:** (Describe) Section 110 Evaluation under NHPA

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") None

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*Resource Name or # Building 891, Travis AFB

B1. Historic Name: Heating Facility Building

B2. Common Name: Gas Vaporizer

B3. Original Use: Utility

B4. Current Use: Utility

***B5. Architectural Style:** Military

***B6. Construction History:** (Construction date, alterations, and date of alterations) Building 891 was constructed in 1957 as a heating facility building. It is currently being used as a gas vaporizer building.

***B7. Moved?** No Yes Unknown **Date:** **Original Location:**

***B8. Related Features:** Building 891 is located just south of the base engineering area.

B9a. Architect: Unknown

b. Builder:

***B10. Significance: Theme:** Cold War-Materiel and Personnel Airlift Mission; USAF **Area:** Travis, AFB

Period of Significance: 1946-1991

Property Type: Support Building-Military

Applicable Criteria:

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
Building 891 is a typical metal Butler building. It is not significant. It retains its integrity.

As a result of World War II, the U.S. military possessed a huge capacity for the shipment of personnel and supplies by air transport. The capability provided the delivery of men and materiel across the globe in a matter of hours instead of weeks, and vastly extended the ability of the U.S. military to have a ground presence in previously distant and hard to reach areas. As a result, not only strategic military planning, but foreign relations and humanitarian intervention actions became more globally focused. Central to this capability was the development and use of long-range cargo planes. These aircraft required specialized flight crews and ground facilities, so first the Army, and after 1947 the Air Force, utilized a number of bases as home to units tasked with this mission (see continuation sheet).

B11. Additional Resource Attributes: (List attributes and codes) HP34

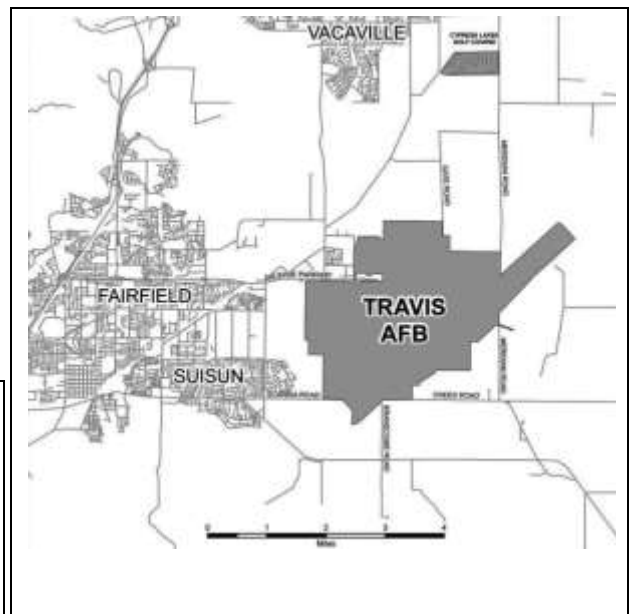
***B12. References:** Real Property Cards, architecture/engineering plans, Travis AFB. "A History of Travis Air Force Base, 1943-1996." Leiser, Gary. Sacramento: Travis Air Force Base Historical Society. 1996. "Travis AFB: 40 Years on Active Duty, 1943-1983." Snow, Chet B. Travis AFB Historical Society. 1983.

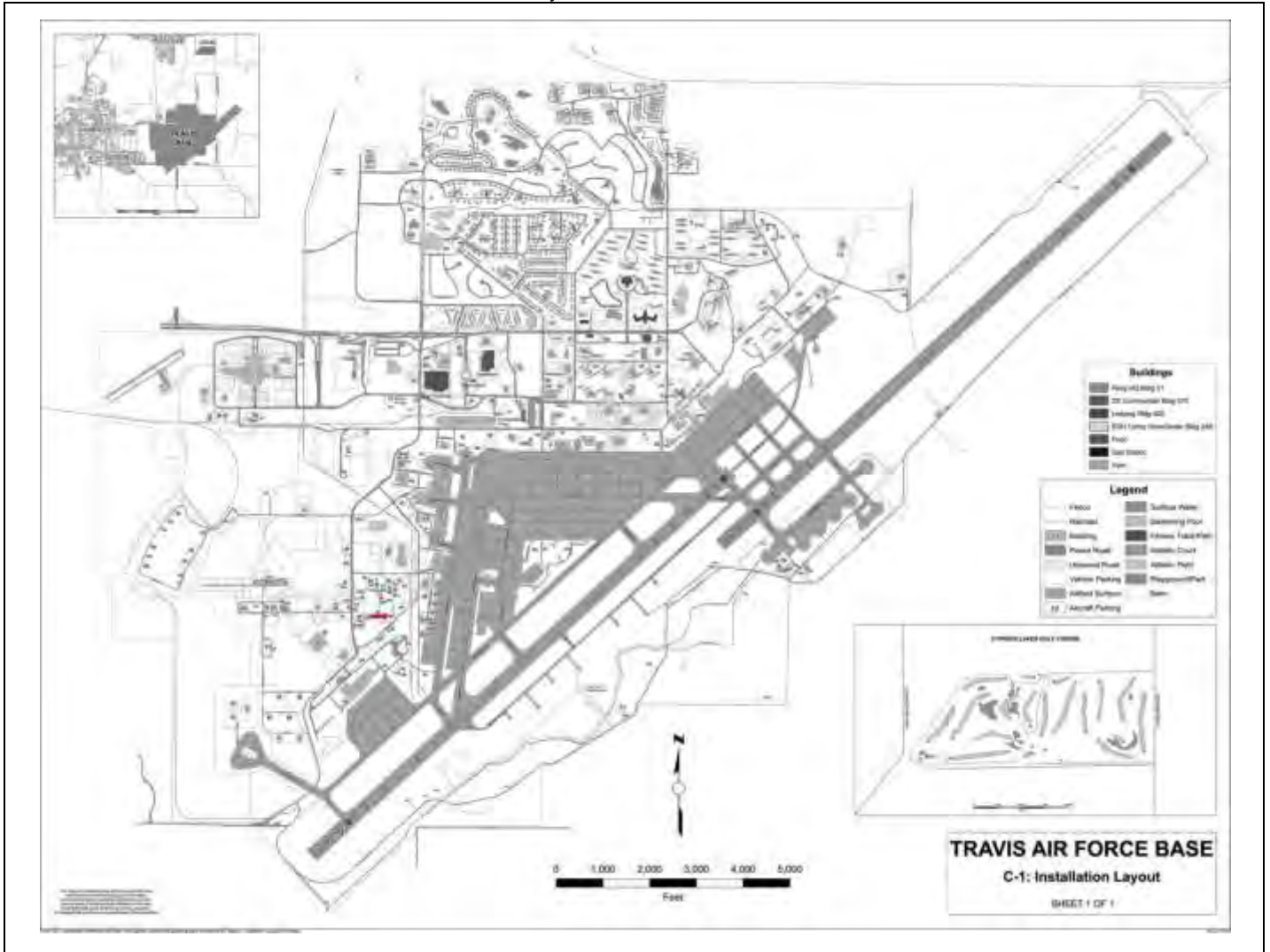
B13. Remarks: NA

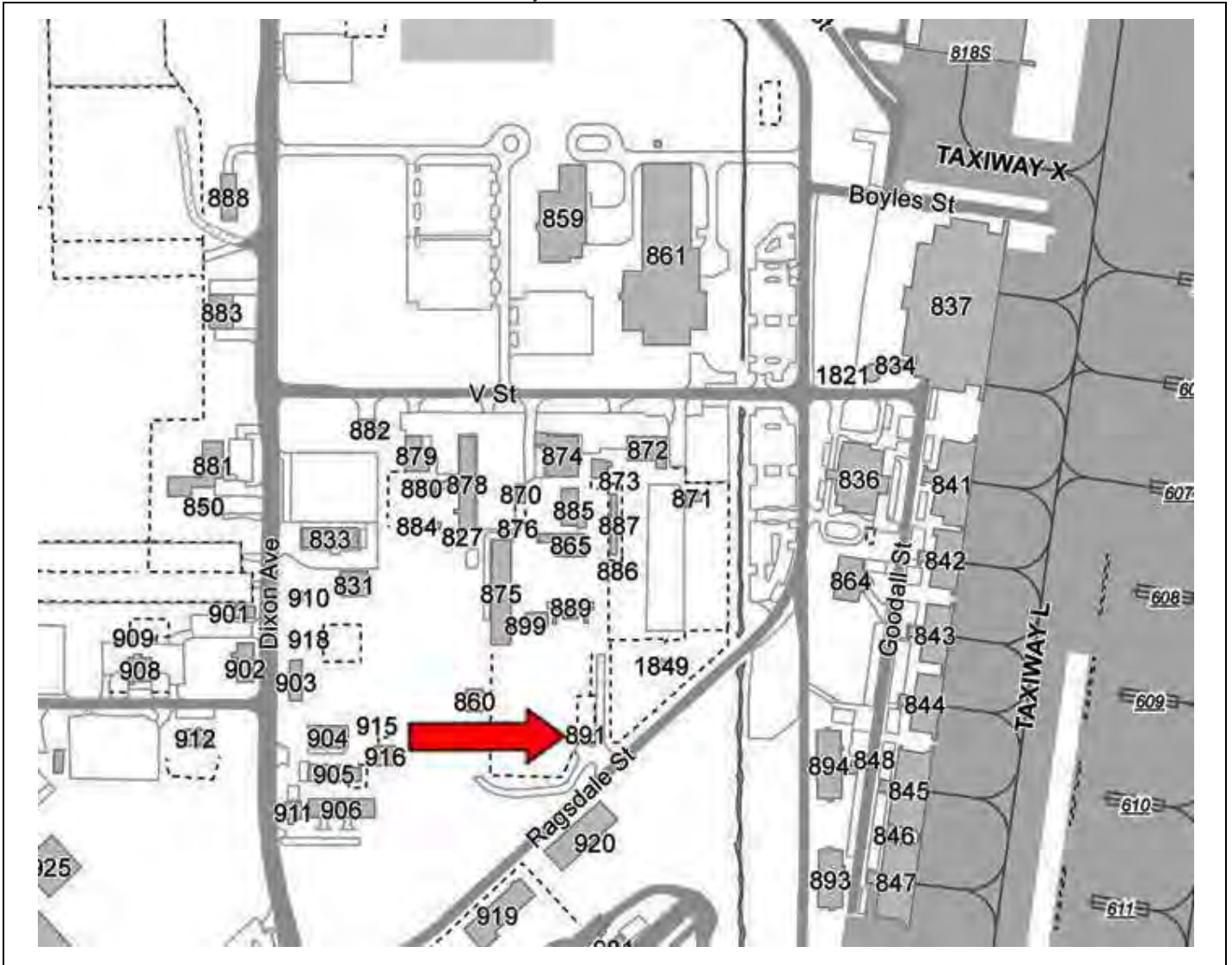
***B14. Evaluator:** Sunny Adams, Adam Smith, and Andrea Sforza
Engineering Research and Development Center
Construction Engineering Research Laboratory
2902 Newmark Drive
Champaign, IL 61822

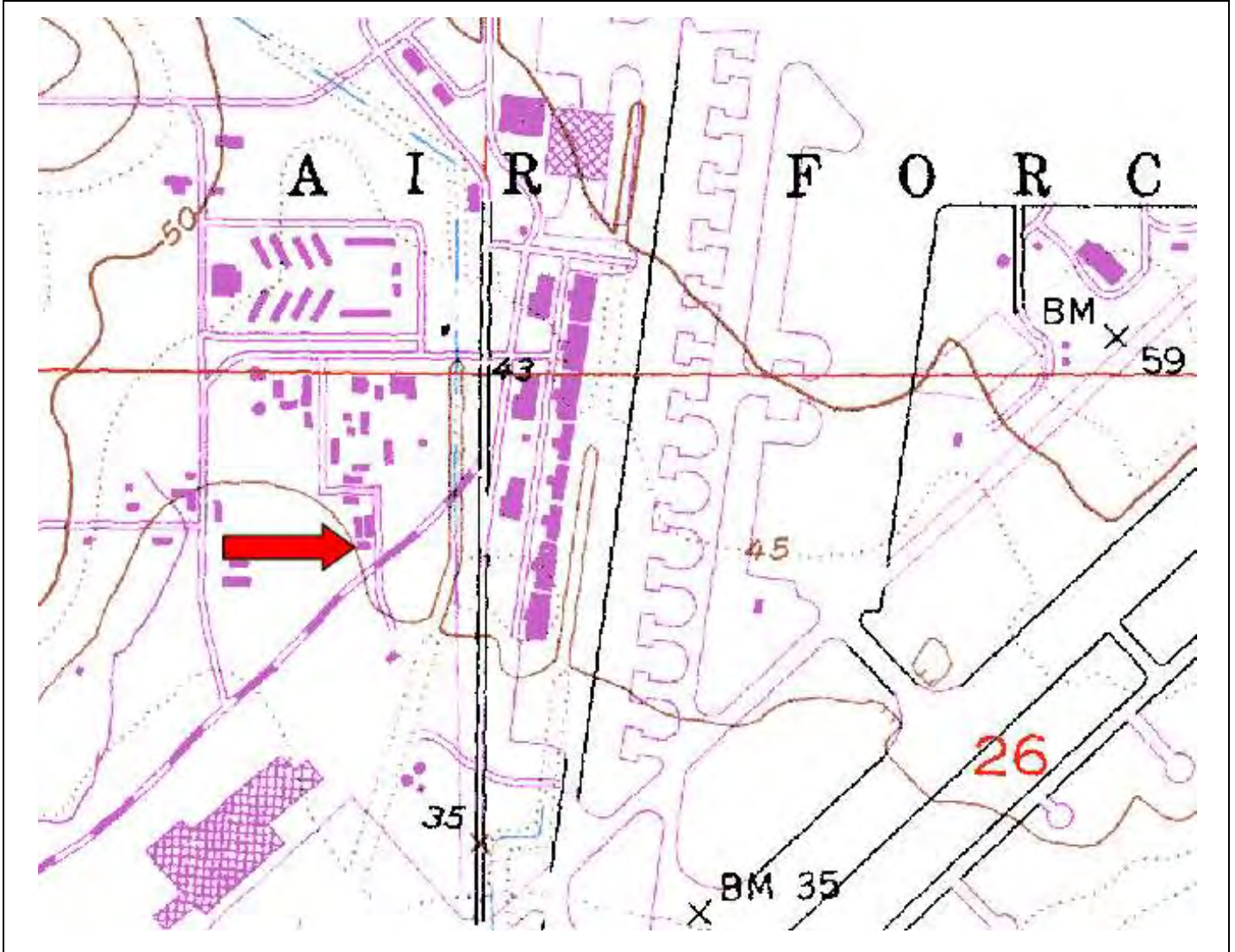
***Date of Evaluation:** 03/2012

(This space reserved for official comments.)









*Recorded by: S. Adams and A. Smith

*Date: 03/2012

Continuation

Update

***P3a. Description: (continued from Primary Record)**

The east (front) elevation faces Ragsdale Street. The elevation consists of one single metal entry door on the left half of the elevation that has three panes of glazing on the top portion of the door. There is a vent in the triangular portion of the elevation under the gable roof.

The south elevation consists of two original four-pane steel fixed windows.

The west elevation consists of one original four-pane steel fixed windows on the right half of the elevation.

The north elevation faces the large metal tank. It consists of one centrally located original four-pane steel fixed windows.

***B10. (continued from Applicable Criteria)**

In 1946, Travis AFB (then the Fairfield-Suisun Army Air Base) became the West Coast Port of Embarkation for trans-Pacific flights, and this role continued under Air Force control. The airlift capability at Travis AFB played major roles in the Berlin Airlift, the Korean War, the Cuban Missile Crisis, the Vietnam War, and provided essential assistance in dozens of humanitarian or disaster-relief missions. In addition to transport of troops and supplies, the airlift mission at Travis AFB has been a vital factor in the evacuation of wounded or ill personnel and their dependents for all military services. The ability to evacuate wounded by air came into its own during the Korean War in the early 1950s, with 90% of all casualties moved this way. In times of combat during the Cold War era, Military Air Transport Service planes from Travis AFB took out wounded and brought in fresh troops, serving as the western hub for military aeromedical evacuation, both for the Army, then for the Air Force.

In order to facilitate the airlift mission, Travis AFB needed specific types of buildings and other structures. The most important construction activities included an airfield (runways, taxiways, and parking aprons), aircraft hangars, control towers, airfield operations buildings, and passenger terminals. For the aeromedical evacuation mission, additional necessary features included a hospital and a morgue.

Integrity/Significance

Building 891 is in good condition with all of the original design and architectural features intact. The original physical integrity has remained unchanged. Building 891 is not an important factor in the development of Travis AFB, nor is the structure a rare or exemplary model that displays the exceptional qualities of integrity (location, design, setting, materials, workmanship, feeling, association) necessary for individual listing on the National Register of Historic Places (NRHP) and no evidence was found to indicate any significance associated with this utilitarian building.

Determination of Contributing/Non-Contributing Eligibility Status

It is the determination of this report that Building 891 is **NOT** eligible to the NRHP as it does not contribute to an understanding of the Cold War military airlift mission at Travis AFB. Building 891 is not significant by itself to be individually eligible to the NRHP and is not associated with a historically significant person nor does it have any unique architectural features that qualify it individually for the NRHP. The building was considered of minor importance to the development of the base as a whole. This building is considered a base operations (BASOPs) building constructed to support Travis AFB. Overall, the ERDC-CERL research team determined that the BASOPs buildings at Travis AFB are not individually eligible nor could the researchers find a cohesive historic district of support buildings on base.

*Recorded by: S. Adams and A. Smith

*Date: 03/2012

Continuation

Update

* P5b. Description of Photo: (continued from Primary Record)



South elevation (ERDC-CERL, October 2011)



Northeast oblique (ERDC-CERL, January 2012)

ATTACHMENT 4

SHPO LETTERS and excerpts from the 1996 ARGONNE REPORT

Moeller, K, B.T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California. Environmental Assessment Division, Argonne National Laboratory.

Included in this Attachment are three items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

ATTACHMENT 5

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air
Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of Building 891 added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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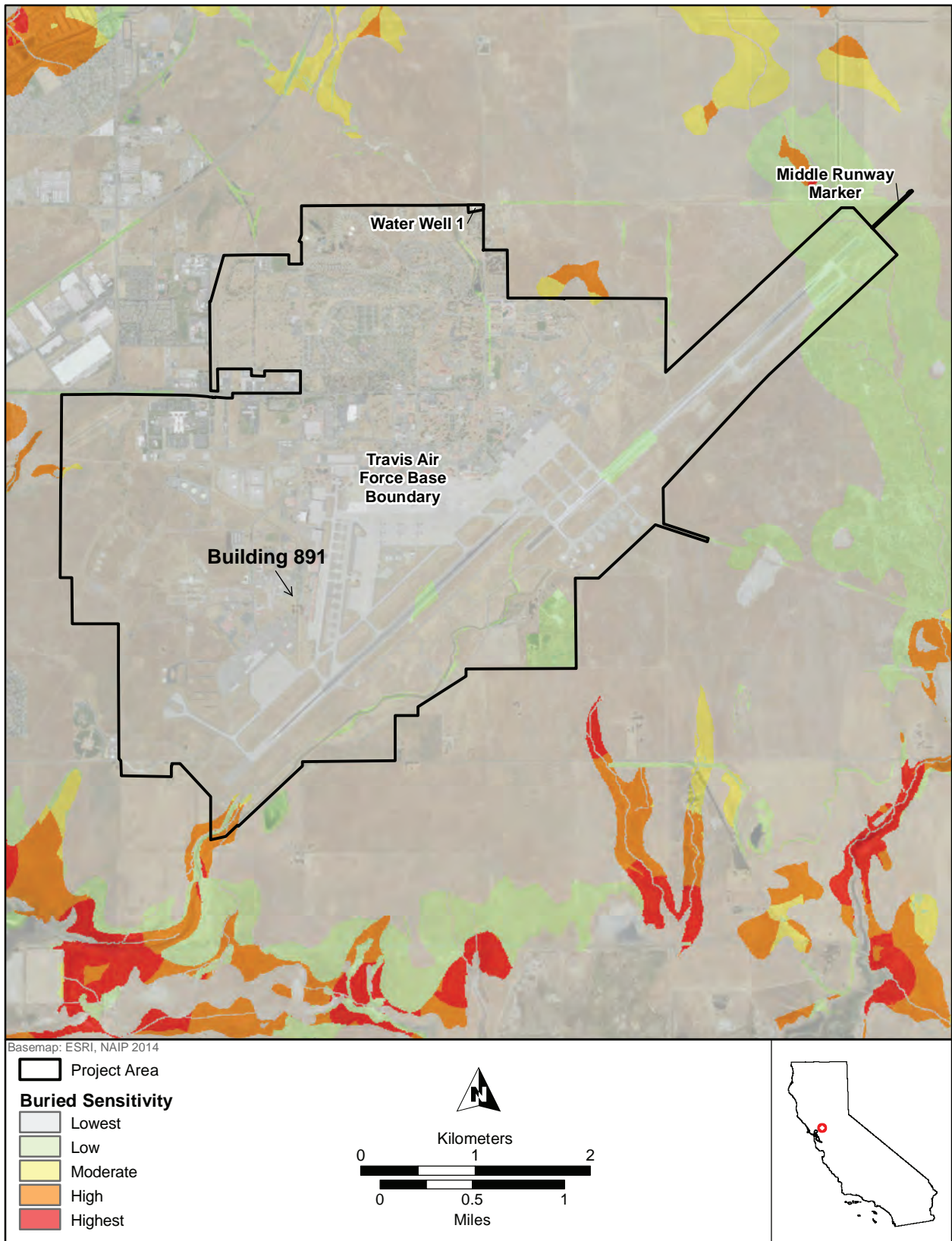


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 6

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-383H</u> NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
 c. Address City Fairfield Zip
 d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE/ 4237690 mN
 e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

***P6. Date Constructed/Age and Source:** Historic Prehistoric Both



***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA

***P8. Recorded by:** (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

***P9. Date Recorded:** May 16, 2013

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project. Travis Air Force Base, Solano County, California

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

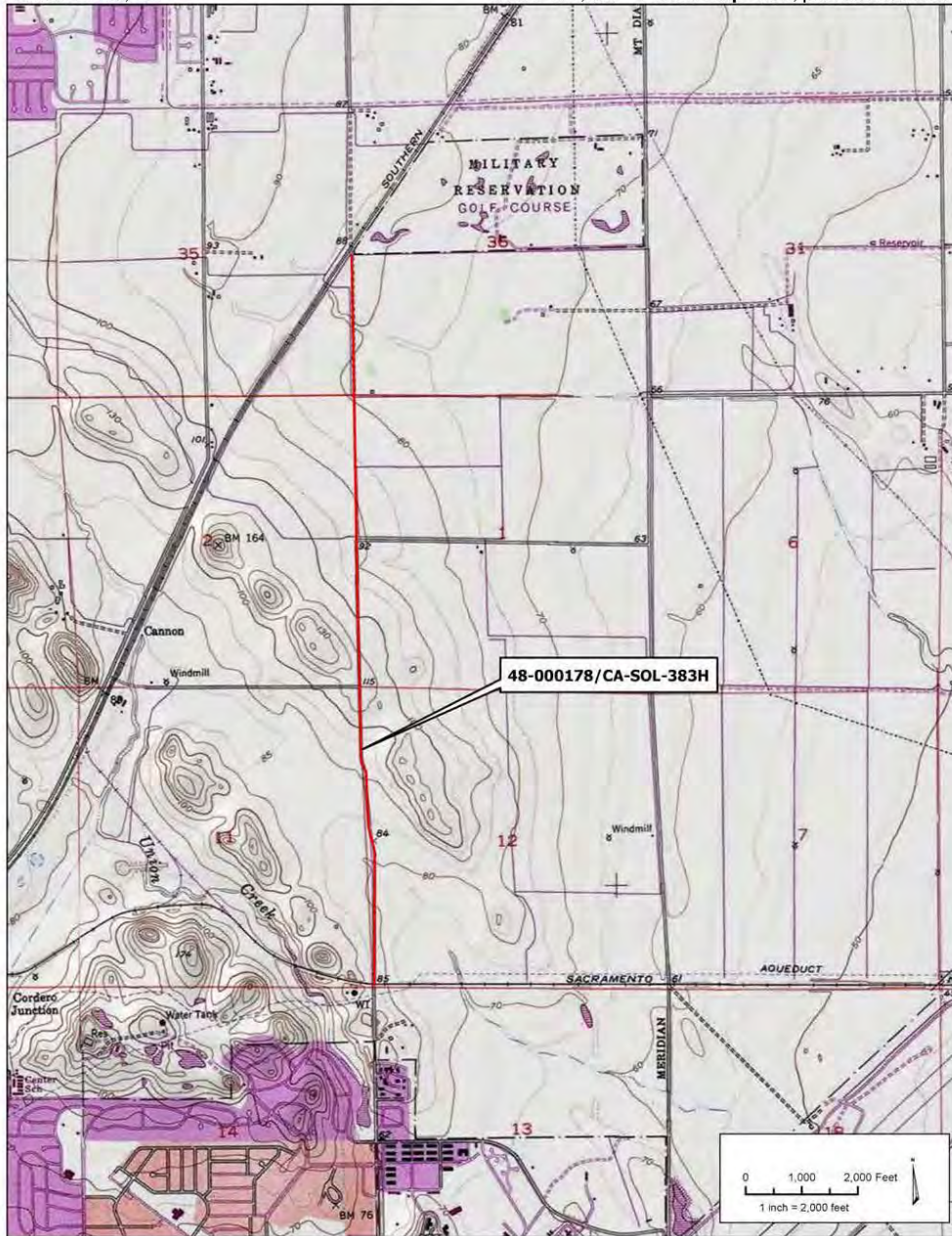
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000178 UPDATE
HRI#
Trinomial CA-SOL-383H

Page 2 of 4

*Map Name: Elmira, CA

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
CONTINUATION SHEET	

Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION CONTINUATION SHEET	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
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Page 4 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

Integrity is measured by the degree to which the resource retains its historical properties and conveys its historical character. As noted in 2002 and confirmed during a recent pedestrian survey (May 16, 2013), the segment considered in this update maintains its context (location); however, its use and maintenance as a modern, asphalt road represents significant alteration (EDAW, Inc. 2002). In addition, the historic age Leisure Town Road alignment measured approximately 12.65 miles in length as originally recorded in 1993 (CRU 1993). At this time, the segment considered in this update is no longer connected to modern Leisure Town Road. Instead, it is presently separated from the remaining portions of the alignment by the UPRR ROW and there is no formal railroad crossing. Therefore, the segment considered in this update no longer functions as a portion of the larger thoroughfare.

Recommendations

48-000178/CA-SOL-383H appears to be potentially eligible for inclusion in the NRHP under Criterion A. However, it is recommended that the segment addressed in this update be considered ineligible for the NRHP. This recommendation is based on a lack of integrity as well as the fact that this segment is not associated with the actual Rancho Los Puntos grant line. Thus, this segment does not appear to be a contributing element to the potential NRHP eligibility of 48-000178/CA-SOL-383H.

References

Bureau of Land Management (BLM). 2013. General Land Office Patent Searches, including: BLM Serial No. CACAAA 000076. Searches completed May 2013. <http://www.glorerecords.blm.gov/search/detail.aspx> and http://www.glorerecords.blm.gov/details/patent/default.aspx?accession=CACAAA_000076&docClass=SER&sid=oqbq30ev.5x2

Cultural Resources Unlimited (CRU). 1993. Archaeological Site Record for 48-000178/CA-SOL-383H. Form on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014. S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

DPR 523L (1/95) *Required Information

1
2

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-424H</u> NRHP Status Code
		Reviewer Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 **T** 5 N ; **R** 1W ; **SW ¼ of SW ¼ of Sec 12**
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
 c. **Address** _____ **City** Fairfield **Zip** _____
 d. **UTM:** (Give more than one for large and/or linear resources) **Zone** 10 , 0593440 mE/ 4238018 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
 This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.
 Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7
***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



***P6. Date Constructed/Age and Source:** Historic
 Prehistoric Both
***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA
***P8. Recorded by:** (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111
***P9. Date Recorded:** May 16, 2013
***P10. Survey Type:** (Describe)
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California
EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

DPR 523A (1/95)

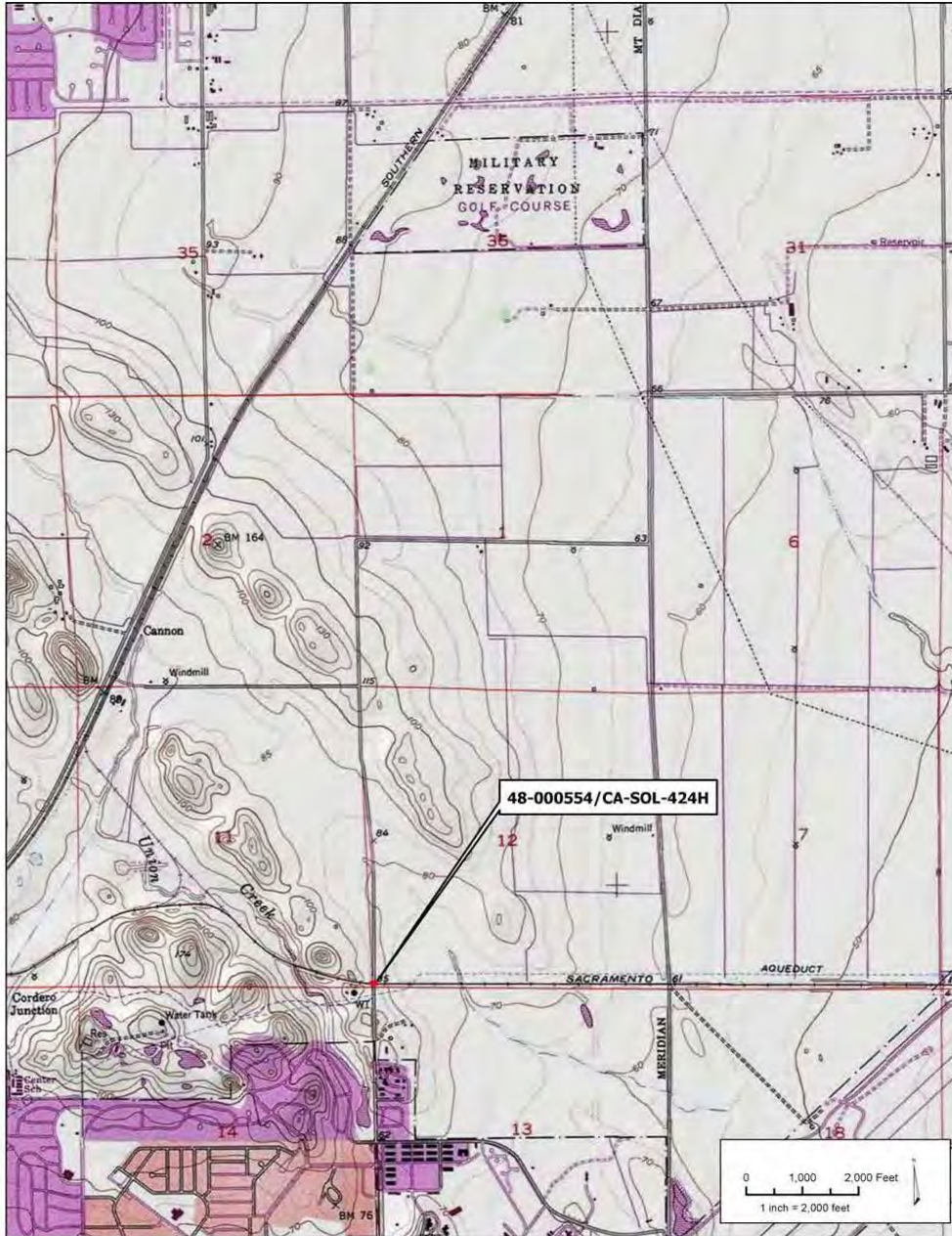
*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

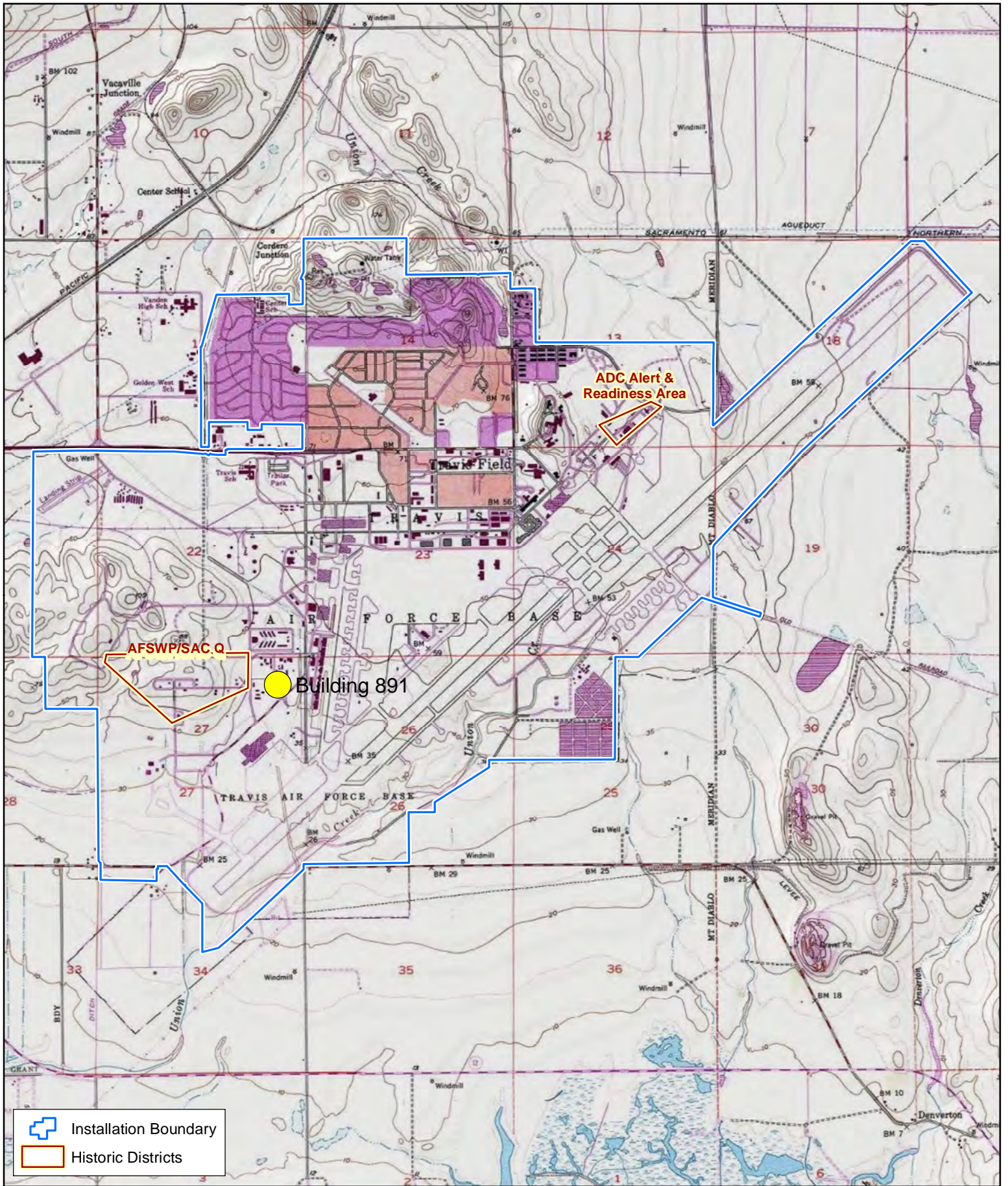
Page 2 of 2
*Map Name: Elmira, CA
1980

*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised



DPR 523J (1/95)

*Required information



Attachment 7

Travis Air Force Base
 Building 891 Demolition Project Area in Relationship to
 the two Cold War-Era Historic Districts



**DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to the Demolition of Building 1182 (Electric Power Station Building) at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with the demolition of Building 1182 (Electric Power Station Building).

This consultation combines a discussion of the Area of Potential Effects (APE) for the undertaking (per 36 CFR 800.4) with our finding of No Historic Properties Affected. Travis AFB requests your concurrence with the APE; with our determination that Building 1182 is Not Eligible for listing in the National Register of Historic Places (NRHP); and that there will be No Historic Properties Affected from the proposed Building 1182 demolition project.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base, which is under the operational control of the Air Mobility Command. The 60th Air Mobility

Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves the demolition of Building 1182 (Electric Power Station Building) and its associated concrete foundation and underground utilities. Building 1182 is situated on the south side of the airfield district in a remote area along the north side of Perimeter Road and approximately 50 feet from the eastern installation boundary. Building 1182 is approximately 276 square feet in size and was constructed in the Cold War-era (1955). The small, single-story, rectangular-in-plan building is sheathed in vertical wood siding, has a metal end-gable roof, and sets on a concrete slab. The building is no longer in use and has deteriorated beyond the point of economical repair (Attachments 2 and 3).

The APE shall be limited to the Building 1182 demolition project footprint, plus a 50-foot (15.2-meter) buffer zone that defines the work area around the building and allows for the impacts of deconstruction, grading, and other demolition activities. The Building 1182 APE is, therefore, the entire work area (facility footprint plus buffer), but the Area of Direct Impact (ADI) shall be limited to the project footprint (demolition zone) and any work areas within the buffer that are actually impacted. Except for the Building 1182 footprint and buffer zone, there are no other APEs associated with the demolition of this facility.

As shown on Attachment 2, all staging and equipment maintenance activities shall take place on existing roads (gravel, dirt) or parking areas within the project site that have been heavily disturbed from previous construction and operational use. Stockpiling of waste materials and rubble shall occur on existing disturbed surfaces, shall not affect undisturbed soils, and will be away from Perimeter Road.

Based on the above information, Travis AFB is requesting your concurrence on the APE as delineated herein for the current Building 1182 demolition project.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery will be used to demolish Building 1182 and its associated infrastructure. The demolition encompasses the building itself, the concrete foundation, and underground utilities. The underground utility services (pipes, cables, etc.) shall be cut, capped, and left in place. If compactable soil, topsoil, gravel, or other materials are needed for fill, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO).

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During demolition activities, if any archaeological deposits, anomalies, or potential historic properties are encountered, all work will stop in the vicinity of the find and the

Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, the Building 1182 project area is located in a heavily graded and disturbed area of the airfield district and it is extremely unlikely that intact, buried archaeological deposits will be encountered. After demolition of Building 1182 is complete, the ground shall be graded and seeded to appear similar to the surrounding area. Given its proximity to the airfield, the area would be backfilled, graded for positive drainage, hydroseeded, and allowed to return to natural conditions.

36 CFR 800.11(d)(2) – Identification of Historic Properties

One previous architectural resources survey with NRHP evaluations has encompassed the Building 1182 project area. The survey report *Travis Air Force Base Architectural Inventory*, was completed by the U. S. Army Corps of Engineers Engineering Research and Development Center of the Construction and Engineering Research Laboratory (ERDC/CERL) in February 2013 (Attachment 4). The report recommended Building 1182 as Not Eligible for inclusion in the NRHP; however, at the time of the survey, the building was locked and could not be accessed or photographed and a California Department of Parks and Recreation (DPR) structure record form for Building 1182 was not completed. Attachment 3 for this consultation provides photographs of the building from 2008.

In 2018, and as shown in the photographs in Attachments 2 and 3, Building 1182 retains a poor degree of integrity of materials and workmanship. Given its existing condition and utilitarian design, the building does not meet the criteria for NRHP eligibility required under 36 CFR 60.4. Building 1182 would not contribute to an understanding of the Cold War-era military airlift mission at Travis AFB (NRHP criterion A), is a minor, utilitarian element constructed to support airfield and base operations (BASOPs), and is of minor importance in the development of the base as a whole. The building is not known to be associated with a person or persons of historical importance (NRHP criterion B); does not embody the distinctive characteristics of a type, period, or method of construction, does not represent the work of a master or possess high artistic value; and is not a contributing element of an existing or proposed historic district (Criterion C). Building 1182 is also not likely to yield information important in prehistory or history (Criterion D). For these reasons, Travis AFB agrees with the 2013 ERDC/CERL report recommendation that Building 1182 is Not Eligible for inclusion in the NRHP (Attachment 4) and requests your concurrence.

Travis AFB has been completely surveyed for archaeological resources. Among the surveys are *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, which was completed by the Argonne National Laboratory in March 1996 (Attachment 5), and most recently a predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California*, which was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 6). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of

landform age, type, slope, and other physical characteristics, and considered water sources, sedimentation, drainage, and other processes and ground disturbances, the study identified less than 16 acres (out of 5,317, or less than 0.3%) as having “high” or “moderate” potential for buried prehistoric sites. As a result, the surveys have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant, unknown buried prehistoric archaeological deposits are extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 5). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and DPR forms have been prepared (Attachment 7); however, neither of these two sites is near the proposed Building 1182 demolition project and neither would be affected by the current project. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Putos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site is approximately 1.5 miles northwest of the Building 1182 demolition project area.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site is approximately 1.3 miles north of the Building 1182 demolition project area.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB and the location of Building 1182 within the heavily disturbed airfield area, the unexpected discovery of archaeological resources during the demolition of Building 1182 is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although demolition projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about the demolition of Building 1182, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a

report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties* and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB), the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National Historic Preservation Act (NHPA). The required documentation was completed in 2002; however, the two Historic Districts continue to be treated as eligible, pending additional SHPO consultation.

The Air Force Special Weapons Project (AFSWP) Q Area Historic District is situated in the southwestern area of Travis AFB and approximately 2.5 miles southwest of Building 1182. The Air Defense Command (ADC) Historic District is situated in the northeastern area of Travis AFB and is approximately 0.63 miles northwest of Building 1182. Both Historic Districts are shown on Attachment 8 and are well removed from the proposed demolition of Building 1182; therefore, neither of the Historic Districts would be affected by the current consultation.

36 CFR 800.11(d)(3) – Determination of No Historic Properties Affected

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the proposed demolition of Building 1182. There are no prehistoric, ethnographic, or traditional cultural properties within the Building 1182 APE and Native American tribes affiliated with Travis AFB have been contacted about this proposed demolition project. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native Americans concerns are raised about the proposed Building 1182 demolition project, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Based on the above discussions and letter attachments, Travis AFB is requesting your concurrence that Building 1182 is Not Eligible for inclusion in the NRHP, and that there will be No Historic Properties Affected for the proposed demolition of Building 1182 and its concrete foundation and underground utilities.

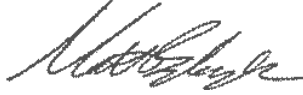
36 CFR 800.13 – Post-Review Discoveries

If during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, Travis AFB personnel shall conform to the requirements of 36 CFR 800.13. All work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be immediately contacted.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

 Recoverable Signature

X 

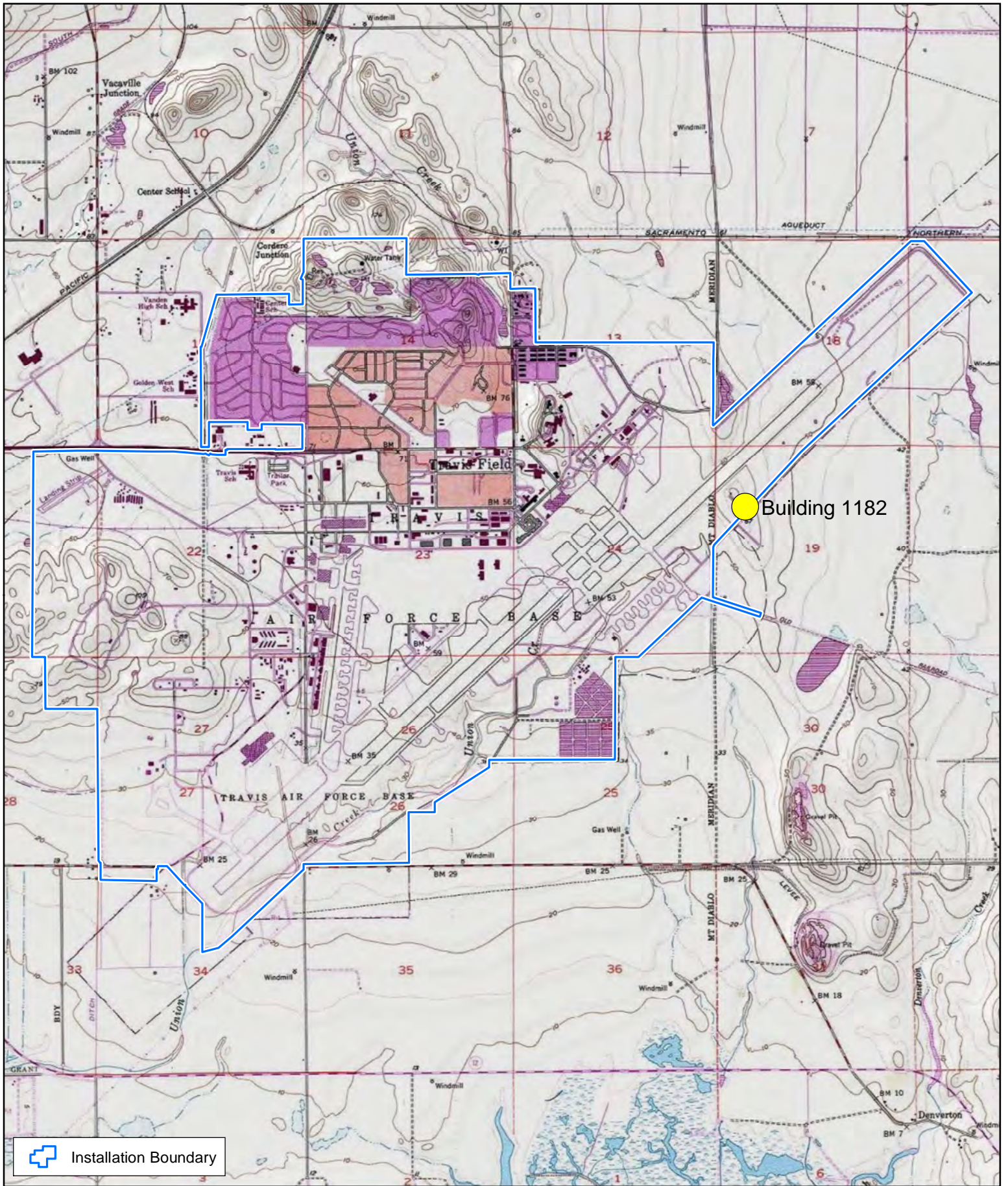
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

8 Attachments:

1. Building 1182 Project Location Map
2. Building 1182 Demolition Project APE
3. Building 1182 Photographs from 2008
4. 2013 ERDC/CERL Survey Report Excerpts
5. SHPO Consultation Letters (1995-1996), Argonne National Laboratory Report Excerpts
6. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
7. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
8. Building 1182 / Historic Districts Locations Map

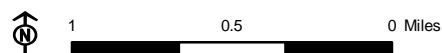
DEMOLITION OF
BUILDING 1182

SECTION 106 LETTER ATTACHMENTS



Building 1182

Installation Boundary



Attachment 1

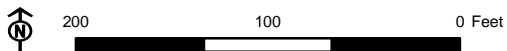
Travis Air Force Base
Installation Boundary
and Location of Building 1182

B1182



Google™

Imagery ©2018 , DigitalGlobe, U.S. Geological Survey



Attachment 2

Travis Air Force Base
 Area of Potential Effects
 Demolition of Building 1182

- Demolition Zone
- Staging and Stockpiling

ATTACHMENT 3

Building 1182 Photographs from 2008

Building 1182 as described in Travis AFB Real Property Records as:

- Electric Power Station Building
- 276 square feet
- Constructed 1955
- Category Code 811149

Base-wide architectural inventory conducted in 2012 by Army Corps of Engineers/CERL personnel could not access the locked, abandoned building. Report states “could not locate,” but indicates on the DPR form for Building 1185 that Building 1182 is adjacent. The report offers a summary NRHP eligibility recommendation of Not Eligible.

Reference:

2013 Adam D. Smith, Susan I. Enscore, and Sunny E. Adams
Travis Air Force Base Architectural Inventory. Construction Engineering Research Laboratory U.S. Army Engineer Research and Development Center (ERDC/CERL), 2902 Newmark Drive PO Box 9005 Champaign, IL 61826-9005

See attached photographs from 2008



Building 1182 north elevation



Building 1182 south elevation



Building 1182 west elevation

ATTACHMENT 4

ERDC/CERL 2013 Architectural Survey Excerpts Building 1182

Included in this Attachment are two items:

- 1) ERDC/CERL Report cover through Table of Contents.
- 2) A table included in Appendix B of the 2013 ERDC/CERL Report indicating that Building 1182 is Not Eligible.

Travis Air Force Base Architectural Inventory

Adam D. Smith, Susan I. Enscoe, and Sunny E. Adams

*Construction Engineering Research Laboratory
U.S. Army Engineer Research and Development Center
2902 Newmark Drive
PO Box 9005
Champaign, IL 61826-9005*

Final report

Approved for public release; distribution is unlimited.

Prepared for Travis Air Force Base
400 Brennan Circle
Travis AFB, CA 94535

Under Project Number 369998,
“Section 110 Architectural Evaluation at Travis AFB, CA”

Abstract

This document is an architectural and landscape survey of 314 buildings, structures, and landscapes located at Travis Air Force Base, California, for eligibility to the National Register of Historic Places (NRHP). The list contains 2 buildings and structures dating to World War II; 5 buildings dating from post-World War II; 72 buildings dating from the early Cold War-Strategic Air Command (SAC) era; and 36 buildings dating from the late Cold War era. The remainder of the buildings, structures, and landscapes were previously evaluated and determined ineligible for the NRHP or else could not be located. This survey satisfies Section 110 of the National Historic Preservation Act of 1966 as amended, and it was used to determine the eligibility of these buildings and landscapes for inclusion on the NRHP. As a result of this work, no buildings, structures, or landscapes were recommended for nomination to the NRHP.

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Report Documentation Page

Facility Number	Date Built	Name	Eligibility Status
1182	1955	ELEC PWR STN BLDG	Not Eligible
1185	1963	RAPCON CEN	Not Eligible
1201	1968	TRML, AIR FRT	Not Eligible
1205	1957	BE MAINT SHP	ADC Hist. Dist.
1206	1954	WHSE SUP&EQUIP BSE	ADC Hist. Dist.
1207	1989	ILS LOCALIZER	Not Evaluated
1208	1977	MISC RECTN BLD	Not Exceptionally Important
1212	1955	HQ GROUP	ADC Hist. Dist.
1281	1970	ILS GLIDE SLOPE	Not Evaluated
1290	1957	ELEC PWR STN BLDG	Not Eligible
1295	1991	ELEC PWR STN BLDG	Not Exceptionally Important
1300	1990	BUS SHELTER	Not Exceptionally Important
1304	1954	DORM AM PP/PCS-STD	ELPA
1305	1954	DORM AM PP/PCS-STD	ELPA
1307	1954	DORM AM PP/PCS-STD	ELPA
1308	1954	DORM AM PP/PCS-STD	ELPA
1309	1954	DORM AM PP/PCS-STD	ELPA
1322	1988	HTG FCLTY BLDG	Not Exceptionally Important
1325	1988	HTG FCLTY BLDG	Not Exceptionally Important
1330	1954	DORM AM PP/PCS-STD	ELPA
1331	1954	DORM AM PP/PCS-STD	ELPA
1332	1954	DORM AM PP/PCS-STD	ELPA
1334	1954	DORM AM PP/PCS-STD	ELPA
1347	1990	BUS SHELTER	Not Exceptionally Important
1348	1954	HSG SUP&STOR FCLTY	Not Eligible
1357	1990	BUS SHELTER	Not Exceptionally Important
1358	1990	BUS SHELTER	Not Exceptionally Important
1360	1956	RAD, MARS	Not Eligible
1365	1963	BE STOR CV FCLTY	Not Eligible
1366	1963	HQ WG	Not Eligible
1371	1977	S WSTE REP	Did not locate
1740	1971	STOR LIQ OXYGEN	Not Exceptionally Important
1760	1985	EOD	Not Exceptionally Important
1797	1972	HYDR FL,BLDG	Not Exceptionally Important
1801	1960	SAN LATRINE	Did not locate
1846	1985	RIDING STABLES	Not Exceptionally Important
1876	1952	SWIM PO AMN	Did not locate
1902	1967	TRML, FLEET SVC	Not Exceptionally Important
1905	1972	TRML, FLEET SVC	Not Exceptionally Important
5375	1990	BUS SHELTER	Not Exceptionally Important
5581	1951	FH WHERRY (SCOUT HUT)	ELPA
7270	1959	SAN SEWAGE S	Not Eligible
7763	1975	YOUTH CEN	Not Exceptionally Important
7766	1985	CHAPEL CEN	Not Exceptionally Important
7855	1990	BUS SHELTER	Not Exceptionally Important
9397	1955	TRAFFIC CHK HSE	Not Eligible

ATTACHMENT 5

SHPO LETTERS and excerpts from the 1996 ARGONNE REPORT

Moeller, K, B.T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California. Environmental Assessment Division, Argonne National Laboratory.

Included in this Attachment are three items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

ATTACHMENT 6

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air
Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of Building 1182 added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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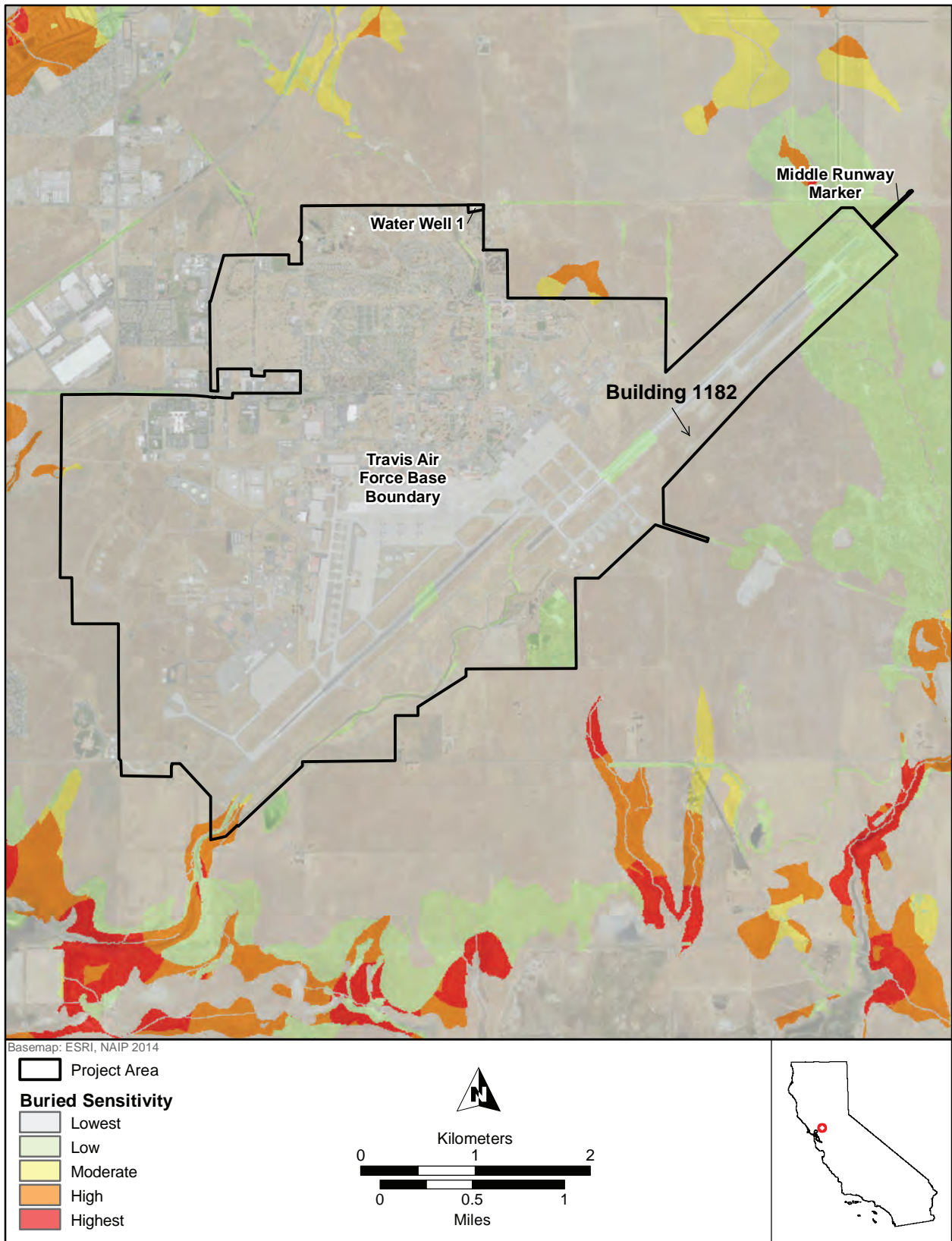


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 7

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-383H</u> NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
 c. Address City Fairfield Zip
 d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE/ 4237690 mN
 e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

***P6. Date Constructed/Age and Source:** Historic Prehistoric Both



***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA

***P8. Recorded by:** (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

***P9. Date Recorded:** May 16, 2013

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project. Travis Air Force Base, Solano County, California

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

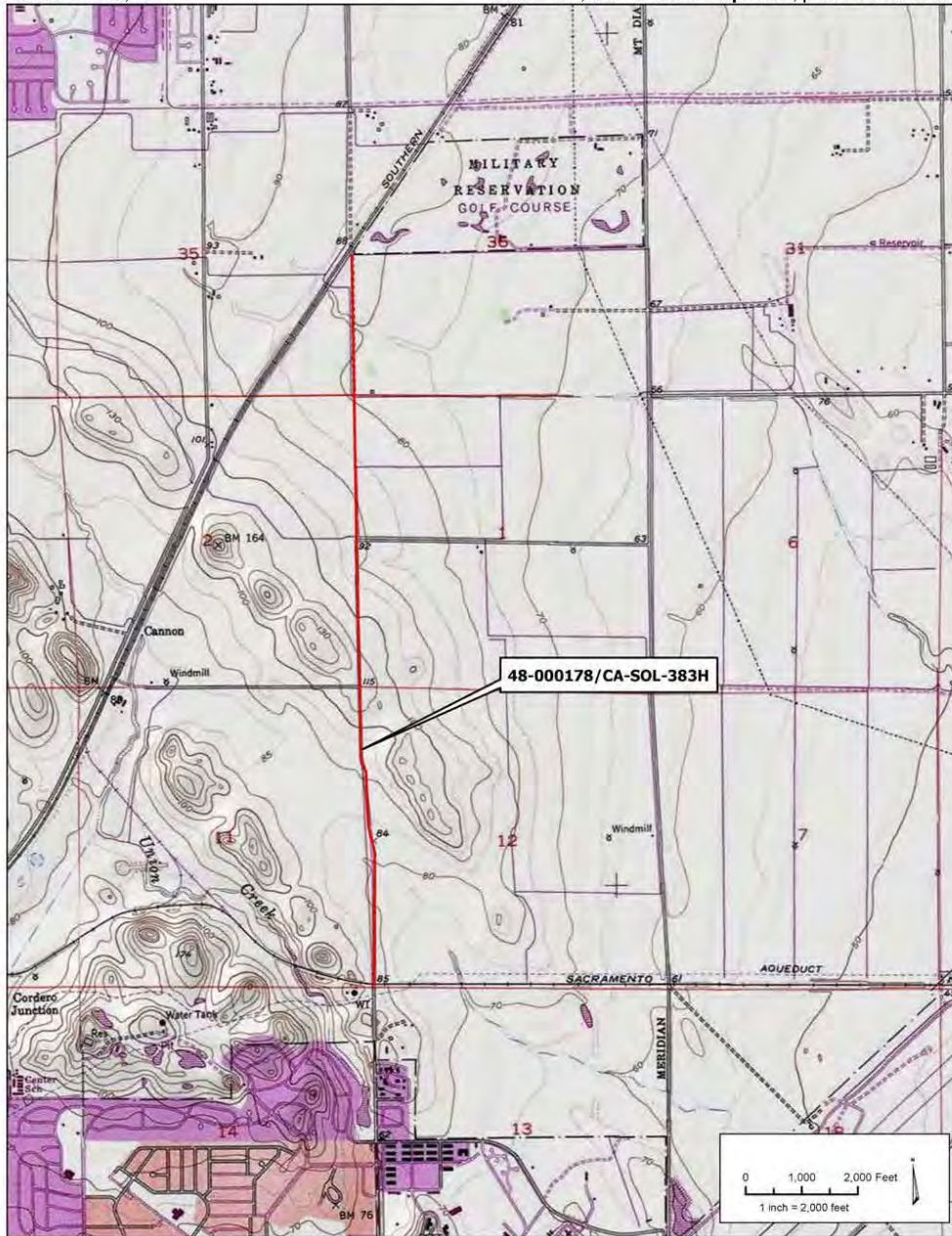
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000178 UPDATE
HRI#
Trinomial CA-SOL-383H

Page 2 of 4

*Map Name: Elmira, CA

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
CONTINUATION SHEET	

Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

***P3a. Description (Continued)**

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION CONTINUATION SHEET	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
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Page 4 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

Integrity is measured by the degree to which the resource retains its historical properties and conveys its historical character. As noted in 2002 and confirmed during a recent pedestrian survey (May 16, 2013), the segment considered in this update maintains its context (location); however, its use and maintenance as a modern, asphalt road represents significant alteration (EDAW, Inc. 2002). In addition, the historic age Leisure Town Road alignment measured approximately 12.65 miles in length as originally recorded in 1993 (CRU 1993). At this time, the segment considered in this update is no longer connected to modern Leisure Town Road. Instead, it is presently separated from the remaining portions of the alignment by the UPRR ROW and there is no formal railroad crossing. Therefore, the segment considered in this update no longer functions as a portion of the larger thoroughfare.

Recommendations

48-000178/CA-SOL-383H appears to be potentially eligible for inclusion in the NRHP under Criterion A. However, it is recommended that the segment addressed in this update be considered ineligible for the NRHP. This recommendation is based on a lack of integrity as well as the fact that this segment is not associated with the actual Rancho Los Puntos grant line. Thus, this segment does not appear to be a contributing element to the potential NRHP eligibility of 48-000178/CA-SOL-383H.

References

Bureau of Land Management (BLM). 2013. General Land Office Patent Searches, including: BLM Serial No. CACAAA 000076. Searches completed May 2013. <http://www.glorerecords.blm.gov/search/detail.aspx> and http://www.glorerecords.blm.gov/details/patent/default.aspx?accession=CACAAA_000076&docClass=SER&sid=oqbq30ev.5x2

Cultural Resources Unlimited (CRU). 1993. Archaeological Site Record for 48-000178/CA-SOL-383H. Form on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014. S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

1
2

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-424H</u> NRHP Status Code
		Reviewer Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 **T** 5 N ; **R** 1W ; **SW ¼ of SW ¼ of Sec 12**
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
 c. **Address** _____ **City** Fairfield **Zip** _____
 d. **UTM:** (Give more than one for large and/or linear resources) **Zone** 10 , 0593440 mE/ 4238018 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
 This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.
 Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7
***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



***P6. Date Constructed/Age and Source:** Historic
 Prehistoric Both
***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA
***P8. Recorded by:** (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111
***P9. Date Recorded:** May 16, 2013
***P10. Survey Type:** (Describe)
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California
EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

DPR 523A (1/95)

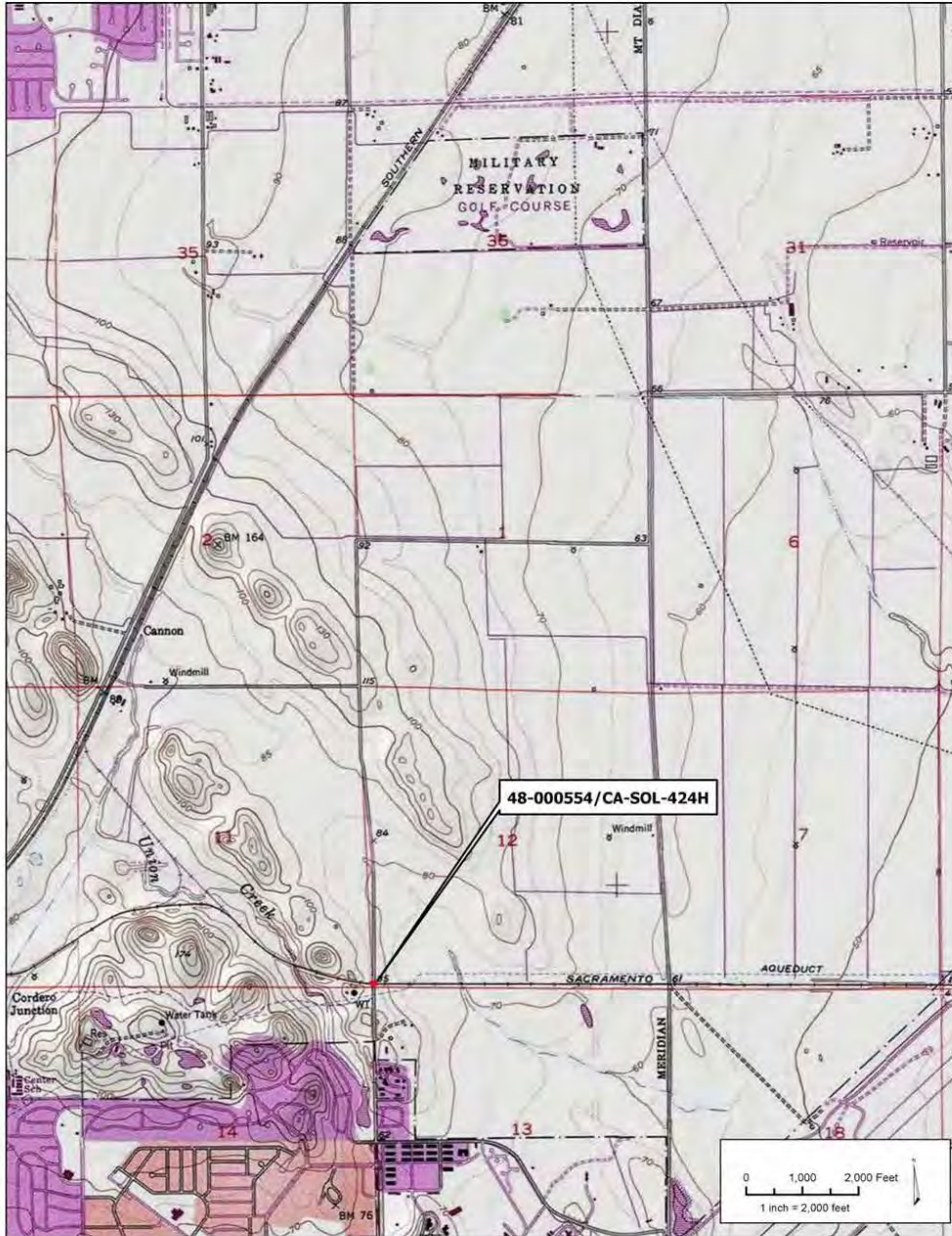
*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

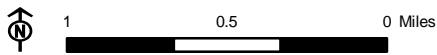
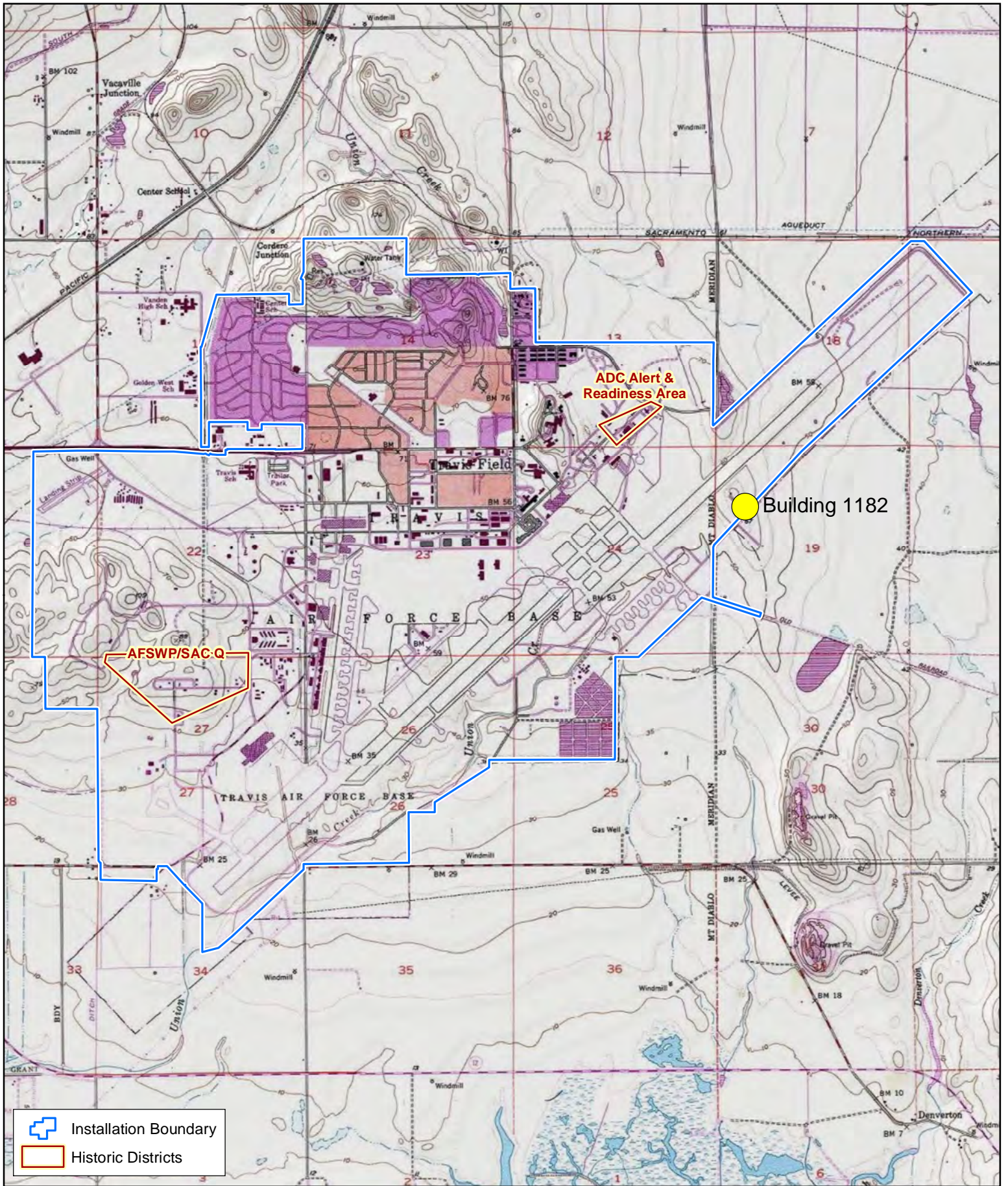
Page 2 of 2
*Map Name: Elmira, CA
1980

*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised



DPR 523J (1/95)

*Required information



Attachment 8

Travis Air Force Base
 Building 1182 Demolition Project Area in Relationship to
 the two Cold War-Era Historic Districts



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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 2, 2018

Reply in Reference To: USAF_2018_0613_003

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Dear Mr. Sassaman:

Re: Section 106 Consultation for Demolition of Former Waste Water Plant Infrastructure Features, Travis Air Force Base

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to demolish features of a former waste water plant (Building 1150 and 1151) at Travis Air Force Base. Project activities include removal of two Imhoff tanks, a settling tank, manhole structures and associated piping and utilities capping. Active treatment equipment and the pump house will remain intact.

Constructed in 1946, the treatment plant has been inactive since 1980 and upon evaluation the USAF determined it does not meet National Register of Historic Places (NRHP) eligibility requirements. Additionally, the USAF has determined through several archeological pedestrian surveys and sensitivity probability modelling that the project area has a low sensitivity for subsurface resources.

The USAF are requesting the SHPO's concurrence with their area of potential effects (APE) definition, their determination that the treatment plant remnants subject to this undertaking do not meet NRHP eligibility requirements and with their finding of no historic properties affected. After reviewing the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the APE as the treatment plant footprint and a 50 meter buffer zone.

- 2) The SHPO concurs that the waste water plant remnants are not eligible for NRHP inclusion.
- 3) The SHPO concurs that a finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1) is appropriate. Be advised that that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Julianne Polanco', with a horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer



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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 2, 2018

Reply in Reference To: USAF_2018_0613_006

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Dear Mr. Sassaman:

Re: Section 106 Consultation for Demolition of Building 1, Travis Air Force Base

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to demolish Building 1 at Travis Air Force Base. Constructed in 1946 as an air freight terminal, the building now functions as a squadron operations center and warehouse. The SHPO's concurrence with the USAF's determination that Building 1 does not meet National Register of Historic Places (NRHP) eligibility requirements was received in 1996.

The USAF are requesting the SHPO's concurrence with their area of potential effects (APE) definition and with their finding of no historic properties affected. After reviewing the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the APE as the footprint of Building 1 and a 50 meter buffer zone.
- 2) The SHPO concurs that a finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1) is appropriate. Be advised that that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

July 2, 2018
Brian Sassaman
Page 2

USAF_2018_0613_006

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to be 'J Polanco', with a horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer



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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
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calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 2, 2018

Reply in Reference To: USAF_2018_0613_002

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Dear Mr. Sassaman:

Re: Section 106 Consultation for Demolition of Building 891, Travis Air Force Base

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to demolish Building 891 at Travis Air Force Base. Project activities include propane tank and fencing removal and utility capping. Constructed in 1957 as a gas vaporizer facility, Building 891 has been long abandoned. Upon evaluation the USAF determined it does not meet National Register of Historic Places (NRHP) eligibility requirements.

The USAF are requesting the SHPO's concurrence with their area of potential effects (APE) definition, their determination that Building 891 does not meet NRHP eligibility requirements and with their finding of no historic properties affected. After reviewing the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the APE as the footprint of Building 891 and a 50 meter buffer zone.
- 2) The SHPO concurs that Building 891 is not eligible for NRHP inclusion.
- 3) The SHPO concurs that a finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1) is appropriate. Be advised that that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

July 2, 2018
Brian Sassaman
Page 2

USAF_2018_0613_002

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, consisting of a stylized 'J' followed by a horizontal line that tapers to the right.

Julianne Polanco
State Historic Preservation Officer



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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
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July 2, 2018

Reply in Reference To: USAF_2018_0613_004

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Dear Mr. Sassaman:

Re: Section 106 Consultation for Demolition of Building 1182, Travis Air Force Base

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to demolish Building 1182 at Travis Air Force Base. Project activities include foundation removal and utility capping. Constructed in 1955 as an electrical power station, Building 1182 has been long abandoned. Upon evaluation the USAF determined it does not meet National Register of Historic Places (NRHP) eligibility requirements.

The USAF are requesting the SHPO's concurrence with their area of potential effects (APE) definition, their determination that Building 1182 does not meet NRHP eligibility requirements and with their finding of no historic properties affected. After reviewing the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the APE as the footprint of Building 1182 and a 50 meter buffer zone.
- 2) The SHPO concurs that Building 1182 is not eligible for NRHP inclusion.
- 3) The SHPO concurs that a finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1) is appropriate. Be advised that that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

July 2, 2018
Brian Sassaman
Page 2

USAF_2018_0613_004

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J Polanco', with a horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer



**DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to Three Construction Projects at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with three proposed construction projects:

1. Construction of a Permanent C-5 Aircraft Static Display
2. Construction of a new War Reserve Materiel (WRM) Warehouse Facility and New Patient and Staff Parking Areas
3. Construction of a New Youth Center.

This consultation combines a discussion of the Area of Potential Effects (APE) for the three above-listed project locations (per 36 CFR 800.4) with our finding of No Historic Properties Affected. Travis AFB requests your concurrence with the APE and our finding that there will be No Historic Properties Affected from the proposed three construction projects.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base, which is under the operational control of the Air Mobility Command. The 60th Air Mobility Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves three separate construction projects. In general, each APE shall be limited to the project footprint, plus a 50-foot (15.2-meter) buffer zone that defines the work area around the project site and allows for the impacts of deconstruction, grading, and other construction activities. The APE is, therefore, the entire work area (construction footprint plus buffer at each project site), but the Area of Direct Impact (ADI) shall be limited to the project footprint (construction zone) and any work areas within the buffer that are actually impacted. Except for the three discrete project footprints and buffer zones, there are no other APEs associated with the construction of the proposed new facilities.

As shown on Attachments 2 through 4, all staging and equipment maintenance activities shall take place on existing roads (paved), paved parking areas, or areas within the project areas that have been heavily disturbed from previous construction and operational use. Stockpiling of waste materials and rubble shall occur on existing disturbed surfaces and shall not affect undisturbed soils.

The proposed specific APE for each proposed construction project encompasses the following:

1. Construction of a Permanent C-5 Aircraft Static Display (Attachment 2). The new C-5 aircraft static display would be situated in the Administrative Planning District of Travis AFB and adjacent to the existing airframe display area, which is immediately north of Travis Avenue and east of Burgan Boulevard, near the “Y” intersection at Challenger Lane and Travis Avenue. This location also would be approximately 900 feet northwest of a cluster of other airframe displays at the intersection of Airlift Drive and Challenger Lane. The APE for this construction project also encompasses a 56,520 square-foot temporary haul-road needed to transport the airframe from the flightline to its final destination.
2. Construction of a new War Reserve Materiel (WRM) Warehouse Facility and New Patient and Staff Parking Areas (Attachment 3). The new WRM Warehouse Facility project would be situated within the Travis AFB Medical Planning District. The new facility would be constructed north of the Consolidated Storage Distribution Center (CSDC) (Building 791) and west of the David Grant Medical Center (DGMC) (Building 777). A new secure, fenced storage pad would also be constructed north of the new WRM facility. To offset the loss of parking area created by the new construction, a new parking area would also be constructed for patients and staff of the DGMC.

3. Construction of a New Youth Center (Attachment 4). The new Youth Center would be situated within the Travis AFB Community Planning District, southwest of the intersection of Nevada Street and Collins Drive. The facility would be adjacent and to the south of the existing Youth Center (Building 7763), south of Fairchild Drive and across (west of) Collins Drive and the base housing area. The Youth Center would be near the northwestern extent of development on Travis AFB, approximately 2,200 feet south of the northern installation boundary.

Based on the above information, Travis AFB is requesting your concurrence on the APE as delineated herein for the proposed three construction projects.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery will be used to construct each of the three proposed new facilities and parking areas. There is no facility demolition required for any of these projects and existing buildings adjacent to the project areas will not be altered or otherwise affected in any way. If compactable soil, topsoil, gravel, or other materials are needed for these projects, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO). After construction is complete, areas surrounding each new facility will be paved or landscaped using vegetation or other ground coverings to match the adjacent landscape.

1. Construction of a Permanent C-5 Aircraft Static Display (Attachment 2). This project would create a new permanent, static display accessible to the public and designed to showcase a C-5 Galaxy airframe. The new facility would require a permanent, 55,000 square-foot, reinforced six-inch concrete pad to support the weight of the airframe. Lighting, sidewalks, handicapped accessible ramps, two memorial display plaques, and permanent landscaping (consisting of ginger rock and vegetation to match the nearby “Golden Bear” display to the north) are included as part of the proposed project. Construction of the temporary haul-road would involve removing a small stand of trees, grading existing topography, and restoring the haul road and surrounding area to its current state, to the maximum extent possible, after the airframe has been moved.
2. Construction of a new War Reserve Materiel (WRM) Warehouse Facility and New Patient and Staff Parking Areas (Attachment 3). This project would require construction of a 35,000 square-foot heated/cooled warehouse, a 43,125 square-foot secure fenced storage pad for WRM tactical equipment and vehicles, and would convert a temporary parking lot to a 17,408 square-foot permanent lot for use by patients and staff of the DGMC. The permanent lot would add stormwater infrastructure, lighting, sidewalks, and a crosswalk.
3. Construction of a New Youth Center (Attachment 4). Requirements for the new Youth Center include a 30,104 square-foot facility designed to better meet the needs of the growing Travis AFB population. The Center would support approximately 350

elementary school-age, youth, and teen children and programs and would be required to comply with all current buildings standards, seismic codes, fire and safety requirements, and environmental regulations. The new Youth Center is sited on the north side of Travis Avenue to allow children and parents convenient access from military housing without having to traverse major roadways, such as Collins Drive, that are used for primary access to the installation.

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During construction activities, if any archaeological deposits, anomalies, or potential historic properties are encountered, all work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, all three of the proposed project areas are located in areas that have been heavily graded and disturbed from previous construction and operational use and it is extremely unlikely that intact, buried archaeological deposits will be encountered.

36 CFR 800.11(d)(2) – Identification of Historic Properties

Travis AFB has been completely surveyed for archaeological resources. Among the surveys are *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, which was completed by the Argonne National Laboratory in March 1996 (Attachment 5), and most recently a predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California*, which was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 6). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of landform age, type, slope, and other physical characteristics, and considered water sources, sedimentation, drainage, and other processes and ground disturbances, the study identified less than 16 acres (out of 5,317, or less than 0.3%) as having “high” or “moderate” potential for buried prehistoric sites. As a result, the surveys have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant, unknown buried prehistoric archaeological deposits are extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 5). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and California Department of Parks and Recreation (DPR) forms have been prepared (Attachment 7); however, neither of these two sites is near the three proposed construction project areas and

neither would be affected by the current project. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Puntos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site to the C-5 Static Display construction project area is approximately 0.67 miles to the north. The closest point of this linear site to the WRM warehouse construction/parking lot project is approximately 2 miles to the northeast, and the closest point of this linear site to the new Youth Center project area is approximately 1 mile to the northeast.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site to the C-5 Static Display construction project area is approximately 1 mile to the north. The closest point of this linear site to the WRM warehouse construction/parking lot project is approximately 2 miles to the northeast and the closest point of this linear site to the new Youth Center project area is approximately 1 mile to the northeast.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB and the locations of the three proposed construction areas within the built up administrative, medical, and community (base housing) areas, the unexpected discovery of archaeological resources during the construction of any of the proposed facilities is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although these types of construction projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about any of the proposed construction projects, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties* and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB), the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National

Historic Preservation Act (NHPA). The required HABS documentation was completed in 2002; however, the two Historic Districts continue to be managed as eligible, pending additional SHPO consultation.

While the 1996 Cold War-era report did not focus on prehistoric or historic archaeological resources, adverse effects on these types of resources can occur from ground disturbing activities within the delineated boundaries of the two Historic Districts. However, none of the three construction projects will take place within the boundary of either Historic District and the distances of the three construction projects from each Historic District are as noted below.

The Air Force Special Weapons Project (AFSWP) Q Area Historic District is situated in the southwestern area of Travis AFB. The C-5 Static Display would be constructed approximately 1.7 miles northeast of this Historic District; the WRM warehouse construction/parking lot project would be constructed approximately 0.8-mile north of this Historic District; and the new Youth Center project would be constructed approximately 1.3 miles northeast of this Historic District.

The Air Defense Command (ADC) Historic District is situated in the northeastern area of Travis AFB. The C-5 Static Display would be constructed approximately 0.3 mile southwest of this Historic District; the WRM warehouse construction/parking lot project would be constructed approximately 2.3 miles southwest of this Historic District; and the new Youth Center would be constructed approximately 1.5 miles northwest of this Historic District.

Both Historic Districts and the three construction project areas are shown on Attachment 8 to show the separation between the locations. Given the separation, neither of the Historic Districts would be affected by the three proposed projects.

36 CFR 800.11(d)(3) – Determination of No Historic Properties Affected

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the three proposed construction projects. There are no prehistoric, ethnographic, or traditional cultural properties within either of the three proposed construction project areas and Native American tribes affiliated with Travis AFB have been contacted about these proposed projects. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native American or public concerns are raised about any or all of the proposed construction projects, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Based on the above discussions, Travis AFB requests your concurrence that there would be No Historic Properties Affected as a result of the three proposed construction projects.

36 CFR 800.13 – Post-Review Discoveries

In addition, if during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, all work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management

personnel, and the regional Cultural Resource Manager shall be contacted. Travis AFB personnel shall conform to the requirements of 36 CFR 800.13.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

6/5/2018

X 

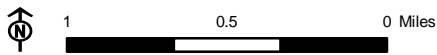
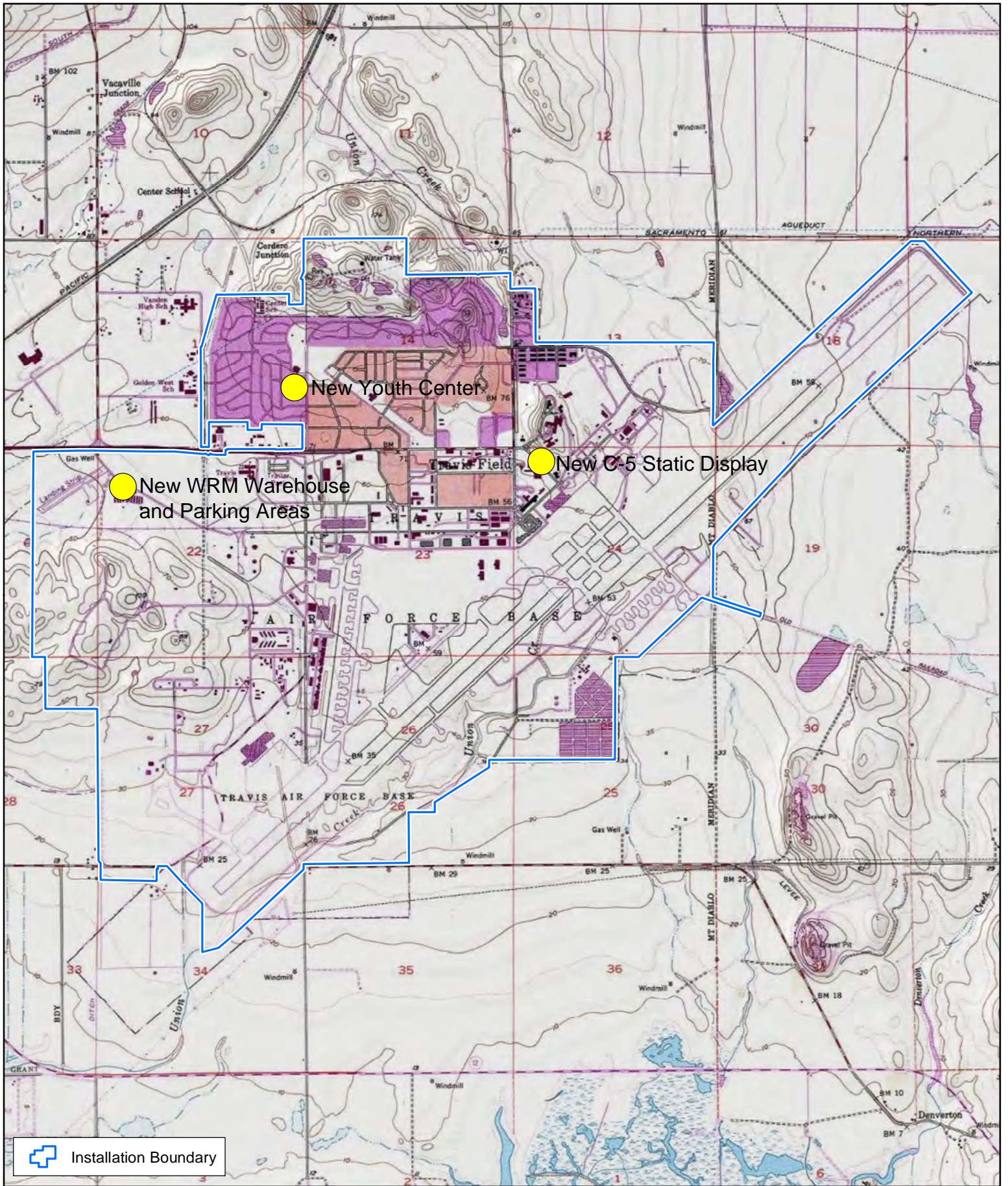
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

8 Attachments:

1. Three Construction Projects Location Map
2. New C-5 Static Display Construction Project APE
3. New WRM Warehouse and Parking Lot Construction Project APE
4. New Youth Center Construction Project APE
5. SHPO Concurrence Letters (1995-1996), Argonne National Laboratory Report Excerpts
6. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
7. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
Three Construction Projects Location / Historic Districts Locations Map

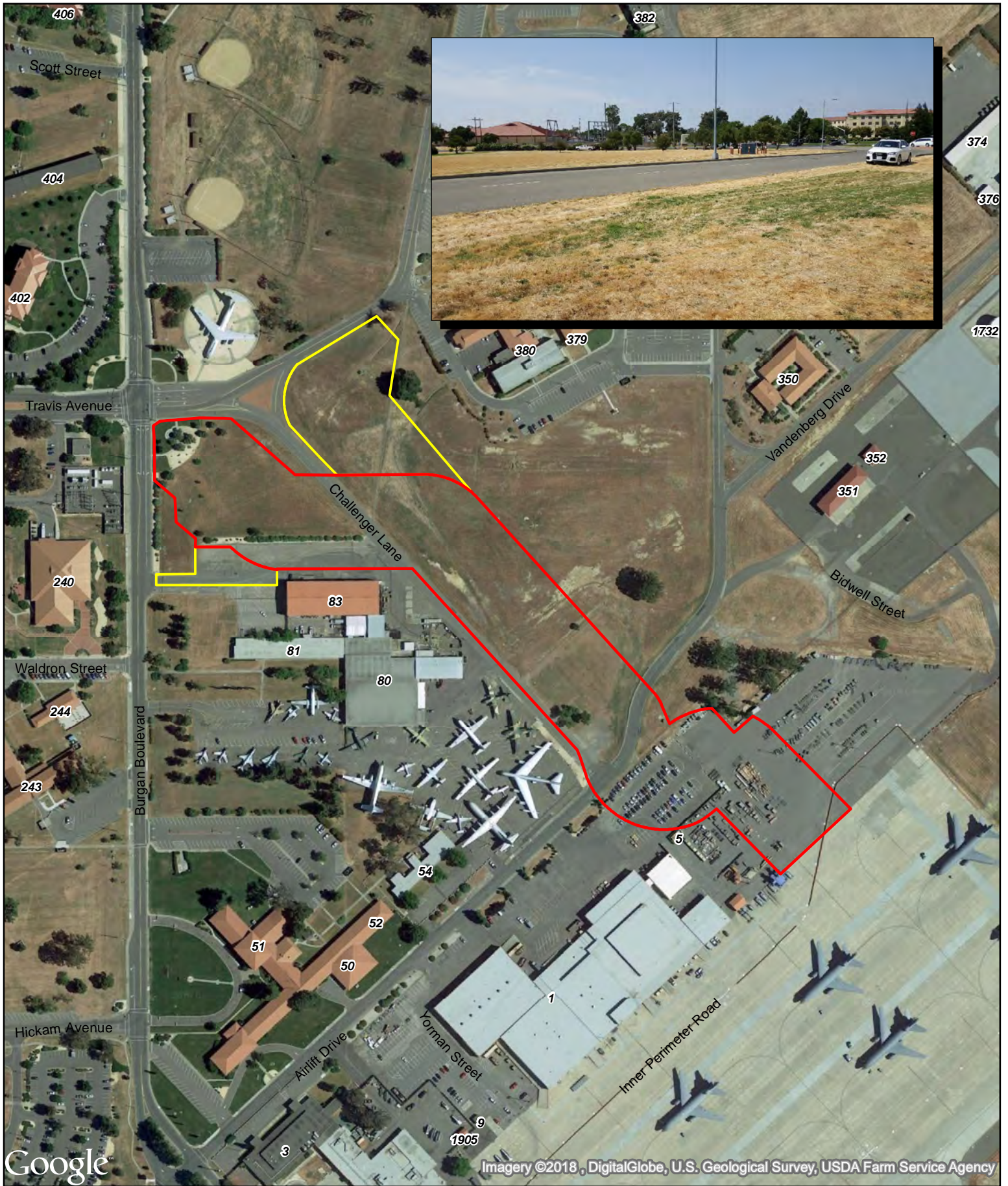
CONSTRUCTION OF
C-5 STATIC DISPLAY
NEW WRM WAREHOUSE AND PARKING AREAS
NEW YOUTH CENTER

SECTION 106 LETTER ATTACHMENTS



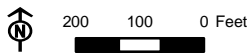
Attachment 1

Travis Air Force Base
Location of Three Proposed
Construction Projects



Google

Imagery ©2018, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency

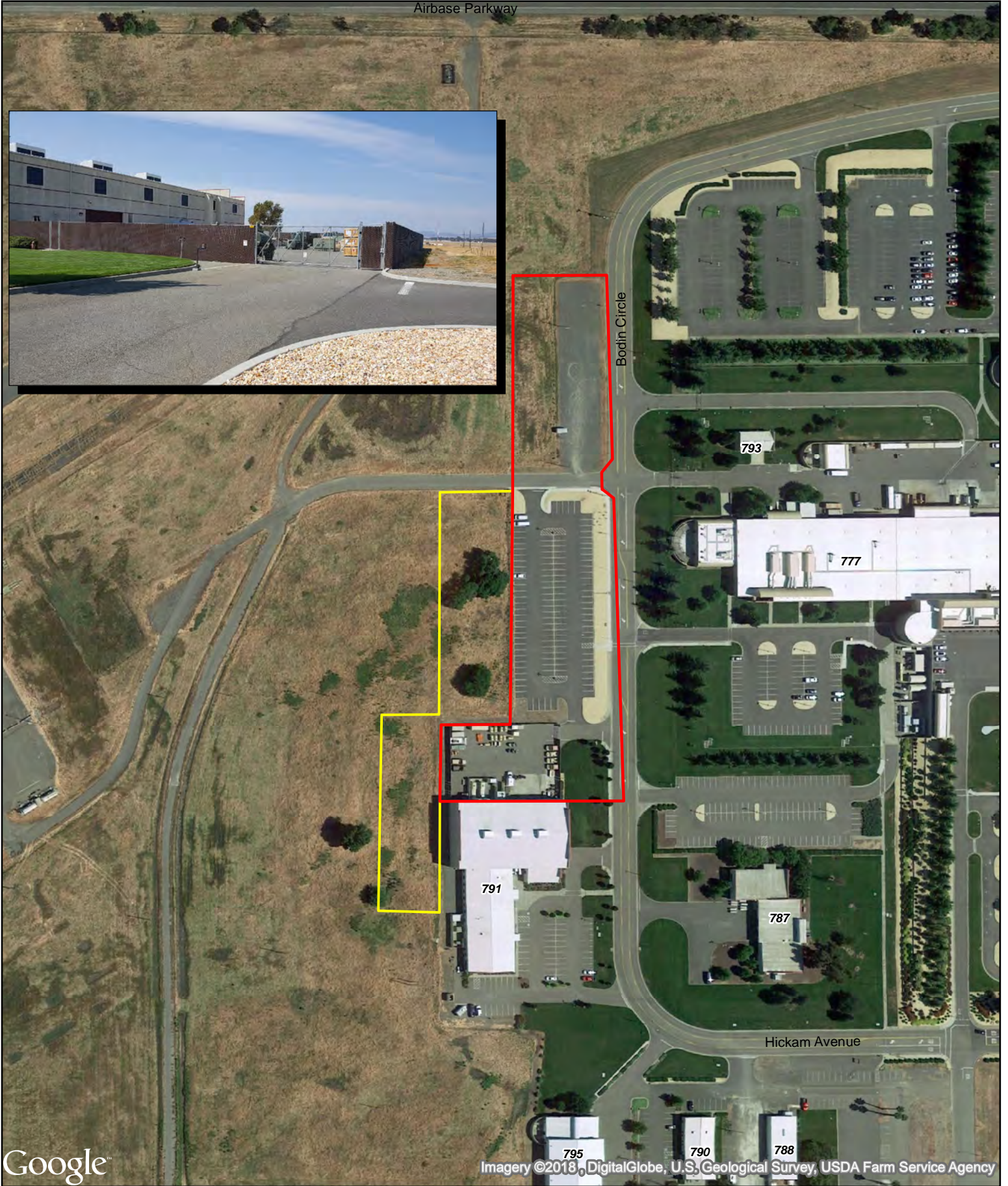


Attachment 2

Travis Air Force Base
Area of Potential Effects
Construction of C-5 Static Display

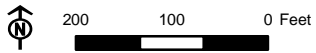
- ▭ Construction Zone
- ▭ Staging and Stockpiling

Airbase Parkway



Google

Imagery ©2018, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency



Attachment 3

Travis Air Force Base
Area of Potential Effects
New WRM Warehouse and Parking Expansion

- Construction Zone
- Staging and Stockpiling



Attachment 4

Travis Air Force Base
Area of Potential Effects
New Youth Center

ATTACHMENT 5

SHPO LETTERS and excerpts from the 1996 ARGONNE REPORT

Moeller, K, B.T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California. Environmental Assessment Division, Argonne National Laboratory.

Included in this Attachment are three items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

ATTACHMENT 6

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air
Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of three construction sites added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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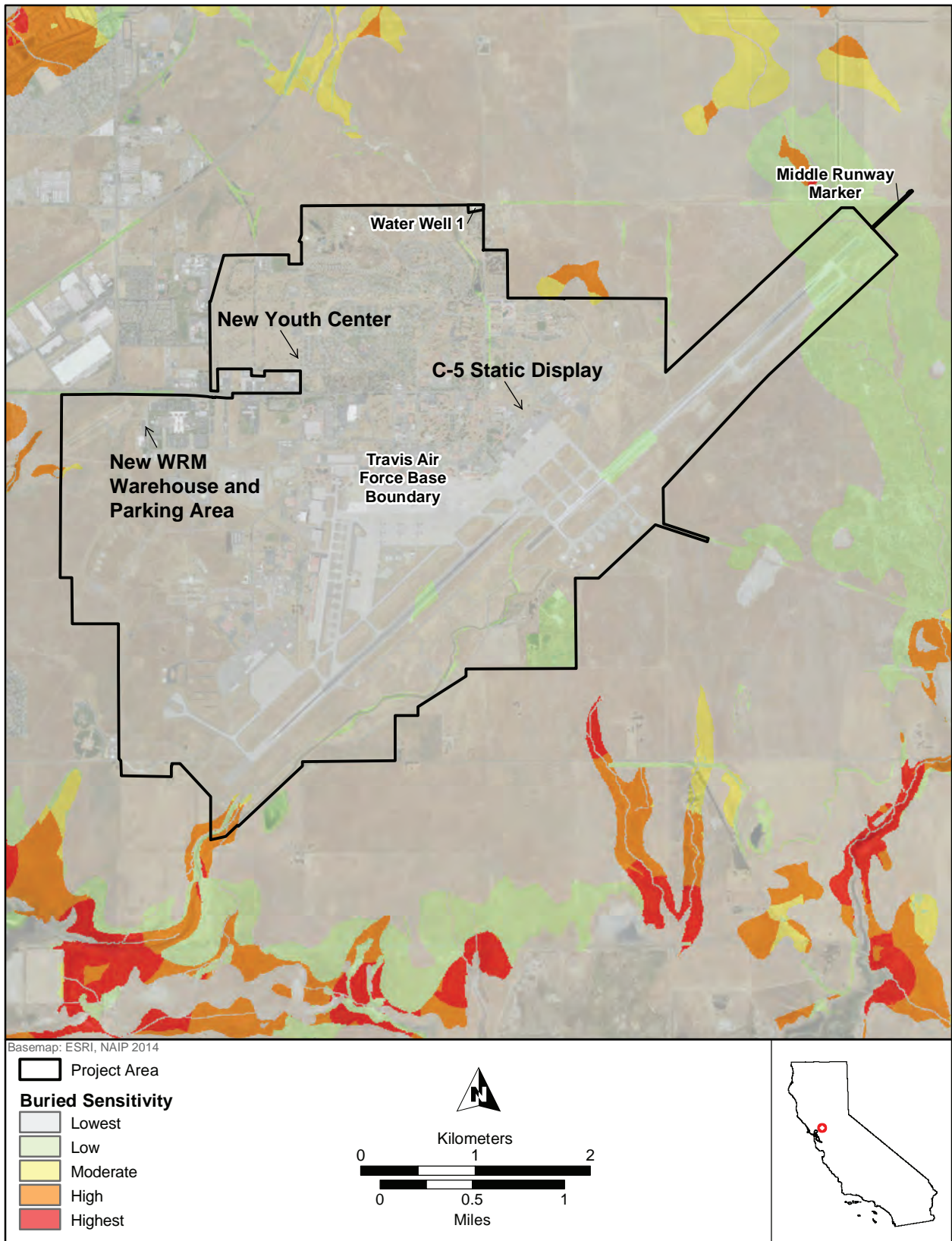


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 7

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-383H</u> NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
*P2. Location: Not for Publication Unrestricted *a. County Solano
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad Elmira, CA Date 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
c. Address City Fairfield Zip
d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE/ 4237690 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

*P6. Date Constructed/Age and Source: Historic Prehistoric Both



*P7. Owner and Address:
Travis Air Force Base
Fairfield, CA

*P8. Recorded by: (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

*P9. Date Recorded: May 16, 2013

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Atkins, 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California

*Attachments: NONE Location Map Continuation Sheet Building, Structure, and Object Record
Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000178 UPDATE
HRI#

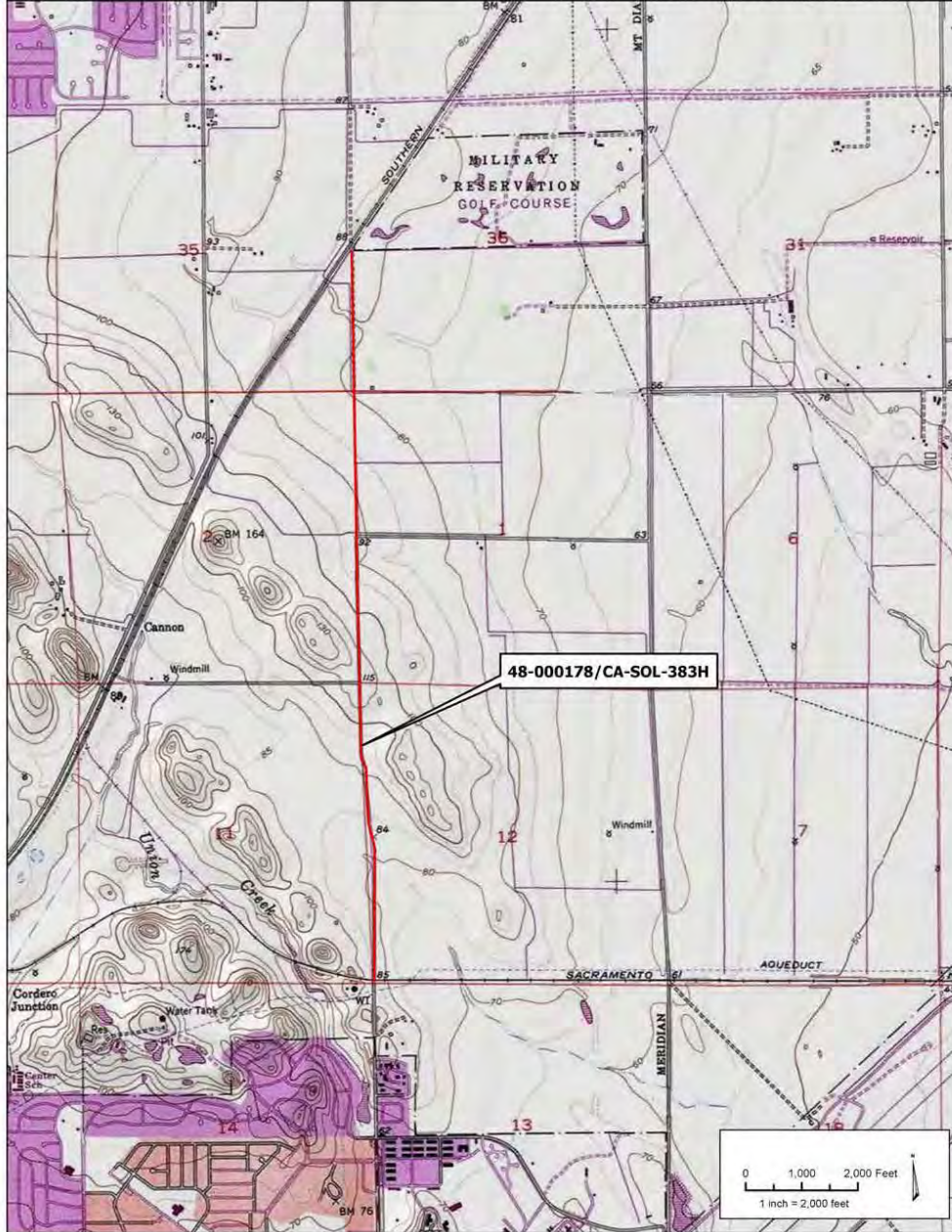
Trinomial CA-SOL-383H

Page 2 of 4

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE

*Map Name: Elmira, CA

*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
CONTINUATION SHEET	

Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

***P3a. Description (Continued)**

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
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Page 4 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
*Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

Integrity is measured by the degree to which the resource retains its historical properties and conveys its historical character. As noted in 2002 and confirmed during a recent pedestrian survey (May 16, 2013), the segment considered in this update maintains its context (location); however, its use and maintenance as a modern, asphalt road represents significant alteration (EDAW, Inc. 2002). In addition, the historic age Leisure Town Road alignment measured approximately 12.65 miles in length as originally recorded in 1993 (CRU 1993). At this time, the segment considered in this update is no longer connected to modern Leisure Town Road. Instead, it is presently separated from the remaining portions of the alignment by the UPRR ROW and there is no formal railroad crossing. Therefore, the segment considered in this update no longer functions as a portion of the larger thoroughfare.

Recommendations

48-000178/CA-SOL-383H appears to be potentially eligible for inclusion in the NRHP under Criterion A. However, it is recommended that the segment addressed in this update be considered ineligible for the NRHP. This recommendation is based on a lack of integrity as well as the fact that this segment is not associated with the actual Rancho Los Puntos grant line. Thus, this segment does not appear to be a contributing element to the potential NRHP eligibility of 48-000178/CA-SOL-383H.

References

Bureau of Land Management (BLM). 2013. General Land Office Patent Searches, including: BLM Serial No. CACAAA 000076. Searches completed May 2013. <http://www.glorerecords.blm.gov/search/detail.aspx> and http://www.glorerecords.blm.gov/details/patent/default.aspx?accession=CACAAA_000076&docClass=SER&sid=oqbq30ev.5x2

Cultural Resources Unlimited (CRU). 1993. Archaeological Site Record for 48-000178/CA-SOL-383H. Form on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014. S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

1
2

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
		HRI #
		Trinomial <u>CA-SOL-424H</u>
		NRHP Status Code
Other Listings Review Code	Reviewer	Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
*P2. Location: Not for Publication Unrestricted *a. County Solano
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad Elmira, CA Date 1953, photorevised 1980 T 5 N; R 1W; SW ¼ of SW ¼ of Sec 12
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
c. Address _____ City Fairfield Zip _____
d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE 4238018 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.

Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



*P6. Date Constructed/Age and Source: Historic
 Prehistoric Both

*P7. Owner and Address:
Travis Air Force Base
Fairfield, CA

*P8. Recorded by: (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111

*P9. Date Recorded: May 16, 2013

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California

EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

*Attachments: NONE Location Map Continuation Sheet Building, Structure, and Object Record
Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
Artifact Record Photograph Record Other (List):

DPR 523A (1/95)

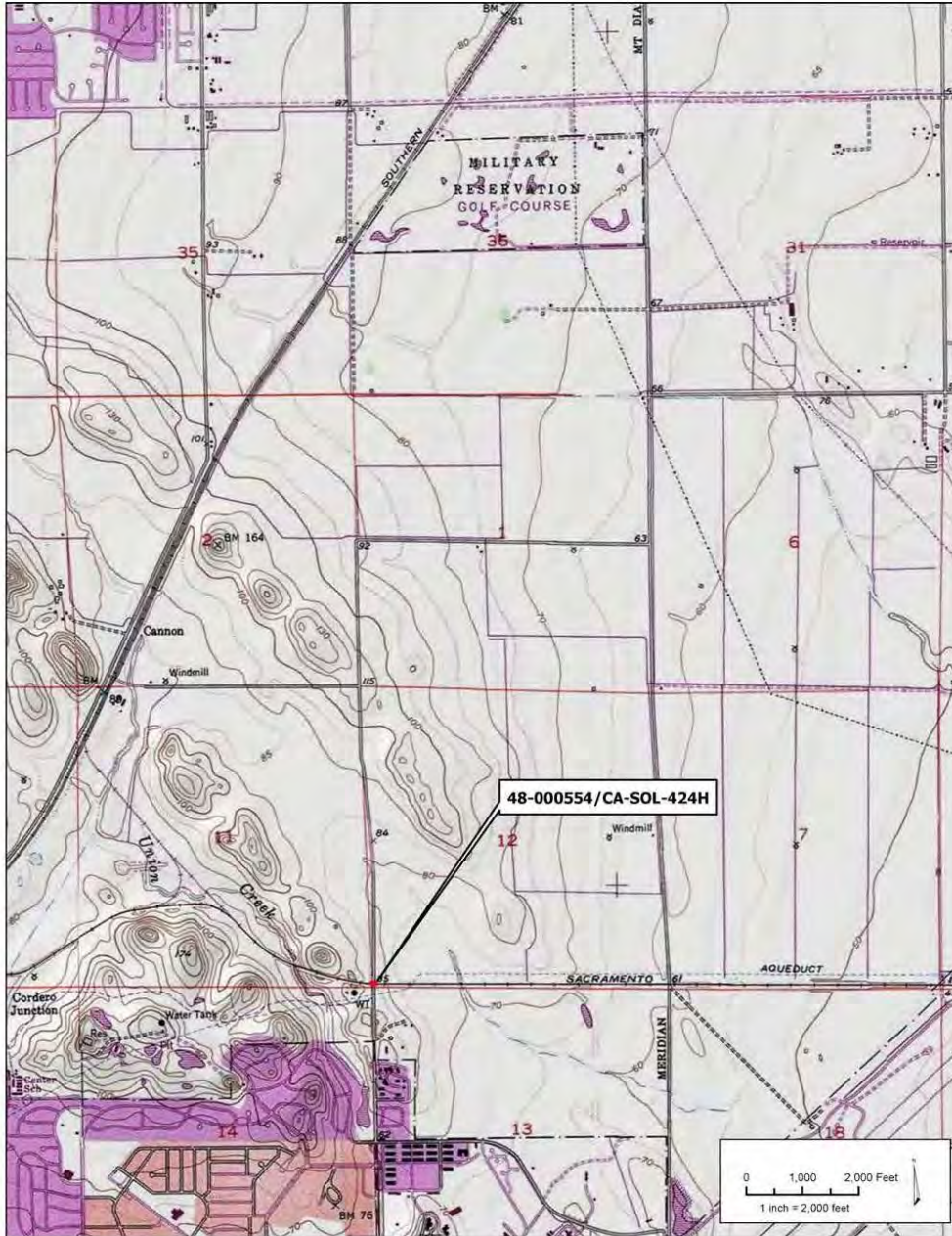
*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

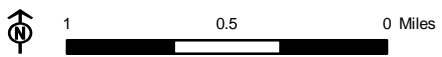
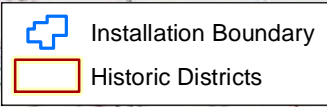
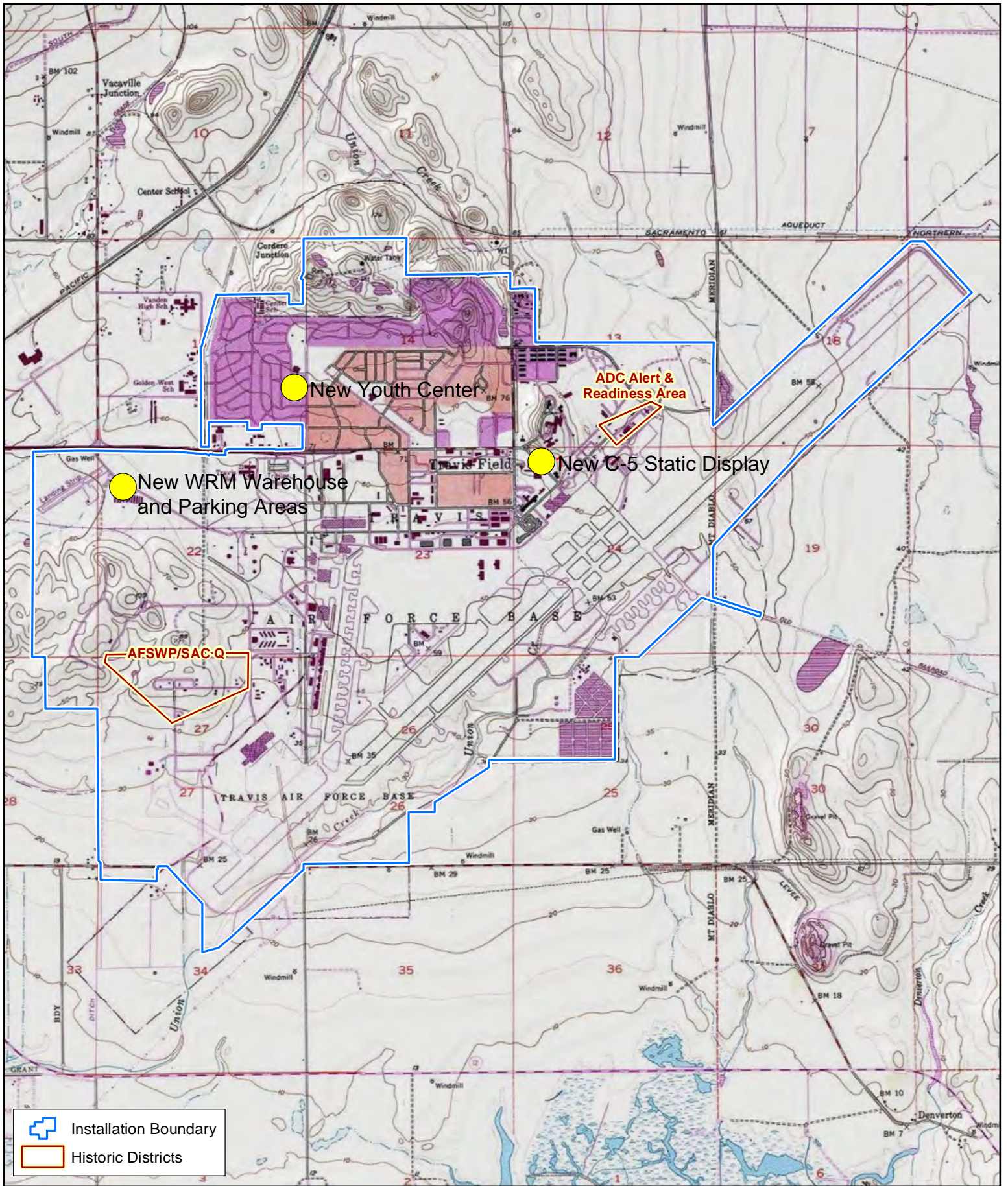
Page 2 of 2
*Map Name: Elmira, CA
1980

*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised



DPR 523J (1/95)

*Required information



Attachment 8

Travis Air Force Base
Three Construction Project Areas in Relationship to
the two Cold War-Era Historic Districts



**DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to the Repurposing of 2.5 acres for Recreational Vehicle Storage within the Air Force Special Weapons Project Q Area Historic District at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with the repurposing of a 2.5-acre area for Recreational Vehicle (RV) storage.

This consultation combines a discussion of the Area of Potential Effects (APE) for the RV Storage area (per 36 CFR 800.4) with our finding of No Adverse Effect on Historic Properties. Travis AFB would like your concurrence with the APE and our finding that there will be No Adverse Effect on Historic Properties from the repurposing of the 2.5-acre area for RV storage.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base, which is under the operational control of the Air Mobility Command. The 60th Air Mobility

Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves the repurposing for RV storage of a 2.5-acre, partially paved and previously developed area between Building 927 and Building 902. The project area is situated within the Western Planning District of Travis AFB and in an area of largely industrial land use. Specifically, the project site is located on the north side of W Street, approximately 500 feet west of the intersection of W Street and Dixon Avenue. Both the project site and a large already existing RV storage area are within the boundary of the Cold War-era Air Force Special Weapons Project (AFSWP) Q Area Historic District.

Because the project will take place within the AFSWP Q Area Historic District, the APE for this project is defined as the boundary of the entire Historic District (Attachment 2) to consider any potential impacts on the Historic District itself rather than just the smaller, 2.5-acre Area of Direct Impact (ADI). Also included in the APE is a 50-foot (15.2-meter) buffer zone that defines the work area around the construction zone and allows for the impacts of grading and other construction activities. The APE, therefore, encompasses the entire AFSWP Q Area Historic District, but focuses on the direct ground-disturbing construction zone and any work areas within the buffer that are actually impacted. There are no other APEs associated with the repurposing of this 2.5-acre area for use as RV storage.

As shown on Attachment 2, all staging, stockpiling, and equipment maintenance activities shall take place on existing paved or heavily disturbed areas within the 2.5-acre project site and its associated 50-foot buffer. Stockpiling of waste materials and rubble shall occur on existing paved or disturbed surfaces, shall not affect undisturbed soils, and will be away from W Street.

Based on the above information, Travis AFB is requesting your concurrence that the APE for this project encompasses the entire AFSWP Q Area Historic District as delineated herein and shown on Attachments 2 and 3 for the proposed repurposing of 2.5 acres within the Historic District for use as a RV storage.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery will be used to construct/repurpose the 2.5-acre project site. Building 927, which is also situated within the AFSWP Q Area Historic District, is still standing, but is a non-contributing element of the Historic District and will be demolished as part of a separate project. Concurrence for the demolition of Building 927 was previously received from your office in October 2015 with a determination of No Adverse Effect on Historic Properties (Attachment 4).

If compactable soil, topsoil, gravel, or other materials are needed for this project, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic

properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO). After construction/repurposing is complete, the surrounding area will be paved or landscaped using vegetation or other ground coverings to match the adjacent landscape.

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During construction activities, if any archaeological deposits, anomalies, or potential historic properties are encountered, all work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, the RV Storage Area is located in an area that has been heavily graded and disturbed from previous construction and operational use and it is extremely unlikely that intact, buried archaeological deposits will be encountered.

36 CFR 800.11(d)(2) – Identification of Historic Properties

Travis AFB has been completely surveyed for archaeological resources. Among the surveys are *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, which was completed by the Argonne National Laboratory in March 1996 (Attachment 5), and most recently a predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California*, which was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 6). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of landform age, type, slope, and other physical characteristics, and considered water sources, sedimentation, drainage, and other processes and ground disturbances, the study identified less than 16 acres (out of 5,317, or less than 0.3%) as having “high” or “moderate” potential for buried prehistoric sites. As a result, the surveys have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant, unknown buried prehistoric archaeological deposits are extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 5). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and California Department of Parks and Recreation (DPR) forms have been prepared (Attachment 7); however, neither of these two sites is near the AFSWP Q Area Historic District and proposed RV project construction area and neither would be affected by the current consultation. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Potos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site to the AFSWP Q Area and RV Storage Area project site is approximately 2.1 miles to the northeast.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site to the AFSWP Q Area and RV Storage Area project site is approximately 2.3 miles to the northeast.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB, the AFSWP Q Area, and the proposed RV Storage Area construction zone, the unexpected discovery of archaeological resources during the construction of the RV Storage Area is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although minor construction projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about this construction project, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties* and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB), the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National Historic Preservation Act (NHPA). The required HABS documentation was completed in 2002; however, the two Historic Districts continue to be managed as eligible, pending additional SHPO consultation.

While the 1996 Cold War-era report did not focus on prehistoric or historic archaeological resources, adverse effects on these types of resources can occur from ground disturbing activities within the delineated boundaries of the two Historic Districts and for this project within the AFSWP Q Area Historic District; however, as noted above, there are no NRHP -eligible or -listed archaeological resources within the boundary of Travis AFB, the AFSWP Q Area, or the

RV Storage Area project site; therefore there will be No Adverse Effect on Historic Properties from the repurposing of the existing 2.5-acre project site.

The location of the proposed RV Storage Area within the AFSWP Q Area Historic District boundary and in relationship to the two Historic Districts is shown on Attachment 8.

36 CFR 800.5(b) – Determination of No Adverse Effect on Historic Properties

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the proposed RV Storage repurposing construction project. There are no prehistoric, ethnographic, or traditional cultural properties within the proposed RV Storage Area project site or the AFSWP Q Area Historic District and Native American tribes affiliated with Travis AFB have been contacted about this proposed project. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native American or public concerns are raised about this proposed project, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Based on the above discussions, Travis AFB requests your concurrence that there would be No Adverse Effect on Historic Properties as a result of the proposed RV Storage Area construction/repurposing project.

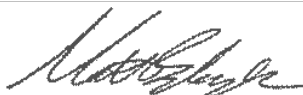
36 CFR 800.13 – Post-Review Discoveries

If during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, Travis AFB personnel shall conform to the requirements of 36 CFR 800.13. All work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be immediately contacted.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

 Recoverable Signature

X 

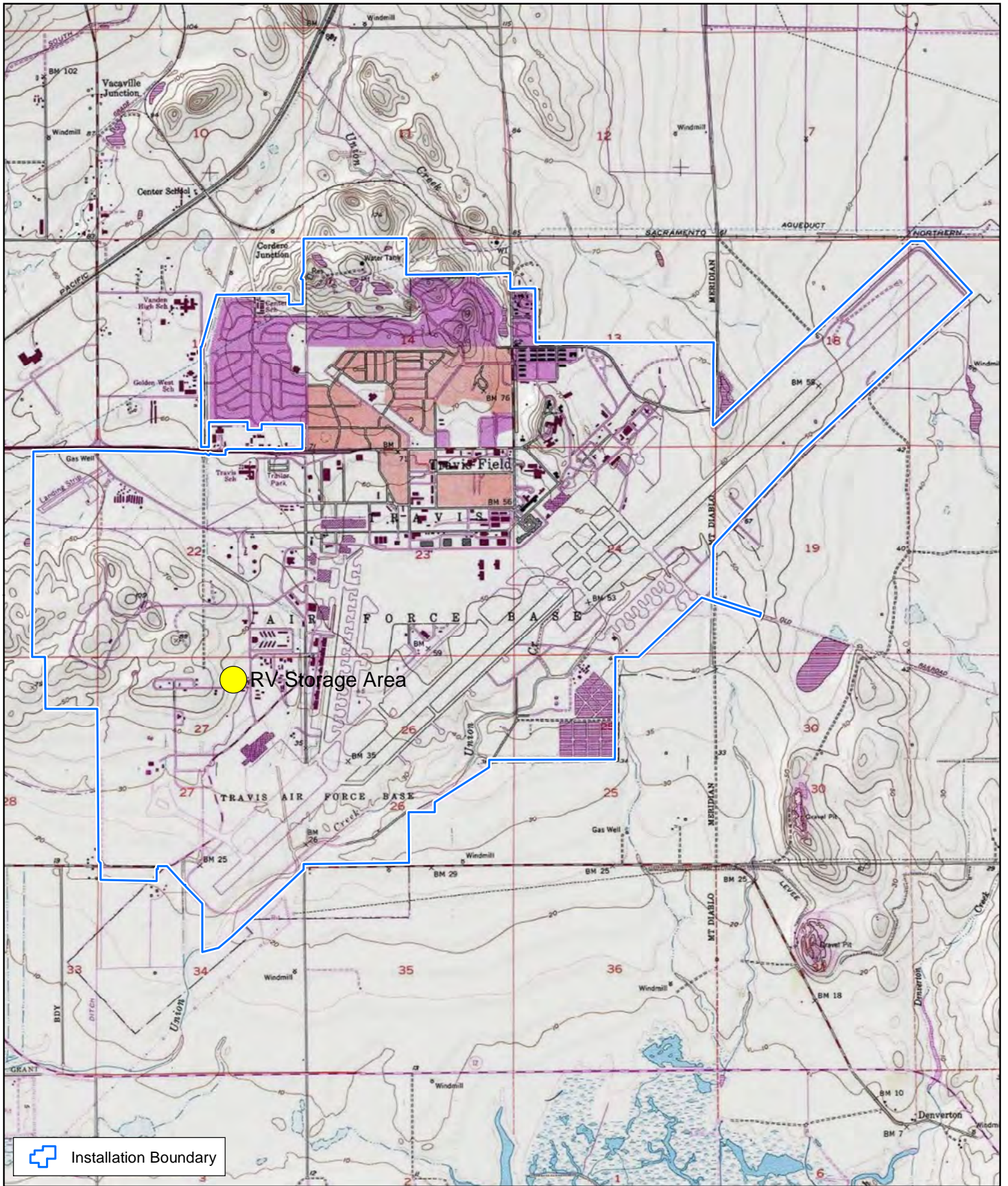
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

8 Attachments:

1. RV Storage Area Project Location Map
2. RV Storage Area APE
3. RV Storage Area within the AFSWP Q Area Historic District
4. SHPO Concurrence Letter, Demolition of Building 927
5. SHPO Concurrence Letters (1995-1996), Argonne National Laboratory Report Excerpts
6. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
7. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
8. RV Storage Area Location / Historic Districts Location Map

CONSTRUCTION / REPURPOSING OF
RECREATIONAL VEHICLE STORAGE AREA

SECTION 106 LETTER ATTACHMENTS



RV Storage Area

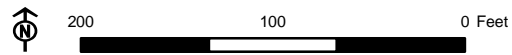
Installation Boundary



1 0.5 0 Miles

Attachment 1

Travis Air Force Base
Installation Boundary
and Location of RV Storage Area



Attachment 2

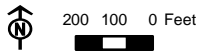
Travis Air Force Base
Area of Potential Effects
Location of RV Storage Area

- Construction Zone
- Staging and Stockpiling



Google™

Imagery ©2018, DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency



Attachment 3

Travis Air Force Base
RV Storage Area within
AFSWP Q Area Historic District

- AFSWP Q Area Historic District
- Construction Zone
- Staging and Stockpiling

ATTACHMENT 4

SHPO CONCURRENCE LETTER

Proposed Demolition of Building 927

Section 106 Consultation October 26, 2015

Included in this Attachment is one item:

- 1) A letter from the California SHPO dated October 26, 2015, indicating concurrence with Travis AFB No Adverse Effect on Historic Properties determination for proposed demolition of Building 927.

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

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



October 26, 2015

Reply in Reference To: USAF_2015_0928_001

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Re: Section 106 Consultation for Demolition of Building 927, Travis Air Force Base, Solano County

Dear Mr. Sassaman:

The United States Air Force (USAF) is initiating consultation regarding their efforts to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF has identified the undertaking as the demolition of Building 927 within the Q Area Historic District at Travis Air Force Base. Constructed in 1995, Building 927 is composed of nine trailers and is a non-contributing element to the Q-Area Historic District. Project components include demolition and removal of the building and utility capping.

The USAF is requesting SHPO concurrence that the subject building is not eligible for National Register of Historic Places (NRHP) inclusion and with their determination of no adverse effect to historic properties. After reviewing the information provided, SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the APE should be delineated as the boundaries of Q-Area rather than as described in the USAF's letter. Undertakings occurring within a historic district have the potential to not only affect the resource(s) subject to the undertaking but also the historic district in its entirety. Please notify SHPO if the USAF does not agree with this recommendation.
- 2) SHPO concurs that Building 927 is not eligible for NRHP inclusion.
- 3) SHPO concurs with the USAF's determination of no adverse effect to historic properties pursuant to 36 CFR Part 800.5(b).

If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 / Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Julianne Polanco".

Julianne Polanco
State Historic Preservation Officer

ATTACHMENT 5

SHPO LETTERS and excerpts from the 1996 ARGONNE REPORT

Moeller, K, B.T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California. Environmental Assessment Division, Argonne National Laboratory.

Included in this Attachment are three items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

ATTACHMENT 6

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air
Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of RV storage area added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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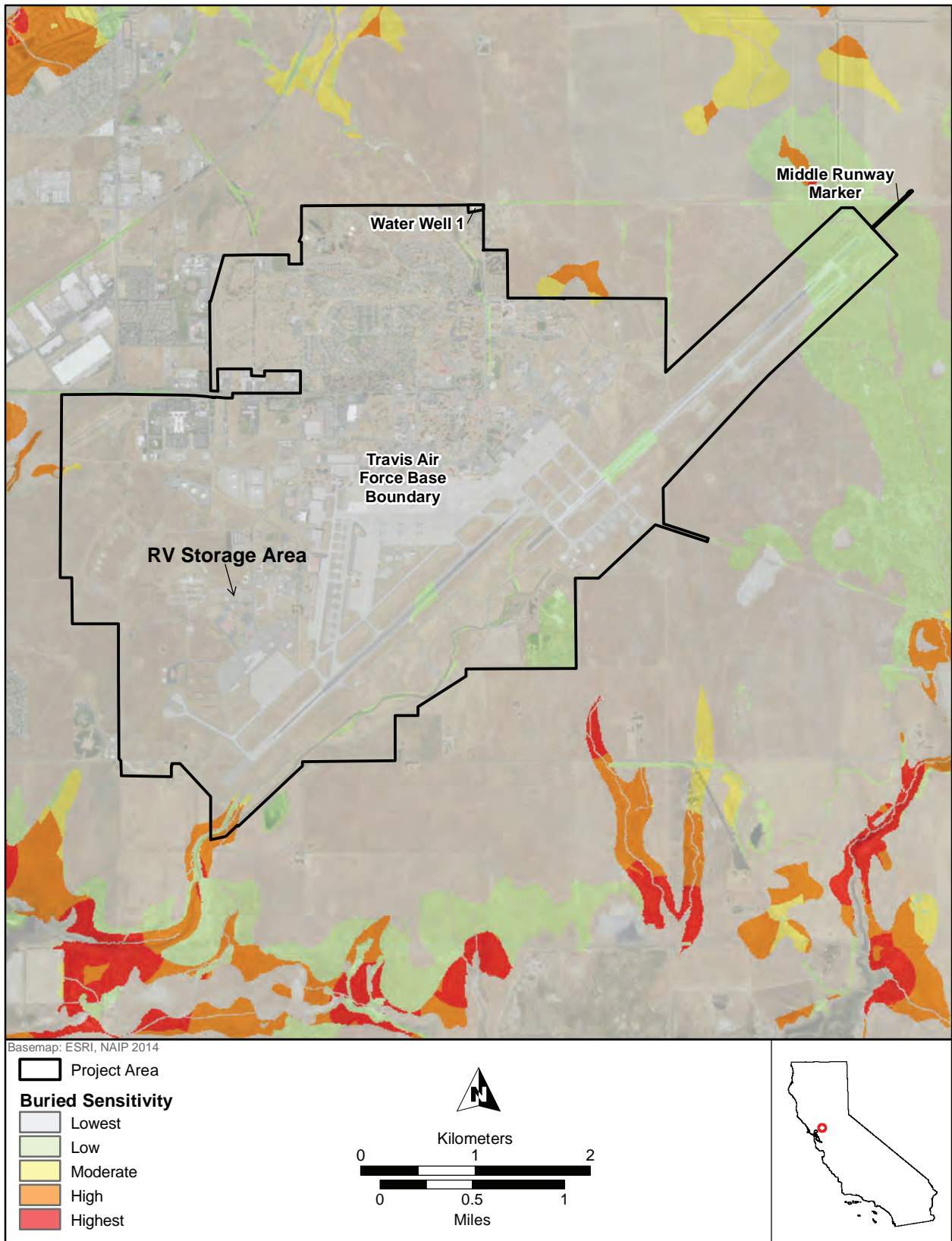


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 7

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-383H</u> NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
 c. Address City Fairfield Zip
 d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE/ 4237690 mN
 e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

***P6. Date Constructed/Age and Source:** Historic Prehistoric Both



***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA

***P8. Recorded by:** (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

***P9. Date Recorded:** May 16, 2013

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project. Travis Air Force Base, Solano County, California

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

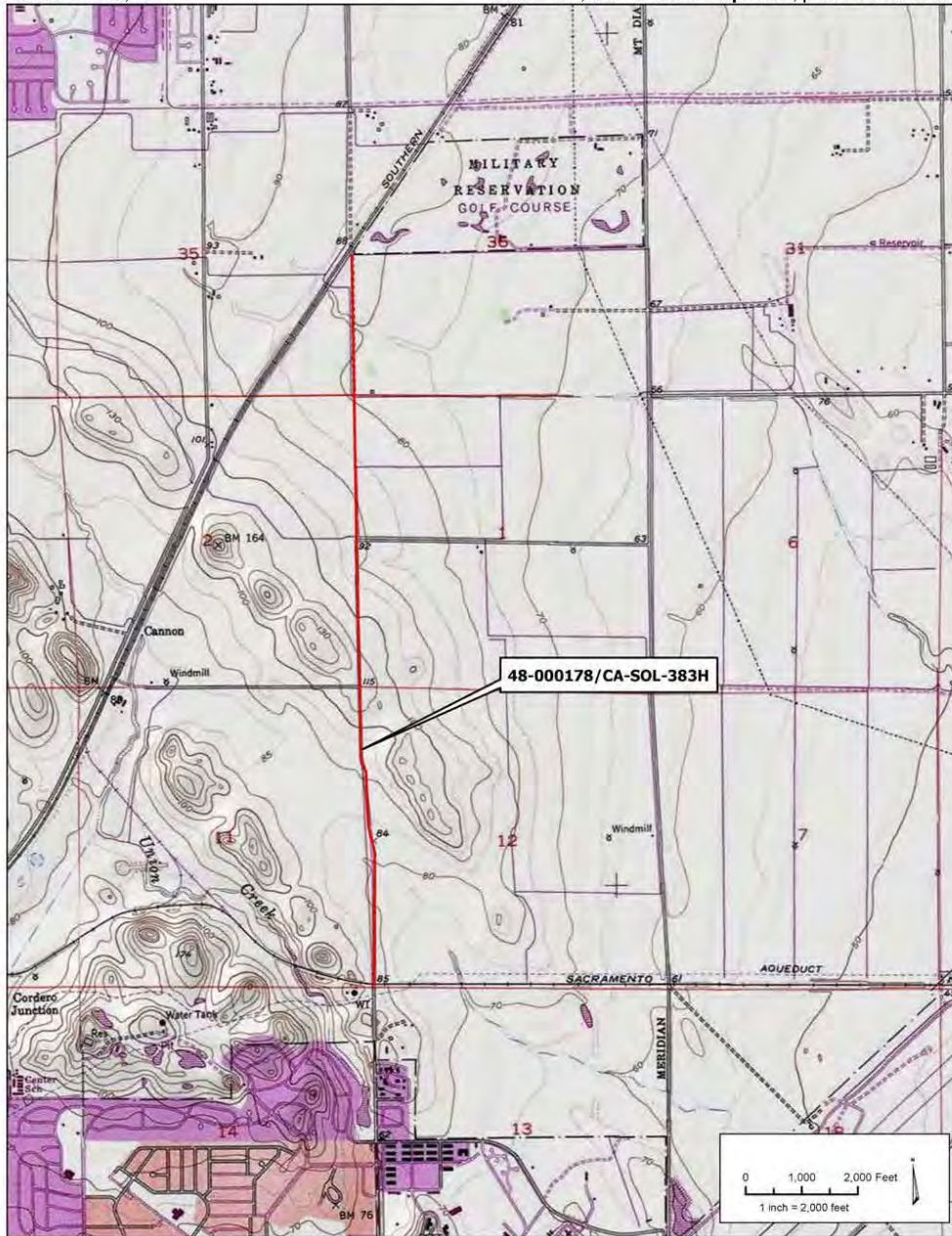
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000178 UPDATE
HRI#
Trinomial CA-SOL-383H

Page 2 of 4

*Map Name: Elmira, CA

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
CONTINUATION SHEET	

Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

***P3a. Description (Continued)**

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
--	---

Page 4 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
*Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

Integrity is measured by the degree to which the resource retains its historical properties and conveys its historical character. As noted in 2002 and confirmed during a recent pedestrian survey (May 16, 2013), the segment considered in this update maintains its context (location); however, its use and maintenance as a modern, asphalt road represents significant alteration (EDAW, Inc. 2002). In addition, the historic age Leisure Town Road alignment measured approximately 12.65 miles in length as originally recorded in 1993 (CRU 1993). At this time, the segment considered in this update is no longer connected to modern Leisure Town Road. Instead, it is presently separated from the remaining portions of the alignment by the UPRR ROW and there is no formal railroad crossing. Therefore, the segment considered in this update no longer functions as a portion of the larger thoroughfare.

Recommendations

48-000178/CA-SOL-383H appears to be potentially eligible for inclusion in the NRHP under Criterion A. However, it is recommended that the segment addressed in this update be considered ineligible for the NRHP. This recommendation is based on a lack of integrity as well as the fact that this segment is not associated with the actual Rancho Los Puntos grant line. Thus, this segment does not appear to be a contributing element to the potential NRHP eligibility of 48-000178/CA-SOL-383H.

References

Bureau of Land Management (BLM). 2013. General Land Office Patent Searches, including: BLM Serial No. CACAAA 000076. Searches completed May 2013. <http://www.glorerecords.blm.gov/search/detail.aspx> and http://www.glorerecords.blm.gov/details/patent/default.aspx?accession=CACAAA_000076&docClass=SER&sid=oqbq30ev.5x2

Cultural Resources Unlimited (CRU). 1993. Archaeological Site Record for 48-000178/CA-SOL-383H. Form on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014. S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

1
2

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-424H</u> NRHP Status Code
		Reviewer Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 **T** 5 N ; **R** 1W ; **SW ¼ of SW ¼ of Sec 12**
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
 c. **Address** _____ **City** Fairfield **Zip** _____
 d. **UTM:** (Give more than one for large and/or linear resources) **Zone** 10 , 0593440 mE/ 4238018 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
 This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.
 Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7
***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



***P6. Date Constructed/Age and Source:** Historic
 Prehistoric Both
***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA
***P8. Recorded by:** (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111
***P9. Date Recorded:** May 16, 2013
***P10. Survey Type:** (Describe)
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California
EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

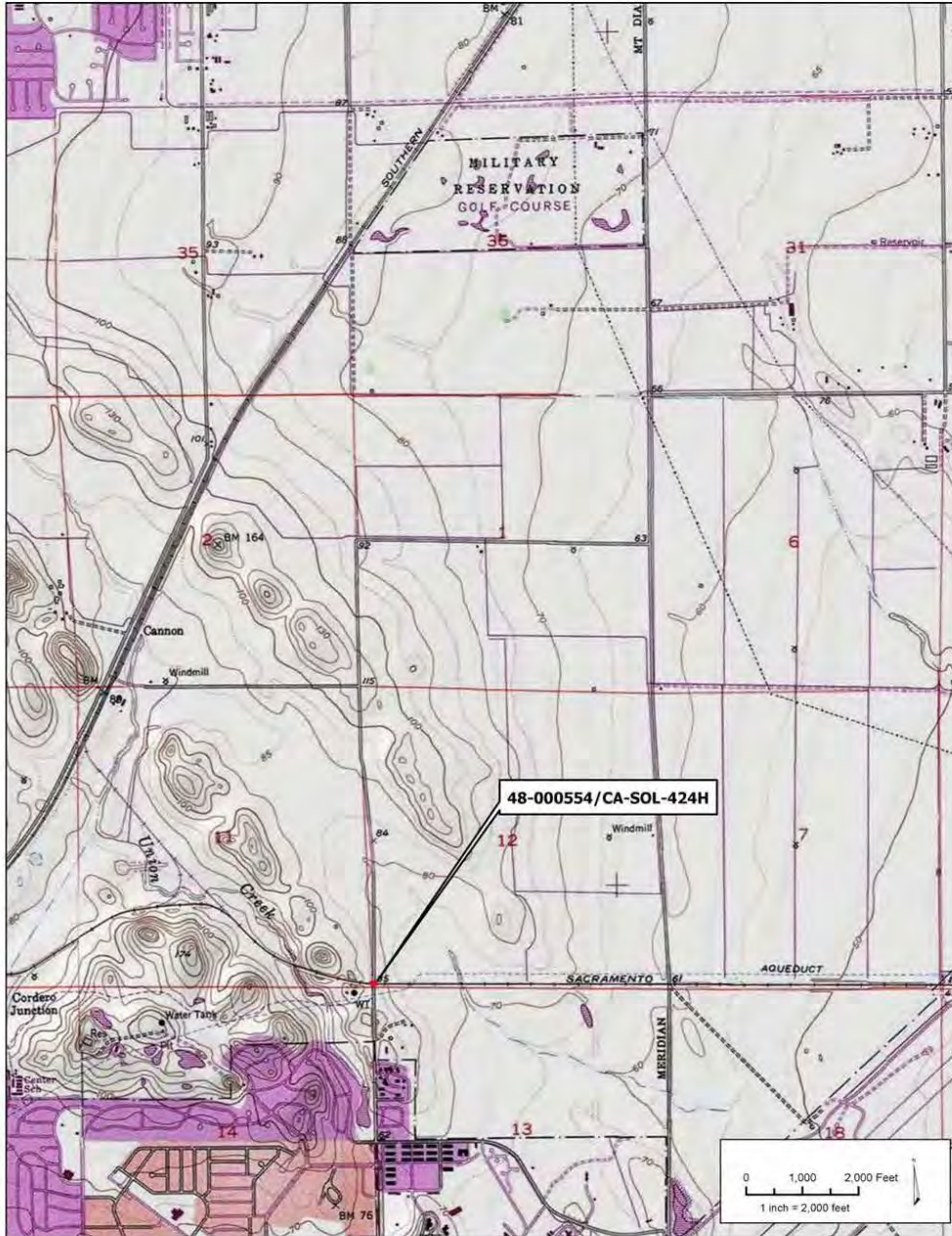
DPR 523A (1/95) *Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

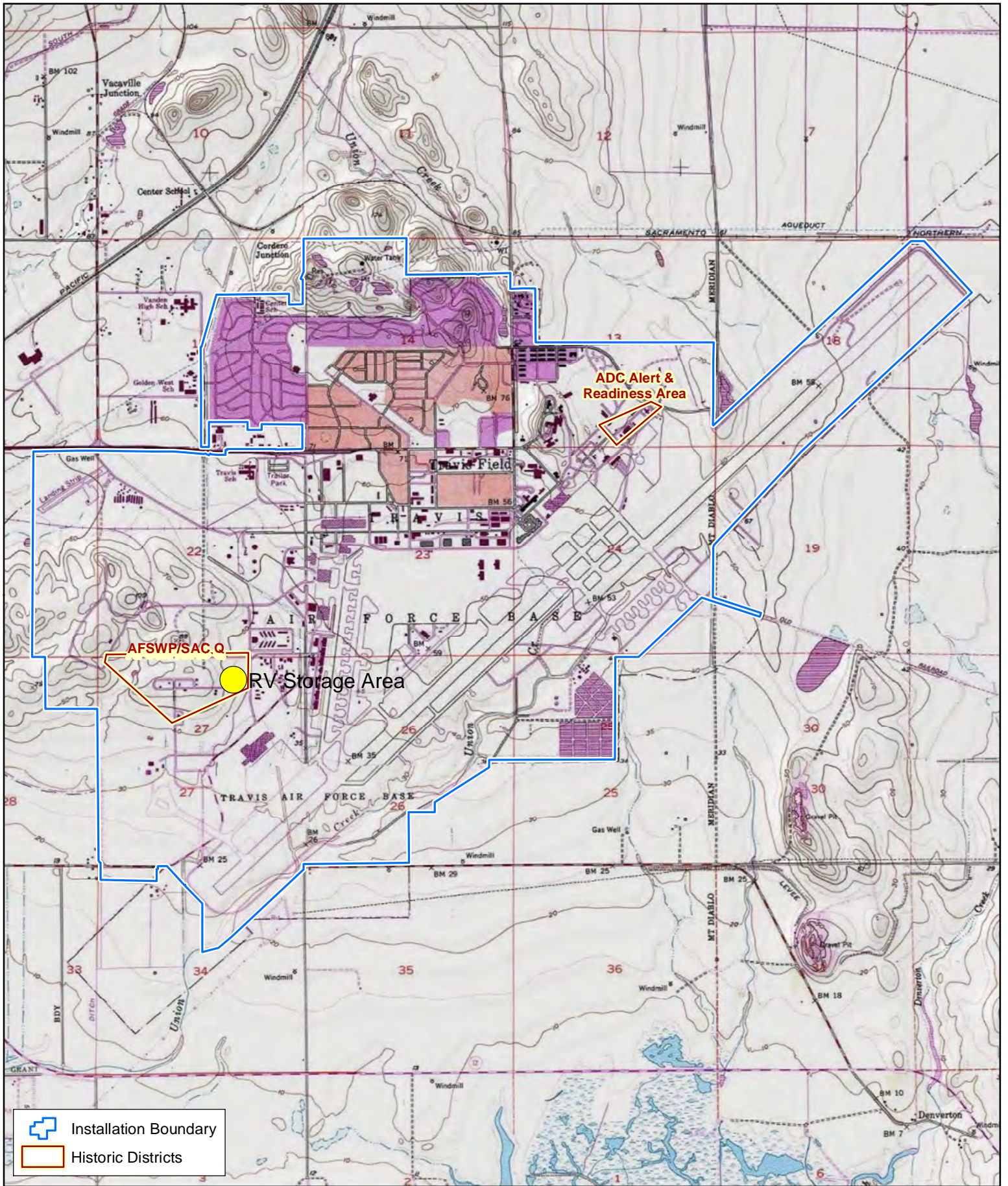
Page 2 of 2
*Map Name: Elmira, CA
1980

*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised



DPR 523J (1/95)

*Required information





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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 2, 2018

Reply in Reference To: USAF_2018_0613_007

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Dear Mr. Sassaman:

Re: Section 106 Consultation for Three Construction Projects, Travis Air Force Base

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to initiate the following three separate projects at Travis Air Force Base:

1. Construction of a permanent C-5 Aircraft airframe display in the Travis Administrative Planning District. Project requirements include the construction of an approximately 55,000 sf concrete pad, and sidewalk, lighting and accessibility ramp installation.
2. Construction of a 35,000 sf warehouse facility with associated 43,125 sf concrete storage pad within the base Medical Planning District. Project requirements include the conversion of a temporary parking area into a permanent facility and sidewalk, storm water drainage system and lighting installation.
3. Construction of an approximately 30,000 sf youth center in the base Community Planning District.

USAF property identification efforts indicate that no eligible or listed National Register of Historic Places properties will be subject to or affected by the proposed activities. Based on the results of tribal notification, several archeological surveys and sensitivity probability modelling the USAF determined that the project areas have low sensitivity for subsurface resources.

The USAF are requesting the SHPO's concurrence with their three separate area of potential effects (APE) definitions and with their finding of no historic properties affected. After reviewing

the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the three APE's as the construction footprint of each project and a 50 meter buffer zone.
- 2) The SHPO concurs that a finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1) is appropriate for all three projects. Be advised that that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J Polanco', with a horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer



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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
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calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 2, 2018

Reply in Reference To: USAF_2018_0613_001

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Re: Section 106 Consultation for Repurposing of 2.5 Acres for RV Storage, Air Force Special Weapons Project Q-Area Historic District, Travis Air Force Base

Dear Mr. Sassaman:

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to repurpose a partially paved 2.5 acre parcel adjacent to Building 927 within the Air Force Special Weapons Project Q-Area Historic District to accommodate recreational vehicle parking and storage. Building 927 is a non-contributing resource to the District and the USAF has determined through several archeological surveys and sensitivity probability modelling that the project area has a low sensitivity for subsurface resources.

The USAF are requesting the SHPO's concurrence with their area of potential effects (APE) definition and with their finding of no adverse effect to historic properties. After reviewing the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the APE as the Q-Area Historic District boundaries.
- 2) The SHPO concurs that a finding of no adverse effect to historic properties pursuant to 36 CFR Part 800.5(d)(1) is appropriate. Be advised that that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

July 2, 2018
Brian Sassaman
Page 2

USAF_2018_0613_001

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, consisting of a stylized 'J' followed by a horizontal line that ends in a small hook.

Julianne Polanco
State Historic Preservation Officer



**DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)**



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Drive, Building 411
Travis AFB CA 94535-2001

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento CA 95816

SUBJECT: Initiation of National Historic Preservation Act Section 106 Consultation Review of Project Effects related to the Bunker B Area Roof and Electrical Repair and Security Gate Upgrade at Travis Air Force Base, California (Undertaking).

Dear Ms. Polanco

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (as amended) and 36 Code of Federal Regulations (CFR) Part 800, the U.S. Department of the Air Force (USAF), Travis Air Force Base (AFB) is initiating consultation with your office regarding any potential project effects associated with Bunker B Area Roof and Electrical Repair and Security Gate Upgrade.

This consultation combines a discussion of the Area of Potential Effects (APE) for the Bunker B project area (per 36 CFR 800.4) with our finding of No Historic Properties Affected. Travis AFB would like your concurrence with the APE; with our determination that the six B area bunkers are Not Eligible for listing in the National Register of Historic Places (NRHP); and that there will be No Historic Properties Affected from the proposed Bunker B Area Roof and Electrical Repair and Security Gate Upgrade.

Background Information

Travis AFB occupies 6,383 acres within the city limits of Fairfield, and is located 50 miles northeast of San Francisco and about 40 miles southwest of Sacramento (Attachment 1). The base is just north of Suisun Bay and marsh, northeast of San Pablo Bay, on the northeastern boundary of the San Francisco Bay region. In the late prehistoric and early contact periods, this area was occupied by the Southern Patwin, native speakers of the Wintu language.

Known as the Gateway to the Pacific, Travis AFB is among the largest and busiest military air terminals in the country. More than 14,000 military and civilian personnel work on the base,

which is under the operational control of the Air Mobility Command. The 60th Air Mobility Wing (AMW) is the host unit, and is responsible for providing strategic airlift and air refueling missions around the world. The 60th AMW also supports air logistics needs for other services and agencies, moving cargo, patients, and passengers throughout the world.

36 CFR 800.4(a)(1) – Description of the Area of Potential Effects

This undertaking involves the roof repair of six earth covered magazines (ECMs) (bunkers/storage igloos) within the Bunker B area. The six ECMS are Buildings 956, 958, 966, 968, 976, and 978. The project also involves the correction of electrical deficiencies within the Bunker B area, the correction of inadequate or uneven soil coverage on each of the ECMs, and the installation of an electrically-operated security gate at the main entrance of the Bunker B area. The project area is situated near the southwestern-most portion of Travis AFB, within the installation's Western Planning District, and in an area of largely industrial land use. More specifically, the project site is located immediately adjacent to and south of X Street and is bounded by Cordelia Avenue on the west and Ragsdale Street on the east (Attachment 2). The Bunker B area is also approximately 0.15 mile south of the southern boundary of the Cold War-era Air Force Special Weapons Project (AFSWP) Q Area Historic District.

While the more confined area around each ECM will be the location of the greatest potential impact, the APE for this project is defined as the larger boundary of the Bunker B area given the requirement to correct electrical deficiencies within the entire Bunker B project site and connect to a power transformer on the north side of X Street (Attachment 2). Also included in the APE is a 50-foot (15.2-meter) buffer zone that defines the work areas around each repair zone and allows for the impacts of grading and other construction activities. The APE, therefore, encompasses the entire Bunker B area, plus a 50-foot buffer, but focuses on the direct ground-disturbing repair zones and any work areas within the buffers that is actually impacted. There are no other APEs associated with the Bunker B project area.

As shown on Attachment 2, all staging, stockpiling, and equipment maintenance activities shall take place on existing paved or heavily disturbed areas within the Bunker B project site and its associated 50-foot buffer. Stockpiling of waste materials and rubble shall occur on existing paved or disturbed surfaces and shall not affect undisturbed soils.

Based on the above information, Travis AFB is requesting your concurrence that the APE for this project encompasses the entire Bunker B area as delineated herein and shown on Attachment 2.

36 CFR 800.11(d)(1) – Description of the Undertaking

Heavy wheeled and tracked machinery may be used during the various repair activities associated with the six ECMs. All of the project activities will be undertaken concurrently. Roof repairs would involve temporarily removing the soil cover on each of the six ECMS to assess and repair cracks in the underlying concrete roofs (approximately 17,000 square feet of soil disturbance per ECM). After the concrete repairs are completed, soil would be placed on each roof to a depth of at least two feet to meet current Air Force regulations. Additionally, electrical system deficiencies associated with ECMs in the Bunker B Area require replacement, repair,

and/or upgrade to comply with construction standards and National Fire Protection Act (NFPA) codes. Repairs and upgrades would likely include installation of electrical surge protection devices, replacement of aged/failing facility electrical panels, and relocation of the site electrical panel.

Replacement of the existing mechanical security gate at the entrance of the Bunker B Area would include installation of an electrically-operated security gate outfitted with a remotely actuated mechanism to comply with security requirements. The existing mechanical gate would be removed and disposed of concurrent with installation of the new gate. The area in proximity to the gate would require regrading and asphalt replacement (approximately 1,000 square feet) to ensure gaps under the gate meet security requirements. The electrical feed for the gate would be installed by extending conduit/wires underground adjacent to the north side of the roadway (X Street) to an existing transformer. The trench for the underground conduit/wires (approximately 24,500 square feet) would be restored and revegetated as appropriate upon completion.

If compactable soil, topsoil, gravel, or other materials are needed for this project, they will be borrowed from off-base locations or from approved borrow sites on base. If on-base sources are used, no expansion of the borrow sites or impacts on historic properties are anticipated. If Travis AFB determines that any borrow activities may impact known or potential historic properties, the Air Force will reopen this consultation and seek comments from the California State Historic Preservation Officer (SHPO). After construction/repurposing is complete, the surrounding area will be paved or landscaped using vegetation or other ground coverings to match the adjacent landscape.

Before work begins, contractors shall be trained and instructed to report any archaeological discoveries. During construction activities, if any archaeological deposits, anomalies, or potential historic properties are encountered, all work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be contacted. Examples of unexpected buried anomalies include historic bottles, china fragments, metal artifacts or other objects, glass beads, prehistoric stone tool fragments, arrowheads, bones or bone fragments, shells, and fossils. However, the Bunker B area is located in an area that has been heavily graded and disturbed from previous construction and operational use and it is extremely unlikely that intact, buried archaeological deposits will be encountered.

36 CFR 800.11(d)(2) – Identification of Historic Properties

Travis AFB has been completely surveyed for archaeological resources. Among the surveys are *An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California*, which was completed by the Argonne National Laboratory in March 1996 (Attachment 3), and most recently a predictive/sensitivity model for the installation: *Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California*, which was completed by Far Western Anthropological Research Group, Inc. (Jack Meyer) in April 2017 (Attachment 4). None of the archaeological survey reports have recommended any prehistoric archaeological sites as eligible for inclusion in the NRHP. Based on the 2017 sensitivity model, which included an analysis of landform age, type, slope, and other physical characteristics, and considered water sources,

sedimentation, drainage, and other processes and ground disturbances, the study identified less than 16 acres (out of 5,317, or less than 0.3%) as having “high” or “moderate” potential for buried prehistoric sites. As a result, the surveys have identified no evidence of NRHP-eligible archaeological sites on Travis AFB, and evaluations based on geotechnical data, soils, and patterns of sedimentation all indicate that extant, unknown buried prehistoric archaeological deposits are extremely unlikely.

Twelve archaeological sites have been previously recorded at Travis AFB, two of which were allegedly prehistoric, but have been destroyed and one of which is allegedly prehistoric, but is located near the Travis AFB Defense Fuels Support Point (OZOL), a Geographically Separated Unit (GSU) situated near Martinez, California (approximately 18 miles southwest of the Travis AFB Main Base). The remaining archaeological sites recorded at Travis AFB are historic-age, six of which were determined to be Not Eligible with SHPO concurrence on July 29, 1996 (Attachment 3). Two additional historic-age archaeological sites are linear features that were assumed to be eligible in June 2014 for the purposes of a proposed water line project and California Department of Parks and Recreation (DPR) forms have been prepared (Attachment 5); however, neither of these two sites is near the Bunker B project area and neither would be affected by the current consultation. The two possibly eligible historic-age archaeological sites are:

- **CA-SOL-383H. Leisure Town Road/Rancho Los Putos Grant Boundary.** This historic-period archaeological site is an early 20th century road, a short portion of which is located on Travis AFB as North Gate Road (from Turner Street to the north base boundary). The closest point of this linear site to the Bunker B project area is approximately 2.6 miles to the northeast.
- **CA-SOL-424H. Spur Segment of former Sacramento Northern Railway.** This railroad segment is also associated with the early 20th century historic period. It is a railroad spur that runs roughly east/west near the northern boundary of the Travis AFB Main Base. The closest point of this linear site to the Bunker B project area is approximately 2.8 miles to the northeast.

Given the extremely low probability for archaeological resources within the boundary of Travis AFB and the Bunker B project area, the unexpected discovery of archaeological resources during repair activities within the Bunker B APE is remote.

Views of the public, Native Americans, and interested parties will be considered regarding this undertaking and its potential effects. Although minor construction projects do not usually make the local news, if there is local coverage of any kind, or any public discussion about this construction project, all substantial comments related to the protection of historic properties will be shared with the SHPO and this consultation will be reopened.

36 CFR 800.4(b) – Other Historic Property Identification Efforts

Between 1994 and 1996, an architectural survey and NRHP evaluation was conducted at Travis AFB for the identification of Cold War-era historic properties. The survey resulted in a report entitled *Travis Air Force Base, Fairfield, California - Inventory of Cold War Properties*

and was prepared by Dr. Karen Weitze/Geo-Marine Inc. (1996) (Attachment 6). Two NRHP-eligible Historic Districts were recommended in the report and those recommendations and the delineation of the District boundaries were discussed among the Air Force, the National Park Service, and the SHPO. Ultimately the two Districts and the properties encompassed within their boundaries were the subject of a 1997 Memorandum of Agreement (MOA) among the Air Force (Travis AFB), the SHPO, and the Advisory Council on Historic Preservation (ACHP), which stipulated requirements for the recordation of the two potential NRHP-eligible Cold War-era Historic Districts using Historic American Buildings Survey (HABS) documentation standards as part of Travis AFB's management responsibilities under Section 106 and Section 110 of the National Historic Preservation Act (NHPA). The required HABS documentation was completed in 2002; however, the two Historic Districts continue to be managed as eligible, pending additional SHPO consultation.

The six ECMs (Buildings 956, 958, 966, 968, 976, and 978) that will be repaired as part of the Bunker B roof and electrical repair activities project were among the facilities evaluated for NRHP eligibility in the 1996 Cold War properties inventory. Originally among a cluster of 15 ECMs, the remaining six were determined to be Not Eligible based on the post 1970s removal of the other nine ECMs, the rerouting of Ragsdale Street, and the construction of a new air freight terminal (Building 977), all of which destroyed the distinctive configuration typical of original Cold War-era AFSWP Q Area boundaries. These intrusions and removals left the remaining six ECMs fragmented and separated from their historical counterparts. As a result, Buildings 956, 958, 966, 968, 976, and 978 were specifically excluded from the NRHP-designated boundary of the intact portion of the original AFSWP Q Area (Attachment 6) and were not included in the 1997 MOA described above. Travis AFB agrees with the findings of the Cold War-era regarding the Bunker B ECMs and request your concurrence that the entire Bunker B area is Not Eligible.

The location of the proposed Bunker B project area in relationship to the two Historic Districts is shown on Attachment 7

36 CFR 800.11(d)(3) – Determination of No Historic Properties Affected

Prehistoric and historic archaeological resources, visual resources, architectural resources, and identified Historic Districts have all been considered, and none will in any way be affected by the proposed Bunker B roof and electrical repair project and installation of the new security gate. The six ECMs have been previously evaluated for their eligibility for inclusion in the NRHP and found to be Not Eligible and there are no prehistoric, ethnographic, or traditional cultural properties within the proposed Bunker B project area. Native American tribes affiliated with Travis AFB have been contacted about this proposed project. Previous consultations with federally-recognized tribal groups have been rare and sporadic in the past; however, if any Native American or public concerns are raised about this proposed project, Travis AFB shall contact the SHPO, relay the concerns, and reopen this consultation as appropriate.

Based on the above discussions, Travis AFB requests your concurrence that the six ECMs are Not Eligible for inclusion in the NRHP and that there would be No Historic Properties Affected as a result of the proposed Bunker B area repair project.

36 CFR 800.13 – Post-Review Discoveries

If during the implementation of this undertaking, new or unexpected prehistoric, historic, or architectural discoveries are made, Travis AFB personnel shall conform to the requirements of 36 CFR 800.13. All work will stop in the vicinity of the find and the Contracting Officer, project manager, Travis AFB Installation Management personnel, and the regional Cultural Resource Manager shall be immediately contacted.

Please contact me at 707-424-8225 or brian.sassaman.1@us.af.mil if you have any questions.

Sincerely

 Recoverable Signature

X 

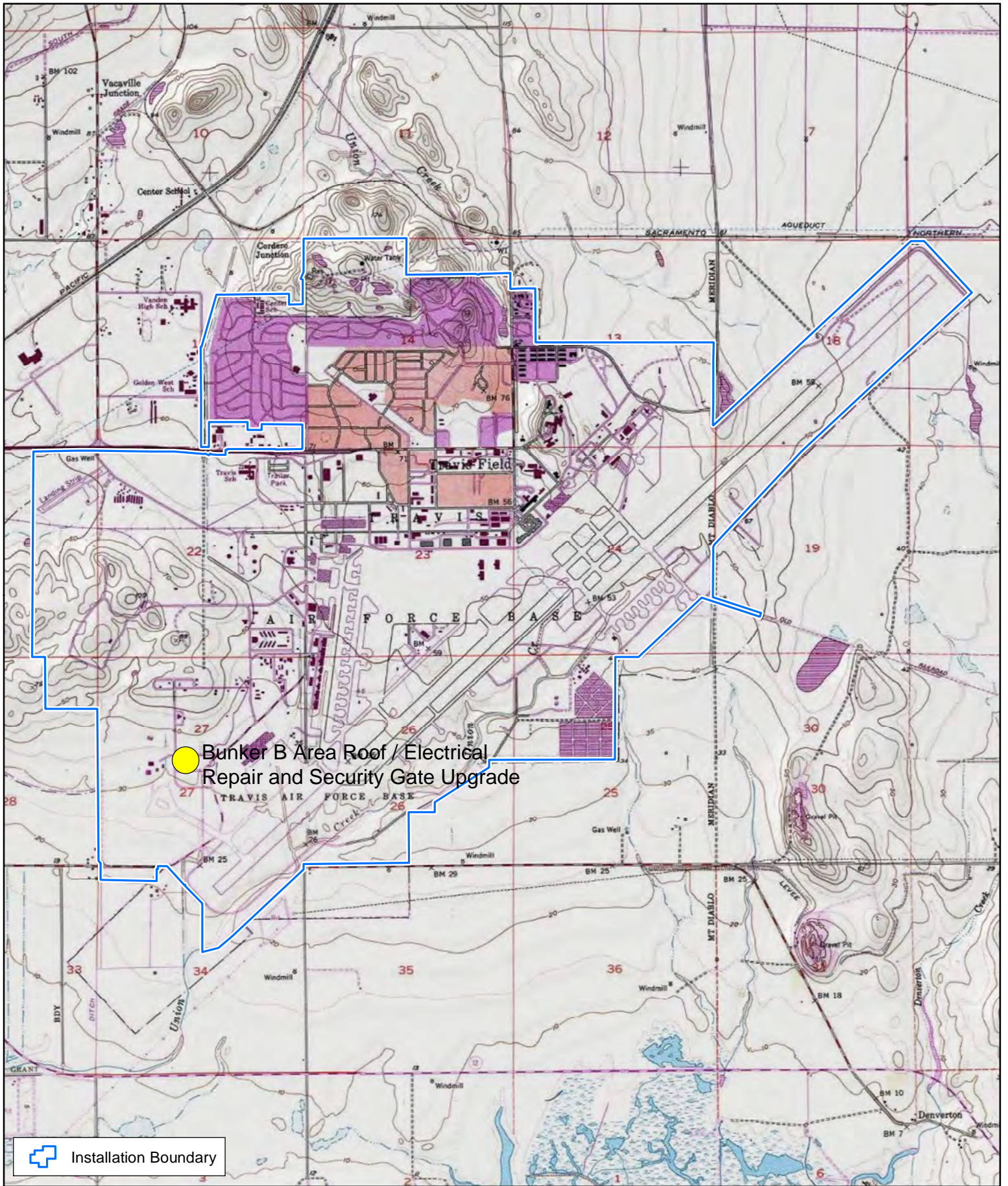
Matthew Blazek, Acting Flight Chief, Installa...
Signing for BRIAN L. SASSAMAN, GS-13, DAFC
Signed by: matthew.blazek@us.af.mil

7 Attachments:

1. Bunker B Area Project Location Map
2. Bunker B Project Area APE
3. SHPO Concurrence Letters (1995-1996), Argonne National Laboratory Report Excerpts
4. 2017 Geoarchaeological Overview and Site Sensitivity Assessment Excerpts
5. DPR Forms, Historical Archaeological Sites CA-SOL-383H and CA-SOL-424H
6. 1996 Cold War Inventory Excerpts
7. Bunker B Area Project Location / Historic Districts Location Map

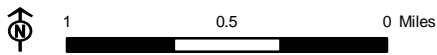
Bunker B Area Roof and Electrical Repair
and Security Gate Upgrade

SECTION 106 LETTER ATTACHMENTS



● Bunker B Area Roof / Electrical Repair and Security Gate Upgrade

✚ Installation Boundary



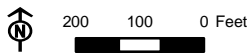
Attachment 1

Travis Air Force Base
Installation Boundary
and Location of Bunker B Area Roof / Electrical Repair
and Security Gate Upgrade



Google™

Imagery ©2018 , DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency



Attachment 2

Travis Air Force Base
 Area of Potential Effects
 Bunker B Area Roof / Electrical Repair
 and Security Gate Upgrade

- Repair Zones
- Staging and Stockpiling
- Overall Project APE

ATTACHMENT 3

SHPO LETTERS and excerpts from the 1996 ARGONNE REPORT

Moeller, K, B.T. Verhaaren, and D.A. Walitscheck
1996 An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California. Environmental Assessment Division, Argonne National Laboratory.

Included in this Attachment are three items:

- 1) A cover letter from Travis AFB to Clarence Caesar at the California SHPO, dated 17 October 1995, transmitting a copy of the DRAFT historic resources survey report produced by Argonne National Laboratory.
- 2) A letter from the SHPO dated July 29, 1996 (#USAF951024A) to Travis AFB stating that none of the 1946-era facilities are eligible for the NRHP.
- 3) Excerpt from the March 1996 FINAL report from the Argonne Lab, including the title page, table of contents, summary page, and copy of Table 1 listing the evaluated WWII-era structures.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

17 OCT 1995

HQ AMC/CEVP
507 A Street
Scott AFB IL 62225-5022

Mr. Clarence Caesar
State of California
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box
Sacramento CA 94296-0001

Dear Mr. Caesar

We have attached the draft report, "An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California," for your review and comment. This project was undertaken to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. It is not tied to any specific construction or renovation project at Travis AFB. We would appreciate your comments by 20 Nov 95, if at all possible. Please note a fold out base map showing all buildings can be provided with the final report, if requested.

If the members of your staff have any questions, please have them call our POCs, Mr. Bob Holmes, 60 SPTG/CEV, 707-424-3897, or Dr. Robin Burgess, HQ AMC/CEVP, at (618) 256-2233.

FRANK W. BOAZ III, Maj, USAF
Acting Chief, Environmental Planning Br
Directorate of Civil Engineering

Attachment:
Draft Inventory Report

cc:
California Archaeological Inventory
(Northwest Information Center) w/Atch
60 SPTG/CEV (Mr. Holmes) wo Atch
Argonne National Laboratory (Ms. Moeller) wo Atch

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942886

SACRAMENTO 94296-0001



July 29, 1996

USAF951024A

William H. Mills, Colonel
United States Air Force
60 SPTG/CEV
420 Airmen Drive
TRAVIS AIR FORCE BASE CA 94535-2041

Re: Archeological and Historic Resources Survey of Travis Air
Force Base, Solano County.

Dear Col. Mills:

Thank you for submitting to our office your April 1, 1996 letter and supporting documentation regarding the Archeological and Historic Resources Survey and Inventory (AHRSI) of Travis Air Force Base (AFB), Solano County. The inventory was undertaken by the Air Force to fulfill the requirements of Section 110 of the National Historic Preservation Act and Air Force Instruction 32-7065. There is no formal construction or renovation project on the base. You are also responding to comments presented in our January 16, 1996 letter regarding your previously submitted Historic Resource Inventory Survey (HRIS) on Travis AFB.

You are seeking our comments on your determination of the eligibility of pre-1946 historic and archeological properties evaluated in the AHRIS and located on Travis AFB for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Our review of the submitted documentation leads us to concur with your determination that none of the structures evaluated in the AHRIS are eligible for inclusion in the NRHP under any of the criteria established by 36 CFR 60.4. We agree that the structures have no strong associations with significant events or persons nor are they architecturally significant. Regarding the archeological properties surveyed in the AHRIS, we concur with your determination that none of the locations are likely to yield any significant prehistoric deposits.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Cheryl Widell
State Historic Preservation Officer

An Archaeological and Historic Resources Survey and Inventory of Travis Air Force Base, Solano and Contra Costa Counties, California

Prepared by:

K. Moeller, B.T. Verhaaren, and D.A. Walitschek

Environmental Assessment Division,
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

March 1996

Prepared for Headquarters/Air Mobility Command
United States Air Force

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**AN ARCHAEOLOGICAL AND HISTORIC RESOURCES SURVEY
AND INVENTORY OF TRAVIS AIR FORCE BASE,
SOLANO AND CONTRA COSTA COUNTIES, CALIFORNIA**

by

K.L. Moeller, B.T. Verhaaren, and D.A. Walitschek

SUMMARY

An inventory and evaluation of archaeological and historic resources at Travis Air Force Base, which occupies an area of 5,020 acres in Solano County, California, was conducted by Argonne National Laboratory. Four off-base facilities totaling 300 acres were also included in the inventory. Existing site files and reports, historic records and maps, aerial photographs, and other sources were consulted for background information on the base and the surrounding area. A pedestrian survey of 657 acres and limited shovel testing of potential historic locations were conducted in 1993 and 1995. Military structures constructed before 1947 were documented.

Results of the basewide archaeological investigations include some evidence of six historic archaeological locations (five on the base proper and one at Water Well II). No prehistoric remains were encountered. No pre-1947 military structures were recommended eligible for the *National Register of Historic Places*.

Data recovered from the six historic locations identified in the survey indicate that none of the locations would meet evaluation criteria A-D for eligibility to the *National Register of Historic Places*. These locations have been extensively disturbed and do not contain sufficient artifactual material to warrant further investigation.

TABLE 1 Extant Structures at Travis AFB Constructed prior to 1947

Bldg. No.	Current Use	Original Use	Year Constructed
1	Traffic Management Facility	Air Freight Terminal	1946
3	Air Passenger Terminal	Aircraft Maintenance	1946
4	Base Operations	Communication Center	1946
52	Wing Headquarters (HQ)	Wing HQ	1946
80	Museum	Commissary	1946
81	Thrift Shop	Commissary	1946
82	Housing Support Facility	Base Theater	1946
144	Vehicle Maintenance Shop	Clothing Sales	1946
230	Gymnasium	Gymnasium	1946
237	Reserve Forces Training	Dormitory	1946
239	Dormitory	Dormitory	1946
241	Squadron Ops	Dormitory	1946
243	HQ Group	Dormitory	1946
246	Audio-Visual (Combat Camera)	Dormitory	1946
247	Dining Hall	Dormitory	1946
249	Education Center	Dormitory	1946
250	Defense Accounting Office	Dormitory	1946
344	Detention Center	Fire Station	1946
406	Visiting Officers Quarters (VOQ)	Dormitory	1946
407	VOQ	Dormitory	1946
408	VOQ	Dormitory	1946
409	VOQ	Dormitory	1946
410	VOQ	Dormitory	1946
417	Officers Quarters	Officers Quarters	1946
418	Officers Quarters	Officers Quarters	1946
419	Officers Quarters	Officers Quarters	1946
440	Temporary Lodge Facility (TLF)	Family Quarters	1946
441	Airmen Dormitory	Officers Quarters	1946
442	Airmen Dormitory	Officers Quarters	1946
443	TLF	Family Quarters	1946
444	TLF	Family Quarters	1946
445	TLF	Family Quarters	1946
446	TLF	Family Quarters	1946
447	Officers Quarters	Officers Quarters	1946
480	Officers Open Mess	Officers Open Mess	1946

TABLE 1 (Cont.)

Bldg. No.	Current Use	Original Use	Year Constructed
1150	Waste Treatment Building	Waste Treatment Building	1946
1151	Waste Treatment Building	Waste Treatment Building	1946
1882	Swimming Pool	Swimming Pool	1944
8961	VOQ	Officers Quarters	1946
8962	VOQ	Officers Quarters	1946
8963	VOQ	Officers Quarters	1946

ATTACHMENT 4

Excerpts from the 2017 Geoarchaeological Overview and Site Sensitivity Assessment

Far Western Anthropological Research Group, Inc.
2017 A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air
Force Base, Solano County, California. Prepared by Jack Meyer (April)

Included in this Attachment is one item:

- 1) Excerpts from the 2017 FINAL report from Far Western Anthropological Research Group, Inc., including cover, title page, table of contents, executive summary, and Figure 7 showing the potential for buried sites within the Main Part of Travis Air Force Base (location of Bunker B area added to figure).

**A Geoarchaeological Overview
and Site Sensitivity Assessment
for Travis Air Force Base,
Solano County, California**

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
411 Airman Drive, B-570
Travis AFB, CA 94533



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.
2727 Del Rio Place, Suite A, Davis, California, 95618
<http://www.farwestern.com> 530-756-3941

A Geoarchaeological Overview and Site Sensitivity Assessment for Travis Air Force Base, Solano County, California

By:
Jack Meyer

April 2017 FINAL

Submitted to:
Penn Craig
Natural & Cultural Resources Manager
Biological Scientist
411 Airman Drive, B-570
Travis AFB, CA 94533

EXECUTIVE SUMMARY

Only one prehistoric archaeological site has been identified within Travis Air Force Base (TAFB), and a recent study has questioned whether the materials recovered there are, in fact, prehistoric artifacts rather than quarry materials brought to the base more recently (Scher 2017). In an effort to provide an overview for use in ongoing Native American consultation, Far Western Anthropological Research Group, Inc., under contract to TAFB, developed site sensitivity models for both surface and subsurface archaeological deposits on the base and outlying facilities managed by the base.

The surface site sensitivity model uses a number of factors that have been found to correlate to the site distributions in Solano County and, more broadly, in central California. These include proximity to freshwater (and, in the case of TAFB, to Suisun Marsh), slope, and landform age. The modeling results indicate that surface site potential is “Highest” in about 8.8% (~467 acres) and “High” in about 48% (~2,530 acres) of the study area. In the remaining area, a little more than one-quarter (28.2%) has a “Moderate” potential to contain sites, and the remaining 15% (~811 acres) has a “Low” or “Lowest” potential. Two main areas of highest site potential occur within the main base area, one located along the former channel of Union Creek near the central part of the main runway, and the other located along the middle tributary of Union Creek, which is roughly bordered by Boyles Street to the east, Dixon Avenue to the west, Hanger Avenue to the north, and V Street to the south. Although buildings, roads, parking lots, and other structures now cover large portions of these areas, and it is likely that surface sites that may have been present prior to base development were destroyed during initial construction of the base, site remnants and intact deposits may be present in these areas.

The buried site sensitivity model relies on proximity to water and the age of landforms, under the assumption that buried sites are likely to be located beneath younger landforms. The potential for buried sites is estimated to be “Low” to “Lowest” throughout the vast majority (~5,300 acres, or 99.7%) of the study area. The low potential primarily reflects the age of the surface landforms, which are mostly Pleistocene in age or older and therefore were deposited prior to human occupation of the region. In turn, fewer than 16 acres (0.3%) of the study area are estimated to have a “Moderate” or “High” buried site potential, and no “Highest”-potential zones were identified by the model. Thus, the potential for buried prehistoric sites appears to be restricted to very small portions of TAFB and the associated facilities.

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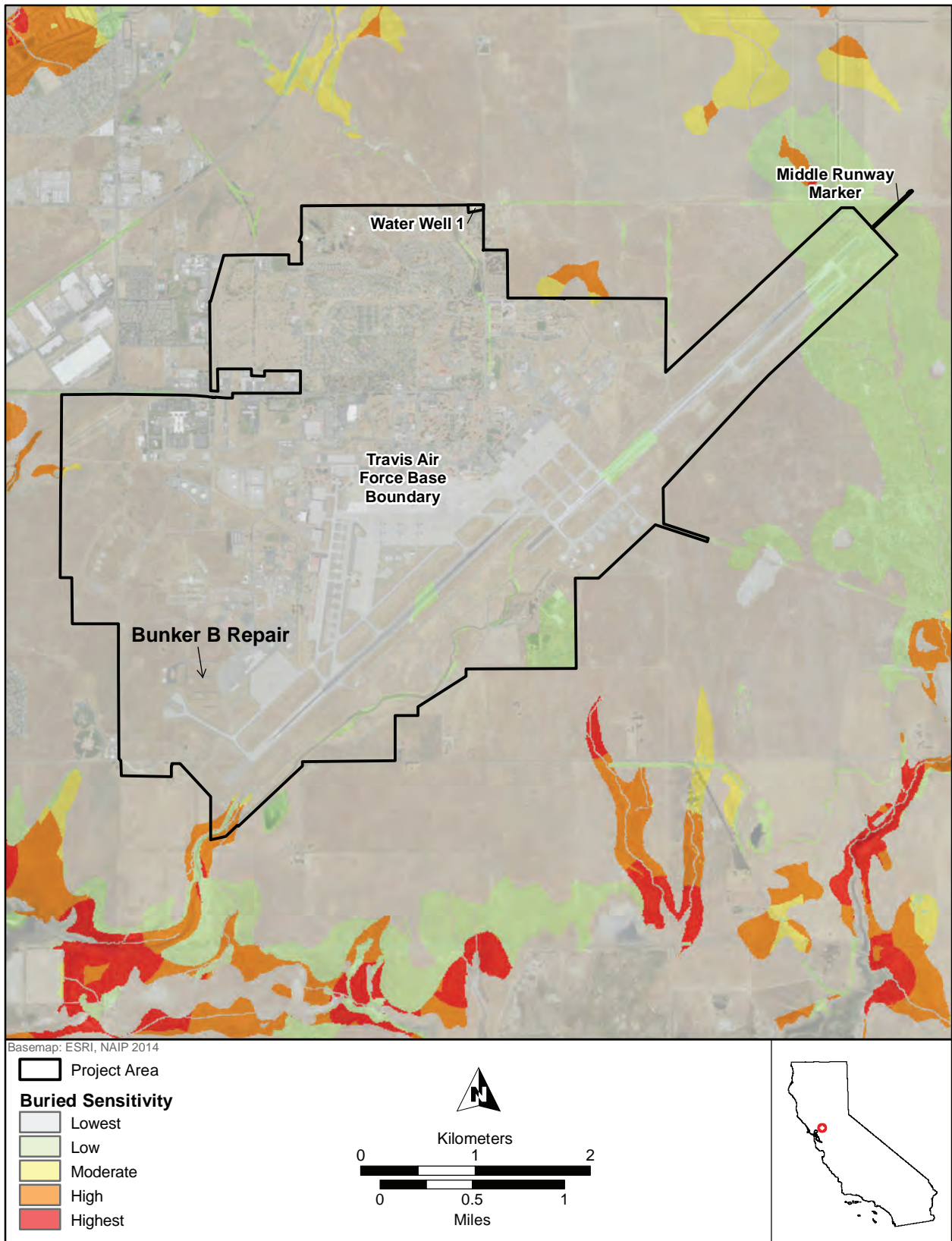


Figure 7. Potential for Buried Sites within the Main Part of Travis Air Force Base.

ATTACHMENT 5

California DPR Forms, Historical Archaeological Sites CA- SOL-383H and CA-SOL-424H

Included in this Attachment are two items:

- 1) California DPR Form for Historical Archaeological Site CA-SOL-383H, Leisure Town Road/Rancho Los Potos Grant Boundary. Form Update.
- 2) California DPR Form for Historical Archaeological Site CA-SOL-424H, Sacramento Northern Railway (Segment). Form Update.

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000178 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-383H</u> NRHP Status Code
		Reviewer Date

Page 1 of 4 *Resource Name or #: (Assigned by recorder) North Gate Road
P1. Other Identifier: Leisure Town Road/Rancho Los Pulos Grant Boundary
*P2. Location: Not for Publication Unrestricted *a. County Solano
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad Elmira, CA Date 1953, photorevised 1980 T 5 and 6 N ; R 1W ; between Sections 1, 2; 11 through 14 M.D.B.M.
c. Address City Fairfield Zip
d. UTM: (Give more than one for large and/or linear resources) Zone 10, 0593440 mE/ 4237690 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This resource consists of a segment of a north-south trending road, known as Leisure Town Road. This update considers a segment measuring approximately 2.50 miles in length. Approximately 1.50 miles of the segment is a paved and maintained road known as North Gate Road. The paved portion measures about 20 feet in width and extends from its intersection with Tunner Drive, nearer the north gate of Travis Air Force Base (AFB), to its intersection with McCrory Road. The remaining mile of the segment is a local, dirt access road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. The dirt road provides access to surrounding agricultural lands (See Continuation Sheet).

P3b. Resource Attributes: (List attributes and codes) HP37

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the south

*P6. Date Constructed/Age and Source: Historic Prehistoric Both



*P7. Owner and Address:
Travis Air Force Base
Fairfield, CA

*P8. Recorded by: (Name, affiliation, and address)

Lora Holland and Jennifer Sanka
Atkins
475 Sansome Street
San Francisco, CA 94111

*P9. Date Recorded: May 16, 2013

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource Assessment Travis Air Force Base Water Transformation Project. Travis Air Force Base, Solano County, California

*Attachments: NONE Location Map Continuation Sheet Building, Structure, and Object Record
Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
Artifact Record Photograph Record Other (List) :

DPR 523A (1/95)

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

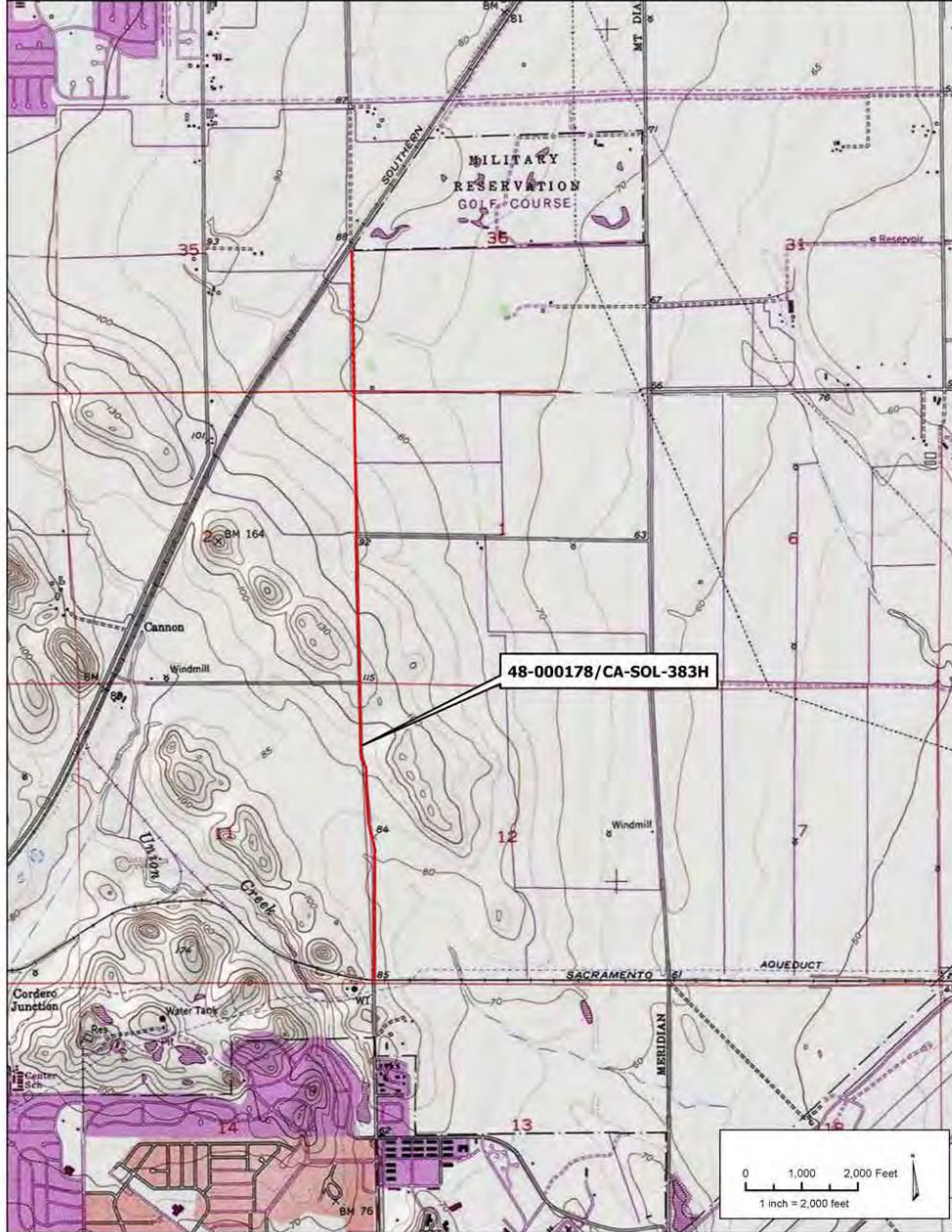
Primary # P-48-000178 UPDATE
HRI#
Trinomial CA-SOL-383H

Page 2 of 4

*Map Name: Elmira, CA

*Resource Name or #: P-48-000178/CA-SOL-383H UPDATE

*Scale: 1:24,000 *Date of Map: 1953, photorevised 1980



DPR 523J (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION CONTINUATION SHEET	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
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Page 3 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

48-000178/CA-SOL-383H was originally recorded in 1993 by E. Derr and A. Derr of Cultural Resources Unlimited as Leisure Town Road (CRU 1993). This linear resource measured 12.65 miles in length, extended north from Travis AFB to near Allendale, and was bisected by Interstate 80. The road is described as in reasonable condition; but, the original fabric had generally been changed from a dirt road to a paved road with ditches on either side. The road is further identified as representing the southern extension of the eastern boundary of the Rancho Los Putos grant between Sections 35 and 36 in Township 6 and Sections 1 and 2; 11 and 12; 13 and 14 in Township 5.

This resource was updated by C. Gross of EDAW Inc. in 2002, and included a portion of the larger resource. Specifically, the update addressed a segment of this resource extending along North Gate Road from the intersection of North Gate Road and Tunner Drive. The segment then continued to the north, along a dirt road to terminate near the southwest corner of the Cypress Lakes Golf Course property. The 2002 update identified this segment as coinciding with the historic Rancho Los Putos grant line and noted that the road would have originally been of dirt construction. In 2002, the resource was primarily a paved and maintained road known as North Gate Road. The resource is described as maintaining its context (location); however, its use and maintenance as a modern, asphalt road represented significant alteration (EDAW, Inc. 2002).

The current update addresses a segment measuring 2.50 miles in length. The location of this segment is similar to the 2002 update, and the existing conditions were determined to be consistent via a pedestrian survey (May 16, 2013). However, based upon a review of archival topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) Records, the eastern grant boundary line of the Rancho Los Putos appears to be located 0.50 mile to the north of this segment.

A review of the 1859 GLO Plat Map (Township 6 North, Range 1 West) indicated that Lot No. 37 of the Rancho Los Putos grant is situated beyond Sections 35 and 36 of Township 6 North, Range 1 West, and approximately 0.50 mile to the north of this segment. This finding is reinforced by the presence of a dashed grant boundary line on the 1908 USGS Vacaville 15-minute map that corresponds with the mapped location of Lot No. 37 of the Rancho Los Putos as depicted in 1859. Further, an on-line search of the BLM GLO Records for this segment and the vicinity indicated that the Rancho Los Putos was granted to Juan Felipe Pina and Juan Manuel Vaca on June 4, 1858. This grant occurred under the auspices of the Spanish/Mexican Grant of March 3, 1851 (9 Stat. 631) and encompassed approximately 43,500-acres to the north and west of the segment (BLM 2013). Thus, it appears that the Rancho Los Putos grant boundary does not correspond to the segment of 48-000178/CA-SOL-383H recorded in 2002 or as included in the current update. Rather, this segment reflects a portion of the historic age Leisure Town Road alignment.

Currently, this 2.50 mile segment of Leisure Town Road is comprised of the paved and maintained North Gate Road and a local, dirt access road. Approximately 1.50 mile of the segment is North Gate Road, and this portion is situated between its intersection with Tunner Drive and its intersection with McCrory Road. The paved portion measures about 20 feet in width. The remaining mile of the segment is a local, dirt road that extends from the intersection of McCrory Road and North Gate Road to the southwestern corner of the Cypress Lakes Golf Course. At present, Leisure Town Road is found to the north of the modern Union Pacific Railroad (UPRR) (48-000549/57-000400). The segment addressed in this update is no longer connected to modern Leisure Town Road as it was when it was originally recorded in 1993 (CRU 1993). It is presently separated from the remaining portions of the alignment by the UPRR Right-of Way (ROW) and there is no formal railroad crossing. As such, the segment considered by this update no longer functions as a portion of the larger thoroughfare.

National Register of Historic Places (NRHP) Eligibility Discussion

NRHP eligible properties must meet at least one of the NRHP criteria (Criterion A through D) and exhibit integrity. With regard for the NRHP criteria, previous research has indicated that the importance of Leisure Town Road is primarily derived from its location along the earlier Rancho Los Putos grant boundary (CRU 1993; EDAW, Inc. 2002). This implies that this resource may be potentially eligible for the NRHP for being associated with a period characterized by extensive land grants as part of events that have made a significant contribution to the broad patterns of our history (Criterion A). Previous research on this resource, as well as research completed for this segment update, does not indicate that it is associated with significant persons in our past (Criterion B), that it embodies characteristics of a type, period, or method of construction (Criterion C), or that it is likely to yield information important in history (Criterion D). Thus, while an analysis of the entire resource alignment has not been completed, it does appear that this resource may be considered potentially eligible for the NRHP under Criterion A and for being associated with the grant line. A review of archival maps and a search of BLM GLO Records (BLM 2013) have indicated that the segment of 48-000178/CA-SOL-383H considered in this update does not correspond to the grant line. Rather, the Rancho Los Putos grant is located approximately 0.50 mile to the north of the segment.

DPR 523L (1/95)

*Required information

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION CONTINUATION SHEET	Primary # P-48-000178 UPDATE HRI# Trinomial CA-SOL-383H
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Page 4 of 4 *Resource Name or # (Assigned by recorder) P-48-000178/CA-SOL-383H UPDATE
 *Recorded by: JM Sanka and L Holland of Atkins *Date: 05/16/2013 Continuation Update

*P3a. Description (Continued)

Integrity is measured by the degree to which the resource retains its historical properties and conveys its historical character. As noted in 2002 and confirmed during a recent pedestrian survey (May 16, 2013), the segment considered in this update maintains its context (location); however, its use and maintenance as a modern, asphalt road represents significant alteration (EDAW, Inc. 2002). In addition, the historic age Leisure Town Road alignment measured approximately 12.65 miles in length as originally recorded in 1993 (CRU 1993). At this time, the segment considered in this update is no longer connected to modern Leisure Town Road. Instead, it is presently separated from the remaining portions of the alignment by the UPRR ROW and there is no formal railroad crossing. Therefore, the segment considered in this update no longer functions as a portion of the larger thoroughfare.

Recommendations

48-000178/CA-SOL-383H appears to be potentially eligible for inclusion in the NRHP under Criterion A. However, it is recommended that the segment addressed in this update be considered ineligible for the NRHP. This recommendation is based on a lack of integrity as well as the fact that this segment is not associated with the actual Rancho Los Puntos grant line. Thus, this segment does not appear to be a contributing element to the potential NRHP eligibility of 48-000178/CA-SOL-383H.

References

Bureau of Land Management (BLM). 2013. General Land Office Patent Searches, including: BLM Serial No. CACAAA 000076. Searches completed May 2013. <http://www.glorerecords.blm.gov/search/detail.aspx> and http://www.glorerecords.blm.gov/details/patent/default.aspx?accession=CACAAA_000076&docClass=SER&sid=oqbq30ev.5x2

Cultural Resources Unlimited (CRU). 1993. Archaeological Site Record for 48-000178/CA-SOL-383H. Form on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014. S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

1
2

State of California X The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD		Primary # <u>P-48-000554 UPDATE</u>
Other Listings Review Code		HRI # Trinomial <u>CA-SOL-424H</u> NRHP Status Code
		Reviewer Date

Page 1 of 2 *Resource Name or #: (Assigned by recorder) Sacramento Northern Railway
P1. Other Identifier: _____
***P2. Location:** Not for Publication Unrestricted *a. County Solano
 and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
 *b. **USGS 7.5' Quad** Elmira, CA **Date** 1953, photorevised 1980 **T** 5 N ; **R** 1W ; **SW ¼ of SW ¼ of Sec 12**
and SE ¼ of SE ¼ of Sec 11 M.D.B.M.
 c. **Address** _____ **City** Fairfield **Zip** _____
 d. **UTM:** (Give more than one for large and/or linear resources) **Zone** 10 , 0593440 mE/ 4238018 mN
 e. **Other Locational Data:** (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From the North Gate of Travis Air Force Base, proceed approximately 1000 feet north on North Gate Road. The tracks of the Sacramento Northern cross North Gate Road at this point.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
 This resource consists of a segment of a spur of the former Sacramento Northern Railway. The segment measures approximately 50 in length and 8 feet in width.
 Previous research has indicated that the entire Sacramento Northern Railway system may retain qualities of location, design, setting, materials, workmanship, feeling, and association that may render it eligible for inclusion in the National Register of Historic Places (EDAW, Inc. 2002).

P3b. Resource Attributes: (List attributes and codes) AH7
***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) May 16, 2013, View to the east



***P6. Date Constructed/Age and Source:** Historic
 Prehistoric Both
***P7. Owner and Address:**
Travis Air Force Base
Fairfield, CA
***P8. Recorded by:** (Name, affiliation, and address)
Lora Holland
Atkins
475 Sansome Street
San Francisco, CA 94111
***P9. Date Recorded:** May 16, 2013
***P10. Survey Type:** (Describe)
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Atkins. 2013. Cultural Resource

Assessment Travis Air Force Base Water Transformation Project, Travis Air Force Base, Solano County, California
EDAW, Inc. 2002. Results of an Archaeological Survey at Travis Air Force Base, Contract Number DACW05-99-D-0006-0014, S-025880. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.

***Attachments:** NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

DPR 523A (1/95)

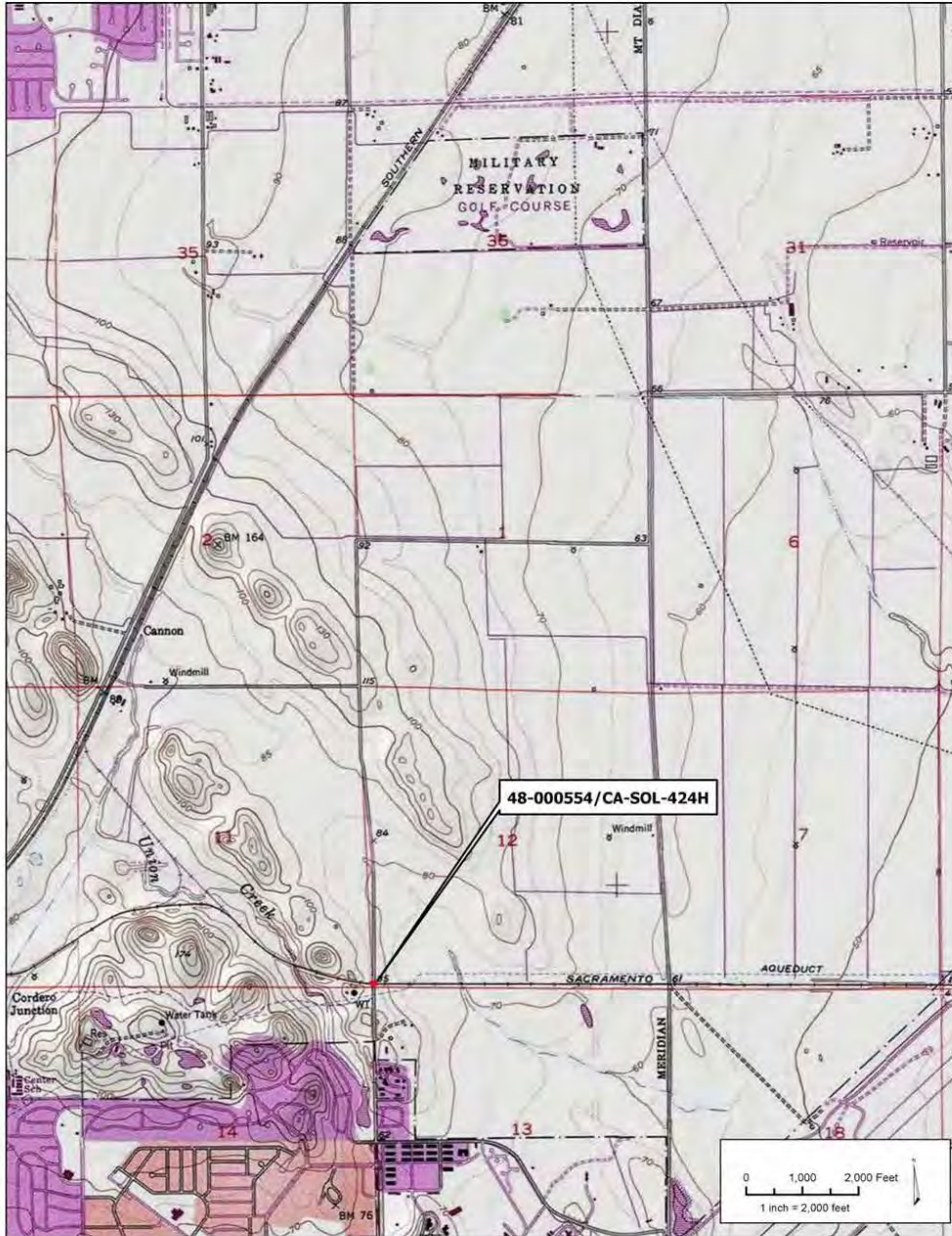
*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-48-000554 UPDATE
HRI#
Trinomial CA-SOL-424H

Page 2 of 2
*Map Name: Elmira, CA
1980

*Resource Name or #: P-48-000554/CA-SOL-424H UPDATE
*Scale: 1:24,000 *Date of Map: 1953, photorevised



DPR 523J (1/95)

*Required information

ATTACHMENT 6

Excerpts from 1996 Weitze Report

Weitze, Karen J.

1996 Travis Air Force Base Fairfield, California Inventory of Cold War Properties. Prepared for Headquarters Air Mobility Command, Scott Air Force Base, Illinois and U.S. Army Corps of Engineers, Fort Worth District, Fort Worth Texas. United States Air Force Air Mobility Command Cold War Series Report of Investigations Number 7. Geo-Marine, Inc. October.

Included in this Attachment are three items:

- 1) Excerpts from Cold War Properties Inventory Cold War Properties Inventory (Weitze 1996): Excerpts include the cover, table of contents, and pages 6 through 15, 19, 61, 69, 70, and 77 with pertinent text highlighted.
- 2) Cold War Properties Inventory (Weitze 1996): DPR Form for the AFSWP Q Area
- 3) Cold War Properties Inventory (Weitze 1996): Appendix A Field Photographs.

**TRAVIS AIR FORCE BASE
FAIRFIELD, CALIFORNIA**

INVENTORY OF COLD WAR PROPERTIES

by
Karen J. Weitze, Ph.D.
Architectural Historian

for
Headquarters, Air Mobility Command
United States Air Force
Scott Air Force Base, Illinois
and
U.S. Army Corps of Engineers,
Fort Worth District
Fort Worth, Texas

UNITED STATES AIR FORCE AIR MOBILITY COMMAND COLD WAR SERIES
REPORT OF INVESTIGATIONS
NUMBER 7

Geo-Marine, Inc.
550 East 15th Street
Plano, Texas 75074

October 1996

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The total number of buildings and structures individually inventoried is 50, located at Travis AFB. The uninventoried Point Arena AC&W radar facilities are assumed to have originally included between 45 and 50 buildings, but the complex's current intactness is unevaluated herein. Buildings and structures are listed here in numerical real property order, and are identified by architect/engineer, original Cold War use, and date of design (Figures 4a, 4b, and 4c). Those properties interpreted as potentially eligible for the NRHP are bulleted, with summary discussion following the inventory list.

- Building 365: liquid fuel pump station (1952) [ADC jet fuel tank farm]
- Building 366: liquid fuel pump station (1953) [ADC jet fuel tank farm]
- Building 369: ADC flight simulator training building (1955)
[ADC readiness area district]
- Building 370: ADC squadron operations building (1953)
[ADC readiness area district]
- Building 373: U.S. Army Nike missile assembly shop (built as a field maintenance shop, 1959;
modified for Nike assembly, 1967)
- Building 377: U.S. Army Nike missile assembly shop (built as an automotive shop, 1954; modified
for Nike assembly, 1967)
- Building 754: Earl & Wright, Inc., San Francisco, air compressor shelter (1962)
- Building 755: Ganteaume & McMullen, Boston, GAM-77 facilities [guided missile systems run-up
shop] (1961)
- Building 759: missile test stand; SAC ammunition shop (1957/1960)
- Building 810: Kuljian Corporation, Philadelphia, double-cantilever medium bomber hangar (1952-
1955) [used for the B-36]

Clustered with Building 810 are 10 extant buildings and structures completed in 1954 that provided direct ancillary support for B-36 maintenance: Building 549, a rail-accessible warehouse; Buildings 556, 557, and 558, squadron operations facilities; Building 801, a pump station for nonpotable water; and Buildings 802, 804, 835, 837, and 838, shops. Related structures at a secured, segregated site to the northwest of the AFSWP Q Area include the SAC munitions igloos, Buildings 980, 982, 984, 986, 988, 990, 992, 994, and 996 (1954-1956).

AFSWP Q Area (900 series): Black & Veatch, Kansas City, including:

- Building 902: base spares (inert) office (1951-1953)
- Building 903: checkout and assembly, C structure (1951-1953)
- Building 904: base spares (inert) warehouse (1951-1953)
- Building 905: base spares (inert) warehouse (1951-1953)
- Building 906: base spares (inert) warehouse (1955-1956)

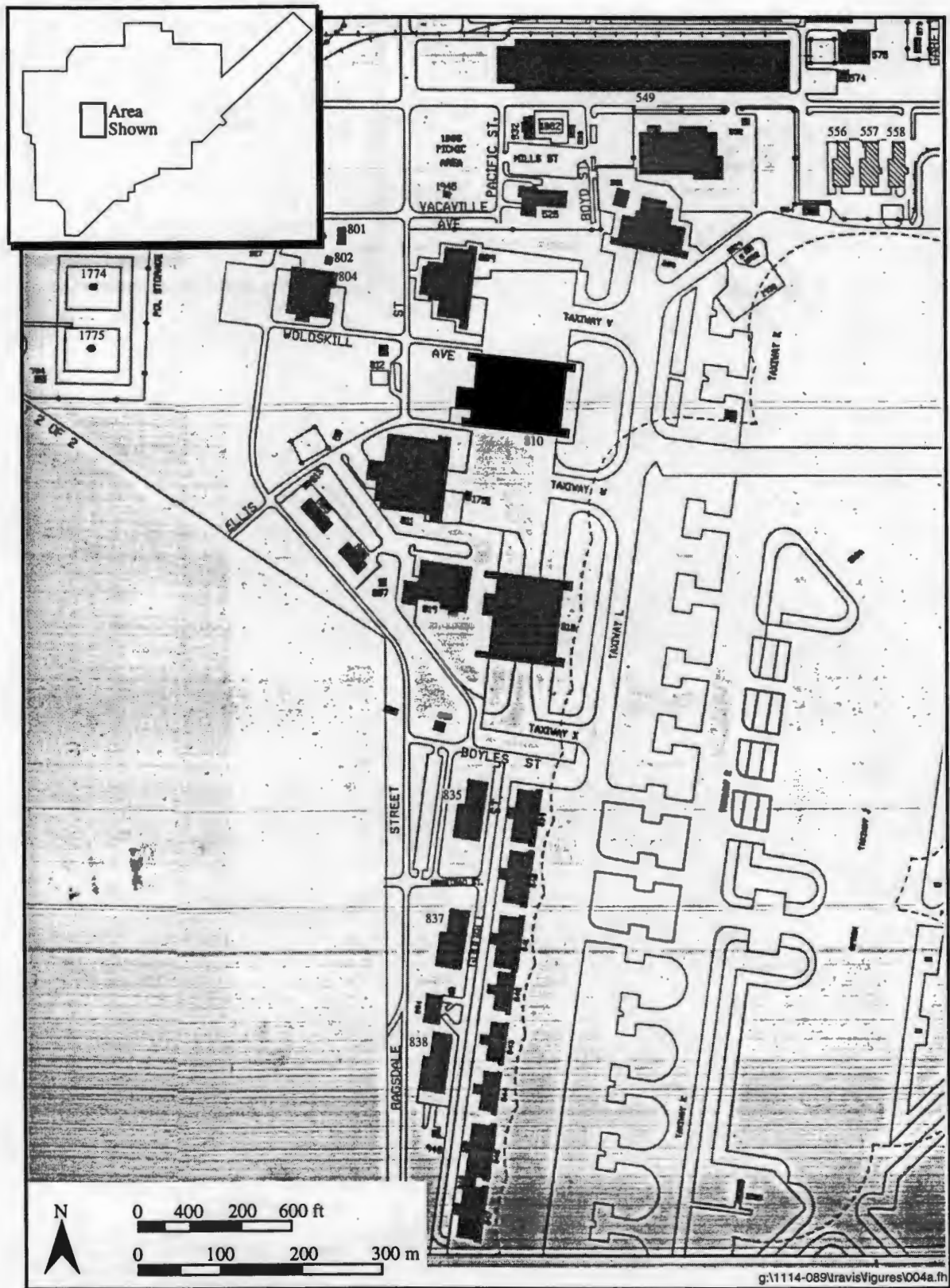


Figure 4a. Cold War properties, Travis Air Force Base, Fairfield, California, inventoried 1995-1996, Geo-Marine, Inc.

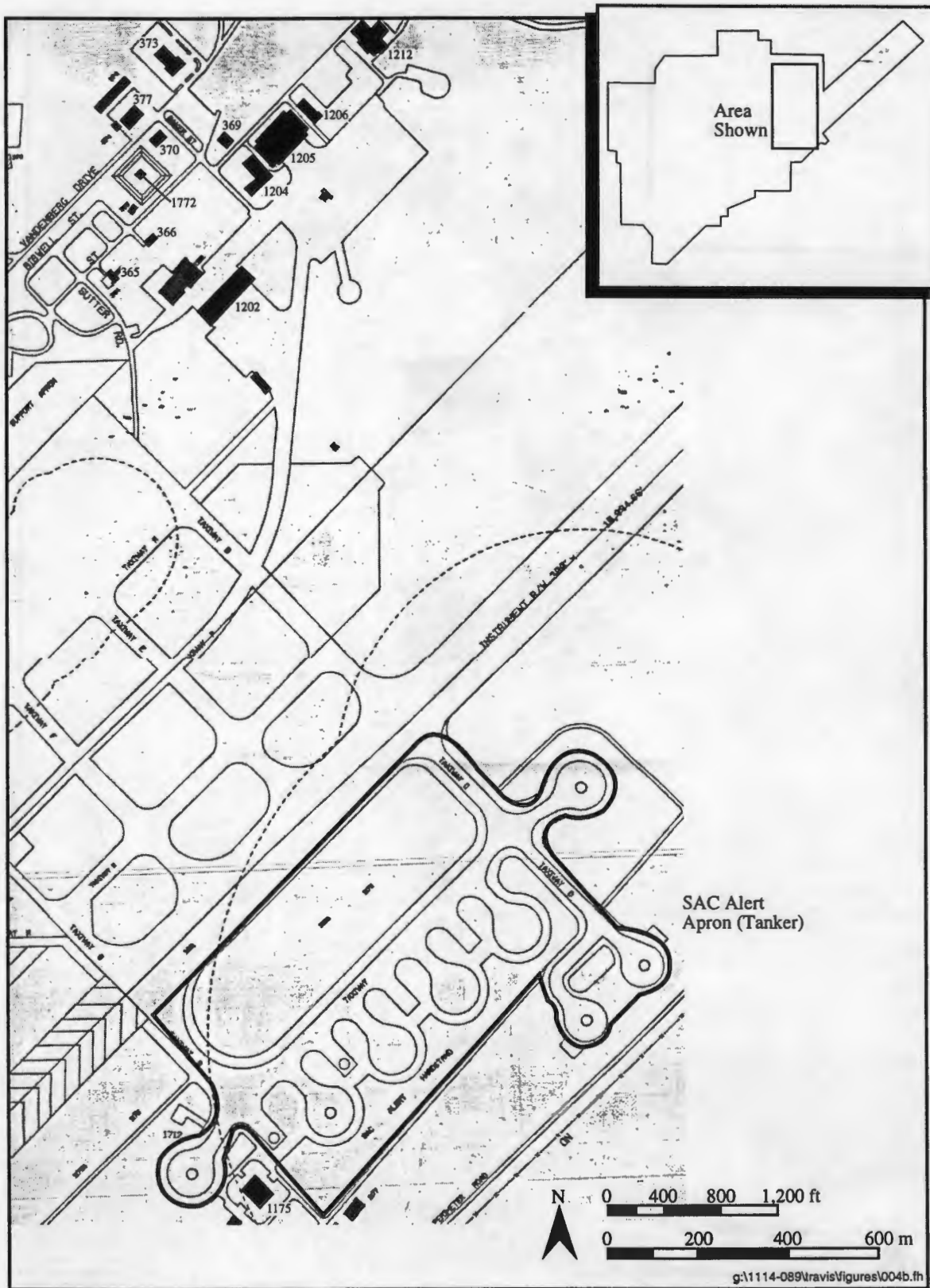


Figure 4b. Cold War properties, Travis Air Force Base, Fairfield, California, inventoried 1995-1996, Geo-Marine, Inc.

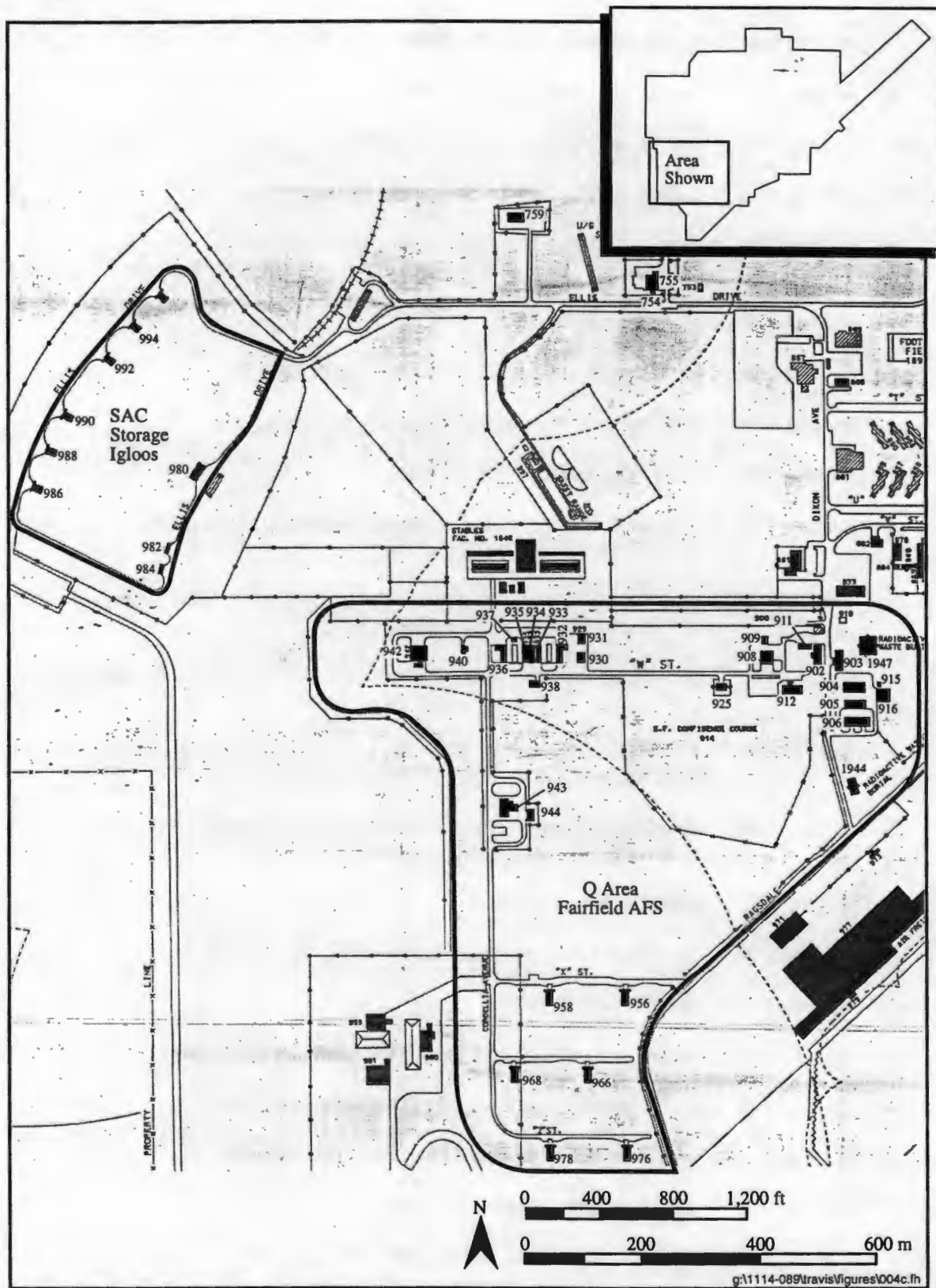


Figure 4c. Cold War properties, Travis Air Force Base, Fairfield, California, inventoried 1995-1996, Geo-Marine, Inc.

- **Building 908:** supply and issue shop (1953-1954)
- **Building 909:** special weapons readiness crew facility (1956-1957)
- **Building 911:** security and dispatch office (1955-1956)
- **Building 912:** base communications/intelligence office (1956-1957)
- **Building 915:** hazardous/flammable substances warehouse (1956-1957)
[Building 910 mismapped as a second Building 915, 1995 base map]
- **Building 916:** power plant (1951-1953)
- **Building 925:** detonator pits storage, A structure (1951-1953)
- **Building 930:** readiness crew and operations facility (1951-1953)
- **Building 931:** heavy equipment shop (1951-1953)
- **Building 932:** surveillance and inspection shop [assembly plant] (1951-1953) [tunnel connected to Buildings 933, 934, 935, and 936]
- **Building 933:** surveillance and inspection shop [assembly plant] (1951-1953) [tunnel connected to Buildings 932, 934, 935, and 936]
- **Building 934:** surveillance and inspection shop [assembly plant] (1951-1953) [tunnel connected to Buildings 932, 933, 935, and 936]
- **Building 935:** surveillance and inspection shop [assembly plant] (1951-1953) [tunnel connected to Buildings 932, 933, 934, and 936]
- **Building 936:** surveillance and inspection shop [assembly plant] (1951-1953) [tunnel connected to Buildings 932, 933, 934, and 935]
- **Building 937:** power station (1951-1953)
- **Building 938:** base spares (inert) warehouse (1958-1959)
- **Building 940:** paint shop (1959-1960)
- **Building 942:** surveillance and inspection shop [assembly plant] (1955-1956)
- **Building 943:** surveillance and inspection shop [laboratory] (1955-1956)
- **Building 944:** base spares (inert) warehouse [laboratory] (1958-1959)
- **Building 956:** special weapons storage igloo (1951-1952)
- **Building 958:** special weapons storage igloo (1951-1952)
- **Building 966:** special weapons storage igloo (1951-1952)

- Building 968: special weapons storage igloo (1951-1952)
- Building 976: special weapons storage igloo (1951-1952)
- Building 978: special weapons storage igloo (1951-1952)
- Building 1944: radioactive waste burial site, fenced (1950s)
- Building 1947: radioactive waste burial site, fenced (1950s)
- Building 1175: Leo A. Daly Company, Omaha, SAC readiness crew facility and tanker alert apron (1958-1960)
- Building 1202: Strobel & Salzman, New York, FIS alert hangar (1952-1954)
- Building 1204: Barnett, Haynes, Barnett, Inc., San Francisco, squadron operations wing (1953); Franceschi, Dreyfus & Mullen, and Rickey & Brooks, Sacramento, readiness crew wing (1954-1956) [ADC readiness area district]
- Building 1205: Strobel & Salzman, New York, ADC readiness and maintenance hangar, standardized design of 1953; modified for Travis AFB by Falk & Booth, San Francisco (1954-1956) [ADC readiness area district]
- Building 1206: Barnett, Haynes, Barnett, Inc., San Francisco, small arms storage building (1952-1953) [ADC readiness area district]
- Building 1212: William Gehron, with Weiskopf & Pickworth, New York, units A and B, rocket checkout and assembly building, standardized design of 1954; modified for Travis AFB by Moffatt & Nichol, Inc., Long Beach, unit A, (1954-1955); Sverdrup & Parcel, Inc., San Francisco, unit B (1955-1956)
- Building 1772: liquid fuel storage tank [ca. 1954] [ADC jet fuel tank farm]

Existing NRHP Properties

None of the above Cold War properties have been listed on, or formally evaluated as eligible for, the NRHP.

Potential NRHP Significance at Travis AFB

Of the 50 inventoried Cold War properties, 32 are interpreted as potentially eligible for the NRHP under criterion C and criteria consideration G, configured as two NRHP districts and one independently eligible structure.

Districts

The NRHP-eligible districts are interpreted as the 25-building assembly, laboratory, and communications/intelligence section of the AFSWP Q Area of 1951-1960, and the six-building ADC readiness area of 1952-1955.

AFSWP Q Area

Buildings 902, 903, 904, 905, 906, 908, 909, 911, 912, 915, 916, 925, 930, 931, 932, 933, 934, 935, 936, 937, 938, 940, 942, 943, and 944.

The structures within the Q Area evaluated as an NRHP-eligible district comprise approximately 30-35 percent of the historic as-built restricted area, following the original fenced delineation of the compound, but deleting the six extant storage igloos as well as the open land between the storage area and the compound's concentration of buildings (Figure 5). In 1960, the Q Area had established its mature configuration. At that time, the portion of the compound interpreted as NRHP-eligible had six more structures than extant today. These buildings were all small, possibly security stations. In 1960, the as-built weapons storage area, however, had 15 igloos placed in a distinctive configuration occupying the southern 40 percent of the compound; between 1970 and today, the USAF has removed the nine easternmost igloos, has diagonally rerouted Ragsdale Street across the southeastern corner of the Q Area, and has added the large AMC air freight terminal (Building 977) partially within the original eastern compound boundary. The substantial changes to the southern component of the Q Area, in addition to its original segregated site plan for the igloos, argue for the more constrictive NRHP district boundaries. The interpreted NRHP-eligible district has suffered only a minimal loss of integrity, with only a small dispersed group of portable noncontributing trailers and shelters added within suggested boundaries.

ADC Readiness Area

Buildings 369, 370, 1204, 1205, 1206, and 1212.

The Travis AFB readiness area features the complete evolution of buildings planned for ADC installations nationwide, with construction in rapid sequence indicative of a high tactical importance, and with the area's self-contained siting still evocative of its original mission. Included buildings, presented chronologically, are the small arms ammunition building (Building 1206); the standard permanent squadron operations wing and the readiness crew wing, both part of the readiness crew facility (Building 1204); the second-generation squadron operations building (Building 370); the readiness maintenance hangar [with plans for a second, unbuilt, hangar] (Building 1205); units A and B of the rocket checkout and assembly building (Building 1212); and the flight simulator training building (Building 369). The jet fuel tank farm immediately adjacent to the second-generation squadron operations building is today highly altered with new construction in progress at the time of inventory and is thus excluded from the interpreted potential district (Figure 6). The ADC alert hangar (Building 1202) is sited distinctly separate from the readiness cluster. Its visual presence enhances the ADC 1950s context for the readiness area, but as the alert hangar is also substantially modified, and as it is complemented by the immediate siting of an unrelated late 1960s Military Transport Command (MTC) [now, Naval Facilities Command (NAVFAC)] in-flight kitchen (Building 1201), the alert hangar is not considered for inclusion in the potential NRHP district. The buildings of the readiness area are little modified.

Independently Eligible Building

Building 810

Building 810, of 1952-1954, is interpreted as independently eligible for the NRHP as an excellent example of the double-cantilever medium bomber hangar, used at Travis AFB for the B-36. The B-36 was SAC's first long-range, intercontinental bomber carrying nuclear weapons, early modified with added jet engines. Its maintenance hangar was, like the aircraft, extremely large, and built at SAC installations of the 1952-1957

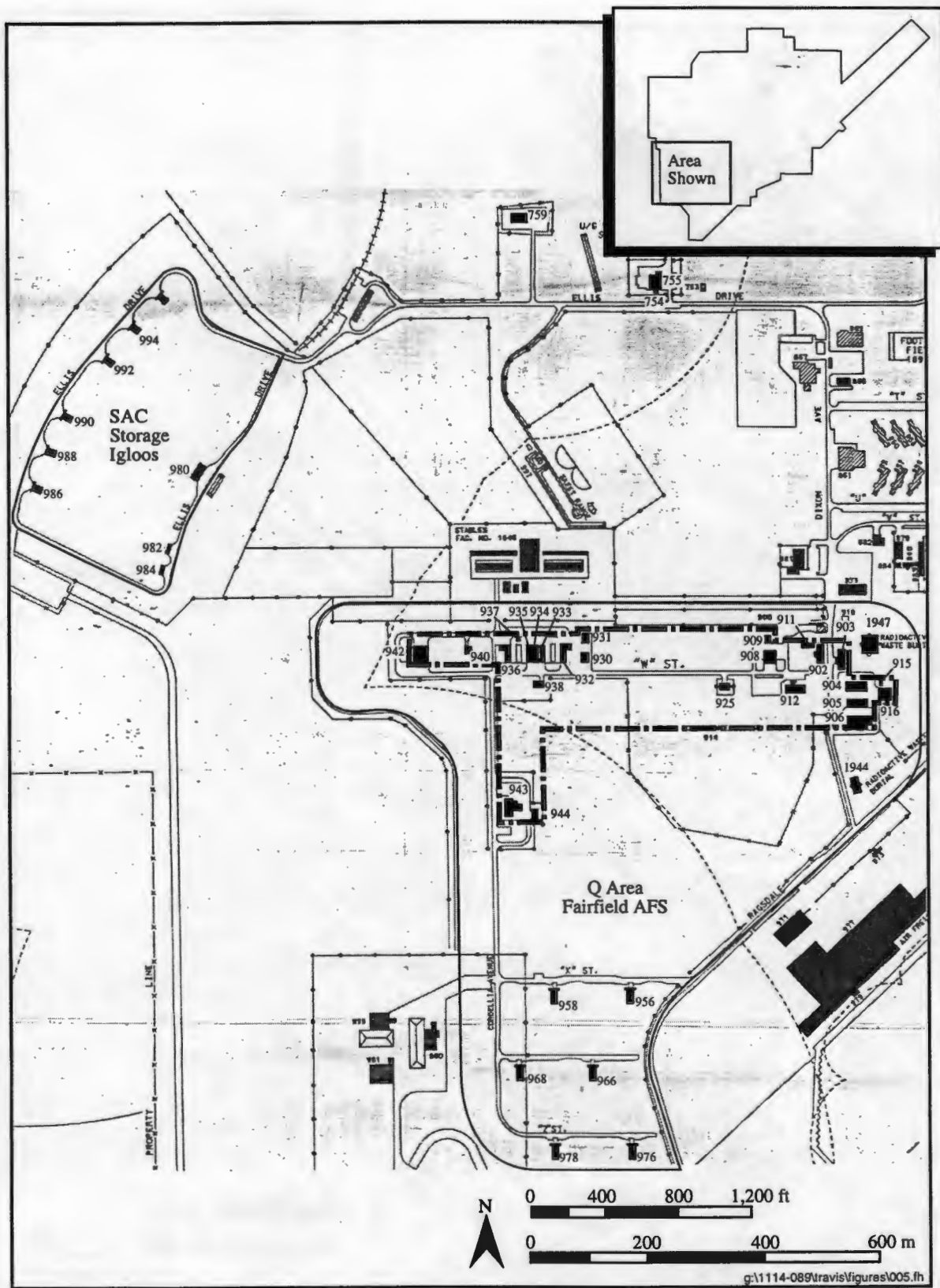


Figure 5. Location of AFSWP Q Area proposed NRHP historic district.

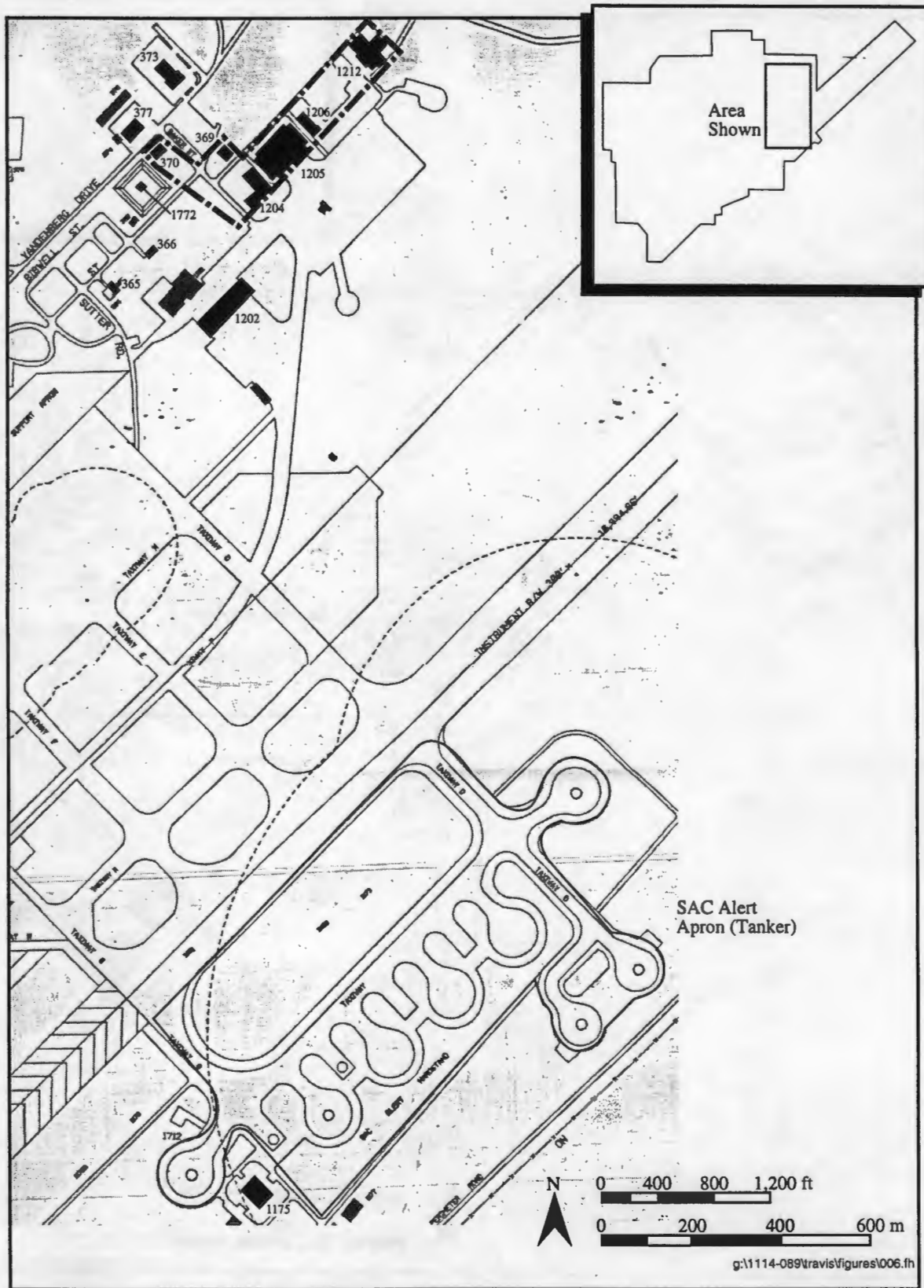


Figure 6. Location of ADC readiness area proposed NRHP historic district.

years. The B-36 hangar at Travis AFB is strongly supported by its immediate context of SAC ancillary structures of its historic period (1954). The ancillary group, however, is today intermixed with unrelated SAC and AMC buildings, and as such has lost potential for NRHP district consideration.

III. METHODOLOGY

In an attempt to gather and analyze detailed information, and to identify the Cold War built environment as specifically as possible for its seven inventoried USAF installations, GMI developed an interactive field-archival methodology for the project. Dr. Karen J. Weitze, GMI architectural historian, with assistance from Diane Williams, previously of Hardy-Heck-Moore, & Associates, conducted both field and archival investigations, with Dr. Weitze completing the comprehensive archival research and final field evaluations. At their assigned installations, Dr. Weitze and Ms. Williams site-checked the Cold War properties; made field notes and took black and white photographs; reviewed real property records and drawings/maps files; and visited base historians and museums.

Dr. Weitze initiated the GMI project with a background literature search, based upon a brief reading list provided by the CE, Fort Worth District, in December 1994. Dr. Weitze augmented the reading list substantially during the 10 months required to complete the preliminary draft reports for the seven installations. In January 1995, before beginning fieldwork, Dr. Weitze prepared a schedule of base visits and a workplan, submitting these to the CE. As agreed upon through the reviewed workplan, the first bases to be visited were set as Dover and Andrews AFBs, in Dover, Delaware, and Camp Springs, Maryland (Washington, D.C., vicinity) in January-February 1995. Sequentially, the next two installations were programmed to be McChord and Travis AFBs, in Tacoma, Washington, and Fairfield, California, in March-April 1995. By the midpoint of the base visits, Dr. Weitze also planned an archival visit to the Historical Research Agency (HRA), at Maxwell AFB, Montgomery, Alabama. As the USAF's main documents repository, the HRA is essential to any comprehensive Air Force study, and is particularly necessary for a multibase analysis. Following Dr. Weitze's research at the HRA, and after a consultation discussing the fieldwork at the first four installations, Ms. Williams visited Charleston and Scott AFBs, in Charleston, South Carolina, and Belleville, Illinois (St. Louis vicinity), in April-May 1995. Finally, Dr. Weitze completed fieldwork at Grand Forks AFB in Grand Forks, North Dakota, in June 1995. Representative historic property inventory forms, maintained by the staff of the State Historic Preservation Officers (SHPOs) in each jurisdiction, were agreed upon for Andrews, Dover, Grand Forks, McChord, and Travis AFBs, with site photography to be handled as indexed contact sheets with selected black and white prints for each installation. Dr. Weitze and Ms. Williams contacted staff of the respective SHPOs for California, Delaware, Illinois, Maryland, North Dakota, and Washington. Both the numbers of state inventory forms and SHPO contacts were augmented during the course of the study by GMI. Final inventory forms were filled out by Johnna Buysse, a GMI employee, under the direct guidance of Dr. Weitze.

Dr. Weitze assumed that the first base visits might benefit from a second, later revisit. Generally speaking, each scheduled installation was substantially built during the 1950s and early 1960s, making the initial selection of Cold War properties to be inventoried a challenge. From several hundred buildings and structures, Dr. Weitze typically chose between 20 and 60 for field survey and documentary analysis at each base. Selected properties always sustained a significant, and active, tactical or strategic Cold War mission that could be discussed and documented in the contexts and installation histories prepared for each base inventory. Generally supportive and administrative properties, such as housing, offices, civic, and recreation facilities were not inventoried, nor were the generic clusters of hangars and aircraft ancillary buildings present on all bases. The inventoried structures quickly fell into a pattern of standardized buildings associated with USAF missions. The greatest proportion of the inventories focused on the American air defense network: alert fighter squadron clusters; first-generation command and control buildings; radar stations; second-generation, semiautomated command and control buildings; fighter jet test and noise-suppression buildings; missile emplacements; and weapons storage/checkout compounds. Standardized strategic properties included SAC alert bomber and tanker facilities; first-generation intercontinental bomber hangars; weapons storage/checkout compounds; and intercontinental ballistic missile (ICBM) silos. Related to both the tactical and strategic properties were research, assembly, and storage areas of the AFSWP. By

South Dakota [2nd]; Fairchild AFB, Washington [3rd]; and Westover AFB, Massachusetts [5th]. Approximately 20 Q Areas, inclusive of main storage and operational storage sites, were constructed worldwide. The Travis AFB Q Area included 49 buildings and structures in 1960, with an administrative/intelligence section, a laboratory section, an assembly plant, and both base spares and igloo nuclear weapons/weapons components storage (H.D. Nottingham & Associates 1960). In mid-1962 the Air Materiel Command turned the compound over to SAC, after which time the area served a primary nuclear munitions storage function and the acreage became a formal part of Travis AFB. **Structures at Travis AFB associated with its Q Area mission include Buildings 902, 903, 904, 905, 906, 908, 909, 911, 912, 915, 916, 925, 930, 931, 932, 933, 934, 935, 936, 937, 938, 940, 942, 943, 944, 956, 958, 966, 968, 976, 978, 1944, and 1947.**

By 1952, Travis AFB also began to prepare for a role in tactical air defense. Jet fuel storage tanks, a first-generation squadron operations facility, and small arms ammunition storage were in place by 1953, with permanent alert and readiness facilities in planning and early construction. The ADC assigned the 413th FIS to Travis AFB in mid-1954, deploying F-86Ds at the installation. In August 1955, the 82nd FIS replaced the 413th, in a rotation effort of ADC's Project Arrow. This same year the U.S. Army surrounded Travis AFB with 11 AAA units (U.S. Army Corps of Engineers, Sacramento District 1955). Subsequently, the 82nd FIS advanced from machine gun weaponry to FFARs and GARs, advancing to the F-102 aircraft in late 1957. ADC's tactical role at Travis AFB, paralleling the strategic role of SAC during these same years, was pronounced, and evolved quickly from one state-of-the-art cluster of buildings and weapons to the next without interruption. **Structures at Travis AFB associated with its ADC mission include Buildings 365, 366, 369, 370, 1202, 1204, 1205, 1206, 1212, and 1772.**

In mid-1966 the ADC transferred the 82nd FIS to Hickam AFB, Hawaii, ending the fighter-interceptor mission at Travis AFB. Even before the move, in 1958, U.S. Army Nike-Zeus nuclear ground-to-air antimissile missiles emplaced approximately seven miles northeast of the installation, at Elmira (east of Vacaville), enhanced the defense of the SAC bombers and their nuclear arsenal at Travis AFB (Indenco Engineers, Inc., 1958; Schaffel 1991:258-259). The Nike installation continued the Army's mid-1950s AAA tactical role in regional defense, and was upgraded at Elmira to the Nike-Hercules generation of missiles in 1967. The late 1960s Nikes fully replaced the Travis AFB FIS alert and readiness mission. Appropriately, the Nike maintenance buildings of the 1967-1972 period were located immediately adjacent to the 1952-1966 FIS readiness area on base. **Structures at Travis AFB associated with its Nike mission include Buildings 373 and 377.**

While the ADC's and the Army's tactical mission developed at Travis AFB during the 1952-1967 period, SAC's strategic mission moved forward apace. In 1955 SAC initiated changes toward the B-52, a jet-powered long-range bomber. SAC redesignated the 5th SRW the 5th Bombardment Wing (Heavy) in October. The 5th Wing continued to fly RB-36s, anticipating the shift from a reconnaissance to a bomber mission with the late 1950s arrival of the B-52. During the interim, SAC lengthened runways to 11,000 feet to accommodate the B-52 and deployed the B-47 to augment the mission. The first B-52 arrived at Travis AFB in February 1959. Simultaneous with the B-52 deployment, SAC instituted its satellite dispersal program. With dispersal, the three 5th Wing squadrons based at Travis AFB were divided among Travis, Mather (Sacramento), and Beale (Marysville) AFBs, with one installation serving as the central maintenance depot for the B-52s (Mather). The 72nd Bombardment Squadron left for Mather AFB in mid-1958; the 31st Bombardment Squadron, for Beale in January 1960. The 23rd Bombardment Squadron remained at Travis AFB, with 15 B-52 aircraft assigned.

With deployment of the B-52, SAC joined the AFSWP (Q Area) and ADC with readiness crew facilities (moleholes) and aprons. World tensions of the late 1950s, coupled with the growing nuclear arsenals of the U.S. and the Soviet Union, demanded that SAC place its bomber force on standing alert. Congress reviewed SAC's proposal for segregated alert areas during 1956-1957, with construction underway at AFBs beginning

intercontinental bomber, the only aircraft in the early years of the Cold War that could reach the Soviet Union and return to either the U.S. or friendly territory.

The oversized steel frame and open-truss hangar, with reinforced concrete slab foundation and metal-deck roof, stands 66' high, measuring 268' by 370' with one 18-foot by 55-foot, six-inch offset (primarily an addition of 1960-1961), and four nine-foot by 37-foot, six-inch wings. Sheathed in corrugated metal siding, the hangar housed B-36 bombers for readiness and maintenance. Two parallel bands of multi-pane, steel sash industrial windows articulate the hangar along its side elevations. Full-facade doors, sliding in motorized, side-recessing panels, articulate the end facades, and allow the entrance and exit of aircraft. The structure's height allowed for its adaptation in 1960-1961 for a combined GAM-77/GAM-72 assembly, guidance, and maintenance shop occupying the southernmost 40 percent of the hangar. In addition, SAC extended the original western-facade utility room to accommodate GAM-72 storage and inserted a small administrative office on the interior of the northern facade. Missile triangulation stations, brass plates set in reinforced concrete piers independent of the hangar floor, occupied a significant portion of the northern half of the modified southern shop area. The GAM-72 storage room housed missile racks. In August 1966, in preparation for SAC's leave-taking of Travis AFB and its hosting by MAC, the USAF added three, prefabricated maintenance stations in the open area of the GAM shop to service C-141 transports. MAC subsequently removed these structures in late 1969, remodeling for C-5A transports. Building 810 has sustained few exterior modifications. An interior inspection has not been conducted.

At Travis AFB, Building 810 is contextually supported by a cluster of ancillary structures, built in 1953-1954 simultaneously with the hangar, and likely typical of a B-36 wing. These include Building 549, a large, reinforced concrete, rail-accessible warehouse measuring 1106'10" by 200'; Buildings 556, 557, and 558, semipermanent squadron operations buildings; Building 801, an adjacent nonpotable water pump; and Buildings 802, 804, 835, 837, and 838, shops. Not noted by specific real property designation, the liquid fuel tank farm servicing the B-36 and RB-36 squadrons of the 1951-1958 period is sited to the near west. The area surrounding Building 810 has had a number of buildings added since the mid-1950s, however, detracting from the historic configuration. To the west, northwest of the AFSWP Q Area, SAC additionally maintained traditional munitions storage igloos for the B-36 bomber in Buildings 980-996. Nuclear munitions were stored in the Q Area itself.

AFSWP Q Area

Black & Veatch, Kansas City

Original design of 1950; drawings for Travis AFB, 1950-1951. Buildings accepted as completed from 1951 through 1960, with some later additions executed by other architectural-engineering firms, notably Indenco Engineers, Inc., of Oakland.

The AFSWP Q Area was a quadruple security-fenced compound of buildings and structures initially managed by the Sandia Corporation of Albuquerque, New Mexico. The Q Area required Q, secret level, AEC clearances for government and private contractor personnel, and technically was a subcomponent of the Fairfield AFS. Immediately abutting Travis AFB on its east and north, the Q Area was sometimes referred to as the Fairfield AFS. Two additional references to the compound are the Air Materiel Command West River Depot and the 3083rd ADS/ADG. The ADS designation continued through mid-1954 only. In 1962, the Air Materiel Command concluded its tenure at the Fairfield AFS Q Area, transferring the property to Travis AFB under the command of SAC.

The AFSWP planned and developed the Q Area at Travis AFB as four discrete concentrations of buildings and structures within the compound's high-security fencing. Immediately inside the main gate at the northeastern corner, the AFSWP clustered its administrative buildings, communications-intelligence center; power plant; and, base spares warehousing. As first planned and built, the cluster was defined only by the

C structure; warehousing; power plant; and guardhouse, also containing the Q Area's two radioactive waste disposal units; the AFSWP added the administrative and communications-intelligence buildings during the middle 1950s. In the extreme northwestern corner, the AFSWP configured the compound's nuclear weapons assembly plant, originally a tunnel-interconnected group of five structures protected by earth embankments, and possessing its own readiness crew quarters, shops, and warehousing. Segregated from the assembly plant, but documented as a part of it, is the A structure, a detonator storage facility. Within the southern 40 percent of the Q Area, the AFSWP evenly spaced 15 weapons storage igloos, also of earth-embanked type, segregating the group from the two other northern edge clusters. The three sub-areas of the Q Area were as isolated from one another as possible, connected by a perimeter road inside the innermost fence, and circumscribed by two additional perimeter roads between the fences in a R/F/R/FF/R/F pattern. During the second half of the 1950s, the AFSWP added a fourth sub-area, a laboratory station, sited along the western edge halfway between the assembly plant and the storage igloos. To support the Q Area, the Air Force erected administration, housing, service, and recreational facilities for the Fairfield AFS just to the northeast of the Q Area diagonally adjacent to the secured compound's main gate. A small arms range occupied the largely empty northwestern corner of the AFS outside the Q Area, providing a secondary buffer between the Q Area's assembly plant and the also-secured SAC weapons storage area of Travis AFB to the north/northwest. SAC's missile test stand of 1957 (Building 759) was the only other 1950s facility in the near vicinity, located due north of the Q Area assembly plant, beyond the AFS small arms range, and outside the AFS on Travis AFB property (H.D. Nottingham & Associates 1960).

Structures erected within the Q Area fall into an original building phase of 1951-1953, with additions spanning 1954-1960. The greatest concentration of the additions were made during mid-decade. Built for the compound during the first phase were the 15 storage igloos, of which six remain [Buildings 956, 958, 966, 968, 976, and 978]; weapons components storage and warehousing, including a checkout and assembly facility for stored bomb parts, the C structure [Building 903], the warehousing and control office for the compound's inert spares [Buildings 902, 904, and 905], and, two fenced, radioactive waste burial sites [Buildings 1944 and 1947]; the main gate guardhouse and power plant [Buildings 901 (completely rebuilt, late 1980s) and 916]; and the weapons assembly plant, including the A structure, a readiness crew and operations building, a heavy equipment shop, and a power station [Buildings 925, 930, 931, 932, 933, 934, 935, 936, and 937]. Between 1954 and 1957, the AFSWP added its administrative and communications-intelligence facilities [Buildings 908, 911, and 912]; moved the readiness crew building from the weapons assembly plant to the communications-intelligence area [Building 909]; expanded base spares and hazardous waste storage, and the weapons assembly plant [Buildings 906, 915, 938, and 942; with four structures now removed, possibly S structures (guard stations) for the security of the main warehousing and administration area, and, for the A structure]; and added a laboratory area [Building 943]. During 1958-1959, two final additions occurred, a paint shop for the weapons assembly plant [Building 940] and an inert spares warehouse for the laboratory area [Building 944]. Most of the first-phase buildings within the Q Area are of reinforced concrete construction, with Buildings 903 and 904, the C structure and an inert spares warehouse, unusual, and of brick construction. Structures added after 1955 are typically of concrete block construction, and, for the administrative buildings and several inert spares warehouses, of wood-frame construction sheathed in either asbestos shingles or corrugated metal siding.

Within the original building phase of 1951-1953, three structures are of special note, the A structure [Building 925]; the C structure [Building 903]; and the interconnected weapons assembly structure [Buildings 932, 933, 934, 935, and 936]. The A structure is designed to appear as a flat-roofed, two-story, reinforced concrete office building, articulated by bands of fenestration on its north and south facades. At close range, the fenestration is obviously false, and the building readily reads as windowless. Presumably, the bands of faux-fenestration were intended to be effective camouflage from outside the Q Area, or possibly in aerial photographic surveillance. A storage facility for the earliest nuclear weapons detonators, Building 925 was one of the most important structures within the Q Area. Building 925 measures 41'6" by 53', with an 8' by 8' offset defining the front step-up entrance. Inside the structure a single space is divided into four, single-entry rooms with a narrow bisecting corridor between pairs, and is encased in 10 feet of reinforced concrete

VII. COMPARATIVE ANALYSIS AND CONCLUSIONS

The NRHP

Ineligible Buildings and Structures

Numbers of the buildings and structures at Travis AFB are highly modified, suffering a loss of integrity as defined by the NRHP. Among these structures are Buildings 365, 366, 373, 377, 754, 755, 759, 1175, 1202, and 1772. The buildings and structures that immediately support Building 810 are in varying states of integrity, but as a group are heavily intermixed with more recent additions. These buildings do not appear to be potentially eligible as a NRHP district due to the substantial modification of the overall site. Individually, these buildings and structures are not of sufficient significance to qualify for NRHP eligibility. Additionally interpreted as ineligible for the NRHP are Buildings 956, 958, 966, 968, 976, 978, 1944, and 1947. These structures were historically a part of the AFSWP Q Area, but are today only in a fragmentary condition and are segregated from the intact portion of the compound.

Eligible Districts and Buildings

The AFSWP Q Area

A confined, intact portion of the historic AFSWP Q Area, including 25 buildings and structures, is interpreted as potentially eligible for the NRHP (see Figure 5). The suggested NRHP-eligible district restricts boundaries to the original communications-intelligence cluster; warehousing adjacent to the main gate for the area; the weapons assembly plant; and the laboratory area, removing buffering land and the remainders of the storage igloos from consideration. Included structures are Buildings 902, 903, 904, 905, 906, 908, 909, 911, 912, 915, 916, 925, 930, 931, 932, 933, 934, 935, 936, 937, 938, 940, 942, 943, and 944. The fenced radioactive burial waste areas, Buildings 1944 and 1947, are within the interpreted NRHP-eligible district, but are suggested as inappropriate for NRHP inclusion. The Q Area NRHP-district is interpreted as potentially eligible under criterion C as an example of a rare and distinguishable entity, some of the components of which are of distinction (Buildings 925 [the A structure], 932, 933, 934, 935, 936 [the assembly plant], and, possibly, 903 [the C structure]). At this time, the NRHP district is not suggested as eligible under criterion A, association with events significant to the broad patterns of history, although it is likely that further research would support this criterion with documentary detail pertinent specifically to Travis AFB. The AFSWP Q Area district is interpreted as eligible under criteria consideration G, the requirement for the demonstration of exceptional significance for properties of less than 50 years in age.

The ADC Readiness Area

The ADC readiness area at Travis AFB offers an extremely coherent cluster of buildings and structures. The group still occupies a segregated site on base, and is easily recognized as a readiness area supportive of a FIS alert hangar. The cluster possesses a strong quality of historic time and place, with little exterior modifications to its buildings and with no site infill post-1960. Of the installations inventoried for AMC during 1995-1996, only the Travis ADC readiness area sustains its historic coherence. The ADC readiness area is physically and, in terms of its Cold War mission, complementary to the presence of the SAC bomber and tanker compounds (Buildings 810 and 1175) of the same period at Travis AFB. Boundaries are suggested to immediately circumscribe Buildings 369, 370, 1204, 1205, 1206, and 1212, with the maintenance apron

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 3S

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 6 *Resource Name or #: (Assigned by recorder) AFSWP O Area, Travis AFB

P1. Other Identifier: Fairfield AFS; Air Materiel Command West River Depot; 3083rd ADS/ADG

*P2. Location: Not for Publication Unrestricted *a. County Solano
and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad _____ Date _____ T _____; R _____; _____ % of _____ % of Sec _____; _____ B.M.

c. Address Travis Air Force Base City Fairfield Zip _____

d. UTM: (Give more than one for large and/or linear resources) Zone _____, _____ mE/ _____ mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) The district is located in the southwest corner of Travis Air Force Base, Fairfield, California, near Ragsdale and Cordellia.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) The Armed Forces Special Weapons Project (AFSWP) Q Area, also referred to as the Fairfield AFS, was a quadruple-security fenced compound of buildings and structures requiring Q, secret level, AEC clearance. Structures erected within the area fall into an original building phase of (see continuation sheet)

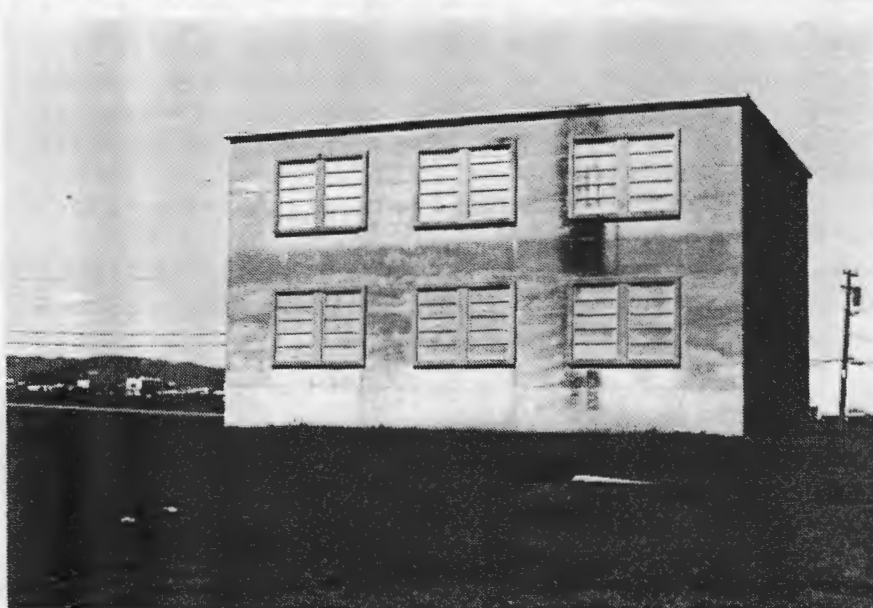
*P3b. Resource Attributes: (List attributes and codes) HP34 - nuclear weapons storage sites

*P4. Resources Present: Building Structure Object Site District Element of District Other(Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) the A structure (Building 925) facing N; see Appendix A in report for additional photographs of contributing elements to O Area

*P6. Date Constructed/Age and Source: Historic Prehistoric Both—1951-1960; Real Property Cards;

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)



arch/engineering plans

*P7. Owner and Address: U.S. Air Force

*P8. Recorded by:(Name, affiliation, and address) K.Weitze, J.Buysse, Geo-Marine, Inc., 550 East 15th St., Plano, TX 75074

*P9. Date Recorded: 8/27/96

*P10. Survey Type: (Describe) Reconnaissance survey, Section 110 of NHPA

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") "Travis Air Force Base, Fairfield, California, Inventory of Cold War Properties," by K.Weitze for Geo-Marine, Inc., August 1996

*Attachments: NONE Location

Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other(List): _____

DISTRICT RECORD

Primary # _____

HRI # _____

Trinomial _____

Page 2 of 6

*NRHP Status Code 3S

*Resource Name or # (Assigned by recorder) AFSWP Q Area, Travis AFB

D1. Historic Name: Fairfield AFS; Air Materiel Command West River Depot; 3083rd ADS/ADG
D2. Common Name: _____

*D3. Detailed Description (Discuss overall coherence of the district, its setting, visual characteristics, and minor features. List all elements of district.):

The Armed Forces Special Weapons Project (AFSWP) Q Area, sometimes referred to as the Fairfield AFS, was a quadruple-security fenced compound of buildings and structures requiring Q, secret level, AEC clearance. Structures erected within the area fall into an original building phase of 1951-1953 with additions constructed between 1954 and 1960; the greatest concentration of additions was constructed during the mid-1950s. There are a total of 35 buildings within the compound separated into four discrete sub-areas; two of the 35 buildings, Buildings 1944 and 1947, are radioactive waste burial sites and are suggested as inappropriate for NRHP inclusion. Of the remaining Cold War buildings, 25 are interpreted as contributing elements to the district; these include Buildings 902, 903, 904, 905, 906, 908, 909, 911, 912, 915, 916, 925, 930, 931, 932, 933, 934, 935, 936, 937, 938, 940, 942, 943, 944 (see Primary Record for descriptions).

*D4. Boundary Description (Describe limits of district and attach map showing boundary and district elements.): The AFSWP Q Area directly abuts Travis AFB on its eastern and northern edges. The boundary follows the original fenced delineation, but deleting the six existing storage igloos (Buildings 956, 958, 966, 968, 976, and 978); Buildings 1944, 1947, and 901 (recently rebuilt guard station); and the land between the storage area and the compound.

*D5. Boundary Justification: The configuration of the AFSWP Q Area had stabilized by 1960. Minimal alterations have occurred to the northwestern historic Q Area which is proposed as a historic district. However, modifications to the remaining Q Area include the removal of nine of the original 15 igloos; the rerouting of Ragsdale Street across the southeast corner of the Q Area; and the addition of a large AMC air freight terminal (Building 977) within the eastern compound boundary. The substantial changes to portions of the Q Area argue for the more constrictive NRHP district boundaries mentioned above. (see second continuation sheet)

D6. Significance: Theme Cold War; nuclear weapons storage; USAF Area Fairfield AFS
Period of Significance 1951-1960 Applicable Criteria C; and criterion consideration G

(Discuss district's importance in terms of its historical context as defined by theme, period of significance, and geographic scope. Also address the integrity of the district as a whole.) The AFSWP Q Area was a quadruple security-fenced compound of buildings and structures which required Q AEC clearance for government and private contractor personnel and was one of several ADG (Aviation Depot Group) Q Areas in the US. Technically, this area was a subcomponent of Fairfield AFS; the Air Materiel Command transferred the property over to SAC at Travis AFB for weapons storage in 1962. (see second continuation sheet)

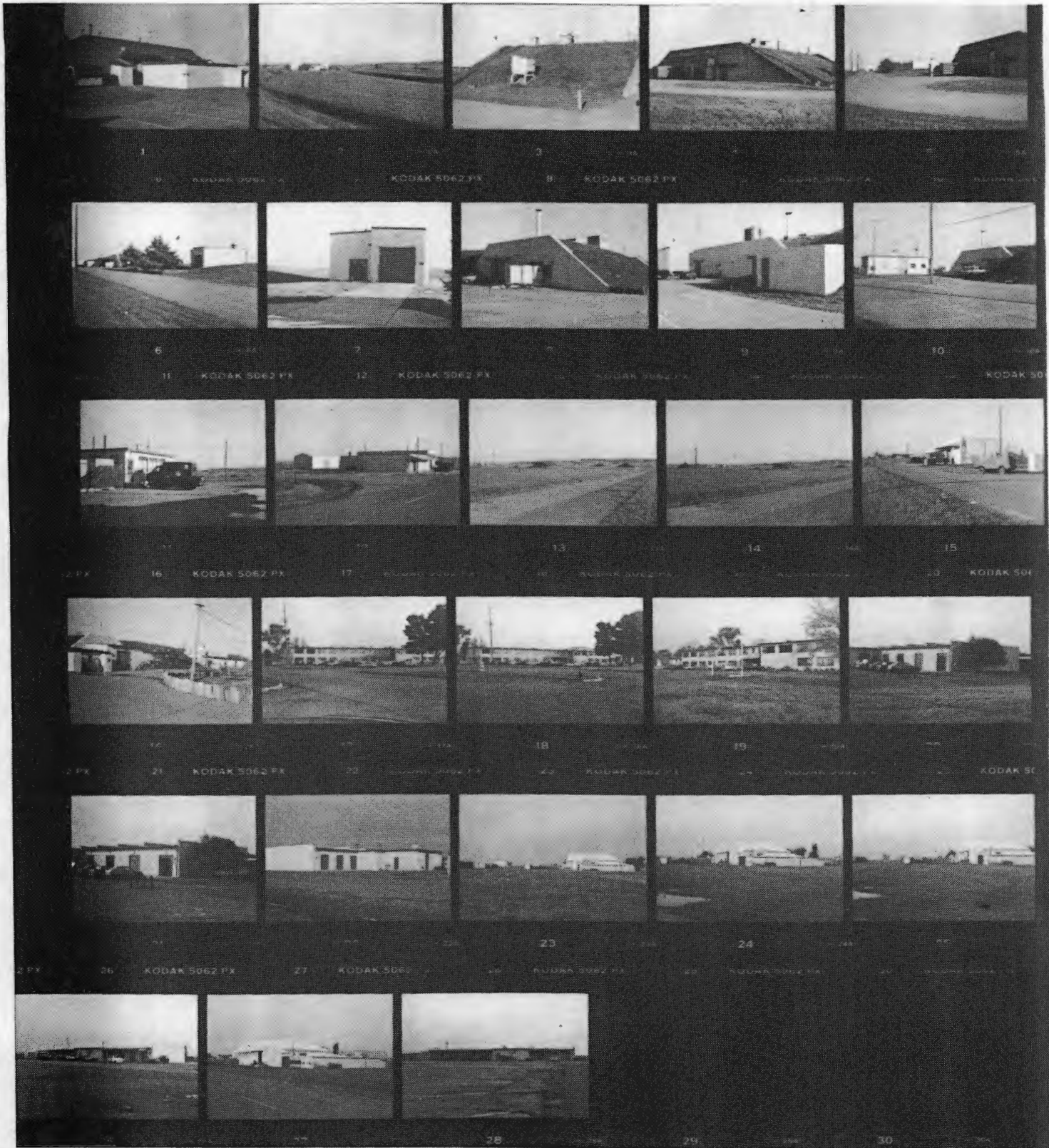
*D7. References (Give full citations including the names and addresses of any informants, where possible.): Real Property Cards and architect/engineering plans at Travis AFB; see report "Travis Air Force Base, Fairfield, California, Inventory of Cold War Properties," by K. Weitze for Geo-Marine, Inc., August 1996, for further references.

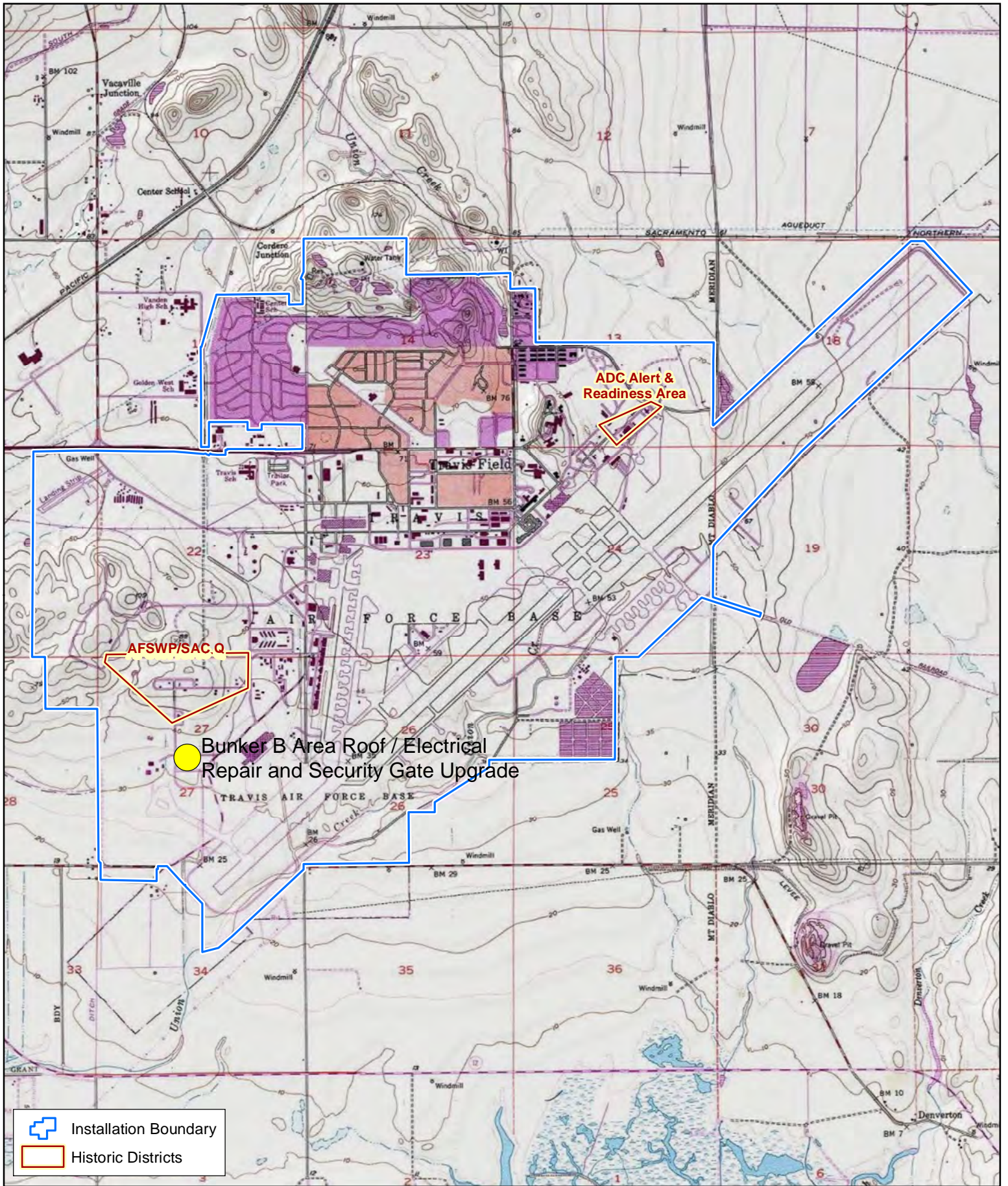
*D8. Evaluator: K.J. Weitze Date: 8/27/96
Affiliation and Address: Geo-Marine, Inc., 550 East 15th Street, Plano, TX 75074

APPENDIX A
FIELD PHOTOGRAPHS

Travis AFB, Fairfield, California March 1995

Roll/Frame	R.P.#	Building/Structure	Facing
R5/F1	942	AFSWP Q Area	NE
R5/F2	943/44/56-78	AFSWP Q Area	SE
R5/F3	942	AFSWP Q Area	NE
R5/F4	942	AFSWP Q Area	SE
R5/F5	942/40/31	AFSWP Q Area	E/SE
R5/F6	940/36/35/34/33/32	AFSWP Q Area	SE
R5/F7	940	AFSWP Q Area	S
R5/F8	936	AFSWP Q Area	SE
R5/F9	935/34/33	AFSWP Q Area	SE
R5/F10	932/931	AFSWP Q Area	E/SE
R5/F11	930	AFSWP Q Area	SE
R5/F12	943/944	AFSWP Q Area	SE
R5/F13	956/58/66/68/76/78	AFSWP Q Area	S/SE
R5/F14	956/58/66/68/76/78	AFSWP Q Area	SE
R5/F15	943	AFSWP Q Area	N/NE
R5/F16	936/35/34/33	AFSWP Q Area	E/NE
R5/F17	163	Tech. Training	N/NE
R5/F18	163	Tech. Training	N/NE
R5/F19	163	Tech. Training	NW
R5/F20	1212	ADC Rocket Chkout/Assem	S
R5/F21	1212	ADC Rocket Chkout/Assem	S
R5/F22	1212	ADC Rocket Chkout/Assem	W/NW
R5/F23	1202/06/05	ADC Alt. Hgr./S. Am./Rd. Hng.	SW
R5/F24	1206/05	ADC Sm. Arms/Rd. Hangar	W
R5/F25	1202/06/05	ADC Alt. Hgr./S. Am./Rd. Hng.	SW
R5/F26	1212	ADC Rocket Chkout/Assem	N
R5/F27	1206/05	ADC Sm. Arms/Rd. Hangar	W
R5/F28	1212	ADC Rocket Chkout/Assem	NE





Attachment 7

Travis Air Force Base
 Location of Bunker B Area
 in Relationship to the two Historic Districts



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

Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 2, 2018

Reply in Reference To: USAF_2018_0613_005

Brian L. Sassaman
Flight Chief, Installation Management
411 Airmen Drive
Travis Air Force Base, CA 94535

Dear Mr. Sassaman:

Re: Section 106 Consultation for Bunker B Area Roof and Electrical Repairs and Security Gate Upgrade, Travis Air Force Base

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding their effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

The USAF are proposing to repair the earthen covered concrete roofs of six Bunker B Area magazines (Bunkers 956, 958, 966, 968, 976, and 978), upgrade Bunker B Area electrical systems and replace the Bunker B Area entrance security gate. Trenching for utilities and site regrading will be required. Based on the results of tribal notification, several archeological surveys and sensitivity probability modelling the USAF determined that the project area has a low sensitivity for subsurface resources.

The USAF are requesting the SHPO's concurrence with their area of potential effects (APE) definition, their determination that the six bunkers do not meet NRHP eligibility requirements and with their finding of no historic properties affected. After reviewing the information provided in support of these conclusions, the SHPO has the following comments:

- 1) Pursuant to 36 CFR Part 800.4(a)(1), the SHPO has no objection to the USAF's definition of the APE as the boundaries of the Bunker B Area and a 50 meter buffer zone.
- 2) The SHPO concurs that the six bunkers subject to this undertaking are not eligible for NRHP inclusion.
- 3) The SHPO concurs that a finding of no historic properties affected pursuant to 36 CFR Part 800.4(d)(1) is appropriate. Be advised that that under certain

July 2, 2018
Brian Sassaman
Page 2

USAF_2018_0613_005

circumstances, such as an unanticipated discovery or a change in project description, the USAF may have future responsibilities for this undertaking under 36 CFR Part 800.

If you have any questions or concerns, contact Historian Ed Carroll at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, consisting of a stylized 'J' followed by a horizontal line.

Julianne Polanco
State Historic Preservation Officer

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APPENDIX C

ACAM DETAIL REPORT

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APPENDIX C

ACAM DETAIL REPORT

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: TRAVIS AFB
County(s): Solano
Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

b. Action Title: Installation Development Environmental Assessment (IDEA)

c. Project Number/s (if applicable):

d. Projected Action Start Date: 10 / 2018

e. Action Description:

The purpose of the proposed demolition actions is to remove excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation to improve mission capability, meet security objectives, and comply with the USAF’s “20/20 by 2020” goal. To achieve this goal, the USAF must divert its limited resources away from excess, obsolete, and under-used infrastructure, and implement processes to increase consolidation and demolition, optimize space allocation and utilization, and promote other emerging initiatives. The specific purpose of and need for each of the nine proposed demolition projects in addition to those indicated above are discussed in Table 1-1 within the Environmental Assessment text.

Four infrastructure construction projects are proposed with the purpose of attaining the mission of Travis AFB and are needed to provide the infrastructure required to support troops in fulfilling this mission. The purpose of and need for each of the four infrastructure construction projects are presented in Table 1-1.

One renovation and repair project is proposed with the purpose of maintaining the mission of Travis AFB by providing necessary repair and upgrade to an existing facility. The specific purpose of and need for this project are presented in Table 1-1.

f. Point of Contact:

Name: Sara Van Klooster
Title: Scientist
Organization: CH2M / Jacobs
Email: sara.vanklooster@jacobs.com
Phone Number: 385-474-8571

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: applicable
 not applicable

Conformity Analysis Summary:

2018

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

San Francisco Bay Area, CA			
VOC	0.098	100	No
NOx	0.723	100	No
CO	0.513		
SOx	0.001	100	No
PM 10	0.834		
PM 2.5	0.033	100	No
Pb	0.000		
NH3	0.001	100	No
CO2e	140.1		
San Francisco-Oakland-San Jose, CA			
VOC	0.098		
NOx	0.723		
CO	0.513	100	No
SOx	0.001		
PM 10	0.834		
PM 2.5	0.033		
Pb	0.000		
NH3	0.001		
CO2e	140.1		

2019

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.697	100	No
NOx	5.430	100	No
CO	3.805		
SOx	0.011	100	No
PM 10	6.057		
PM 2.5	0.248	100	No
Pb	0.000		
NH3	0.010	100	No
CO2e	1131.0		
San Francisco-Oakland-San Jose, CA			
VOC	0.697		
NOx	5.430		
CO	3.805	100	No
SOx	0.011		
PM 10	6.057		
PM 2.5	0.248		
Pb	0.000		
NH3	0.010		
CO2e	1131.0		

2020

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.458	100	No
NOx	3.065	100	No
CO	2.661		
SOx	0.007	100	No

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

PM 10	2.881		
PM 2.5	0.143	100	No
Pb	0.000		
NH3	0.005	100	No
CO2e	755.7		
San Francisco-Oakland-San Jose, CA			
VOC	0.458		
NOx	3.065		
CO	2.661	100	No
SOx	0.007		
PM 10	2.881		
PM 2.5	0.143		
Pb	0.000		
NH3	0.005		
CO2e	755.7		

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.500	100	No
NOx	2.943	100	No
CO	3.148		
SOx	0.007	100	No
PM 10	0.159		
PM 2.5	0.152	100	No
Pb	0.000		
NH3	0.005	100	No
CO2e	747.5		
San Francisco-Oakland-San Jose, CA			
VOC	0.500		
NOx	2.943		
CO	3.148	100	No
SOx	0.007		
PM 10	0.159		
PM 2.5	0.152		
Pb	0.000		
NH3	0.005		
CO2e	747.5		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.543	100	No
NOx	3.295	100	No
CO	3.980		
SOx	0.008	100	No
PM 10	1.454		
PM 2.5	0.143	100	No
Pb	0.000		
NH3	0.007	100	No
CO2e	691.2		

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

San Francisco-Oakland-San Jose, CA			
VOC	0.543		
NOx	3.295		
CO	3.980	100	No
SOx	0.008		
PM 10	1.454		
PM 2.5	0.143		
Pb	0.000		
NH3	0.007		
CO2e	691.2		

2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
San Francisco Bay Area, CA			
VOC	0.016	100	No
NOx	-0.322	100	No
CO	-0.062		
SOx	-0.002	100	No
PM 10	-0.020		
PM 2.5	-0.024	100	No
Pb	0.000		
NH3	0.003	100	No
CO2e	-370.5		
San Francisco-Oakland-San Jose, CA			
VOC	0.016		
NOx	-0.322		
CO	-0.062	100	No
SOx	-0.002		
PM 10	-0.020		
PM 2.5	-0.024		
Pb	0.000		
NH3	0.003		
CO2e	-370.5		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Sara Van Klooster, Scientist

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: TRAVIS AFB

County(s): Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Action Title: Installation Development Environmental Assessment (IDEA)

- Project Number/s (if applicable):

- Projected Action Start Date: 10 / 2018

- Action Purpose and Need:

The intent of this IDEA is to address installation development actions necessary to support the mission of 60 AMW and tenant units. The fourteen projects considered in this IDEA were identified as priorities for installation development in the Travis AFB Installation Development Plan and the community of all existing approved management plans for the installation concerning continuing development on Travis AFB. These plans identify requirements for the improvement of the physical infrastructure and functionality of Travis AFB, including current and future mission and facility requirements, development constraints and opportunities, and land use relationships.

- Action Description:

The purpose of the proposed demolition actions is to remove excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation to improve mission capability, meet security objectives, and comply with the USAF's "20/20 by 2020" goal. To achieve this goal, the USAF must divert its limited resources away from excess, obsolete, and under-used infrastructure, and implement processes to increase consolidation and demolition, optimize space allocation and utilization, and promote other emerging initiatives. The specific purpose of and need for each of the nine proposed demolition projects in addition to those indicated above are discussed in Table 1-1 within the Environmental Assessment text.

Four infrastructure construction projects are proposed with the purpose of attaining the mission of Travis AFB and are needed to provide the infrastructure required to support troops in fulfilling this mission. The purpose of and need for each of the four infrastructure construction projects are presented in Table 1-1.

One renovation and repair project is proposed with the purpose of maintaining the mission of Travis AFB by providing necessary repair and upgrade to an existing facility. The specific purpose of and need for this project are presented in Table 1-1.

- Point of Contact

Name: Sara Van Klooster

Title: Scientist

Organization: CH2M / Jacobs

Email: sara.vanklooster@jacobs.com

Phone Number: 385-474-8571

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	D1- Demolish WWTP Infrastructure
3.	Construction / Demolition	D2- Demolish Building 927
4.	Construction / Demolition	D3- Demolish Building 1115
5.	Construction / Demolition	D4- Demolish Building 1201
6.	Construction / Demolition	D5- Demolish Building 819
7.	Construction / Demolition	D6- Demolish Building 1
8.	Construction / Demolition	D7- Demolish Building 1182
9.	Construction / Demolition	D8- Demolish Building 1332
10.	Construction / Demolition	D9- Demolish Building 891

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

11.	Construction / Demolition	C1- C-5 Galaxy Static Display
12.	Construction / Demolition	C2- WRM Expansion/New Patient and Staff Parking Area
13.	Construction / Demolition	C3- New Youth Center
14.	Construction / Demolition	C4- Recreational Vehicle (RV) Storage Area
15.	Construction / Demolition	R1- Bunker B Roof and Electrical Repair, Security Gate Upgrade, & Perimeter lighting
16.	Heating	D5- Remove Heating
17.	Heating	D6- Remove heating
18.	Heating	D8- Remove heating
19.	Heating	C2- Add heating
20.	Heating	C3- Add heating
21.	Heating	D2- Remove Heating
22.	Heating	D4- Remove Heating
23.	Personnel	C3- Add Personnel

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D1- Demolish WWTP Infrastructure

- Activity Description:

Demolish former WWTP process structures, including digester tanks, Imhoff secondary digesters, settling basins, and associated piping

- Activity Start Date

Start Month: 6

Start Month: 2019

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2019

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.122263
SO _x	0.004495
NO _x	1.830329
CO	0.720844
PM 10	5.498446

Pollutant	Total Emissions (TONs)
PM 2.5	0.056173
Pb	0.000000
NH ₃	0.007838
CO ₂ e	480.7

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6

Start Quarter: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Year: 2019

- Phase Duration

Number of Month: 3
 Number of Days: 15

2.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 13412
 Height of Building to be demolished (ft): 1900

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDBGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDBGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0535	0.0006	0.3668	0.3811	0.0225	0.0225	0.0048	58.584
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2226	0.0024	1.6948	0.8387	0.0682	0.0682	0.0200	239.58
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0471	0.0007	0.3018	0.3630	0.0159	0.0159	0.0042	66.904

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.124	000.003	000.093	001.081	000.047	000.020		000.024	00307.627

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

LDGT	000.313	000.004	000.201	002.090	000.048	000.021		000.025	00389.336
HDGV	000.652	000.012	001.435	009.670	000.183	000.078		000.045	01136.449
LDDV	000.028	000.003	000.147	000.293	000.062	000.034		000.008	00279.615
LDDT	000.099	000.004	000.568	000.620	000.116	000.086		000.008	00371.805
HDDV	000.227	000.014	005.388	001.218	000.227	000.133		000.029	01526.867
MC	004.492	000.002	001.255	024.283	000.019	000.009		000.054	00187.027

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM_{10FD} = (0.00042 * BA * BH) / 2000$$

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
Start Quarter: 3
Start Year: 2019

- Phase Duration

Number of Month: 0
Number of Days: 15

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 13412
Amount of Material to be Hauled On-Site (yd³): 1900
Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

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- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0982	0.0014	0.6490	0.5786	0.0316	0.0316	0.0088	132.96
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0595	0.0012	0.3971	0.3522	0.0158	0.0158	0.0053	122.63
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2226	0.0024	1.6948	0.8387	0.0682	0.0682	0.0200	239.58
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0471	0.0007	0.3018	0.3630	0.0159	0.0159	0.0042	66.904

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.124	000.003	000.093	001.081	000.047	000.020		000.024	00307.627
LDGT	000.313	000.004	000.201	002.090	000.048	000.021		000.025	00389.336
HDGV	000.652	000.012	001.435	009.670	000.183	000.078		000.045	01136.449
LDDV	000.028	000.003	000.147	000.293	000.062	000.034		000.008	00279.615
LDDT	000.099	000.004	000.568	000.620	000.116	000.086		000.008	00371.805
HDDV	000.227	000.014	005.388	001.218	000.227	000.133		000.029	01526.867
MC	004.492	000.002	001.255	024.283	000.019	000.009		000.054	00187.027

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM_{10FD} = (20 * ACRE * WD) / 2000$$

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

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VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D2- Demolish Building 927

- Activity Description:

Demolish Civil Engineer Semi-Permanent Mobile Trailer Building

- Activity Start Date

Start Month: 6

Start Month: 2022

- Activity End Date

Indefinite: False

End Month: 9

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End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.044579
SO _x	0.000725
NO _x	0.287820
CO	0.363639
PM 10	0.035760

Pollutant	Total Emissions (TONs)
PM 2.5	0.012718
Pb	0.000000
NH ₃	0.000255
CO _{2e}	70.4

3.1 Demolition Phase

3.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 4
 Number of Days: 0

3.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 7200
 Height of Building to be demolished (ft): 15

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

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3.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDBGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

3.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

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HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D3- Demolish Building 1115

- Activity Description:

Demolish old Tactical Air Navigation (TACAN) building

- Activity Start Date

Start Month: 6
Start Month: 2022

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.044373

Pollutant	Total Emissions (TONs)
PM 2.5	0.012594

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SO _x	0.000710
NO _x	0.282720
CO	0.362434
PM 10	0.013659

Pb	0.000000
NH ₃	0.000226
CO _{2e}	68.8

4.1 Demolition Phase

4.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 4
 Number of Days: 0

4.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 425
 Height of Building to be demolished (ft): 9

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

4.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

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VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
 Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D4- Demolish Building 1201

- Activity Description:

Demolish Consolidated Flight Kitchen Building

- Activity Start Date

Start Month: 6
 Start Month: 2022

- Activity End Date

Indefinite: False
 End Month: 9
 End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.067675
SO _x	0.001019
NO _x	0.423987
CO	0.510966
PM 10	0.074327

Pollutant	Total Emissions (TONs)
PM 2.5	0.020126
Pb	0.000000
NH ₃	0.000415
CO _{2e}	98.5

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5.1 Demolition Phase

5.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 4
 Number of Days: 0

5.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 18215
 Height of Building to be demolished (ft): 14

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

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Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

5.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

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2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

5.2 Paving Phase

5.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9

Start Quarter: 1

Start Year: 2022

- Phase Duration

Number of Month: 1

Number of Days: 0

5.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 18215

- Paving Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.240	000.004	000.179	002.019	000.047	000.020		000.034	00349.301
LDGT	000.529	000.004	000.390	003.951	000.049	000.022		000.034	00438.299
HDGV	001.133	000.012	002.177	017.401	000.185	000.079		000.045	01175.364
LDDV	000.057	000.003	000.387	000.455	000.084	000.055		000.008	00322.805
LDDT	000.127	000.004	000.747	000.768	000.138	000.107		000.008	00404.546
HDDV	000.429	000.015	008.814	001.758	000.338	000.240		000.029	01587.930
MC	004.838	000.002	001.285	028.044	000.019	000.009		000.050	00181.592

5.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D5- Demolish Building 819

- Activity Description:

Demolish Aircraft Shop General Purpose Building and relocate current building occupant to another available existing facility at the Base

- Activity Start Date

Start Month: 6

Start Month: 2022

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.058908
SO _x	0.000964

Pollutant	Total Emissions (TONs)
PM 2.5	0.018003
Pb	0.000000

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

6.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

6.2 Paving Phase

6.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 1
 Number of Days: 0

6.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 39000

- Paving Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.240	000.004	000.179	002.019	000.047	000.020		000.034	00349.301
LDGT	000.529	000.004	000.390	003.951	000.049	000.022		000.034	00438.299
HDGV	001.133	000.012	002.177	017.401	000.185	000.079		000.045	01175.364
LDDV	000.057	000.003	000.387	000.455	000.084	000.055		000.008	00322.805
LDDT	000.127	000.004	000.747	000.768	000.138	000.107		000.008	00404.546
HDDV	000.429	000.015	008.814	001.758	000.338	000.240		000.029	01587.930
MC	004.838	000.002	001.285	028.044	000.019	000.009		000.050	00181.592

6.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D6- Demolish Building 1

- Activity Description:

Demolish Squadron Operations & Warehouse Building and relocate current building occupant to another available existing facility at the Base

- Activity Start Date

Start Month: 6

Start Month: 2022

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2022

- Activity Emissions:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Pollutant	Total Emissions (TONs)
VOC	0.085973
SO _x	0.001643
NO _x	0.629252
CO	0.621294
PM 10	0.773720

Pollutant	Total Emissions (TONs)
PM 2.5	0.025960
Pb	0.000000
NH ₃	0.001395
CO _{2e}	164.3

7.1 Demolition Phase

7.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 3
 Number of Days: 0

7.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 161000
 Height of Building to be demolished (ft): 22

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.1.3 Demolition Phase Emission Factor(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

7.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 WD : Number of Total Work Days (days)
 WT : Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE : Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

7.2 Paving Phase

7.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
Start Quarter: 1
Start Year: 2022

- Phase Duration

Number of Month: 1
Number of Days: 0

7.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 161000

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Tractors/Loaders/Backhoes Composite	1	7
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- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.240	000.004	000.179	002.019	000.047	000.020		000.034	00349.301
LDGT	000.529	000.004	000.390	003.951	000.049	000.022		000.034	00438.299
HDGV	001.133	000.012	002.177	017.401	000.185	000.079		000.045	01175.364
LDDV	000.057	000.003	000.387	000.455	000.084	000.055		000.008	00322.805
LDDT	000.127	000.004	000.747	000.768	000.138	000.107		000.008	00404.546
HDDV	000.429	000.015	008.814	001.758	000.338	000.240		000.029	01587.930
MC	004.838	000.002	001.285	028.044	000.019	000.009		000.050	00181.592

7.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P : Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D7- Demolish Building 1182

- Activity Description:

Demolish abandoned dilapidated electrical shed

- Activity Start Date

Start Month: 6

Start Month: 2022

- Activity End Date

Indefinite: False

End Month: 9

End Month: 2022

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.044372
SO _x	0.000710
NO _x	0.282681
CO	0.362425
PM 10	0.013491

Pollutant	Total Emissions (TONs)
PM 2.5	0.012593
Pb	0.000000
NH ₃	0.000225
CO _{2e}	68.7

8.1 Demolition Phase

8.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 4
 Number of Days: 0

8.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 276
 Height of Building to be demolished (ft): 11

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

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8.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

8.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

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$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D8- Demolish Building 1332

- Activity Description:

Demolish vacant dormitory

- Activity Start Date

Start Month: 6
Start Month: 2022

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.046654
SO _x	0.000875

Pollutant	Total Emissions (TONs)
PM 2.5	0.013969
Pb	0.000000

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Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

9.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

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0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D9- Demolish Building 891

- Activity Description:

Demolish former gas vaporizer building, perimeter fence, propane tanks, and associated piping

- Activity Start Date

Start Month: 6
Start Month: 2022

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.044413
SO _x	0.000713
NO _x	0.283714
CO	0.362669
PM 10	0.017964

Pollutant	Total Emissions (TONs)
PM 2.5	0.012618
Pb	0.000000
NH ₃	0.000231
CO _{2e}	69.1

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10.1 Demolition Phase

10.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2022

- Phase Duration

Number of Month: 4
 Number of Days: 0

10.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 1608
 Height of Building to be demolished (ft): 15

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51

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Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

10.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

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- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

11. Construction / Demolition

11.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
 Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C1- C-5 Galaxy Static Display

- Activity Description:

Construct a permanent C-5 airframe static display and concrete pad and a temporary haul road to facilitate airframe movement to the display

- Activity Start Date

Start Month: 6
 Start Month: 2019

- Activity End Date

Indefinite: False
 End Month: 9
 End Month: 2019

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.158243
SO _x	0.001769
NO _x	0.983855
CO	0.831678
PM 10	0.416989

Pollutant	Total Emissions (TONs)
PM 2.5	0.053739
Pb	0.000000
NH ₃	0.000555
CO ₂ e	170.8

11.1 Site Grading Phase

11.1.1 Site Grading Phase Timeline Assumptions

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- Phase Start Date

Start Month: 6
 Start Quarter: 1
 Start Year: 2019

- Phase Duration

Number of Month: 0
 Number of Days: 21

11.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 52650
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Scrapers Composite	2	8
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

11.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0786	0.0013	0.4574	0.5139	0.0214	0.0214	0.0070	119.75
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0982	0.0014	0.6490	0.5786	0.0316	0.0316	0.0088	132.96

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Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0595	0.0012	0.3971	0.3522	0.0158	0.0158	0.0053	122.63
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2226	0.0024	1.6948	0.8387	0.0682	0.0682	0.0200	239.58
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2020	0.0026	1.4692	0.8161	0.0594	0.0594	0.0182	262.94
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0471	0.0007	0.3018	0.3630	0.0159	0.0159	0.0042	66.904

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.124	000.003	000.093	001.081	000.047	000.020		000.024	00307.627
LDGT	000.313	000.004	000.201	002.090	000.048	000.021		000.025	00389.336
HDGV	000.652	000.012	001.435	009.670	000.183	000.078		000.045	01136.449
LDDV	000.028	000.003	000.147	000.293	000.062	000.034		000.008	00279.615
LDDT	000.099	000.004	000.568	000.620	000.116	000.086		000.008	00371.805
HDDV	000.227	000.014	005.388	001.218	000.227	000.133		000.029	01526.867
MC	004.492	000.002	001.255	024.283	000.019	000.009		000.054	00187.027

11.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

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V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM : Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

11.2 Paving Phase

11.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
Start Quarter: 1
Start Year: 2019

- Phase Duration

Number of Month: 4
Number of Days: 0

11.2.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 55000

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7

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Tractors/Loaders/Backhoes Composite	1	7
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- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

11.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0786	0.0013	0.4574	0.5139	0.0214	0.0214	0.0070	119.75
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0982	0.0014	0.6490	0.5786	0.0316	0.0316	0.0088	132.96
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0595	0.0012	0.3971	0.3522	0.0158	0.0158	0.0053	122.63
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2226	0.0024	1.6948	0.8387	0.0682	0.0682	0.0200	239.58
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2020	0.0026	1.4692	0.8161	0.0594	0.0594	0.0182	262.94
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0471	0.0007	0.3018	0.3630	0.0159	0.0159	0.0042	66.904

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.124	000.003	000.093	001.081	000.047	000.020		000.024	00307.627
LDGT	000.313	000.004	000.201	002.090	000.048	000.021		000.025	00389.336
HDGV	000.652	000.012	001.435	009.670	000.183	000.078		000.045	01136.449
LDDV	000.028	000.003	000.147	000.293	000.062	000.034		000.008	00279.615
LDDT	000.099	000.004	000.568	000.620	000.116	000.086		000.008	00371.805
HDDV	000.227	000.014	005.388	001.218	000.227	000.133		000.029	01526.867
MC	004.492	000.002	001.255	024.283	000.019	000.009		000.054	00187.027

11.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

12. Construction / Demolition

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

12.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C2- WRM Expansion/New Patient and Staff Parking Area

- Activity Description:

Construct a new WRM warehouse facility and a permanent, paved parking lot to accommodate increased patient care and staffing for the David Grant Medical Center (DGMC)

- Activity Start Date

Start Month: 10

Start Month: 2020

- Activity End Date

Indefinite: False

End Month: 3

End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.657558
SO _x	0.009719
NO _x	4.290940
CO	4.037189
PM 10	1.169757

Pollutant	Total Emissions (TONs)
PM 2.5	0.204694
Pb	0.000000
NH ₃	0.004805
CO ₂ e	932.5

12.1 Site Grading Phase

12.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 1

Start Year: 2020

- Phase Duration

Number of Month: 1

Number of Days: 0

12.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 96000

Amount of Material to be Hauled On-Site (yd³): 7000

Amount of Material to be Hauled Off-Site (yd³): 45000

- Site Grading Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of	Hours Per Day
----------------	-----------	---------------

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	Equipment	
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

12.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

12.2 Building Construction Phase

12.2.1 Building Construction Phase Timeline Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Start Date

Start Month: 10
 Start Quarter: 1
 Start Year: 2020

- Phase Duration

Number of Month: 18
 Number of Days: 0

12.2.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
 Area of Building (ft²): 35000
 Height of Building (ft): 25
 Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

12.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0898	0.0013	0.6610	0.3917	0.0256	0.0256	0.0081	128.83
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0320	0.0006	0.1690	0.2160	0.0070	0.0070	0.0028	54.467
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0395	0.0006	0.3232	0.2731	0.0149	0.0149	0.0035	61.081
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0310	0.0003	0.1734	0.1816	0.0102	0.0102	0.0027	25.672

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

12.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

12.3 Paving Phase

12.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 4

Start Quarter: 1

Start Year: 2021

- Phase Duration

Number of Month: 6

Number of Days: 0

12.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 60533

- Paving Default Settings

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

12.3.4 Paving Phase Formula(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

13. Construction / Demolition

13.1 General Information & Timeline Assumptions

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C3- New Youth Center

- Activity Description:

Construct a youth facility that would consist of 12 classrooms, a partially covered outdoor recreation area, administrative offices, multipurpose gym, kitchen, and parking lot

- Activity Start Date

Start Month: 10

Start Month: 2018

- Activity End Date

Indefinite: False

End Month: 4

End Month: 2020

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.640197
SO _x	0.008010
NO _x	4.136028
CO	3.441927
PM 10	1.018131

Pollutant	Total Emissions (TONs)
PM 2.5	0.212897
Pb	0.000000
NH ₃	0.003646
CO ₂ e	766.5

13.1 Site Grading Phase

13.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 10

Start Quarter: 1

Start Year: 2018

- Phase Duration

Number of Month: 0

Number of Days: 21

13.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 116000

Amount of Material to be Hauled On-Site (yd³): 8592

Amount of Material to be Hauled Off-Site (yd³): 8592

- Site Grading Default Settings

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

13.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.138	000.003	000.105	001.204	000.047	000.020		000.025	00316.981
LDGT	000.343	000.004	000.228	002.351	000.048	000.021		000.027	00399.903
HDGV	000.709	000.012	001.546	010.560	000.183	000.078		000.045	01145.768
LDDV	000.032	000.003	000.175	000.310	000.064	000.036		000.008	00288.267
LDDT	000.104	000.004	000.603	000.649	000.120	000.090		000.008	00378.916
HDDV	000.245	000.014	005.811	001.253	000.236	000.142		000.029	01539.947
MC	004.537	000.002	001.259	024.868	000.019	000.009		000.053	00186.229

13.1.4 Site Grading Phase Formula(s)

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- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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13.2 Building Construction Phase

13.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 11
 Start Quarter: 1
 Start Year: 2018

- Phase Duration

Number of Month: 18
 Number of Days: 0

13.2.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
 Area of Building (ft²): 30104
 Height of Building (ft): 39
 Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

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13.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Generator Sets Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0477	0.0006	0.3758	0.2785	0.0191	0.0191	0.0043	61.100
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912
Welders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0387	0.0003	0.1940	0.1876	0.0133	0.0133	0.0034	25.690

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.138	000.003	000.105	001.204	000.047	000.020		000.025	00316.981
LDGT	000.343	000.004	000.228	002.351	000.048	000.021		000.027	00399.903
HDGV	000.709	000.012	001.546	010.560	000.183	000.078		000.045	01145.768
LDDV	000.032	000.003	000.175	000.310	000.064	000.036		000.008	00288.267
LDDT	000.104	000.004	000.603	000.649	000.120	000.090		000.008	00378.916
HDDV	000.245	000.014	005.811	001.253	000.236	000.142		000.029	01539.947
MC	004.537	000.002	001.259	024.868	000.019	000.009		000.053	00186.229

13.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

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VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

13.3 Paving Phase

13.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
Start Quarter: 1
Start Year: 2019

- Phase Duration

Number of Month: 2
Number of Days: 0

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13.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 5410

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

13.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.138	000.003	000.105	001.204	000.047	000.020		000.025	00316.981
LDGT	000.343	000.004	000.228	002.351	000.048	000.021		000.027	00399.903
HDGV	000.709	000.012	001.546	010.560	000.183	000.078		000.045	01145.768
LDDV	000.032	000.003	000.175	000.310	000.064	000.036		000.008	00288.267
LDDT	000.104	000.004	000.603	000.649	000.120	000.090		000.008	00378.916

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HDDV	000.245	000.014	005.811	001.253	000.236	000.142		000.029	01539.947
MC	004.537	000.002	001.259	024.868	000.019	000.009		000.053	00186.229

13.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

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VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

14. Construction / Demolition

14.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C4- Recreational Vehicle (RV) Storage Area

- Activity Description:

Repurpose un-used parking lot adjacent to existing RV storage lot

- Activity Start Date

Start Month: 6
Start Month: 2020

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2020

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.093498
SO _x	0.001241
NO _x	0.594974
CO	0.522730
PM 10	0.128381

Pollutant	Total Emissions (TONs)
PM 2.5	0.028542
Pb	0.000000
NH ₃	0.000310
CO ₂ e	120.3

14.1 Site Grading Phase

14.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 6
Start Quarter: 1
Start Year: 2020

- Phase Duration

Number of Month: 2
Number of Days: 0

14.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 5000

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Amount of Material to be Hauled On-Site (yd³): 0

Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

14.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699

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MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891
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14.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

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Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

14.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

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VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P : Paving VOC Emissions (TONs)
 2.62: Emission Factor (lb/acre)
 PA: Paving Area (ft²)
 43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

15. Construction / Demolition

15.1 General Information & Timeline Assumptions

- Activity Location

County: Solano
Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: R1- Bunker B Roof and Electrical Repair, Security Gate Upgrade, & Perimeter lighting

- Activity Description:

Replace soil-covered roofs of all bunkers (earth-covered magazines [ECMs]) in the Bunker B Area; correct electrical system deficiencies in the Bunker B Area; and improve access control with the addition of an electronic gate

- Activity Start Date

Start Month: 6
Start Month: 2020

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2020

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.093622
SO _x	0.001507
NO _x	0.628053
CO	0.550150

Pollutant	Total Emissions (TONs)
PM 2.5	0.027910
Pb	0.000000
NH ₃	0.000618
CO _{2e}	146.3

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Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

15.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

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VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

15.2 Trenching/Excavating Phase

15.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
 Start Quarter: 2
 Start Year: 2020

- Phase Duration

Number of Month: 1
 Number of Days: 8

15.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 31000
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

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- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

15.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

15.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
 ACRE: Total acres (acres)
 WD: Number of Total Work Days (days)
 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

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CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

15.3 Paving Phase

15.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 8

Start Quarter: 1

Start Year: 2020

- Phase Duration

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Number of Month: 1

Number of Days: 8

15.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 1100

- Paving Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

15.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0919	0.0014	0.5823	0.5765	0.0280	0.0280	0.0082	132.95
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0562	0.0012	0.3519	0.3508	0.0138	0.0138	0.0050	122.62
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038

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HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

15.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

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- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

16. Heating

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D5- Remove Heating

- Activity Description:

- Activity Start Date

Start Month: 6

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.005616
SO _x	-0.000613
NO _x	-0.102104
CO	-0.085767
PM 10	-0.007760

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.007760
Pb	0.000000
NH ₃	0.000000
CO _{2e}	-122.9

16.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²):

30896

Type of fuel:

Natural Gas

Type of boiler/furnace:

Commercial/Institutional (0.3 - 9.9 MMBtu/hr)

Heat Value (MMBtu/ft³):

0.00105

Energy Intensity (MMBtu/ft²):

0.0694

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- **Default Settings Used:** Yes

- **Boiler/Furnace Usage**

Operating Time Per Year (hours): 900 (default)

16.3 Heating Emission Factor(s)

- **Heating Emission Factors (lb/1000000 scf)**

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
5.5	0.6	100	84	7.6	7.6			120390

16.4 Heating Formula(s)

- **Heating Fuel Consumption ft³ per Year**

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- **Heating Emissions per Year**

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

17. Heating

17.1 General Information & Timeline Assumptions

- **Add or Remove Activity from Baseline?** Remove

- **Activity Location**

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- **Activity Title:** D6- Remove heating

- **Activity Description:**

- **Activity Start Date**

Start Month: 6

Start Year: 2022

- **Activity End Date**

Indefinite: Yes

End Month: N/A

End Year: N/A

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.010986
SO _x	-0.001198
NO _x	-0.199739
CO	-0.167780
PM 10	-0.015180

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.015180
Pb	0.000000
NH ₃	0.000000
CO _{2e}	-240.5

17.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 62049
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

17.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

17.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
 HA: Area of floorspace to be heated (ft²)
 EI: Energy Intensity Requirement (MMBtu/ft²)
 HV: Heat Value (MMBTU/ft³)
 1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)
 FC: Fuel Consumption
 EF_{POL}: Emission Factor for Pollutant
 2000: Conversion Factor pounds to tons

18. Heating

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D8- Remove heating

- Activity Description:

- Activity Start Date

Start Month: 6

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.008895
SO _x	-0.000970
NO _x	-0.161725
CO	-0.135849
PM 10	-0.012291

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.012291
Pb	0.000000
NH ₃	0.000000
CO ₂ e	-194.7

18.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 50240

Type of fuel: Natural Gas

Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)

Heat Value (MMBtu/ft³): 0.00105

Energy Intensity (MMBtu/ft²): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

18.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂ e
5.5	0.6	100	84	7.6	7.6			120390

18.4 Heating Formula(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

19. Heating

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C2- Add heating

- Activity Description:

- Activity Start Date

Start Month: 5

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.006362
SO _x	0.000694
NO _x	0.115667
CO	0.097160
PM 10	0.008791

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.008791
Pb	0.000000
NH ₃	0.000000
CO ₂ e	139.3

19.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 35000
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0694

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

19.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

19.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

20. Heating

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C3- Add heating

- Activity Description:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Start Date

Start Month: 5
Start Year: 2020

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005472
SO _x	0.000597
NO _x	0.099487
CO	0.083569
PM 10	0.007561

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.007561
Pb	0.000000
NH ₃	0.000000
CO _{2e}	119.8

20.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 30104
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0694

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

20.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

20.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

21. Heating

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D2- Remove Heating

- Activity Description:

- Activity Start Date

Start Month: 6

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.001649
SO _x	-0.000180
NO _x	-0.029986
CO	-0.025188
PM 10	-0.002279

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.002279
Pb	0.000000
NH ₃	0.000000
CO ₂ e	-36.1

21.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 6935

Type of fuel: Natural Gas

Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)

Heat Value (MMBtu/ft³): 0.00105

Energy Intensity (MMBtu/ft²): 0.0908

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

21.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

21.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

22. Heating

22.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: D4- Remove Heating

- Activity Description:

- Activity Start Date

Start Month: 6

Start Year: 2022

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	-0.003421
SO _x	-0.000373

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.004727
Pb	0.000000

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NO _x	-0.062191
CO	-0.052241
PM 10	-0.004727

NH ₃	0.000000
CO _{2e}	-74.9

22.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): 18215
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft³): 0.00105
Energy Intensity (MMBtu/ft²): 0.0717

- Default Settings Used: Yes

- Boiler/Furnace Usage

Operating Time Per Year (hours): 900 (default)

22.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
5.5	0.6	100	84	7.6	7.6			120390

22.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$$FC_{HER} = HA * EI / HV / 1000000$$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method

HA: Area of floorspace to be heated (ft²)

EI: Energy Intensity Requirement (MMBtu/ft²)

HV: Heat Value (MMBTU/ft³)

1000000: Conversion Factor

- Heating Emissions per Year

$$HE_{POL} = FC * EF_{POL} / 2000$$

HE_{POL}: Heating Emission Emissions (TONs)

FC: Fuel Consumption

EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

23. Personnel

23.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

County: Solano

Regulatory Area(s): San Francisco Bay Area, CA; San Francisco-Oakland-San Jose, CA

- Activity Title: C3- Add Personnel

- Activity Description:

- Activity Start Date

Start Month: 5

Start Year: 2020

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.034548
SO _x	0.000411
NO _x	0.018782
CO	0.224090
PM 10	0.005413

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.002353
Pb	0.000000
NH ₃	0.002770
CO _{2e}	39.6

23.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 0

Civilian Personnel: 20

Support Contractor Personnel: 0

Air National Guard (ANG) Personnel: 0

Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

Active Duty Personnel: 5 Days Per Week (default)

Civilian Personnel: 5 Days Per Week (default)

Support Contractor Personnel: 5 Days Per Week (default)

Air National Guard (ANG) Personnel: 4 Days Per Week (default)

Reserve Personnel: 4 Days Per Month (default)

23.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

23.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

23.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$$VMT_p = NP * WD * AC$$

VMT_p: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT_{Total}: Total Vehicle Miles Travel (miles)

VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)

VMT_C: Civilian Personnel Vehicle Miles Travel (miles)

VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{Total}: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

1
2
3
4

APPENDIX D

ESA SECTION 7 CONSULTATION WORKSHEETS



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Matthew B. Foster
Acting Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Bunker B Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, and is likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) but is not likely to adversely affect Vernal pool fairy and tadpole shrimps (*Branchinecta lynchi* and *Lepidurus packardi*) from construction activities. Construction includes temporary ground disturbance of 12.05 acres of high risk CTS habitat for the replacement of bunker soil roofs, installation of a new electrical system, and gate upgrades. There is also permanent disturbance of approximately 0.0063 acres of high risk CTS habitat due to the installation of a concrete pad for a transformer. Travis AFB is prepared to purchase mitigation credits at a 0.5:1 areal ratio for temporary disturbance and credits at a 2:1 areal ratio for permanent disturbance as specified in the June 2018 Travis AFB Programmatic Biological Opinion. There are four wetlands within 250ft of the project action area but none will be directly impacted.

Please contact Mr. Seth Merdler (707) 424-7516 or seth.merdler@us.af.mil of my staff regarding this consultation request.

Sincerely

1/3/2019

X Matthew B. Foster

MATTHEW B FOSTER, GS-12, DAFC
Acting Flight Chief, Installation Management
Signed by: FOSTER.MATTHEW.BYRON.1044142569

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report Template

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Bunker B Roof and Electrical Repair, Perimeter Lighting Installation, & Security Gate upgrade

Project Proponent: Dennis Chen

CEIE POC: Penn Craig/Deanne Weber

Location: Southwest of the Base, between Cordelia Avenue and X and Y St.

Species impacted: California tiger salamander (CTS); Vernal pool fairy shrimp (VPFS); Vernal pool tadpole shrimp (VPTS)

Effects Assessment: May Affect, Likely to Adversely Affect (CTS); Not Likely to Adversely Affect (VPFS, VPTS)

Expected start date of project: June 2020

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations.

Cracks in the concrete roofs and incompetent levels of soil coverage associated with several of the earth covered magazines (ECMs) in Bunker B Area necessitate rehabilitation of the roofs of Buildings 956, 958, 966, 968, 976, and 978 to comply with U.S. Air Force (USAF) explosive storage safety requirements. Additionally, electrical system deficiencies associated with ECMs in the Bunker B Area require replacement, repair, and upgrade to comply with construction standards within the National Fire Protection Act (NFPA) 70 National Electrical Code (NEC).

Replacement of the existing mechanical security gate at the entrance of the Bunker B Area would include installation of an electrically-operated security gate outfitted with a remotely actuated mechanism to comply with security requirements. The existing mechanical gate would be removed and disposed of concurrently with the installation of a new gate. The current pole-mounted transformer would be demolished and replaced with a pad-mounted transformer, requiring an approximate 100 SF concrete pad and approximately 2,500 SF of trenching for connection to the new gate. The area in proximity to the gate would require regrading and replacing asphalt (approximately 1,000 SF) to ensure gaps under the gate meet security requirements.

The addition of perimeter lighting would require a new lighting panel to be installed on a concrete pad (approximately 100 SF) next to the existing transformer. To accommodate installation of the new lighting, approximately 6,500 linear feet or 21,000 SF of trenching would be required around the perimeter of the Bunker B fence line.

Project site location including all work, staging and storage areas. Bunker B is located near the southwestern end of the Travis AFB Airfield (Figure 1). The closest intersection is X Street and Ragsdale Street. Due to its function as munitions storage, the area is largely unpopulated and away from infrastructure incompatible with munitions storage and Explosive Safety Quantity Distance (ESQD) arcs. The center of the Bunker B Area is approximately 2,500 feet east of the westernmost installation boundary. Adequate paved space for staging areas is present within the fenced area associated with Bunker B.

Detailed narrative description of proposed project activity to include:

Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.)

This project does not have a design yet so disturbance values are approximate and if necessary Travis Environmental will contact FWS with any project changes once there is a design.

The area of temporary upland disturbance is approximately 12.05 acres. The area of permanent disturbance is approximately 100 SF (concrete pad) to support a new transformer and panel.

Roof repairs would involve temporarily removing soil cover to assess and repair cracks in each of the six bunkers (approximately 17,000 square feet (SF) of soil disturbance per bunker). After repairs are completed, soil cover would be placed to a depth of at least two feet to meet current safety regulations.

Repairs and upgrades include installation of perimeter lighting, electrical surge protection devices (SPDs), replacement of aged/failing facility electrical panels, and relocation of site electrical panel. The current electrical distribution panel is not up to code, and the new distribution panel would need a new transformer. These additions would require a new concrete pad (approximately 100 SF) to support the panel and transformer, and approximately 50 SF of trenching to accommodate new connections.

Replacement of the existing mechanical security gate at the entrance of the Bunker B Area would include installation of an electrically-operated security gate. The existing mechanical gate would be removed and disposed of concurrent with installation of a new gate. The area in proximity to the gate would require regrading and asphalt replacement (approximately 1,000 SF) to ensure gaps under the gate meet security requirements. The new gate would be electrically-operated and outfitted with a remotely actuated mechanism to comply with security requirements. The electrical feed for the gate would be installed by extending conduit/wires underground adjacent to the north side of the roadway (X Street) to an existing transformer. The trenching for the underground conduit/wires for the installation of the perimeter lighting (approximately 5,670 SF) would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions.

Temporary ground disturbance	Acreage
Perimeter Lighting (includes 25-foot buffer)	2.89
Bunker B Repair (956)	1.04
Bunker B Repair (958 and 968)	5.22
Bunker B Repair (966)	1.09
Bunker B Repair (976)	0.79
Bunker B Repair (978)	0.96
Trenching for connection to the new gate	0.057
Total	12.05

Permanent ground disturbance	SF
New transformer pads	100 SF
Perimeter lighting pads (56)	176 SF
Total	276 SF

Seasonal constraints of activity. The proposed project is expected to occur during the dry season and work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2020, however, wet season Conservation Measures, including VP-1 are included in the project in the event the project extends past October 15.

Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, cement and mortar mixer, water truck.

Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1). Work will be contained within the existing Bunker B fenceline and the staging area boundary during project construction.

Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base (CNDDDB) were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are ten (10) wetlands within 250 feet of the project boundary: WS.GA.709, VP.GA.669, VP.GA.671, WS.GA.710, WS.GA.711, VP.GA.532, WS.GA.712, WS.GA.714, WS.GA.715, and VP.GA.536. Additional potential wetland features that were not previously delineated were discovered during a site visit conducted 24 October 2018. These features are identified on Figure 3.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. It is not known if the additional potential wetland features identified in Figure 3 are potential habitat for threatened and endangered vernal pool species crustacean populations, however the project will avoid impacting these features. The closest known populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	2,735 ft
Vernal pool fairy shrimp	2,191 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	3,293 ft
California tiger salamander (sighting)	2,741 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered high value upland habitat. In January 2018, an individual CTS was found to the south (approx. 3,000 ft away) along Perimeter Road (Figure 2). The project is located within designated high risk CTS upland habitat.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. A site visit (see Photos) conducted on 24 October 2018 determined moderate level of small mammal burrow activity, primarily that of pocket gopher. The Bunker rooftops are covered with soil, however burrow density on the Bunker rooftops was absent.
- Figures showing all applicable species and habitat information. Refer to Figures 1 through 3 that show the project site and all applicable species and habitat information
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project, historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within high risk area for CTS; approximately 12.05 acres of upland habitat will be temporarily disturbed for replacing soil roof covers, trenching and installation of conduit, installation of perimeter lightings, and maneuvering of equipment to complete the work. Permanent removal of CTS high risk upland habitat will occur with the installation of the perimeter lighting fixtures and transformer pads. Approximately 56 light fixtures with 2 foot diameter concrete bases will be installed (176 SF) as well as the new concrete pad (approximately 100 SF) to support the panel and transformer. A total for 276 SF of high risk CTS upland habitat will be permanently removed for the project.

CTS are known to occur approximately 0.63 miles (mi) south of Bunker B outside of the southern boundary of the Base (Figure 1). A deceased CTS was found in January 2018 approximately 0.56 mi south of the Project on the other side of the runway. During the 2017

CTS Relocation Effort (Marty, 2017), multiple CTS were found on runway 03R21L approximately 2.4 mi northeast and some were relocated to the former Waste Water Treatment Plant site location. These occurrences are clustered in the northeastern portion of the Base and breeding ponds are located on offsite lands to the south and north (Figure 1). CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows, during the dry season. Suitable upland refugia and dispersal habitat are present within the Project area. CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007).

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Closest Action Area (mile)
Potential Breeding Pond	0.63
Breeding Pond	2.62
Breeding Pond	2.94

The Natural Resources Management team believes implementation of these important Conservation Measures (among others) should ensure no harm to CTS:

1. The Service-approved biologist (SAB) will monitor the active project as the work is being done to ensure no CTS are harmed, and if necessary, relocate CTS according to CTS Relocation Plan described in Section 4.4.5 of the *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* (Travis, 2018).
2. Monitoring the weather forecast for rain events and increasing SAB oversight after rain events.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). Vernal pools on the Base are known to support suitable habitat for vernal pool fairy shrimp (VPFS) (CNDDDB, 2018); therefore, presence in all suitable habitat in the Project Areas is assumed for this project. During the 2016 non-protocol wet season survey conducted by Marty Ecological Consulting, VPFS were identified in 16 vernal pools/wetlands on Base (Marty, 2016). No vernal pool tadpole shrimp (VPTS) were observed on Base during this survey. The closest vernal pool fairy shrimp occurrence from this study is approximately 0.41 miles northwest. Known occurrences of VPFS and VPTS are shown in Figure 3. Based on available data, no listed branchiopod species have been documented within vernal pools in the Project area. The Project is scheduled to occur during the dry season (1 May to 15 October) to minimize temporary indirect effects (e.g. alteration to drainage patterns, construction runoff) to VPFS and VPTS and potential habitats for these species. Construction work and staging will occur within 250 feet of wetlands; however, appropriate Best Management Practices (BMPs) will be implemented to protect wetland features and any special status vernal pool species habitat that may be present.

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse

modification to critical habitat.

The Natural Resources Management team believes implementation of these important Conservation Measures (among others) should ensure no harm to VPFS/VPFS:

1. Proper installation of wetland protection measures and natural resource awareness training for all construction crew members.
2. The Service-approved biologist (SAB) will conduct routine inspections of the wetland protection measures to ensure integrity of wattles or silt fencing is maintained.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 12.05 acres of CTS upland habitat will be temporarily disturbed and 276 SF (0.0063 acres) of CTS upland habitat will be permanently removed during construction for perimeter lighting foundations and transformer pads. With implementation of Conservation Measures, there is no expected disturbance to vernal pool species habitat.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. Direct impacts on CTS include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, operational mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows. Construction could also result in an increase in accidental road-killed wildlife due to increased vehicle traffic along existing and new roads.

There is a 0.02-acre vernal pool (VP.GA.532) as well as three (3) wetland swales (WS.GA.710, WS.GA.711, and WS.GA.712) within the Bunker B project area. No direct impacts are expected to occur to the wetland features within the project area. Best Management Practices (BMPs) such as silt fencing or straw wattles would be installed to provide a barrier from construction to the wetland features. Indirect impacts to vernal pools will be avoided with the implementation and monitoring of wetland protection measures and working during the dry season. All work would occur during the dry season and hydro-seeding (with native seed) of the disturbed areas will be included in the project.

Wetland ID	Distance from Work Area
VP.GA.532	17 feet; 66 feet; 118 feet
WS.GA.710	23 feet
WS.GA.711	0 feet; In perimeter lighting work area (project will be designed to avoid impacts)
WS.GA.712	13 feet; 24 feet

Describe the impact if project not completed. If the project is not completed, the soil cover on the bunkers will continue to deteriorate and result in continued expenditure of Air Force funds for

sustainment and would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

MM-1. A Service-approved Biologist will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present prior to the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat. If any federally-listed species are found during the preconstruction surveys, the Service-approved Biologist will contact the Service to determine how to proceed. At least 10 business days prior to the onset of activities, Travis AFB will submit the name(s) and credentials of biologists who will conduct these preconstruction surveys if they have not previously received Service approval for similar surveys. No project activities will begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.

MM-3. A Service-approved Biologist will conduct environmental awareness training for all construction personnel working within and near sensitive habitat on Base. Training will be provided at the start of work and within 15 days of any new worker arrival. The program will consist of a briefing on environmental issues relative to the proposed project. The training program will include an overview of the legal status, biology, distribution, habitat needs, and compliance requirements for each federally-listed species that may occur in the project area. The presentation will also include a discussion of the legal protection for endangered species under the Act, including penalties for violations. A fact sheet conveying this information will be distributed to all personnel who enter the project site. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all avoidance and minimization measures. These forms will be maintained at Travis AFB and will be accessible to the appropriate resource agencies.

MM-4. Travis AFB will track the areal extent and location of impacts resulting from projects covered under the PBO and will submit an annual report to the Service listing each project covered under the PBO and summarizing the impacts to each species and their habitat on a project by project basis.

MM-5. Wetlands/drainages/vernal pools, if present, will have erosion control measures (straw waddles, silt fencing) installed where hydrological continuity exists between the construction activities and the wetland. A Service-approved Biologist will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species including CTS. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources.

MM-7. Off-road travel outside of the demarcated construction boundaries will be prohibited.

MM-8. Prior to initiation of construction activities, sensitive areas, such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., VPFS/VPTS, CCG, CTS), will be staked and flagged as exclusion zones where construction activities cannot take place. Orange construction barrier fencing (or an appropriate alternative method) will designate exclusion zones where construction activities cannot occur. The flagging and fencing will be clearly marked as an *environmentally sensitive area* (ESA). The contractor will remove all fencing, stakes and flagging within 60 days of construction completion.

MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the on-site Biologist. The Biologist will inform the Travis Natural Resource Manager (NRM) immediately (60 CES/CEIE). The Travis NRM will verbally notify the Sacramento Fish and Wildlife Office within one day and will provide written notification of the incident within five days.

MM-10. Motor vehicles and equipment will only be fueled and serviced in designated service areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur in a designated area with appropriate spill containment. Any newly established, project specific fueling and maintenance areas will be located at least 250 feet from any wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB will ensure a plan to allow a prompt and effective response to any accidental spills is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

MM-13. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.

MM-14. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit on unpaved roads.

MM-17. No trenches will be left open at the end of the day; trenched areas will be compacted and restored to normal grade once the project is completed.

MM-18. No work requiring vehicles/equipment will be done when the ground is soft enough where travel will cause depressions.

CTS-1. Within 14 days of the start of construction activities, a Service-approved Biologist will perform a pre-construction survey and identify potential refuge habitats (burrows) suitable for CTS. In the unlikely event that a CTS is encountered, the Biologist will contact the Service for instructions.

CTS-2. A Service-approved Biologist will be on-site during all activities that could result in the take of listed species. As outlined in PBA Section 1.4.3, the qualifications of the biologist(s) will be presented to the Service for review and approval at least 10 working days prior to any groundbreaking activity at the project site. If any of the requirements associated with these measures are not being fulfilled, the Biologist will have the authority to stop project activities, through communication with the Project Manager.

CTS-3. Construction personnel will be instructed to exercise caution when commuting within the area to be disturbed.

CTS-4. Construction activities will occur between 30 minutes after sunrise and 30 minutes before sunset unless otherwise specific in the Project Analysis.

CTS-5. At the end of every work day, trenches, pits, and excavations shall be provided with escape ramps constructed of earth fill or wooden planks at a 3:1 slope. Before such trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife.

CTS-6. If CTS exclusion barriers or fencing are used, a Service-approved Biologist will be on-site to conduct morning inspections of the barrier fencing before construction activities begin each day of work activity on work days and within 30 minutes of dawn on non-work days (includes weekends and holidays). If a CTS is observed within or near the barrier fencing, the individual will be relocated outside of the project area following the procedure provided in Section 4.4.5) and the Sacramento Fish and Wildlife Office will be contacted.

CTS-7. Seasonal Avoidance/Wet Season Procedures (Oct 16 – Apr 30): Work will not be conducted in the rain. The Service-approved Biologist will monitor the weather forecast and authorize work when the forecast indicates a period of dry days (5 – 10 days of no rain) before starting the project. The Travis Environmental Office will document through email notification to the Service when work will commence. The weather forecast and hourly weather data for Travis AFB will be monitored and can be found by

entering the zip code 94535 (Travis AFB) at <http://www.weather.gov/srh/>. A Service-approved Biologist will be on-site for morning inspections before the start of work. Morning inspections consist of examination of all trenches, pits, excavations, equipment, California tiger salamander exclusionary barriers (if present), all suitable upland habitat including refugia habitat such as small woody debris, refuse, burrow entries, etc. will be properly inspected and all other areas within the project site. In addition, the project work crew will be notified to maintain vigilance regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service.

CTS-8. Seasonal Avoidance Dry Season Rain/High Humidity Procedures (May 1 to October 15): Work will not be conducted if raining. The Service-approved Biologist will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50% or greater probability of rain forecasted overnight. If there is, then before work begins the next morning, the Service-approved Biologist will conduct an even more extensive morning inspection. The inspection will include searching the work area and a wider perimeter of the area for presence of CTS. In addition, the work crew will be notified to maintain vigilance regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service. The weather forecast and hourly weather data for Travis AFB should be monitored and can be found by entering the zip code 94535 (Travis AFB) at <http://www.weather.gov/srh/>

CTS-9. If dry season (May 1 – October 15) night time work is necessary, the following additional conservation measures shall be implemented:

- a. Work would only occur within paved areas (greater than 20 feet from uplands)
- b. A 6-inch high CTS exclusionary barrier will surround the work area during work, with ingress/egress access being the only break in the barrier.
- c. A Service-approved Biologist will be onsite during all night time work and will routinely monitor the CTS exclusionary barrier and the project site.
- d. Work will not be conducted at night time if there is a 50% or more chance of rain predicted overnight.

CTS-10. Water shall not be pumped, sprayed, or allowed to flow over undisturbed uplands that can support CTS as part of planned project activities outside of pre-approved requirements (i.e. dust control). Water applied for pre-approved requirements shall be applied in the minimum quantities necessary only to disturbed soils. If excess water accumulates as the result of construction activity, water may be pumped through a screened pump and removed from the construction area as deemed necessary by the on-site biologist in coordination with Travis Natural Resources Management (NRM) staff. If water inadvertently or purposefully enters construction trenches, pits, or excavations, a Service-approved Biologist will remain on site until water is pumped from the trench, pit, or excavation. Following pumping, the Biologist shall inspect the trench, pit, or excavation area and the surrounding uplands to determine if disturbance to CTS has occurred and implement any other measures necessary (e.g. placement of cover boards, exclusionary fencing or barriers) to protect CTS that may emerge due to the wet soil.

CTS-11. Pipes laid underground or stored on the ground shall be capped, covered, or taped in a manner that exclude CTS from entering the pipe prior to the completion of the construction project. Long-term storage of pipes and other construction material should be placed on asphalt and raised above the ground by no less than 1.5 inches (on top of 2 by 4 inch supports).

CTS-12. Trenches, pits, and excavations shall be covered in a manner that exclude CTS from entering during weekends, holidays, humid days, rain events, etc. Specifically, gaps no greater than one inch shall be allowed within cover materials if biologists will not be present the following day or if rain events or

high humidity days are expected to occur. Before such trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife.

CTS-16. Erosion control Best Management Practices implemented in accordance with the Travis AFB Storm Water Pollution Prevention Plan will be placed so as not to create a hazard to CTS.

CTS-17. A Service-approved Biologist or Natural Resource Monitor (depending on effect level of project) shall perform construction site inspections to ensure the contractor completes the proposed action as described and complies with all proposed minimization measures.

CTS-18. Concrete waste and water from curing operations will be collected in washouts and will be disposed of properly and not allowed into watercourses or CTS upland habitat.

CTS-19. In the event that CTS are encountered on the project site, the Service-approved Biologist or Natural Resource Monitor will contact the Travis AFB Natural Resource Manager who will then contact the Service. If CTS are captured, they should be released as near as possible to the point of capture, in a manner that maximizes their survival. Refer to the CTS Relocation Plan described in Section 4.4.5.

VP-1. No work will be conducted in the vicinity of vernal pool species' habitat between 16 Oct and 30 Apr, unless specifically approved by the Travis AFB NRM who will field verify soil saturation, visual ponding, and expected surface disturbance. The Service will be notified of any off-pavement work within 250 feet approved between 16 Oct and 30 Apr.

VP-3. Projects that occur on road surfaces and along road shoulders will avoid direct impacts to wetland habitats.

VP-4. A Service-approved Biologist will mark vernal pool species' habitat and a reasonable buffer to be avoided with flagging material. The area will be protected by placing construction fencing or other appropriate protective fencing around the pools including a buffer. Fencing will be used in locations where project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species habitat. If in a High or Medium Risk CTS area, small mammal burrows will be avoided when placing stakes or posts.

CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed-out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within one working day and in writing within five working days.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service approved biologist. Note,~~

that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.

MM-11. During construction activities, all trash that may attract predators will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 12, 15
Species-Specific (CTS)	Prefix CTS 9, 13, 15
Species-Specific (VPFS, VPTS)	Prefix VP 2, 5-8
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Travis will compensate for the temporary disturbance of 12.05 acres of High Risk CTS upland habitat at a rate of 0.5:1 and permanent removal of 276 SF (0.0063 acres) of High Risk CTS upland habitat at a ratio of 2:1. (Table 3 of the Travis PBO).

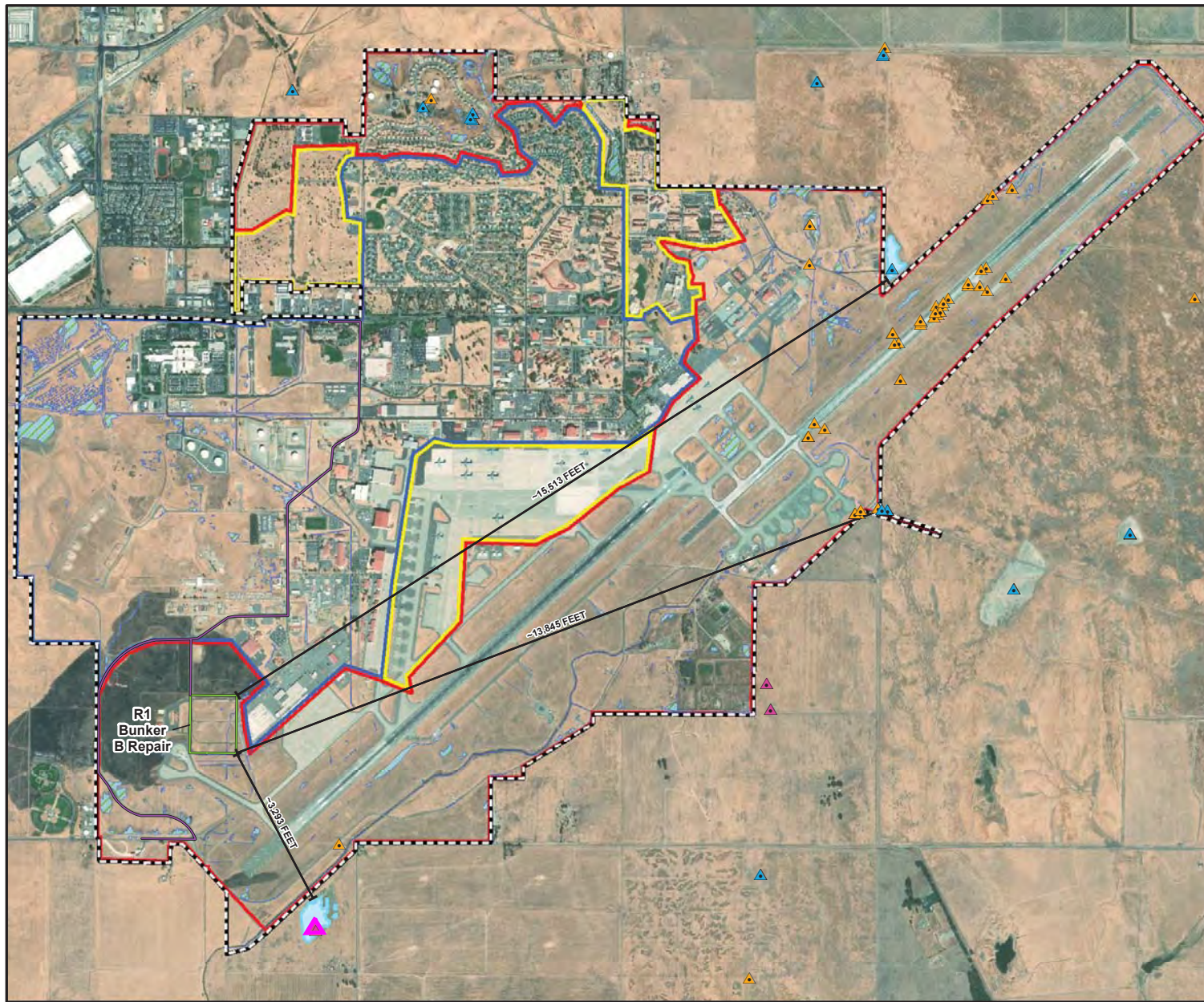
We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

References

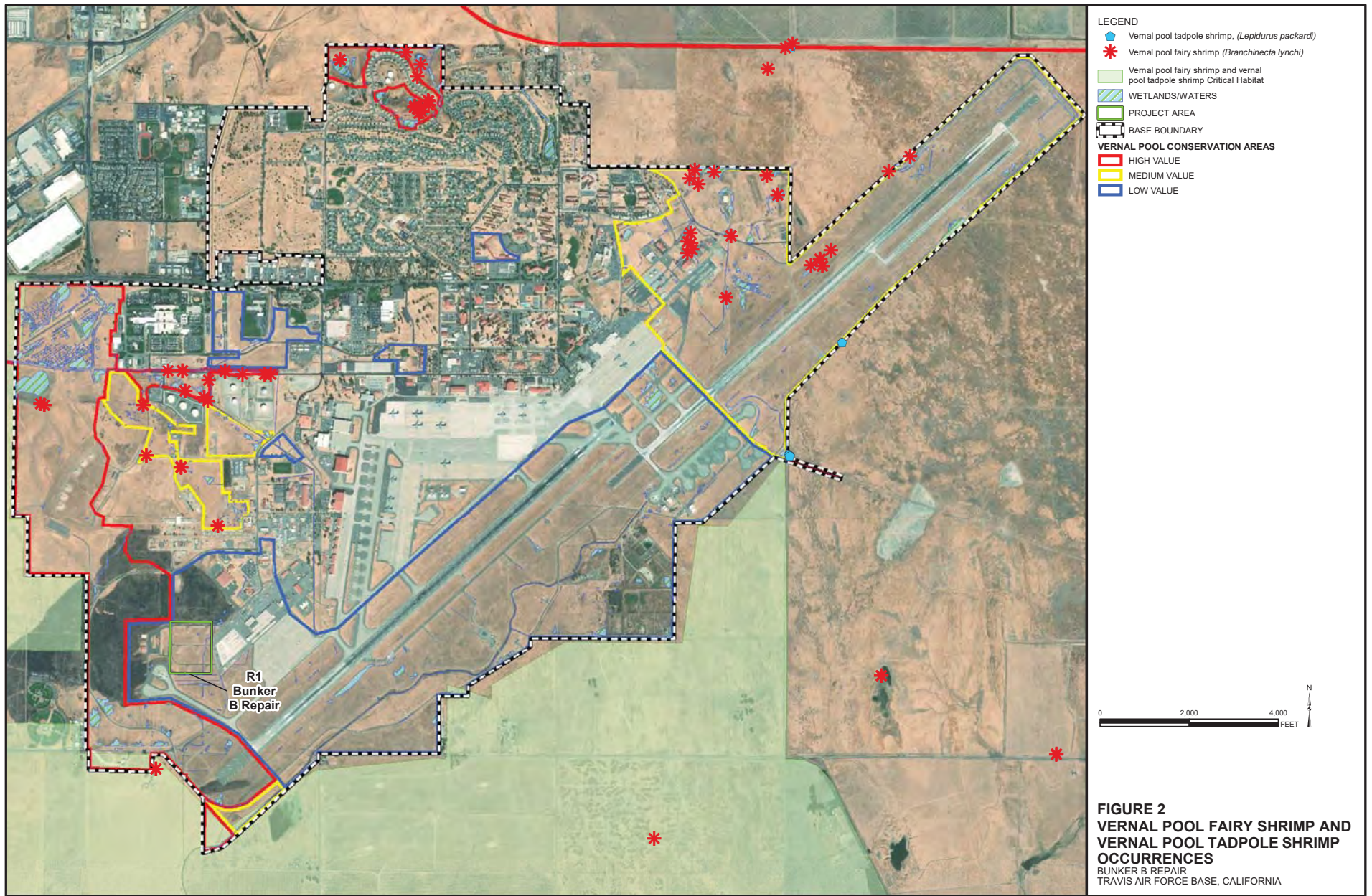
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- Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, CA. September.
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- U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. June 1.

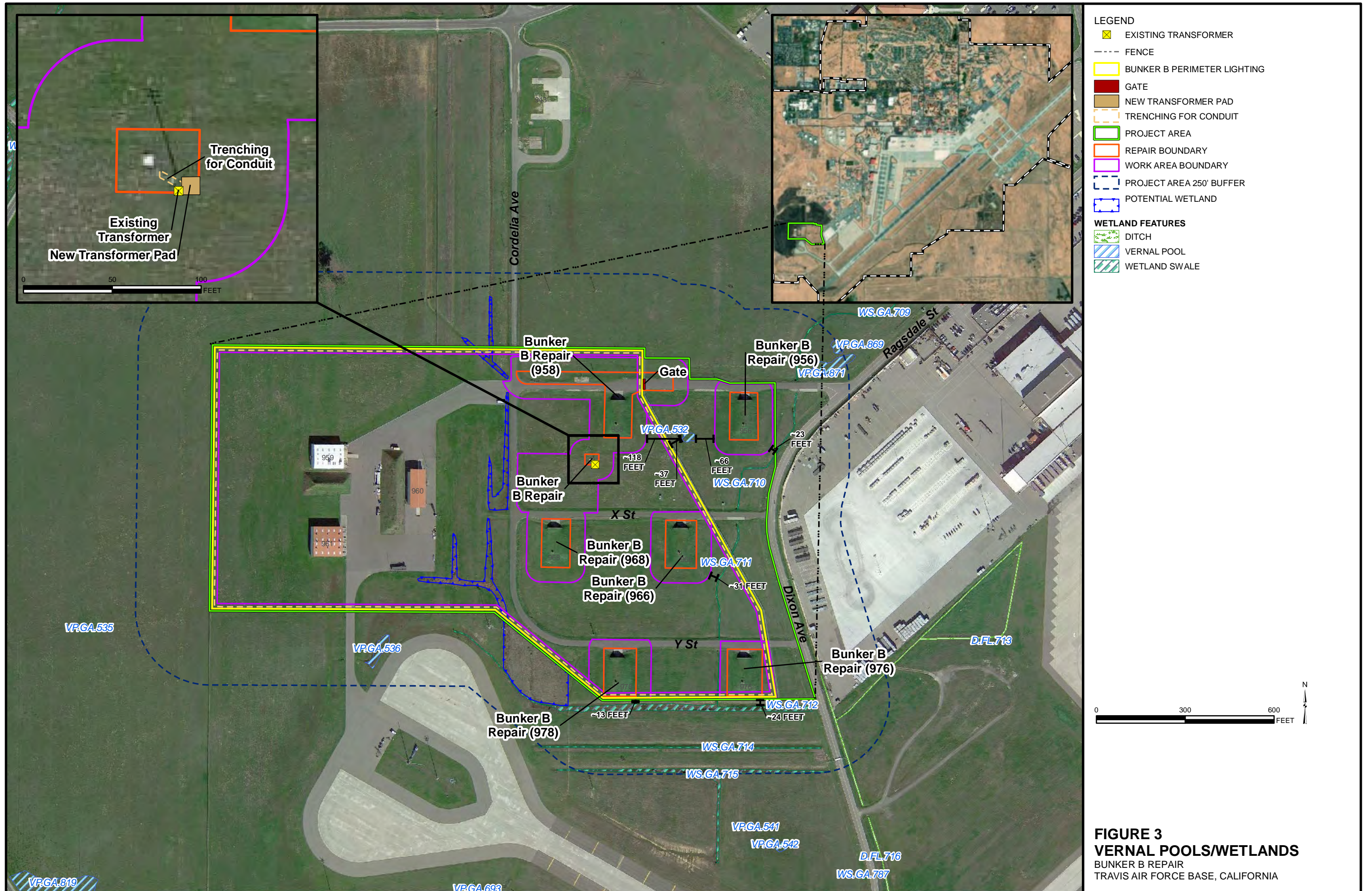


- LEGEND**
- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY



FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 BUNKER B REPAIR
 TRAVIS AIR FORCE BASE, CALIFORNIA





Photos of Bunker B surrounding areas

Perimeter lighting will be installed along the boundary fence of the Bunker B compound



Bunker (in distance) roof will be removed/replaced. Potential wetland feature shown along roadway.





United States Department of the Interior



In Reply Refer to:
08ESMF00-
2019-F-0684-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

FEB 20 2019

Mr. Matthew B. Foster
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Formal Consultation on the Bunker B Project at Travis Air Force Base, Solano County, California, and Appending to the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California*

Dear Mr. Foster:

This letter is in response to the Travis Air Force Base (Travis AFB or Base) January 3, 2019, electronic mail (email) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Bunker B Project (proposed project), Travis AFB in Solano County, California. Your January 3, 2019, email and attachment include the required and complete *Covered Project Analysis Template* (consultation template) as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3; Programmatic Biological Opinion). At issue are the proposed project's effects on the federally-listed as endangered vernal pool tadpole shrimp (*Lepidurus packardii*; tadpole shrimp or VPTS), as well as the federally-listed as threatened vernal pool fairy shrimp (*Branchinecta lynchi*; fairy shrimp or VPFS) and Central California distinct population segment of the California tiger salamander (*Ambystoma californiense*; tiger or CTS). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act) and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action we are consulting on is the rehabilitation of roofs of Buildings 956, 958, 966, 968, 976, and 978 in the Bunker B area of Travis AFB. Additionally, electrical deficiencies will also be addressed through replacements, upgrades, and repairs in the Bunker B area. Pursuant to 50 CFR §402.12(j), you submitted a biological assessment for our review and requested that the proposed project be appended to the Programmatic Biological Opinion. Travis AFB has concluded that the proposed project may affect, and is likely to adversely affect the tiger salamander. Travis AFB has also concluded that the proposed project may affect, but is not likely to adversely affect the tadpole shrimp and the fairy shrimp. The proposed project is not within designated or proposed critical habitat for any federally-listed species.

The Service has determined that the proposed project meets the suitability criteria of, and is within the geographic area analyzed in, the Programmatic Biological Opinion. Therefore, this letter is an agreement by the Service to append the proposed project to the Programmatic Biological Opinion and represents the Service's biological opinion on the effects of the proposed project on the tiger

salamander, tadpole shrimp, and fairy shrimp. By appending the proposed project to the Programmatic Biological Opinion, Travis AFB acknowledges and accepts all of the conservation measures outlined within the Programmatic Biological Opinion, including, but not limited to, the measures to minimize adverse effects. Travis AFB also will follow all reasonable and prudent measures, and all terms and conditions as directed by the Programmatic Biological Opinion.

In considering your request, we based our evaluation on the following: (1) the Programmatic Biological Opinion; (2) the Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species received January 2019; (3) your January 3, 2019, letter initiating formal consultation; (4) the accompanying consultation template prepared to assess potential project impacts to federally-listed species and their habitat; (5) email and telephone correspondence between the Service and Travis AFB; and (6) other information available to the Service.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

The tadpole shrimp and the fairy shrimp have been adversely affected by development and modification of the vernal pool, grassland, and open woodland habitat within the Solano-Colusa vernal pool region (Service 2014). Vernal pool tadpole shrimp have not identified on Travis AFB, yet 11 presumed extant occurrences of the vernal pool tadpole shrimp have been reported in the Denverton and Elmira U.S.G.S quadrangles, where Travis AFB is located (CNDDDB 2019). Most of these occurrence records are on the North Suisun Mitigation Bank and Wilcox Ranch, to the south and east of Travis AFB. The closest occurrence record of the vernal pool fairy shrimp is just off Base about 0.42 mile to the south, while another on Base occurrence is about 0.44 mile to the north. The fairy shrimp has also been found in numerous other pools between the Bunker B area and the Aero Club area to the northwest.

All project-related demolition, staging, and access will avoid direct effects to vernal pools. However, three wetlands are known to occur within 118 feet of demolition areas and may be indirectly affected by changes in hydrology that may result from proposed project activities. Although the tadpole shrimp and fairy shrimp are not known to occur in these wetlands, the hydrological changes could affect the viability of both the tadpole shrimp and the fairy shrimp that may be present. Potential indirect effects to hydrology will be greatly reduced by conducting construction during the dry season (June-October), or during the wet season with the appropriate conservation measures discussed in the Programmatic Biological Opinion and on pages 7 through 11 of the consultation template.

After reviewing all the available information, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the tadpole shrimp or the fairy shrimp. The proposed project reached the 'may affect' level, and the subsequent requirement for a biological assessment, due to the fact that the proposed project occurs within the range of both the tadpole shrimp and the fairy shrimp, and potentially suitable habitat for both species is present in the vicinity of the action area. Due to the fact that the proposed project activities are planned to occur in the dry season, mapped wetland areas will not be directly affected, and the conservation measures that will be implemented as part of the proposed project, the Service believes that adverse effects to the tadpole shrimp and the fairy shrimp are unlikely to occur, and are therefore discountable for the purposes of this consultation.

Consultation History

- June 1, 2018: The Service provided Travis AFB with the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California*.
- February 4, 2019: The Service received from Travis AFB a request to initiate formal Consultation, dated January 3, 2019, for the proposed project effects on the tiger salamander, tadpole shrimp, and fairy shrimp. Included with the initiation request was the consultation template that assesses effects of the proposed project on the species.

BIOLOGICAL OPINION

Description of the Action

The project involves the rehabilitation and maintenance activities associated with the roofs of buildings 956, 958, 966, 968, 976, and 978 in the Bunker B area to comply with U.S. Air Force explosive storage safety requirements. Additionally, electrical system deficiencies in structures throughout the Bunker B area require replacement, repair, and upgrades to comply with national construction standards.

The Bunker B area is located to the west of the southern end of the Travis AFB Airfield, just north of the Hot Cargo Pad staging area. The closest intersection is X Street and Ragsdale Street. Due to its function as munitions storage, the area is largely unpopulated and away from other, incompatible infrastructure. The Bunker B area is currently secured by a perimeter fence, and the proposed project includes upgrades to the perimeter security as well. Adequate paved space for proposed project staging areas is present within the fenced area.

The amount of soil disturbance that will be necessary is yet unknown, but the areas that may require soil disturbance are well established. Cracks in the concrete roofs and ineffectual levels of soil coverage on top of storage bunkers need to be addressed at each building. In all, the estimated area of temporary disturbance is 12.05 acres, while the area of permanent disturbance is about 100 square feet.

Along with the building roof repairs, proposed project work includes the installation of perimeter lighting around the Bunker B area. New surge protection devices and electrical panels will also be installed. The permanent area of disturbance will result from the replacement of a pole-mounted transformer with a new transformer and panel on a new concrete pad. The existing mechanical gate to the Bunker B area will be replaced with a new electrically-operated security gate. The new gate will require grading and asphalt replacement over an area of about 1,000 square feet.

The electrical feed for the gate will be installed by extending conduit/wires underground adjacent to the north side of the roadway (X Street) to an existing transformer. The trenching for the underground conduit/wires for the installation of the perimeter lighting (about 5,670 square feet) will be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions.

The proposed project is expected to occur during the dry season and work will take about 4 months to complete. Work is anticipated to begin in June 2020, however, if necessary work may extend past October 15. Typical construction equipment that may be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, cement and mortar mixer, water truck. Construction equipment will enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate. Work will be contained within the existing Bunker B fenceline and the staging area boundary during project construction.

Conservation Measures

To avoid or minimize effects on the California tiger salamander, Travis AFB will fully implement the following conservation measures listed in Table 1, including all of the relevant conservation measures outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service 2018).

Table 1. Conservation measures described in the programmatic biological assessment (Travis 2017) that will be included as part of the proposed project.

Minimization Measures	California Tiger Salamander Measures	Vernal Pool Measure
MM-1, MM-2, MM-3, MM-4, MM-5, MM-6, MM-7, MM -8, MM-9, MM-10, MM-11, MM-13, MM-14, MM-17, MM-18	CTS-1, CTS-2, CTS-3, CTS-4, CTS-5, CTS-6, CTS-7, CTS-8, CTS-9, CTS-10, CTS-11, CTS-12, CTS-16, CTS-17, CTS-18, CTS-19	VP-1, VP-3, VP-4

Of the conservation measures listed in Table 1, three measures will be modified from the text of the programmatic biological assessment (Travis 2017) when applied to the proposed project. In the following descriptions of these five measures, strikethrough text indicates language that will be omitted upon implementation from the text as written in the programmatic biological assessment:

- From MM -2, remove the strikethrough text: A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within 1 working day and in writing within 5 working days.
- From MM -6, remove the strikethrough text: All areas of upland ground disturbance or exposed soil will be reseed with native “weed-free” seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit from the State Regional Water Quality Control Board.~~
- From MM -11, remove the strikethrough text: During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and

disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

In addition to the conservation measures listed in Table 1, Travis AFB also has proposed to compensate for the temporary loss of upland habitat through the purchase of compensation credits at a ratio of 0.5:1, and permanent loss of upland habitat through the purchase of compensation credits at a ratio of 2:1. The proposed ratios follow Table 3 of the Programmatic Biological Opinion (Service 2018). Temporary upland grassland habitat loss is estimated to be 12.05 acres; therefore Travis AFB has proposed to compensate through the purchase of 6.025 acres of upland habitat at a Service-approved conservation bank. Permanent upland habitat loss is estimated to be 0.0063 acre; therefore Travis AFB has proposed to compensate through the purchase of an additional 0.0126 acre of upland habitat at a Service-approved conservation bank. In total, Travis AFB has proposed to purchase 6.0376 acres of upland habitat credits.

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses all areas subject to the roof and electrical repairs, as well as equipment staging, within a boundary of about 44.06 acres of the Bunker B area. The action area also includes all areas up to 6 feet from the construction footprints in which dust and other particles from construction activities may affect any species occupying suitable habitat.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

For the most recent comprehensive assessment of the range-wide status of the tiger salamander, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014). No change in the tiger salamander listing status was recommended in the 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014 5-year review

was finalized, with loss of habitat being the most significant effect. While there continue to be losses of tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Environmental Baseline

Travis AFB is located in the Solano-Colusa Vernal Pool Region (Service 2005), which covers the majority of Solano County. Agricultural practices, water diversion and impounding for waterfowl enhancement, development, and road building have affected vernal pools in the region. The Solano Land Trust and the California Department of Fish and Wildlife manage adjacent reserves to protect portions of the northern claypan type (totaling about 2,300 acres). In addition, the Wilcox Ranch, adjacent to the base on the east, is a preservation area under restricted land use. Many vernal pool areas in the region have been converted to agriculture or developed for residential, commercial, or industrial uses. Restored agricultural lands are targets for land acquisitions through direct purchases, conservation easements, or other cooperative agreements.

Most of the proposed project demolition will occur in areas that are currently paved. However, the natural vegetation community found in the project area is a disturbed annual grassland/vernal pool complex. Some construction will occur in an area that is currently grassland, and is intensively managed by regular mowing. Throughout Travis AFB, the grassland/vernal pool complex is highly disturbed due to alterations of surface and subsurface hydrology for the construction of road and runway features, the dominance of introduced grasses in upland areas, and the effects from current land management activities. Past land use practices and grading activities within the project area included construction of the original airfield that leveled much of the wetland habitat.

A breeding habitat assessment for the tiger salamander was conducted on Travis AFB during the wet season of 2005 (CH2M Hill 2006). The assessment concluded that tiger salamanders are not likely to breed within wetlands within 250 of the proposed project action area because they do not provide the hydrology necessary to support breeding habitat. Although the proposed project action area does not contain suitable breeding ponds for the tiger salamander, the species has been observed in a pond about 0.63 mile to the south and east of the proposed project action area, within the dispersal range of tiger salamanders (TNC 2002, LSA 2004, CH2M Hill 2006, CNDDDB 2018).

The proposed project only involves work in High Risk areas for tiger salamanders, and the action area does contain some grassland habitat with small mammal burrows that can support tiger salamander populations during the non-breeding season (Johnson and Shaffer 2010). Dispersing tiger salamanders have been known to occur on roadways, runways, and surrounding grassland areas of the base (Marty 2017). For examples, on January 29, 2014, Travis AFB informed the Service of a live adult tiger salamander on a runway within dispersal distance of the proposed project action area. On July 5 and 8, 2015, two dead individuals were found on and near Runway 03R/21L about 2.4 miles from the proposed project action area (Service file #08ESMF00-2014-F-0633-R001). These two individuals were likely responding to ponded water from a break in a water main, which probably triggered dispersal behavior. More recently, runway surveys and relocation efforts between May 31 and July 20, 2017, relocated 154 juvenile tiger salamanders to suitable burrow sites, while 39 dead tiger salamanders also were found (Marty 2017). In addition, pitfall trapping efforts between June 22, 2017, and July 14, 2017, captured and relocated 658 juvenile tiger salamanders and found seven dead tiger salamanders (Marty 2017).

Effects of the Action

The proposed project will result in the temporary disturbance of about 12.05 acres, and the permanent alteration of 276 square feet (0.0063 acre), of upland habitat for the tiger salamander. The affected upland habitat exists in High Risk areas of Travis AFB for potential tiger salamander effects (Travis 2017). In all, the implementation of the listed conservation measures will minimize proposed project effects to tiger salamanders.

Juvenile and adult tiger salamanders have been known to use the hardscape of runways, roadways, and parking areas as dispersal habitat. Proposed project actions will reduce the amount of upland dispersal habitat for the tiger salamander during the proposed construction period at Travis AFB. Any tiger salamanders attempting to move into or through the proposed project area will be restricted in their movements. Mortality, injury, or harassment of tiger salamanders could occur due to crushing, entombment, relocating, or disruption of their movements as a result of construction activities related to the proposed project.

Travis AFB has analyzed the likelihood of theoretical project activities across the Base encountering and affecting a tiger salamander (Travis 2017). The analysis is chiefly based on the known dispersal distance and migration movements of tiger salamanders, which may be as much as 1.2 miles across upland habitat from breeding ponds (Orloff 2011). Due to the proximity of the proposed project action area to known numerous breeding ponds for the tiger salamander, the proposed project action area falls in a zone deemed High Risk. The runway surveys and relocation efforts of the past 2 years manifest the potential for proposed project effects on tiger salamanders moving across upland habitat from the nearby breeding ponds. The potential exists to encounter and affect a tiger salamander.

Travis AFB has proposed to work during the dry season as much as possible, which minimizes the chances of tiger salamanders dispersing across upland habitat. However, if wet season becomes necessary, conservation measures are included in the project in the event the project extends beyond October 15. For examples, Travis AFB has proposed monitoring of the work area by a Service-approved biologist (MM-2), will not work within the vicinity of potential vernal pool species habitat without verification from approved Biologists (VP -1), will not work when it is raining during the dry season or wet season, and will check rain forecasts daily (CTS -7 and CTS -8). Because precipitation can spur dispersal events of tiger salamanders, if there is a 50 percent or greater probability of rain forecasted for a following day, a Service-approved biologist will conduct an extensive morning inspection for tiger salamanders prior to work activities (CTS -7 and CTS-8). The chances of encountering a tiger salamander during proposed project activities will be further minimized by the implementation of conservation measures listed in Table 1. Travis AFB has also proposed to purchase 6.025 acres to compensate for temporary habitat disturbance, and 552 square feet (0.0126 acre) to compensate for permanent habitat alteration, of upland habitat for the tiger salamander at a Service-approved conservation bank. In all, Travis AFB has agreed to purchase 6.0376 acres of upland habitat for the tiger salamander.

Cumulative Effects

Cumulative effects include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service

did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of the tiger salamander, the environmental baseline for the action area, the effects of the proposed project and the cumulative effects, it is the Service's biological opinion that the Bunker B Treatment Plant Project, as proposed, is not likely to jeopardize the continued existence of the California tiger salamander. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the potential of lethal take of individual California tiger salamanders will be minimized by the implementation of the proposed conservation measures; (2) the project fits within the scope of the actions described in the Programmatic Biological Opinion; (3) the effects analyzed are identical work similar to those that were analyzed in the Programmatic Biological Opinion; (4) sensitive time periods for listed species will be avoided to the extent practicable; and (5) all minimization measures will be implemented.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Travis AFB so that they become binding conditions of any grant or permit issued to a contractor, as appropriate, for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this incidental take statement. If Travis AFB (1) fails to assume and implement the terms and conditions or (2) fails to require the contractor to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service anticipates that incidental take of tiger salamander will be difficult to detect due to its life history and ecology. Specifically, tiger salamander can be difficult to locate due to their cryptic appearance, their use of underground burrows as habitat, their multiplicity of life forms, and the fact

that finding a dead or injured individual is unlikely due to their relatively small size. Losses of salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, or the likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities; therefore, the Service is authorizing take incidental to the proposed action as: (1) the harassment and capture of all tiger salamanders within 6 feet of the construction footprint and access routes; and (2) the injury or mortality of one juvenile or adult tiger salamander as observed by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of tiger salamanders associated with the Bunker B Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California tiger salamander.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the tiger salamander resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the tiger salamander.

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Travis AFB will fully implement and adhere to the conservation measures, as a condition of any permit or contract issued for the proposed project. Travis AFB shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
2. To monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Travis AFB will adhere to the following reporting requirement. Should the anticipated amount or extent of incidental take be exceeded, Travis AFB must immediately reinitiate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Travis AFB will provide quarterly updates to the Service with a precise accounting of the total

acreage of habitat impacted. Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the Project Description and not analyzed in this Biological Opinion.

- b. For those components of the action that result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Travis AFB shall immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6563 to report the encounter. If the encounter occurs after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.
- c. For those components of the action that will require the capture and relocation of any listed species, Travis AFB shall immediately contact the Service's SFWO at (916) 414-6563 to report the action. If capture and relocation need to occur after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions: Travis AFB should continue to work with the Service to assist us in meeting the goals for:

- (1) the tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*)* (Service 2017); and
- (2) vernal pool species as outlined in *the Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems in California and Southern Oregon* (Service 2005).

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Demolition of the Waste Water Treatment Plant Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Harry Kahler, Fish and Wildlife Biologist, (harry_kahler@fws.gov) or Doug Weinrich, Assistant Field Supervisor (douglas_weinrich@fws.gov), or at (916) 414-6563, or the letterhead address.

Sincerely,



Jennifer M. Norris, Ph.D.
Field Supervisor

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Endangered Species. 60th Civil Engineer Squadron, Environmental Element, Travis Air Force Base, California. 145 pages plus appendices.



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

Mr. Merlin J. Miller
Deputy Base Civil Engineer, 60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Construction of a War Reserve Materiel (WRM) Warehouse at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action is Not Likely to Adversely Affect the Contra Costa Goldfields (*Lasthenia conjugens*), Vernal Pool Fairy and Tadpole Shrimp (*Branchinecta lynchi* and *Lepidurus packardii*) from construction activities.

A 35,000 square foot (SF) heated/cooled warehouse facility would be constructed north of the Consolidated Storage Distribution Center on existing pavement. Additionally, a 43,125 SF secure fenced storage pad would be constructed for WRM tactical equipment and vehicles north of the proposed warehouse facility on existing pavement. Construction of these facilities would impact the existing paved parking lot adjacent to the WRM, as it would remove approximately 25 percent of the available space. An approximately 66 foot x 302 foot area (19,932 SF) currently consisting of a graveled parking area would be paved to offset the loss of the existing parking space. A 15 foot work area buffer would be used to maneuver equipment during work to pave the graveled parking area. Upon completion, the work area buffer would be hydro-seeded and allowed to return to natural conditions.

Please contact Mr. Seth Merdler (707) 424-7516 or seth.merdler@us.af.mil of my staff regarding this consultation request.

Sincerely

3/11/2019

X Merlin J. Miller

Merlin J. Miller, GS-14
Deputy Base Civil Engineer, 60th Civil Engin...
Signed by: MILLER.MERLIN.J.1152847900

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Construction of WRM Expansion/New Patient and Staff Parking Area

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: West of the Base adjacent to the David Grant Medical Center (DGMC), along Bodin Circle.

Species impacted: Contra Costa Goldfields (CCG); Vernal pool fairy shrimp (VPFS); Vernal pool tadpole shrimp (VPTS)

Effects Assessment: Not Likely to Adversely Affect (CCG, VPFS, VPTS)

Expected start date of project: October 2020

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project is to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations. This project consists of construction of a new War Reserve Materiel (WRM) warehouse facility to alleviate inefficient operation from multiple smaller facilities throughout the installation and the conversion of a gravel parking lot to a permanent, paved parking lot to accommodate increased patient care and staffing for the David Grant Medical Center.

Project site location including all work, staging and storage areas. The proposed site for the WRM warehouse facility and parking lot is located to the west of the DGMC, within an existing parking lot, directly north of the existing Consolidated Storage Distribution Center (CSDC) (Building 791) and within an existing graveled parking lot (Figures 1 and 2). Staging/equipment/material storage areas will be designated by the Base within existing paved areas.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) A 35,000 square foot (SF) heated/cooled warehouse facility would be constructed north of the CSDC on existing pavement. Additionally, a 43,125 SF secure fenced storage pad would be constructed for WRM tactical equipment and vehicles north of the proposed warehouse facility on existing pavement. Construction of these facilities would impact the existing paved parking lot adjacent to the WRM, as it would remove approximately 25 percent of the available space.

An approximately 66 foot x 302 foot area (19,932 SF) currently consisting of a graveled parking area would be paved to offset the loss of the existing parking space. A 15 foot work area buffer would be used to maneuver equipment during work to

pave the graveled parking area. Upon completion, the work area buffer would be hydro-seeded and allowed to return to natural conditions.

- Seasonal constraints of activity. The proposed project is estimated to take approximately 18 months to complete therefore work will occur during both the wet and the dry season. Work is anticipated to begin in October 2020.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, cement truck, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter and exit the Base through the Main Gate. (Figure 1).
- Maps:

Figure 1	Contra Costa Goldfields, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp Occurrences
Figure 2	Project Areas and Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Site visits, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are three (3) wetlands within 250 feet of the project boundary.

Wetland ID	Distance
VP.AC.635	60 feet
VP.AC.636	145 feet

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	360 feet

Vernal pool fairy shrimp	1,172 feet
Vernal pool tadpole shrimp	2.9 miles
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	10,845 feet
California tiger salamander (sighting)	7,615 feet

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered low risk upland habitat.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the graveled parking lot was not mapped, however a site visit on February 2, 2019, by Deanne Weber, CEMML observed no evidence of small mammal activity within the graveled parking lot or the 15 foot work area buffer of the project footprint. The upland grassland area to the west of the graveled parking lot is estimated to have low ground squirrel burrow density due to presence of tall upland grasses most of the year as this area only receives a one-time yearly mowing. The areas to the east of the graveled parking lot is made up of landscaped areas of ginger rock and landscaped plants and grasses. (See Photos 1 and 2)
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information.
- Describe how effects were considered for each species:
Effects to Contra Costa goldfields (CCG) and vernal pool branchiopods were determined by proximity of project boundary to known occurrences of CCG, vernal pool fairy shrimp (VPFS), historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project.

CCG are known to occur within the Aero Club Conservation Area located directly west of the WRM construction boundary (Marty, 2016a; Figure 1). The Preserve consists of natural and created vernal pools around the Aero Club. In 2016, a total of 62 pools on Travis AFB were occupied, with 80 percent of those occurrences within the Aero Club (Marty, 2016a). The closest known occurrence is found in a large vernal pool (VP.AC.638) located approximately 360 feet west of the gravel parking lot project area and a raised gravel road separates this pool from the gravel parking lot project area.

The project area borders a High Value Vernal Pool Conservation Area (Figure 1). Vernal pools on the Base are known to support suitable habitat for VPFS (CNDDDB, 2018); therefore, presence in all suitable habitat in the Project Area is assumed for this project. During the 2016 non-protocol wet season survey conducted by Marty Ecological Consulting, VPFS were identified in 16 vernal pools/wetlands on Base (Marty, 2016b). No vernal pool tadpole shrimp (VPTS) were observed on Base during this survey. The closest vernal pool fairy shrimp occurrence from this study is approximately 0.3 mile southeast. Known occurrences of VPFS and VPTS are shown in Figure 1. Based on available data, no listed branchiopod species have been documented within vernal pools in the Aero Club Conservation Area or in the area east of the Aero Club Conservation Area that borders the gravel parking lot project. The Project is anticipated to take 18 months to complete, therefore portions of the project will occur during the wet season. Conservation Measures will be implemented to prevent indirect effects (e.g.

alteration to drainage patterns, construction runoff) to any VPFS and VPTS and potential habitats for these species that may be present. Construction work will occur within approximately 60 feet of VP.AC.635 and 145 feet of VP.AC.636. The topography in this area is relatively flat, therefore, properly implemented and monitored wetland Conservation Measures included as part of the project should prevent impacts to these pools.

No designated critical habitats or conservation areas for CCG or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 18; Minor Construction Projects (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 0.18 acres of previously disturbed upland grassland will be temporarily disturbed for the work to pave and install lighting and parking lot infrastructure in an existing gravel parking area. Construction of the new WRM warehouse facility occurs on an existing paved parking lot so no temporary or permanent disturbance to upland grassland is expected. With implementation of Conservation Measures, there is no expected disturbance to CCG or vernal pool branchiopod habitat.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. No direct effects to CCG, VPFS, and VPTS are expected to occur as a result of the proposed action. Indirect impacts to vernal pools will be avoided with the implementation and monitoring of wetland protection measures. There is a vernal pool (VP.AC.635) approximately 60 feet north of the northernmost construction boundary. Because wetland protection measures and hydro-seeding of the disturbed areas will be included in the project, any potential runoff into the surrounding vernal pools will be avoided.

Describe the impact if project not completed. If the project is not completed, the existing parking areas for patients and staff will remain inadequate and can impede prompt and unhindered care to patients. Additionally, inefficient operation from management of supplies and equipment in multiple facilities throughout the installation will continue.

Conservation Measures (CMs) that will be implemented for the project are:

Note: CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed-out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-1. A Service-approved Biologist will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present prior to the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat. If any federally-listed species are found during the preconstruction surveys, the Service-approved Biologist will contact the Service to determine how to proceed. At least 10 business days prior to the onset of activities, Travis AFB will submit the name(s) and credentials of

biologists who will conduct these preconstruction surveys if they have not previously received Service approval for similar surveys. No project activities will begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service and the California Department of Fish and Wildlife (CDFW) by telephone within one working day and in writing within five working days.

MM-3. A Service-approved Biologist will conduct environmental awareness training for all construction personnel working within and near sensitive habitat on Base. Training will be provided at the start of work and within 15 days of any new worker arrival. The program will consist of a briefing on environmental issues relative to the proposed project. The training program will include an overview of the legal status, biology, distribution, habitat needs, and compliance requirements for each federally-listed species that may occur in the project area. The presentation will also include a discussion of the legal protection for endangered species under the Act, including penalties for violations. A fact sheet conveying this information will be distributed to all personnel who enter the project site. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all avoidance and minimization measures. These forms will be maintained at Travis AFB and will be accessible to the appropriate resource agencies.

MM-4. Travis AFB will track the areal extent and location of impacts resulting from projects covered under the PBO and will submit an annual report to the Service listing each project covered under the PBO and summarizing the impacts to each species and their habitat on a project by project basis.

MM-5. Wetlands/drainages/vernal pools, if present, will have erosion control measures (straw wattles, silt fencing) installed where hydrological continuity exists between the construction activities and the wetland. ~~A Service-approved Biologist will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species including CTS.~~ Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. **Erosion control measures will remain in place until groundcover (hydro-seeded areas) have reached 70% cover.** ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-7. Off-road travel outside of the demarcated construction boundaries will be prohibited.

MM-8. Prior to initiation of construction activities, sensitive areas, such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., VPFS/VPTS, CCG, CTS), will be staked and flagged as exclusion zones where construction activities cannot take place. Orange construction barrier fencing (or an appropriate alternative method) will designate exclusion zones where construction activities cannot occur. The flagging and fencing will be clearly marked as an environmentally sensitive area (ESA). The contractor will remove all fencing, stakes and flagging within 60 days of construction completion.

MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the on-site Biologist. The Biologist will inform the Travis

Natural Resource Manager (NRM) immediately (60 CES/CEIE). The Travis NRM will verbally notify the Sacramento Fish and Wildlife Office within one day and will provide written notification of the incident within five days.

MM-10. Motor vehicles and equipment will only be fueled and serviced in designated service areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur in a designated area with appropriate spill containment. Any newly established, project specific fueling and maintenance areas will be located at least 250 feet from any wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB will ensure a plan to allow a prompt and effective response to any accidental spills is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-13. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.

MM-14. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit on unpaved roads.

MM-17. No trenches will be left open at the end of the day; trenched areas will be compacted and restored to normal grade once the project is completed.

MM-18. No work requiring vehicles/equipment will be done when the ground is soft enough where travel will cause depressions.

VP-4. A Service-approved Biologist will mark vernal pool species' habitat and a reasonable buffer to be avoided with flagging material. The area will be protected by placing construction fencing or other appropriate protective fencing around the pools including a buffer. Fencing will be used in locations where project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species habitat. ~~If in a High or Medium Risk CTS area, small mammal burrows will be avoided when placing stakes or posts.~~

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 12, 15
Species-Specific (CCG, VPFS, VPTS)	Prefix VP 1, 2, 3, 5, 6, 7, 8
All other Species-Specific (CFS, DGGB)	All

Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

We request concurrence from FWS within 2 weeks of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	Contra Costa Goldfields, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp Occurrences
Figure 2	Vernal Pools/Wetlands

References

California Natural Diversity Data Base (CNDDDB). 2018. Database maintained by the California Department of Fish and Wildlife, Natural Heritage Branch. Sacramento, CA.

Marty Ecological Consulting. 2016a. 2016 Contra Costa Goldfields (*Lasthenia conjugens*) Monitoring Report.

Marty Ecological Consulting. 2016b. 2016 Vernal Pool Aquatic Species Survey Report.

Travis AFB. 2018. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.

U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. June 1.

Construction of WRM Expansion/New Patient and Staff Parking Area

Photo 1: Gravel parking lot to be paved with asphalt (looking north)



Construction of WRM Expansion/New Patient and Staff Parking Area

Photo 2: View of WRM parking lot to the south of the gravel parking lot. Landscaped features including ginger rock and sod can be seen in the surrounding areas. Upland grassland is shown in the foreground.





United States Department of the Interior



In Reply Refer to:
08ESMF00-
2019-I-1363-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

MAR 25 2019

Mr. Merlin J. Miller
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Informal Consultation for the Construction of a War Reserve Material Warehouse at Travis Air Force Base under the Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California

Dear Mr. Miller:

This letter is in response to the Travis Air Force Base (Travis AFB or Base) March 11, 2019, electronic mail (email) request for informal consultation with the U.S. Fish and Wildlife (Service) on the proposed Construction of a War Reserve Material (WRM) Warehouse Project (proposed project), Travis AFB in Solano County, California. At issue are the proposed project's effects on the federally-threatened vernal pool fairy shrimp (*Branchinecta lynchi*; fairy shrimp); and federally-listed as endangered vernal pool tadpole shrimp (*Lepidurus packardii*; tadpole shrimp) and Contra Costa goldfields (*Lasthenia conjugens*; goldfields). No designated critical habitat for any federally listed species exists within the action area. The March 11, 2019, email and enclosure included the required proposed project information as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file FF08ESMF00-2017-F-2294-3; Programmatic Biological Opinion). Our response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the construction of a new 35,000 square foot warehouse facility for WRM at Travis AFB. Currently, multiple smaller facilities throughout Travis AFB are operating inefficiently to handle WRM. Also, a new WRM facility will allow the development of an improved parking area to accommodate increased patient care at the David Grant Medical Center on Base. The proposed WRM will be constructed just north of the Consolidated Storage Distribution Center, on an existing parking lot west of the David Grant Medical Center.

Additionally, a 43,125 square foot secure fenced storage pad would be constructed for WRM tactical equipment and vehicles north of the proposed warehouse facility on existing pavement. A 19,932 square foot gravel parking area, adjacent to the proposed storage pad site, will be paved to offset the loss of the existing paved parking area. A 15 foot work area buffer will be established to allow

equipment maneuverability during work to pave the graveled parking area. Upon completion, the work area buffer would be hydro-seeded and allowed to return to natural conditions.

Proposed project work is anticipated to begin in October 2019, and is expected to take 18 months to complete. Anticipated equipment to be used includes an excavator, tractor, loader or backhoe, trucks, cement truck, roller, grader, rubber-tired dozer, and a water truck. The Main Gate of the Base will be used for access, as well as established Base roads.

Three seasonal wetlands exist within 250 feet of the proposed project demolition area. Vernal pool AC.635 is about 60 feet north of the northern proposed project construction footprint, while vernal pool AC.636 is about 145 feet from the proposed project construction footprint. Vernal pool AC.637 lies just about 250 feet from the proposed project construction footprint.

Proposed Conservation Measures

Travis AFB proposes to implement numerous conservation measures listed in the Programmatic Biological Opinion. Conservation measures to be implemented include:

- MM -1 through MM -11;
- MM -13 and MM -14;
- MM -17 and MM -18; and
- VP -4.

Five of the measures to be implemented will be modified from the descriptions provided in the Programmatic Biological Opinion. In the following descriptions of these five measures, ~~strikethrough~~ text indicates language that will be omitted upon implementation from the text as written in the Programmatic Biological Opinion, and **bold** text indicates language that will be added upon project implementation to the text as written in the Programmatic Biological Opinion:

- From MM -2, remove the ~~strikethrough~~ text: A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within 1 working day and in writing within 5 working days.
- From MM -5, remove the ~~strikethrough~~ text: Wetlands/drainages/vernal pools, if present, will have erosion control measures (straw waddles, silt fencing) installed where hydrological continuity exists between the construction activities and the wetland. ~~A Service-approved Biologist will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species including CTS.~~ Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources
- From MM -6, remove the following ~~strikethrough~~ text and add the **bold** text: All areas of upland grass disturbance or exposed soil will be reseeded with a native “weed-free” seed mix approved by the Travis AFB 60 CES/CEIE. Erosion control measures will remain in place

until groundcover (hydro-seeded areas) have reach 70% cover. Ground disturbance within the vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.

- From MM -11, remove the strikethrough text: During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.
- From VP -4, remove the strikethrough text: A Service-approved Biologist will mark vernal pool species' habitat and a reasonable buffer to be avoided with flagging material. The area will be protected by placing construction fencing or other appropriate protective fencing around the pools including a buffer. Fencing will be used in locations where project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species habitat. ~~If in a High or Medium Risk CTS area, small mammal burrows will be avoided when placing stakes or posts.~~

After reviewing all the available information, we concur with your determination that the proposed project may affect, but is not likely to adversely affect, the fairy shrimp, tadpole shrimp, or goldfields. The proposed project reached the 'may affect' level due to the fact that there is potentially suitable habitat for each species within 250 feet of the proposed project footprint, and because ground disturbing activities within 250 feet of wetland areas have the potential to alter hydrology. However, in general the proposed project construction will not cause permanent impacts to non-paved surfaces, and therefore is not expected to cause measurable differences in local hydrology. Furthermore, the implementation of proposed conservation measures as part of the proposed project will avoid and minimize potential effects from proposed project construction activities on the fairy shrimp, tadpole shrimp, and goldfields.

The proposed project fits within the scope of the actions described in the Programmatic Biological Opinion, and proposed project effects analyzed are comparable to those analyzed in the Programmatic Biological Opinion. Therefore, unless new information reveals effects of the proposed project that may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed project, no further action pursuant to the Act is necessary.

If you have any questions regarding our response concerning the proposed Construction of a War Reserve Material Warehouse Project, please contact Harry Kahler, Fish and Wildlife Biologist (harry_kahler@fws.gov) or Doug Weinrich, Assistant Field Supervisor (douglas_weinrich@fws.gov), at the letterhead address, (916) 414-6563, or by e-mail.

Sincerely,



Doug Weinrich
Assistant Field Supervisor



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the New Youth Center Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, and is likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) from construction activities. Construction includes temporary and permanent ground disturbance from the installation of a parking lot, a 30,104-square foot Youth Center, play areas, landscaping, and associated grading and utility work. The new facilities would permanently remove 5.65 acres of medium risk upland habitat, which Travis AFB is prepared to purchase mitigation credits at a 2:1 areal ratio as specified in the June 2018 Travis AFB Programmatic Biological Opinion.

Please contact Mr. Matthew Blazek (707) 424-5127 or matthew.blazek@us.af.mil of my staff regarding this consultation request.

Sincerely

9/25/2018

X *Brian L. Sassaman*

BRIAN L. SASSAMAN, GS-13, DAFC

Flight Chief, Installation Management

Signed by: SASSAMAN.BRIAN.L.1080522793

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report Template

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Construct New Youth Center

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: Northwest of the Base, West of the intersection of Twin Peaks Drive and Nevada Street

Species impacted: California tiger salamander

Effects Assessment: May Affect, Likely to Adversely Affect

Expected start date of project: October 2018

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations. This project consists of construction of a new Youth Center to better meet the needs of the growing population at Travis AFB. The proposed facility would support approximately 350 children and would comply with all current building standards, seismic codes, fire and safety requirements, and environmental regulations.

Project site location including all work, staging and storage areas. The proposed Youth Center would be located to the south of the existing Youth Center across Collins Drive from the Base housing area, southwest of the intersection of Nevada Street and Cannon Drive (Twin Peaks Drive) (Figure 1). The Youth Center would be near the northwestern extent of development on Travis AFB, approximately 2,200 feet south of the northern installation boundary.

Staging areas may include portions of the 1,000 square-foot existing parking lot (1.47 acres) and previously developed vegetated area west of the existing parking lot (0.65 acre).

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The site is expected to encompass approximately 5 acres for parking lot development, 30,104-square foot Youth Center, play areas, landscape, and associated grading and utility work. Foundations for the new facility will be placed up to 3 feet deep.
- Seasonal constraints of activity. The proposed project will occur year-round and work is estimated to take approximately 20 months to complete. Work is anticipated to begin in October 2018.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, cement and mortar mixer, water truck.

- Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).
 - Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Wetland Resources Map, and the California Natural Diversity Data Base (CNDDDB) were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are no wetlands within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	3,478 ft
Vernal pool fairy shrimp	2,866 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	10,518 ft
California tiger salamander (sighting)	2,522 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. Suitable upland refugia and dispersal habitat are present within the Project area. This area was previously developed as a base housing complex that was later demolished in 2008. The project is located within designated medium risk CTS upland habitat.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. The ongoing mowing activities in this area of the base keep the grass height low and this is attractive to small mammals therefore, the burrow density within the project boundary and surrounding area is high.
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information.

- Describe how effects were considered for each species:

Effects to CTS were determined by proximity of project boundary to CTS upland habitat, type of project, historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within previously disturbed annual grasslands and is designated as a medium risk area for CTS. Approximately 5.65 acres of upland habitat will be permanently removed for construction of the new youth center, which includes approximately 0.65 acre of upland habitat would be temporarily disturbed for longer than one year during construction.

Breeding ponds are located on offsite lands to the east and north in the former Castle Terrace Housing area (Figure 1). The closest documented breeding pond is located approximately 0.48 mi north in the former Castle Terrace Housing Complex (CH2M HILL, 2008). These CTS occurrences indicate that salamanders are aestivating nearby and have potential to disperse through the site; however, presence of residential housing and associated street curbs between this breeding pond and the project site would make the likelihood of CTS occurring low. CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007).

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Closest Action Area (mile)
Potential Breeding Pond	2.44
Potential Breeding Pond	1.99
Potential Breeding Pond	2.21

The Natural Resources Management team believes implementation of this important Conservation Measure (among others) should ensure no harm to CTS:

1. The Service-approved biologist will monitor the active project as the work is being done to ensure no CTS are harmed, and if necessary, relocate CTS according to CTS Relocation Plan described in Section 4.4.5 of the *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* (Travis, 2018).
2. Monitoring the weather forecast for rain events and increasing SAB oversight after rain events.

No designated critical habitats or conservation areas for CTS are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 18; Minor Construction Projects (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 7.12 acres will be disturbed as a result of the

proposed project. Of this amount, approximately 5.65 acres of CTS upland habitat will be disturbed (5 acres permanent, 0.65 temporarily), and 1.47 acres are paved surfaces.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present.

Direct impacts on CTS include crushing of burrows, permanent loss of refugia, and direct mortality from construction activities. However, operational mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows. Construction could also result in an increase in accidental road-killed wildlife due to increased vehicle traffic along existing roads.

Describe the impact if project not completed. If the project is not completed, the existing Youth Center will not be able to provide facilities to support the higher demand in school-age programs.

Conservation Measures (CMs) that will be implemented for the project are:

Conservation Measure	Modified?
MM-1	No
MM-2	Yes
MM-3	No
MM-4	No
MM-5	No
MM-6	Yes
MM-7	No
MM-8	No
MM-9	No
MM-10	No
MM-11	Yes
MM-13	No
MM-14	No
MM-15	Yes
MM-17	No
MM-18	No
CTS-1	No
CTS-2	No
CTS-3	No
CTS-4	No
CTS-5	No
CTS-6	No
CTS-7	No
CTS-8	No

CTS-10	No
CTS-11	No
CTS-12	No
CTS-16	No
CTS-17	No
CTS-18	No
CTS-19	No

CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within one working day and in writing within five working days.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow up monitoring by a Service approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-15. No pets or ~~non-military~~ **personal** firearms will be allowed in the project area.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 12
Species-Specific (CTS)	Prefix CTS 9, 13, 14, 15
All other Species-Specific (VPFS, VPTS, CFS, CCG, DGGB)	All

Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Travis will compensate for the permanent loss of 5.65 acres of CTS upland habitat at a rate of 2:1 (Table 3 of the Travis PBO).

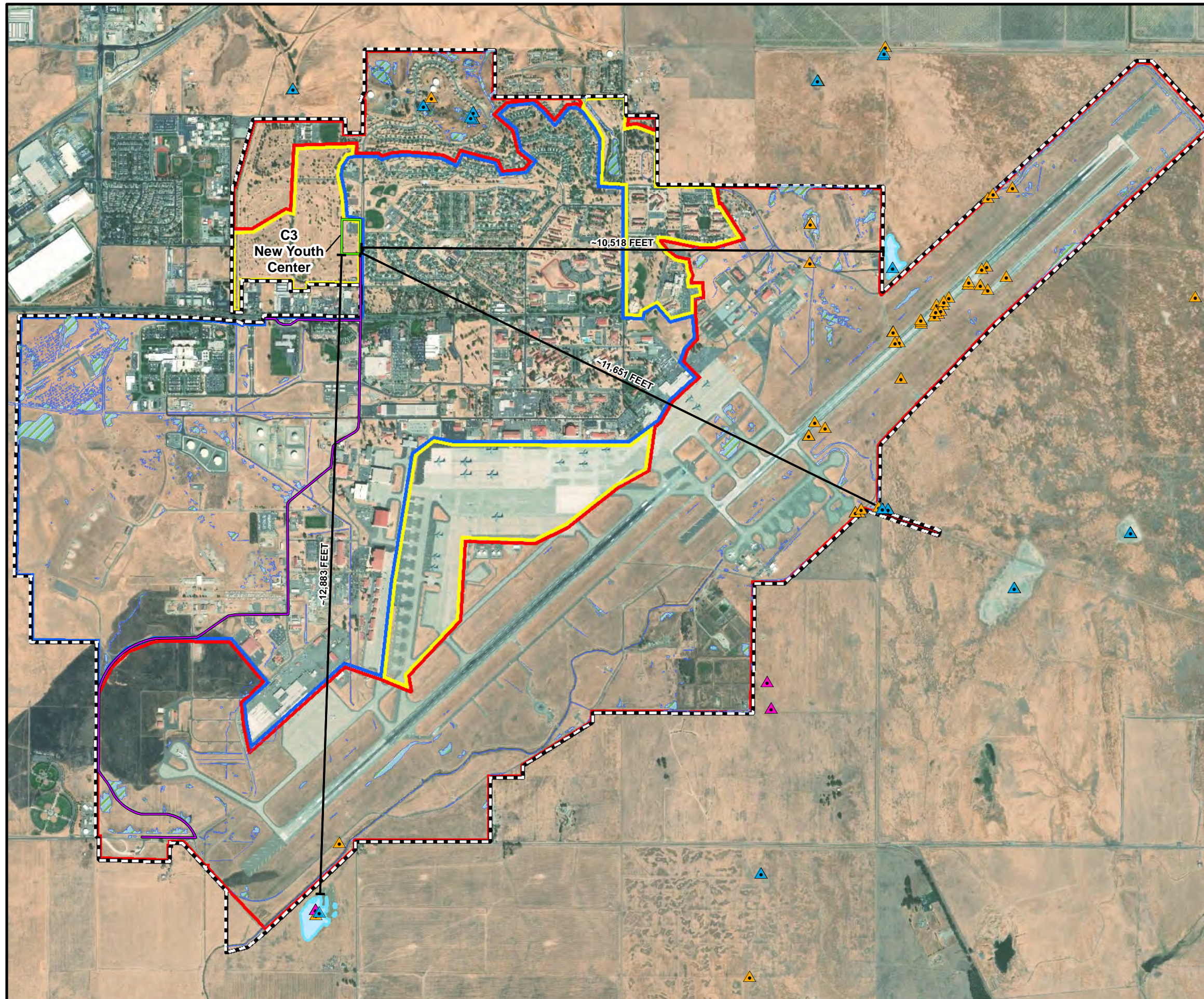
We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

References

- California Natural Diversity Data Base (CNDDDB). 2018. Database maintained by the California Department of Fish and Wildlife, Natural Heritage Branch. Sacramento, CA.
- CH2M HILL. 2008. Castle Terrace Housing Project Vernal Pool Branchiopod and Hydrology 2008 Monitoring Report. October.
- Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, CA. September.
- Orloff, S. 2007. Migratory movements of California tiger salamander in upland habitat – a five-year study (Pittsburg, California). Ibis Environmental, Inc., prepared for Bailey Estates LLC, May.
- Travis AFB. 2018. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.
- U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. 08ESMF00-2017-F-2294-3. June 1.



LEGEND

- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
- ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
- ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
- INGRESS/EGRESS

CTS RISK AREAS

- 1 HIGH RISK
- 2 MEDIUM RISK
- 3 LOW RISK
- CTS BREEDING HABITAT
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

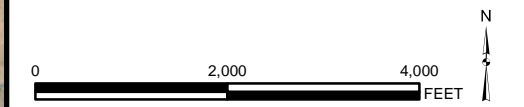
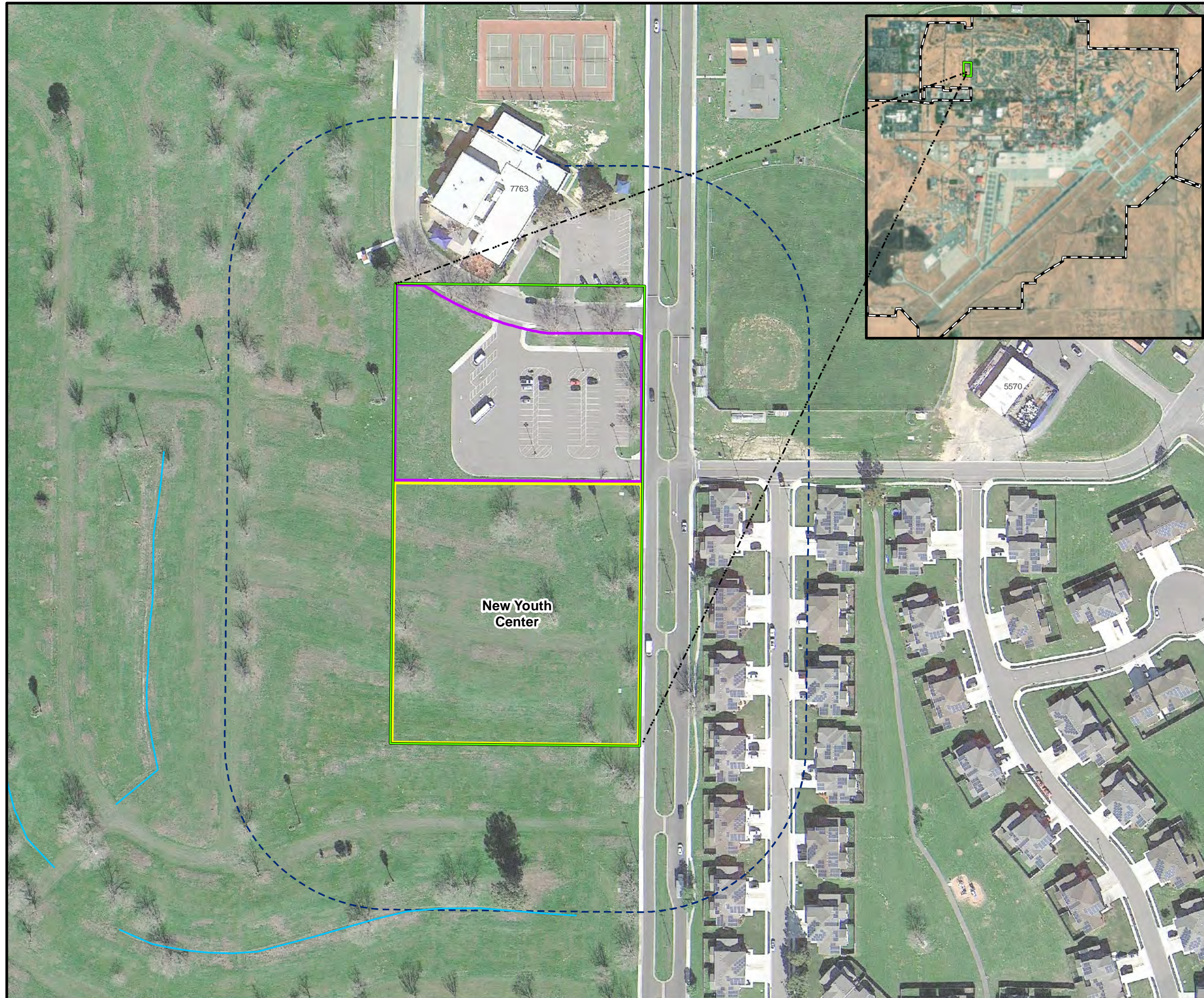


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 CONSTRUCTION OF THE NEW YOUTH CENTER
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- SURFACE WATER
 - PROJECT AREA
 - CONSTRUCTION BOUNDARY
 - STAGING BOUNDARY
 - PROJECT AREA 250' BUFFER

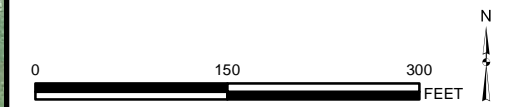


FIGURE 2
PROJECT COMPONENTS
 CONSTRUCTION OF THE NEW YOUTH CENTER
 TRAVIS AIR FORCE BASE, CALIFORNIA



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2019-F-0113-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

OCT 25 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Formal Consultation on the Construct New Youth Center Project at Travis Air Force Base, Solano County, California, and Appending to the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California*

Dear Mr. Sassaman:

This letter is in response to the Travis Air Force Base (Travis AFB) September 25, 2018, electronic mail (email) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Construct New Youth Center (proposed project), Travis AFB in Solano County, California. Your September 25, 2018, email and attachment include the required and complete *Covered Project Analysis Template* (consultation template) as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3; Programmatic Biological Opinion). At issue are effects of the proposed project on the federally threatened Central California Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*; tiger salamander or CTS). Our response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is construction of a new Youth Center at Travis AFB, including a parking area, play areas, landscaping, grading, and utility work. The proposed project is described in the Programmatic Biological Opinion as part of Infrastructure Development (p. 17). Pursuant to 50 CFR 402.12(j), you submitted a consultation template for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the California tiger salamander. Although critical habitat has been designated for the California tiger salamander, no critical habitat for any listed species will be affected by the proposed project. Therefore, critical habitat will not be discussed in the remainder of this document.

Travis AFB requested that the proposed project be appended to Programmatic Biological Opinion. The Service has determined that the proposed project meets the suitability criteria of, and is within the geographic area analyzed in, the Programmatic Biological Opinion. Therefore, this letter is an agreement by the Service to append the proposed project to the Programmatic Biological Opinion and represents the Service's biological opinion on the effects of the proposed project on the California tiger salamander. By appending the proposed project to the Programmatic Biological Opinion, Travis AFB acknowledges and accepts all of the conservation measures outlined within the

Programmatic Biological Opinion, including, but not limited to, the measures to minimize adverse effects. Travis AFB also will follow all reasonable and prudent measures, and all terms and conditions as directed by the Programmatic Biological Opinion.

In considering your request, we based our evaluation on the following: (1) Programmatic Biological Opinion; (2) *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* dated March 2017; (3) your September 25, 2018, letter initiating formal consultation; (4) the accompanying consultation template prepared to assess potential project impacts to federally-listed species and their habitat; (5) email and telephone correspondence between the Service and Travis AFB; and (6) other information available to the Service.

Consultation History

September 25, 2018: The Service received from Travis AFB a request to initiate formal consultation for the proposed project effects on the California tiger salamander. Included with the initiation request was the consultation template that assesses effects of the proposed project on the species.

BIOLOGICAL OPINION

Description of the Action

The new Youth Center will be located on a 5.6-acre parcel to the west of the intersection of Nevada Street and Cannon Drive (Twin Peaks Drive). The purpose of the proposed project is to provide a Youth Center that meets the needs of a growing population at Travis AFB, and remains compliant with all current building requirements, codes, and standards.

The Youth Center building is planned to occupy about 0.69-acre (30,104 square feet) and will include outdoor play areas. The foundations for the building will be placed up to 3 feet deep. Also, it will be necessary to grade the earth for foundation placement, and some utilities will also be placed in ground.

Along with the Youth Center building, a substantial parking area and landscaping will also occupy the 5.6-acre parcel. Staging of equipment will occur in the 1.47-acre (1,000 square-foot) parking area that currently exists within the 5.6-acre parcel, as well as a previously developed, 0.65-acre grassland area just west of the current parking lot.

The construction equipment that could be used includes excavator, tractor, loader, backhoe, trucks, roller, grader, rubber-tired dozer, cement and mortar mixer, and water trucks. Construction equipment will enter the Base through the Suisun Gate (South Gate). All other access to the Base will be through the Main Gate. All construction traffic will exit the Base through the Main Gate.

Work is anticipated to begin in October, 2018, and will take about 20 months to complete. Once started, work will occur year-round during daylight hours.

Conservation Measures

To avoid or minimize effects on the California tiger salamander, Travis AFB will fully implement the following conservation measures listed in Table 1, including all of the relevant conservation measures outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities*

Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California (Service 2018).

Table 1. Conservation measures described in the programmatic biological assessment (Travis 2017) that will be included as part of the proposed project.

Minimization Measures	California Tiger Salamander Measures
MM-1, MM-2, MM-3, MM-4, MM-5, MM-6, MM-7, MM-8, MM-9, MM-10, MM-11, MM-13, MM-14, MM-15, MM-17, MM-18	CTS-1, CTS-2, CTS-3, CTS-4, CTS-5, CTS-6, CTS-7, CTS-8, CTS-10, CTS-11, CTS-12, CTS-16, CTS-17, CTS-18, CTS-19

Of the conservation measures listed in Table 1, four measures will be modified from the text of the programmatic biological assessment (Travis 2017) when applied to the proposed project. In the following descriptions of these four measures, strikethrough text indicates language that will be omitted upon implementation from the text as written in the programmatic biological assessment, and **bold** text indicates language that will be added upon project implementation to the text as written in the programmatic biological assessment:

- From MM -2, remove the strikethrough text: A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service and the California Department of Fish and Wildlife (CDFW) by telephone within 1 working day and in writing within 5 working days.
- From MM -6, remove the strikethrough text: All areas of upland ground disturbance or exposed soil will be reseeded with native “weed-free” seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that the direct impacts to wetlands require a Clean Water Act section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~
- From MM -11, remove the strikethrough text: During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.
- From MM-15, remove the strikethrough text and add the bold text: No pets or ~~non-military~~ **personal** firearms will be allowed in the project area.

In addition to the conservation measures listed in Table 1, Travis AFB also has proposed to compensate for the permanent loss of upland habitat through the purchase of compensation credits at a ratio of 2:1, which follows the ratios outlined in Table 3 of the Programmatic Biological Opinion (Service 2018). Permanent grassland habitat loss is estimated to be 5.65 acres; therefore Travis AFB has proposed to compensate through the purchase of 11.3 acres of upland habitat at a Service-approved conservation bank.

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses all areas subject to building, development or paving, and landscaping. Apart from the ingress and egress routes upon established roads to the work site, the action area is about 7.12 acres of medium risk tiger salamander upland habitat. The action area also includes all areas up to 6 feet from the demolition footprint in which dust and other particles from construction activities may affect any species occupying suitable habitat.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

For the most recent comprehensive assessment of the range-wide status of the tiger salamander, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014). No change in the tiger salamander listing status was recommended in the 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses of tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Environmental Baseline

Travis AFB is located in the Solano-Colusa Vernal Pool Region (Service 2005), which covers the majority of Solano County. Agricultural practices, water diversion and impounding for waterfowl enhancement, development, and road building have affected vernal pools in the region. The Solano Land Trust and the California Department of Fish and Wildlife manage adjacent reserves to protect portions of the northern claypan type (totaling about 2,300 acres). In addition, the Wilcox Ranch, adjacent to the base on the east, is a preservation area under restricted land use. Many vernal pool areas in the region have been converted to agriculture or developed for residential, commercial, or

industrial uses. Restored agricultural lands are targets for land acquisitions through direct purchases, conservation easements, or other cooperative agreements.

The proposed project construction will occur in previously disturbed grassland and woodland areas, as well as upon a current parking lot, in the northwestern corner of the Base. Although many non-native plant species exist in the previously disturbed area, the natural vegetation community of the project area is a disturbed annual grassland/vernal pool complex. Some construction will occur in an area that is currently grassland, and is intensively managed by regular mowing. Throughout Travis AFB, the grassland/vernal pool complex is highly disturbed due to alterations of surface and subsurface hydrology for the construction of road and runway features, the dominance of introduced grasses in upland areas, and the effects from current land management activities. Past land use practices and grading activities within the project area included construction of the original airfield that leveled much of the wetland habitat.

Consequently, many of the historic vernal pools in the area were backfilled with soil or the surrounding upland area was altered to decrease the flow of surface water into remnant wetlands. A formal delineation was conducted in 2014 for the entire base and a preliminary jurisdictional determination of the wetlands within the project area. About 6.09 acres of seasonal wetlands and remnant vernal pools are scattered throughout the action area (Auxilio Management Services 2014).

A breeding habitat assessment for the tiger salamander was conducted on Travis AFB during the wet season of 2005 (CH2M Hill 2006). The assessment concluded that tiger salamanders are not likely to breed within the proposed project action area because it does not provide the hydrology necessary to support breeding habitat. Although the proposed project action area does not contain suitable breeding ponds for the tiger salamander, the species has been observed in breeding ponds to the north and east of the proposed project action area, within the dispersal range of tiger salamanders (TNC 2002, LSA 2004, CH2M Hill 2006, CNDDDB 2018).

Although the proposed project only involves work on disturbed and hardscape areas in Medium Risk areas for tiger salamanders, the action area does contain grassland habitat with small mammal burrows that can support tiger salamander populations during the non-breeding season (Johnson and Shaffer 2010). Dispersing tiger salamanders have been known to occur on roadways, runways, and surrounding grassland areas of the base (Marty 2017). For examples, on January 29, 2014, Travis AFB informed the Service of a live adult tiger salamander on a runway about 2.0 miles northeast of the proposed taxiway and repairs, as well as the hydrant system replacement and expansion. On July 5 and 8, 2015, two dead individuals were found near Runway 03R/21L (Service file # 08ESMF00-2014-F-0633-R001). These two individuals were likely responding to ponded water from a break in a water main, which probably triggered dispersal behavior. More recently, runway surveys and relocation efforts between May 31 and July 20, 2017, relocated 154 juvenile tiger salamanders to suitable burrow sites, while 39 dead tiger salamanders also were found (Marty 2017). In addition, pitfall trapping efforts between June 22, 2017, and July 14, 2017, captured and relocated 658 juvenile tiger salamanders and found 7 dead tiger salamanders (Marty 2017).

Effects of the Action

The proposed project will result in the temporary disturbance of about 0.65 acre, and permanent disturbance of about 5.0 acres, of upland habitat for the tiger salamander. Of the area to be disturbed, about 1.47 acres is currently paved. The affected upland habitat exists in Medium Risk areas of Travis AFB for potential tiger salamander effects (Travis 2017). In all, the implementation of the listed conservation measures will minimize proposed project effects to tiger salamanders.

Juvenile and adult tiger salamanders have been known to use the hardscape of runways, roadways, and parking areas as dispersal habitat. Proposed project actions will reduce the amount of upland dispersal habitat for the tiger salamander during the proposed construction period at Travis AFB. Any tiger salamanders attempting to move into or through the proposed project area will be restricted in their movements. Mortality, injury, or harassment of tiger salamanders could occur due to crushing, entombment, relocation, or disruption of their movements as a result of construction activities related to the proposed project.

Travis AFB has analyzed the likelihood of theoretical project activities across the Base encountering and affecting a tiger salamander (Travis 2017). The analysis is chiefly based on the known dispersal distance and migration movements of tiger salamanders, which may be as much as 1.2 miles across upland habitat from breeding ponds (Orloff 2011). Due to the proximity of the proposed project action area to known breeding ponds for the tiger salamander, one of which exists about 0.48 mile to the north in the former Castle Terrace Housing Complex, the proposed project action area falls in a zone deemed Medium Risk. The recent runway surveys and relocation efforts manifest the potential for proposed project effects on tiger salamanders moving across upland habitat from the nearby breeding ponds during rainy periods.

Travis AFB has proposed to work year round, including during the rainy season when tiger salamander movements across upland habitat are most likely to occur. To avoid and minimize effects to the tiger salamander, Travis AFB has proposed to implement the conservation measures listed in Table 1. Notably, Travis AFB has proposed monitoring of the work area by a Service-approved Biologist (MM-2), and will check rain forecasts daily (CTS -8). Because precipitation events can spur dispersal events of tiger salamanders, if there is a 50% or greater probability of rain forecasted for a following day, a Service-approved Biologist will conduct an extensive morning inspection for tiger salamanders prior to work activities (CTS-8). Also, work will not be conducted if it is raining (CTS-8), which will avoid any potential effects to tiger salamanders that may be moving across the upland habitat. Travis AFB has also proposed to compensate for the permanent loss of 5.65 acres of tiger salamander upland through the purchase of credits at 2:1 ratio (11.3 acres) from a Service-approved conservation bank. The 2:1 ratio follows compensation criteria outlined in Table 3 of the Programmatic Biological Opinion.

Cumulative Effects

Cumulative effects include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of the tiger salamander, the environmental baseline for the action area, the effects of the proposed project and the cumulative effects, it is the Service's biological opinion that the Construct New Youth Center Project, as proposed, is not likely to jeopardize the continued existence of the California tiger salamander. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the potential of lethal take of individual California tiger salamanders will be minimized by the implementation of the

proposed conservation measures; (2) the project fits within the scope of the actions described in the Programmatic Biological Opinion; (3) the effects analyzed are identical work similar to those that were analyzed in the Programmatic Biological Opinion; (4) sensitive time periods for listed species will be avoided to the extent practicable; and (5) all minimization measures will be implemented.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Travis AFB so that they become binding conditions of any grant or permit issued to a contractor, as appropriate, for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this incidental take statement. If Travis AFB (1) fails to assume and implement the terms and conditions or (2) fails to require any contractor to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service anticipates that incidental take of California tiger salamander will be difficult to detect due to its life history and ecology. Specifically, California tiger salamander can be difficult to locate due to their cryptic appearance, their use of underground burrows as habitat, their multiplicity of life forms, and the fact that finding a dead or injured individual is unlikely due to their relatively small size. Losses of salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, or the likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. There is a risk of harm, harassment, injury and mortality as a result of the proposed demolition activities; therefore, the Service is authorizing take incidental to the proposed action as: (1) the harassment and capture of all salamanders within the 7.12 acres of the action area; and (2) the injury or mortality of one juvenile or adult salamander as observed by Service-approved Biologists.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of tiger salamanders associated with the Construct New Youth Center Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California tiger salamander.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the tiger salamander resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the tiger salamander.

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Travis AFB will fully implement and adhere to the conservation measures, as a condition of any permit or contract issued for the proposed project. Travis AFB shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
2. To monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Travis AFB will adhere to the following reporting requirement. Should the anticipated amount or extent of incidental take be exceeded, Travis AFB must immediately reinstate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Travis AFB will provide quarterly updates to the Service with a precise accounting of the total acreage of habitat impacted. Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the Project Description and not analyzed in this Biological Opinion.
 - b. For those components of the action that result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Travis AFB shall immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6563 to report the encounter. If the encounter occurs after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.
 - c. For those components of the action that will require the capture and relocation of any listed species, Travis AFB shall immediately contact the Service's SFWO at

(916) 414-6563 to report the action. If capture and relocation need to occur after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

Travis AFB should continue to work with the Service to assist us in meeting the goals for: (1) the California tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (Service 2017); and (2) vernal pool species as outlined in the *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems in California and Southern Oregon* (Service 2005). In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Construct New Youth Center Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Harry Kahler, Fish and Wildlife Biologist (harry_kahler@fws.gov) or Doug Weinrich, Assistant Field Supervisor (douglas_weinrich@fws.gov), at the letterhead address, (916) 414-6563, or by e-mail.

Sincerely,



Jennifer M. Norris, Ph.D.
Field Supervisor

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- [Service] U.S. Fish and Wildlife Service. 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. Sacramento Fish and Wildlife Office, Sacramento, California. 60 pages plus enclosures.
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[Travis AFB] Travis Air Force Base. 2017. Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. 60th Civil Engineer Squadron, Environmental Element, Travis Air Force Base, California. 145 pages plus appendices.



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Demolition 1115 Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, and is likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) but is not likely to adversely affect Vernal pool fairy and tadpole shrimps (*Branchinecta lynchi* and *Lepidurus packardi*) from construction activities. Construction includes temporary ground disturbance of 0.29 acres of high risk CTS habitat for the removal of the foundation and gas tank for building 1115. Travis AFB is prepared to purchase mitigation credits at a 0.5:1 areal ratio as specified in the June 2018 Travis AFB Programmatic Biological Opinion. There are four wetlands within 250ft of the project action area but none will be directly impacted.

Please contact Mr. Matthew Blazek (707) 424-5127 or matthew.blazek@us.af.mil of my staff regarding this consultation request.

Sincerely

9/25/2018

X *Brian L. Sassaman*

BRIAN L. SASSAMAN, GS-13, DAFC
Flight Chief, Installation Management
Signed by: SASSAMAN.BRIAN.L.1080522793

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report Template

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Removal of foundation of Building 1115 and associated fuel tank and foundation

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: South of the Base, approximately 1.4 miles east of the South Gate, along Perimeter Road.

Species impacted: California tiger salamander (CTS); Vernal pool fairy shrimp (VPFS); Vernal pool tadpole shrimp (VPTS)

Effects Assessment: May Affect, Likely to Adversely Affect (CTS); Not Likely to Adversely Affect (VPFS, VPTS)

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations. This project would include the removal of the concrete foundation of Building 1115 and associated fuel tank and foundation. This building had been vacant for several years and was permanently damaged by fire in 2017. The remains of the burnt building have already been removed.

Project site location including all work, staging and storage areas. Building 1115, the former Tactical Air Navigation (TACAN) building, was located on the south side of the airfield in a remote, unpopulated, primarily vegetated area with a small (approx. 2,000 SF) associated gravel driveway and parking lot (Figure 1). The parking lot is shared by Building 1114 located approximately 40 feet to the northeast. The former building 1115 is on the north side of Perimeter Road less than 750 feet from the south/southeastern installation boundary. An approximately 0.22-acre staging area would be established in the associated gravel parking lot and expanded to the vegetated area northeast.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The area of temporary disturbance is approximately 3,100 square feet. The existing concrete foundation of the former building 1115 and the southernmost fuel tank and its foundation (27 SF) would be removed. The adjacent building (Building 1114) and its associated structures (TACAN antenna, generator, etc.) to the north and the transformer to the southeast would remain. The associated gravel parking lot would also remain. Upon completion, the area would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions.
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 4 months to complete. Work is

anticipated to begin in June 2022

- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).
- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are four (4) wetlands within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	4400 ft
Vernal pool fairy shrimp	5800 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	3100 ft
California tiger salamander (sighting)	2700 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered high value upland habitat. In January 2018, an individual CTS was found in this project area to the west along Perimeter Road (Figure 1). The project is located within designated high risk CTS

- upland habitat.
 - Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the runways was not mapped, however due to BASH activities that minimize small mammal activity in these areas the burrow density is assumed to be at least moderate.
 - Figures showing all applicable species and habitat information. Refer to Figures 2 through 4 that show the project site and all applicable species and habitat information
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in disturbed habitat), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within high risk area for CTS; Demolition work occurs within graveled and disturbed surfaces. Approximately 0.22 acre of upland habitat will be temporarily disturbed for staging of equipment.

CTS have been documented near the former site of building 1115. The deceased adult CTS that was found in January 2018 along Perimeter Road was approximately 0.48 mi west of Building 1115. During the 2017 CTS Relocation Effort (Marty, 2017), multiple CTS that were captured were relocated approximately 1 mile northeast near the Former WWTP site. Most of the CTS occurrences on the base are clustered in the northeastern portion of the Base and breeding ponds are located on off Base lands to the south and north (Figure 2). CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007).

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Closest Action Area (mile)
Potential Breeding Pond	0.59
Potential Breeding Pond	1.94
Potential Breeding Pond	2.56

The Natural Resources Management team believes implementation of these important Conservation Measures (among others) should ensure no harm to CTS:

1. The Service-approved biologist (SAB) will monitor the active project as the work is being done to ensure no CTS are harmed, and if necessary, relocate CTS according to CTS Relocation Plan described in Section 4.4.5 of the *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* (Travis, 2018).
2. Monitoring the weather forecast for rain events and increasing SAB oversight after rain events.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). Vernal pools on the Base are known to support suitable habitat

for vernal pool fairy shrimp (VPFS) (CNDDDB, 2018); therefore, presence in all suitable habitat in the Project Areas is assumed for this project. During the 2016 non-protocol wet season survey conducted by Marty Ecological Consulting, VPFS were identified in 16 vernal pools/wetlands on Base (Marty, 2016). No vernal pool tadpole shrimp (VPTS) were observed on Base during this survey. The closest vernal pool fairy shrimp occurrence from this study is approximately 1.5 miles northwest. Known occurrences of VPFS and VPTS are shown in Figure 2. Based on available data, no listed branchiopod species have been documented within vernal pools in the Project area. The Project is scheduled to occur during the dry season (1 May to 15 October) to minimize temporary indirect effects (e.g. alteration to drainage patterns, construction runoff) to VPFS and VPTS and potential habitats for these species. Construction work and staging will occur within 250 feet of wetlands; however, appropriate Best Management Practices (BMPs) will be implemented to protect wetland features.

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 0.29 acre will be disturbed as a result of the proposed project. Of this amount, approximately 0.22 acre of CTS upland habitat will be temporarily disturbed during construction. With implementation of Conservation Measures, there is no expected disturbance to vernal pool species habitat.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. Direct impacts on CTS include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, operational mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows. Construction could also result in an increase in accidental road-killed wildlife due to increased vehicle traffic along existing and new roads.

No direct effects to VPFS and VPTS are expected to occur as a result of the proposed action. Indirect impacts to vernal pools will be avoided with the implementation and monitoring of wetland protection measures and working during the dry season. Best Management Practices (BMPs) such as silt fencing and straw wattles would be installed to provide a barrier from construction to the wetland features. There is a drainage ditch approximately 10 feet west of the foundation of the building slated for demolition. This drainage ditch is hydrologically connected to SW.SU.547 and SW.SU.548 but because all work will occur during the dry season and hydro-seeding (with native seed) of the disturbed areas will be included in the project, runoff into the surrounding vernal pools and drainage ditch will be avoided.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of this building would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and

pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

Conservation Measure	Modified?
MM-1	No
MM-2	Yes
MM-3	No
MM-4	No
MM-5	No
MM-6	Yes
MM-7	No
MM-8	No
MM-9	No
MM-10	No
MM-11	Yes
MM-13	No
MM-14	No
MM-15	Yes
MM-17	No
MM-18	No
CTS-1	No
CTS-2	No
CTS-3	No
CTS-4	No
CTS-5	No
CTS-6	No
CTS-7	No
CTS-8	No
CTS-10	No
CTS-11	No
CTS-12	No
CTS-16	No
CTS-17	No
CTS-19	No

VP-1	No
VP-4	No

CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed-out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service and the California Department of Fish and Wildlife (CDFW) by telephone within one working day and in writing within five working days.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-15. No pets or ~~non-military~~ **personal** firearms will be allowed in the project area.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 12
Species-Specific (CTS)	Prefix CTS 9, 13-15, 18
Species-Specific (VPFS, VPTS)	Prefix VP 2, 3, 5, 6, 7, 8
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Travis will compensate for the temporary disturbance of 0.22 acres of CTS upland habitat at a rate of 0.5:1 (Table 3 of the Travis PBO).

We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

References

California Natural Diversity Data Base (CNDDB). 2018. Database maintained by the California Department of Fish and Wildlife, Natural Heritage Branch. Sacramento, CA.

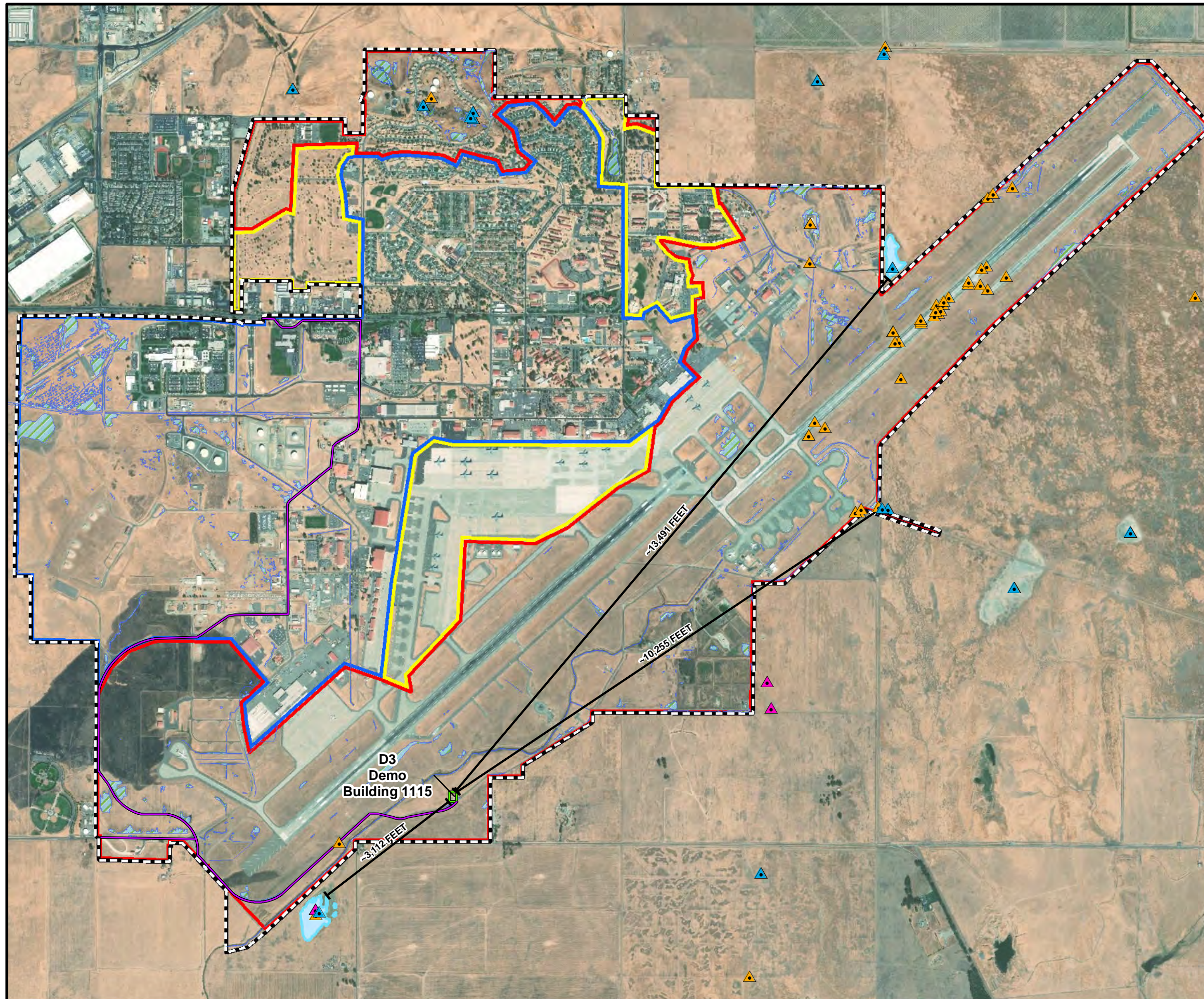
Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, CA. September.

Marty Ecological Consulting. 2016. 2016 Vernal Pool Aquatic Species Survey Report.

Orloff, S. 2007. Migratory movements of California tiger salamander in upland habitat – a five-year study (Pittsburg, California). Ibis Environmental, Inc., prepared for Bailey Estates LLC, May.

Travis AFB. 2018. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.

U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. June 1.



LEGEND

- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
- ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
- ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
- INGRESS/EGRESS

CTS RISK AREAS

- 1 HIGH RISK
- 2 MEDIUM RISK
- 3 LOW RISK
- CTS BREEDING HABITAT
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

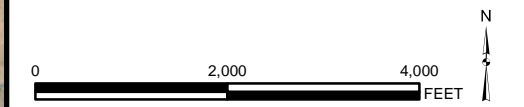
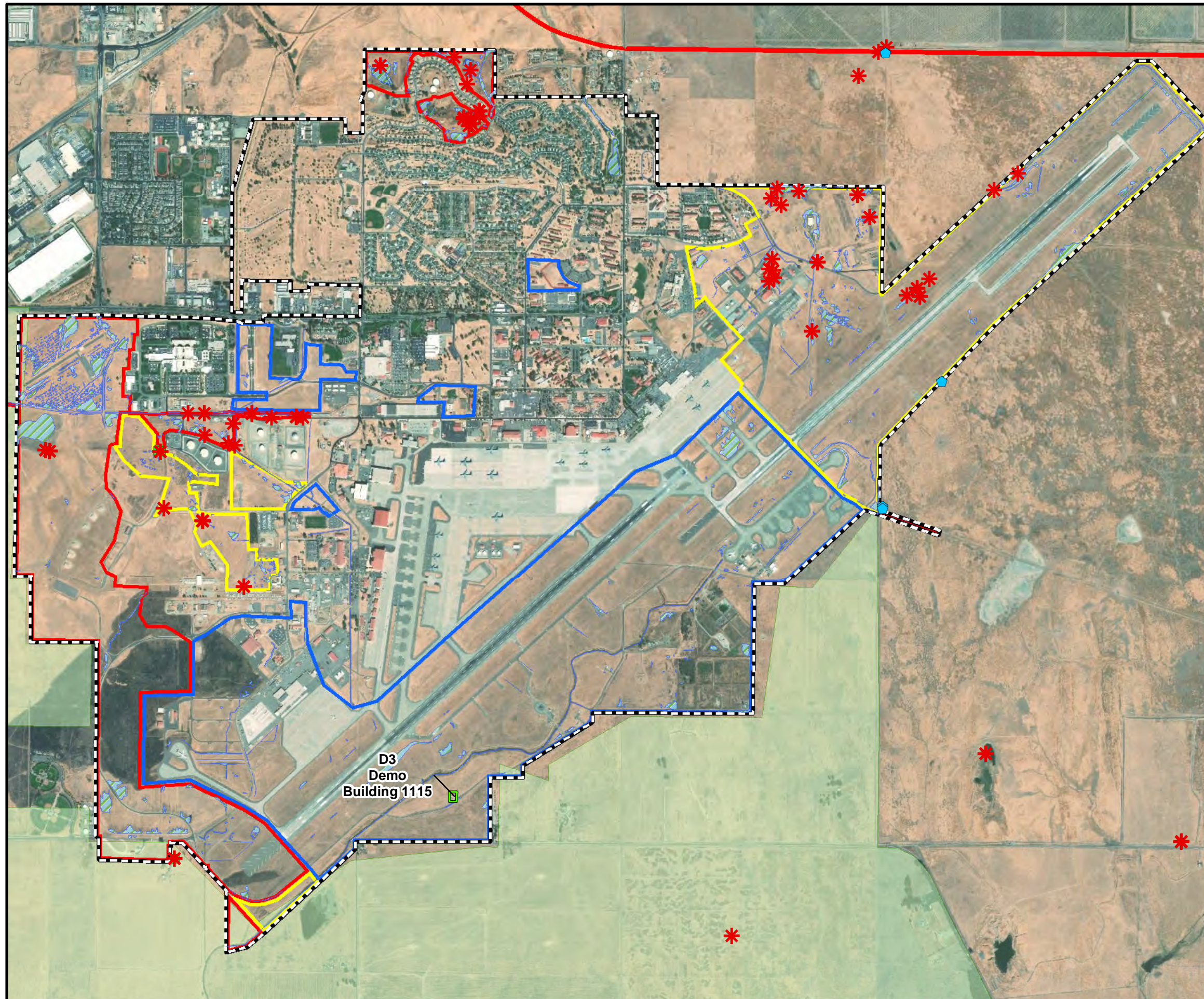


FIGURE 1
CALIFORNIA TIGER SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 1115 TRAVIS AIR FORCE BASE, CALIFORNIA



LEGEND

- ◆ Vernal pool tadpole shrimp, (*Lepidurus packardii*)
- ✱ Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Critical Habitat
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

VERNAL POOL CONSERVATION AREAS

- HIGH VALUE
- MEDIUM VALUE
- LOW VALUE

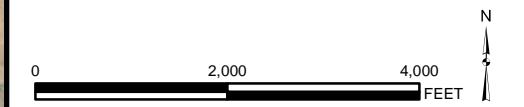


FIGURE 2
VERNAL POOL FAIRY SHRIMP AND
VERNAL POOL TADPOLE SHRIMP
OCCURRENCES
 DEMOLITION OF BUILDING 1115
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- PROJECT AREA
 - DEMOLITION BOUNDARY
 - STAGING BOUNDARY
 - PROJECT AREA 250' BUFFER
- WETLAND FEATURES**
- SEASONAL WETLAND



FIGURE 3
VERNAL POOLS/WETLANDS
 DEMOLITION OF BUILDING 1115
 TRAVIS AIR FORCE BASE, CALIFORNIA



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2018-F-3337-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

OCT 25 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Formal Consultation for Demolition 1115 Project at Travis Air Force Base at Travis Air Force Base, Solano County, California and Appending to the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3)

Dear Mr. Sassaman:

This letter is in response to the Travis Air Force Base (Travis AFB) September 25, 2018, electronic mail (email) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Demolition 1115 Project (proposed project), Travis AFB in Solano County, California. Your September 25, 2018, email and attachment include the required and complete *Covered Project Analysis Template* (consultation template) as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3) (Programmatic Biological Opinion). At issue are the proposed project's effects on the federally-threatened Central California distinct population segment of the California tiger salamander (*Ambystoma californiense*) and vernal pool fairy shrimp (*Branchinecta lynchi*) (fairy shrimp), as well as the federally endangered vernal pool tadpole shrimp (*Lepidurttis packardii*) (tadpole shrimp). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the removal of the concrete foundation of Building 1115 and associated fuel tank and its foundation. Pursuant to 50 CFR 402.12(j), you submitted a Covered Project Template (consultation template) for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the California tiger salamander. Travis AFB has also concluded that the proposed project may affect, but is not likely to adversely affect, the fairy shrimp and tadpole shrimp. Although critical habitat has been designated for the California tiger salamander, fairy shrimp, and the tadpole shrimp, no critical habitat for any listed species exists on Travis AFB. Therefore, critical habitat will not be discussed in the remainder of this document.

Travis AFB, requested that the proposed project be appended to the June 1, 2018, *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3) (Programmatic Biological Opinion). The Service has determined that the proposed project meets the suitability criteria of, and is within the geographic area analyzed in, the Programmatic Biological Opinion. Therefore, this letter is an agreement by the Service to append the proposed project to the Programmatic Biological Opinion and represents the Service's biological opinion on the effects of the proposed project on the California tiger salamander. By appending the proposed project to the Programmatic Biological Opinion, Travis AFB acknowledges and accepts all of the conservation measures outlined within the Programmatic Biological Opinion, including, but not limited to, the measures to minimize adverse effect. Travis AFB will also follow all reasonable and prudent measures, and all terms and conditions as directed by the Programmatic Biological Opinion. Travis AFB will ensure that all construction personnel and activity meets all of these obligations.

In considering your request, we based our evaluation on the following: (1) Programmatic Biological Opinion (Service file 08ESMF00-2017-F-2294-3) ; (2) *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* dated March 2017, Service 2018); (3) your September 25, 2018, letter initiating formal consultation; (4) the accompanying consultation template prepared to assess potential project impacts to federally-listed species and their habitat; (5) email and telephone correspondence between the Service and Travis AFB; and (6) other information available to the Service.

Fairy Shrimp and Tadpole Shrimp

The proposed project is located within a low value vernal pool conservation area. There are no known vernal pool crustacean species populations within 250 feet of the proposed project boundary; the closest proximity to the proposed project site for vernal pool fairy shrimp is 5,800 feet and no vernal pool tadpole shrimp are found near the proposed project site. However, since vernal pools on Travis AFB are known to support suitable habitat for fairy shrimp (CNDDDB 2018); presence in all suitable habitat in the proposed project areas is assumed for this project.

Like the vernal pool fairy shrimp, vernal pool tadpole shrimp also occur throughout the Solano Colusa Vernal Pool Region, including the greater Jepson Prairie area. The CNDDDB (2018) lists 26 known extant occurrences of tadpole shrimp in Solano County, yet the general distribution of tadpole shrimp is sparser than fairy shrimp. Previous surveys on Travis AFB, identified fairy shrimp in 16 vernal pools, but no tadpole shrimp were observed (CH2M Hill 2006; Marty 2016). However, tadpole shrimp have been detected along the eastern boundary of Travis AFB near Runway 3R/21L, and to the south of the Base.

The proposed project consists of the removal of the former Building 1115 and southern most fuel tank and its foundation. The adjacent buildings and associated structures will remain. There are four wetland features 250 feet of the proposed project area. No known populations of vernal pool species are known to occur in these wetland features. In general, wetlands located more than 250 feet from a work area are not expected to be hydrologically affected by proposed project actions.

After reviewing all the available information, we concur with your determination that the proposed project may affect, but is not likely to adversely affect, the fairy shrimp and the tadpole shrimp. The proposed project reached the may affect level for the fairy shrimp and tadpole shrimp due to the fact that proposed project occurs within the known range of the fairy shrimp and the tadpole

shrimp. Wetlands exist within 250 feet of proposed project actions, and hydrology in cases may be affected up to 250 feet from certain ground disturbances. However, the demolition and removal actions of the proposed project are not expected to affect the hydrology of nearby wetlands in any measurable way. Due to the low likelihood that existing wetlands will be affected by proposed project actions, and the lack of occurrence of fairy shrimp and tadpole shrimp in these wetlands, the Service believes that any potential adverse effects to the fairy shrimp and tadpole shrimp from all actions of the proposed project will be discountable.

Consultation History

September 25, 2018: The Service received from Travis AFB a request for formal consultation and to append to the Programmatic Biological Opinion.

BIOLOGICAL OPINION

Description of the Action

The proposed project is located at Travis AFB in Solano County, California. Building 1115, the former Tactical Air Navigation (TACAN) building, is located on the south side of the airfield in a remote, unpopulated, primarily vegetated area with a small (2,000 square feet) gravel driveway and parking lot. The parking lot is shared by Building 1114 located about 40 feet to the northeast. The former Building 1115 is on the north side of Perimeter Road less than 750 feet from the south/southeastern installation boundary. A 0.22-acre staging area would be established in the associated gravel parking lot and expanded to the vegetated area northeast.

The purpose of the proposed project is to provide and maintain infrastructure that is adequate to the needs of 60 Air Mobility Wing (AMW), and support the Air Force mission requirements that meet applicable Department of Defense (DoD), Federal, State, and local laws and regulations. Building 1115 had been vacant for several years and was permanently damaged by fire in 2017. The remains of the burnt building have been already removed. This proposed project is a maintenance project that consists of the removal of a concrete foundation and associated fuel tank and foundation.

The project area encompasses 3,100 square feet. The existing concrete foundation of the former Building 1115 and the southernmost fuel tank and its foundation (27 square feet) would be removed. The adjacent building (Building 1114) and its associated structures (TACAN antenna, generator, etc.) to the north and the transformer to the southeast will remain. The associated gravel parking lot will also remain. Upon completion, the area will be backfilled, graded for positive drainage, hydro-seeded and allowed to return to natural conditions.

The construction equipment that will be used includes excavator, tractor, loader, backhoe, trucks, roller, grader, rubber-tired dozer, and water trucks. Construction equipment will enter the Base through the Suisun Gate (South Gate). All other access to the Base will be through the Main Gate. All construction traffic will exit the Base through the Main Gate.

The proposed project will occur during the dry season and work is estimated to take about 4 months to complete. Work is anticipated to begin in June 2022.

Conservation Measures

To avoid or minimize effects on the California tiger salamander, Travis AFB will fully implement the following conservation measures including all of the relevant conservation measures outlined *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service 2018). The relevant conservation measures have been included below or modified to be project specific, as needed.

Monitoring

1. At least 10 business days prior to the onset of activities, Travis AFB will submit to the Service the name(s) and credentials of Biologists who will conduct biological monitoring oversight of the project. No project activities will begin until proponents have received written approval from the Service that the Biologist(s) is qualified to conduct the work.
2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service by telephone within 1 working day and in writing within 5 working days.
3. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE.
4. During construction activities, all trash will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.
5. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit (maximum) will be adhered to while conducting demolition operations.
6. No pets or personal firearms will be allowed in the project area.

California Tiger Salamander

1. Construction personnel will be instructed to exercise caution when commuting within the proposed project area (encompasses taxiways, ramps, and runways).
2. Proposed project activities will occur day and night for a period of no more than 6 days. A Service-approved Biologist will be on-site during activities that could result in the take of listed species.

3. Work schedules will be modified to a 24 hour work day. Service-approved Biologist(s) will be on-site for morning and night time inspections before the start of work. Inspections consist of examination of all equipment, and all areas within the project site. The Service-approved Biologist(s) will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50 percent or greater probability of rain (trace or more) forecasted. The weather forecast and hourly weather data for Travis AFB will be monitored. If there is measureable rain forecasted, then before work begins the Service-approved Biologist(s) will conduct even more extensive inspections to include searching the work area and a wider perimeter of the area for presence of California tiger salamander. In addition, the proposed project work crew will be notified to maintain vigilance regarding California tiger salamander activity. If feasible, the work crew will participate in the inspections. Modifications to this timing may be approved on a case-by-case basis by the Service.
4. For all night time work (30 minutes before sunset – 30 minutes after sunrise) and daytime/night time work where trace rain or more (drizzling, raining, downpour) is forecasted or occurring, Service-approved Biologists will conduct an inspection of the work areas prior to the start of work. During work, Service-approved Biologist(s) will walk in front of equipment at the project site(s) and while ingressing and egressing along the fire access road to and from the proposed project site(s), surveying the ground for California tiger salamander movement. The Service-approved Biologist(s) will follow the California Tiger Salamander Relocation Plan for any California tiger salamander found within the proposed project site. Equipment must move at the slowest speed possible. Service-approved Biologist(s) will survey the areas in front of and next to equipment more frequently; personal adequate lighting source (i.e. flashlight) to ensure good visibility to see small dark objects moving on a dark surface in rainy conditions.
5. For daytime work only (30 minutes after sunrise – 30 minutes before sunset), if no measurable rain is in the forecast, only a morning inspection will be conducted by a Service-approved Biologist
6. Travis AFB will compensate for temporary disturbance of 0.22 acre of California tiger salamander upland habitat at a rate of 0.5:1 as described in Table 3 of the Programmatic Biological Opinion.

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses all areas subject to the demolition of Building 1115. The action area is 0.22 acre of high risk California tiger salamander upland habitat and also includes all areas up to 6 feet from the demolition footprint in which dust and other particles from construction activities may affect any species occupying suitable habitat.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the

continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

California Tiger Salamander

For the most recent comprehensive assessment of the range-wide status of the California tiger salamander, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014). No change in the California tiger salamander listing status was recommended in the 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses of California tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Environmental Baseline

Travis AFB is located in the Solano-Colusa Vernal Pool Region (Service 2005), which covers the majority of Solano County. Agricultural practices, water diversion and impounding for waterfowl enhancement, development, and road-building have impacted vernal pools in the region. The Solano Land Trust and the California Department of Fish and Wildlife manage adjacent reserves to protect portions of the Northern claypan type (totaling about 2,300 acres). In addition, the Wilcox Ranch, adjacent to the base on the east, is a preservation area under restricted land use. Many vernal pool areas in the region have been converted to agriculture or developed for residential, commercial, or industrial uses. Restored agricultural lands are targets for land acquisitions through direct purchases, conservation easements, or other cooperative agreements.

Seasonal wetlands and vernal pools located on the Travis AFB are known to support the California tiger salamander. Terrestrial habitats at Travis AFB consists of annual grasslands (main vegetation community present), early successional ruderal, and riparian. The undeveloped upland annual grassland area on Travis AFB is known to support the California tiger salamander.

An extensive survey was conducted on the main Travis AFB in 2017, to categorize and quantify vernal pool habitat as either providing high, medium or low habitat conservation values for vernal pool species. Emulating what was done for the jurisdictional area covered in the draft Solano County Multi-species Habitat Conservation Plan (Solano HCP); Travis AFB has surveyed and categorized habitat on Travis AFB and its geographically separated units (GSU's) into three habitat conservation value categories (high, medium and low value conservation areas). This methodology is based on a number of existing criteria including: (1) disturbance levels; (2) distribution of federally-listed species; (3) unique or uncommon habitat features; (4) proximity to existing and proposed Preserves/Reserves; (5) presence of physical barriers; (6) located in Core Recovery Areas and/ or designated critical habitat; and (7) corridors and linkage areas. Based on this methodology, Travis AFB classified and mapped vernal pool conservation areas. Currently, there are 729 acres of high value vernal pool habitat, 920 acres of medium value vernal pool habitat, and 1,559 acres of low value vernal pool habitat located at Travis AFB.

California Tiger Salamander

A breeding habitat assessment for the tiger salamander was conducted on Travis AFB during the wet season of 2005 (Jennings 2005). The assessment concluded that tiger salamanders are not likely to breed within the project area because it does not provide the hydrology necessary to support breeding habitat. The University of California, Davis, conducted a spring survey of potential breeding pools to the west and east of the project site and within the project area during April 2010 and found that the aquatic habitat on Travis AFB this area was not conducive for continuous inundation for successful larval metamorphosis (Johnson and Shaffer 2010). Although the proposed project action area does not contain suitable breeding ponds for the tiger salamander, the species has been observed in breeding ponds to the northeast and east of the proposed project action area, within the dispersal range of tiger salamanders (TNC 2002, LSA 2004, CH2M HILL 2006, CNDDDB 2018).

Travis AFB does contain suitable upland grassland habitat with small mammal burrows which support tiger salamander populations during the non-breeding season (Johnson and Shaffer 2010). Dispersing tiger salamanders have been known to occur on runways and surrounding grassland areas of the base (CNDDDB 2018). For examples, on January 29, 2014, Travis AFB informed the Service of a live adult tiger salamander on a runway about 2.3 miles northeast of the proposed project action area. On July 5 and 8, 2015, two dead individuals were found about 2.1 miles to the northeast of the proposed project action area, on and near Runway 03R/21L (Service file #08ESMF00-2014-F-0633-R001). These two individuals were likely responding to ponded water from a break in a water main, which was near their aestivation sites. More recently, runway surveys and relocation efforts between May 31 and July 14, 2017, relocated 154 juvenile tiger salamanders to suitable burrow sites, while 39 dead tiger salamanders also were found (Marty 2017). In addition, pitfall trapping efforts between June 22, 2017, and July 14, 2017, captured and relocated 658 juvenile tiger salamanders and found 7 dead tiger salamanders (Marty 2017). There have been no reports of injury or mortality of a California tiger salamander in projects appending to the Programmatic Biological Opinion.

Effects of the Action

Effects to California tiger salamander are determined by proximity of the proposed project boundary to high risk California tiger salamander upland habitat, type of proposed project (all demolition and removal work), historical information on California tiger salamander movement within the area of the proposed project, and the close consideration of appropriate Conservation

Measures to be implemented for the proposed project. About 0.22 acre of California tiger salamander upland habitat will be temporarily disturbed during construction. Travis AFB will compensate for temporary disturbance of 0.22 acre of California tiger salamander upland habitat at a rate of 0.5:1 as described in Table 3 of the Programmatic Biological Opinion.

Direct Effects

The potential for take that the proposed project may cause on the California tiger salamander include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, this potential is greatly reduced by implementation of appropriate Conservation Measures and especially through monitoring by Service-approved Biologists.

Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. No indirect effects are expected to occur from the proposed project based on the minimization measures proposed.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

Federally-Listed Species

After reviewing the current status of the California tiger salamander, the environmental baseline for the action area, the effects of the proposed Demolition 1115 Project and the cumulative effects, it is the Service's biological opinion that the Demolition 1115 Project, as proposed, is not likely to jeopardize the continued existence of the California tiger salamander. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the potential of lethal take of individual California tiger salamanders will be minimized by the implementation of the proposed conservation measures; (2) the project fits within the scope of the actions described in the Programmatic Biological Opinion; (3) the effects analyzed are identical work similar to those that were analyzed in the Programmatic Biological Opinion; (4) sensitive time periods for listed species will be avoided to the extent practicable; and (5) all minimization measures will be implemented.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent

act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Travis AFB so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this incidental take statement. If Travis AFB (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally-listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

California Tiger Salamander

The Service anticipates that incidental take of California tiger salamander will be difficult to detect due to its life history and ecology. Specifically, California tiger salamander can be difficult to locate due to their cryptic appearance, their use of underground burrows as habitat, their multiplicity of life forms, and the fact that finding a dead or injured individual is unlikely due to their relatively small size. Losses of salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, or the likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. There is a risk of harm, harassment, injury and mortality as a result of the proposed demolition and removal activities; therefore, the Service is authorizing take incidental to the proposed action as: (1) the harassment and capture of all salamanders within 0.22 acre of the action area; and (2) the injury or mortality of one larval or adult salamander as observed by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of California tiger salamander associated with the Demolition 1115 Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California tiger salamander.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the California tiger salamander resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the California tiger salamander.

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Travis AFB will fully implement and adhere to the conservation measures, as a condition of any permit or contract issued for the proposed project. Travis AFB shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
2. To monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Travis AFB will adhere to the following reporting requirement. Should the anticipated amount or extent of incidental take be exceeded, Travis AFB must immediately reinstate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Travis AFB will provide quarterly updates to the Service with a precise accounting of the total acreage of habitat impacted. Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the Project Description and not analyzed in this Biological Opinion.
 - b. For those components of the action that result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Travis AFB shall immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6563 to report the encounter. If the encounter occurs after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

- c. For those components of the action that will require the capture and relocation of any listed species, Travis AFB shall immediately contact the Service's SFWO at (916) 414-6563 to report the action. If capture and relocation need to occur after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

Travis AFB should continue to work with the Service to assist us in meeting the goals for: (1) the California tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (Service 2017); and (2) vernal pool species as outlined in the *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems in California and Southern Oregon* (Service 2005). In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Demolition 1115 Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Cathy Johnson, Fish and Wildlife Biologist, Cathy_Johnson@fws.gov, (916) 414-6596 or Doug Weinrich, Assistant Field Supervisor, douglas_weinrich@fws.gov, (916) 414-6563, or at the letterhead address.

Sincerely,



Jennifer M. Norris, Ph.D.
Field Supervisor

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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Matthew Blazek
Acting Element Chief, Environment
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Demolition 1182 Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, and is likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) from construction activities. Construction includes temporary ground disturbance of 0.20 acres of high risk CTS habitat for the demolition of building 1182, removal of the foundation, and staging of equipment. Travis AFB is prepared to implement applicable conservation measures and purchase 0.185 acres in mitigation credits as specified in the June 2018 Travis AFB Programmatic Biological Opinion. We propose to offset the remaining 0.015 acres of temporary disturbance by the creation of upland habitat from what was previously the foundation of Building 1182.

Please contact me at (707) 424-5127 or matthew.blazek@us.af.mil if you have any questions.

Sincerely

10/24/2018

X

MATTHEW F. BLAZEK, GS-12, DAFC
Acting Element Chief, Environment
Signed by: BLAZEK.MATTHEW.F.1512869820

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Building and Foundation of Building 1182 and Surrounding Concrete Structures

Project Proponent:

CEIE POC: Matthew Blazek

Location: NE of the Base, along Perimeter Road

Species impacted: California tiger salamander

Effects Assessment: May Affect, Likely to Adversely Affect

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations. This project would include the demolition and removal of the building and concrete foundation of Building 1182 and the various surrounding concrete structures (Photo 1).

Project site location including all work, staging and storage areas. Building 1182 is located on the south side of the airfield in a remote, sparsely populated, primarily vegetated area on the north side of Perimeter Road and approximately 50 feet from the eastern installation boundary (Figure 1). The project staging area will be located on the graveled area adjacent to Building 1182 (Figure 2).

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) Demolition of Building 1182 and associated infrastructure such as the foundation and various concrete structures would be removed at grade. Due to its location away from airfield pavements, the area would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions.
- Seasonal constraints of activity. Work will occur to the greatest extent possible during the dry season (May 1 – October 15) to avoid rain events and CTS migration, however, wet season Conservation Measures have been included in the project in the event work extends into the wet season. Work is estimated to take approximately 4 months to complete and is anticipated to begin in June 2022.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).

- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are no wetlands within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	10,536 ft
Vernal pool fairy shrimp	1,613 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	2,337 ft
California tiger salamander (sighting)	212 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered high value upland habitat. CTS have been documented in the north, southeast and south of the Base, dispersing from breeding ponds and traveling through the Base along the runways. A 2017 CTS runway survey and relocation effort began on 31 May 2017 at Travis AFB. A total of 154 juvenile CTS were relocated off the runway and placed in suitable burrow sites along the eastern boundary of the Base near Building 1182 (Marty, 2017; Figure 2). The project is located within designated high risk CTS upland habitat.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the project area was not mapped, however due to BASH activities that minimize small mammal activity in these areas the burrow density is assumed to be at least moderate.
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information.

- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in disturbed habitat), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within high risk area for CTS; Demolition work occurs within disturbed surfaces and upland habitat. Approximately 0.20 acres of upland habitat will be temporarily disturbed during the project.

CTS have been documented near Building 1182 (CNDDDB, 2018; Marty, 2017). Most of the CTS occurrences are clustered north of Building 1182 and additional breeding ponds are located on offsite lands to the southwest. CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007). Suitable upland refugia and dispersal habitat are present within the Project area.

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Closest Action Area (mile)
Potential Breeding Pond	0.44
Potential Breeding Pond	0.44
Potential Breeding Pond	2.92

The Natural Resources Management team believes implementation of this important Conservation Measure (among others) should ensure no harm to CTS:

1. The Service-approved biologist will monitor the active project as the work is being done to ensure no CTS are harmed, and if necessary, relocate CTS according to CTS Relocation Plan described in Section 4.4.5.

No designated critical habitats or conservation areas for CTS are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). The building and concrete structures to be demolished comprises approximately 0.015 acres and these areas will be returned to a natural state (grasslands). The temporary disturbance of high risk CTS upland habitat as a result of the proposed project is comprised of approximately 0.20 acres.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. Direct impacts on CTS include crushing of burrows, temporary loss of refugia, and direct mortality from

construction activities. However, operational mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows. The project could also result in an increase in accidental road-killed wildlife due to increased vehicle traffic along existing roads.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of this building would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation. The remaining structure and surrounding concrete structures would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

Conservation Measure	Modified?
MM-1	No
MM-2	Yes
MM-3	No
MM-4	No
MM-5	No
MM-6	Yes
MM-7	No
MM-8	No
MM-9	No
MM-10	No
MM-11	Yes
MM-13	No
MM-14	No
MM-17	No
MM-18	No
CTS-1	No
CTS-2	No
CTS-3	No
CTS-4	No
CTS-5	No
CTS-6	No
CTS-7	No
CTS-8	No
CTS-10	No
CTS-11	No
CTS-12	No

CTS-16	No
CTS-17	No
CTS-19	No

CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within one working day and in writing within five working days.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 12, 15
Species-Specific (CTS)	Prefix CTS 9, 13-15, 18
All other Species-Specific (VPFS, VPTS, CFS, CCG, DGGB)	All

Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed

species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Since the foundation of building 1182 and the surrounding concrete structures will be removed (total approximately 0.015 acres) and these areas will be returned to their natural, or pre construction condition and small mammal activities are expected to resume Travis proposes to offset the temporary disturbance of 0.20 acres high risk upland habitat with the 0.015 acres that will be returned to upland grassland for a total of 0.185 acres of temporary disturbance. Travis will compensate for the temporary disturbance of 0.185 (0.20 – 0.015=0.185) acres of CTS high risk upland habitat at a rate of 0.5:1 (Table 3 of the Travis PBO).

We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

References

California Natural Diversity Data Base (CNDDDB). 2018. Database maintained by the California Department of Fish and Wildlife, Natural Heritage Branch. Sacramento, CA.

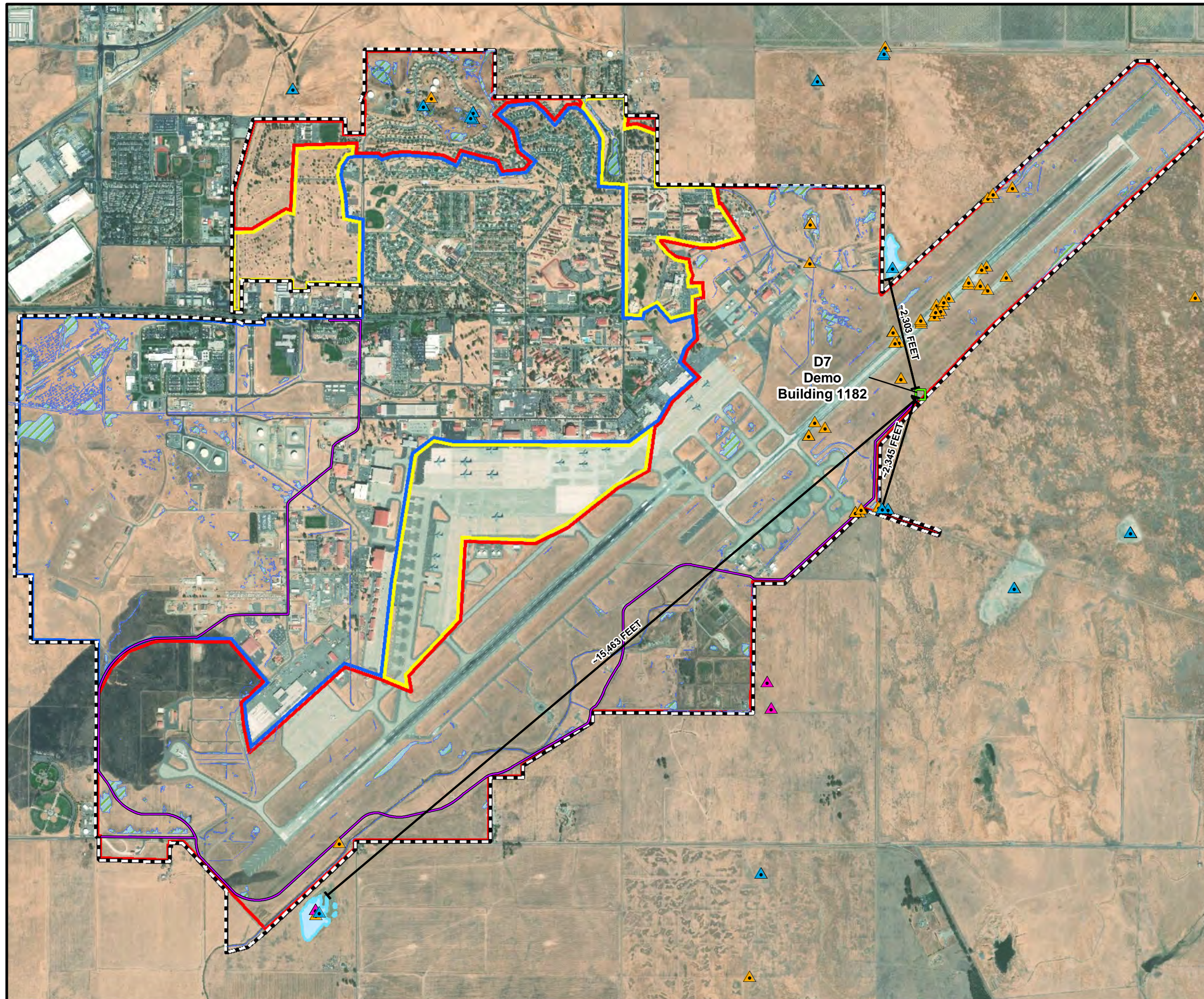
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- LEGEND**
- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY

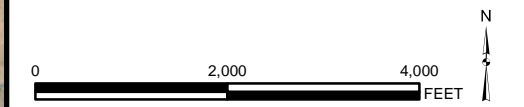
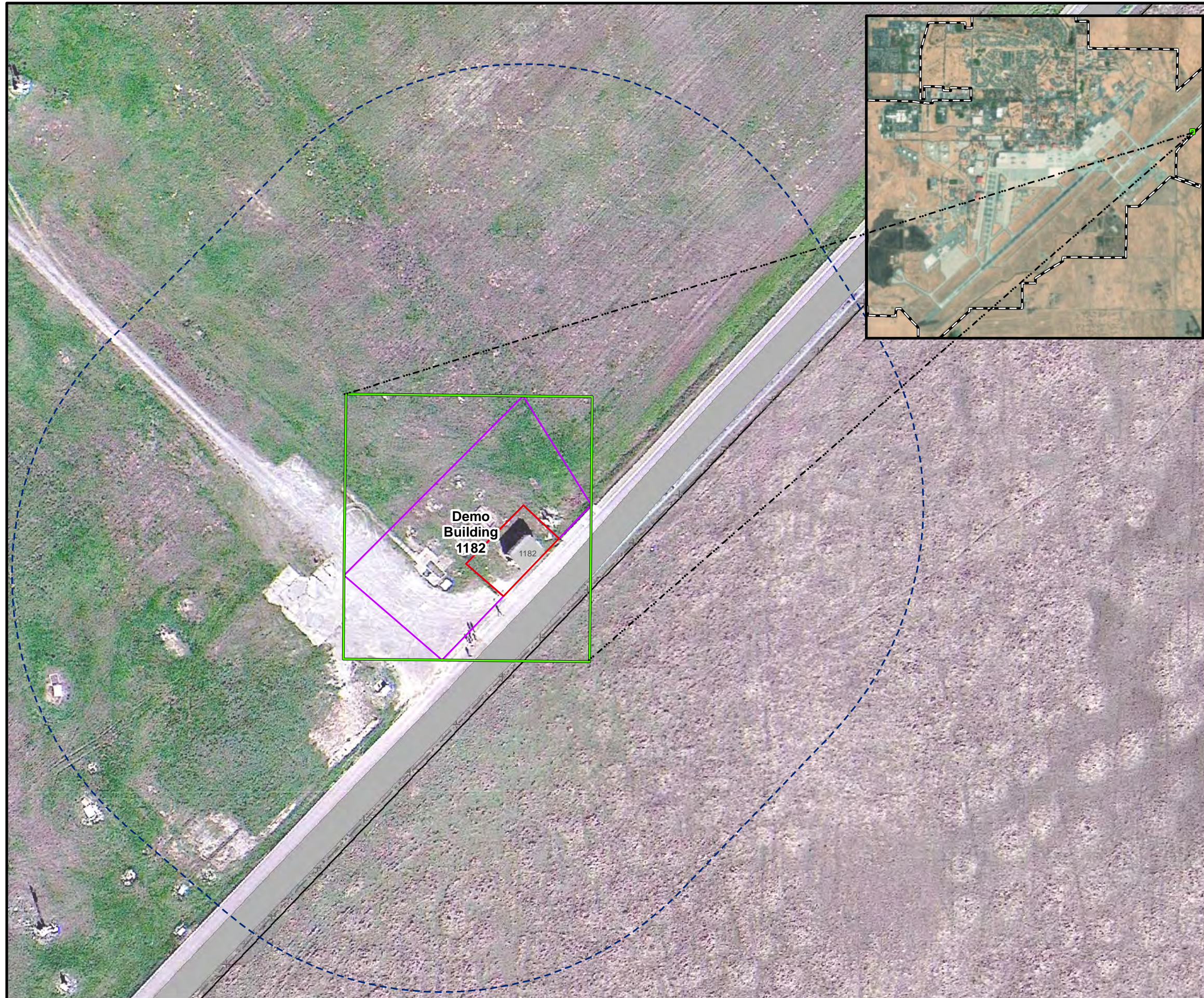


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 1182
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- FENCE
 - PROJECT AREA
 - DEMOLITION BOUNDARY
 - STAGING BOUNDARY
 - PROJECT AREA 250' BUFFER



FIGURE 2
PROJECT COMPONENTS
 DEMOLITION OF BUILDING 1182
 TRAVIS AIR FORCE BASE, CALIFORNIA



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2019-F-0204-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

OCT 30 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Formal Consultation for Demolition of Building 1182 Project at Travis Air Force Base at Travis Air Force Base, Solano County, California and Appending to the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3)

Dear Mr. Sassaman:

This letter is in response to the Travis Air Force Base (Travis AFB) October 19, 2018, electronic mail (email) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Demolition of Building 1182 Project (proposed project), Travis AFB in Solano County, California. Your October 19, 2018, email and attachment include the required and complete *Covered Project Analysis Template* (consultation template) as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3) (Programmatic Biological Opinion). At issue are the proposed project's effects on the federally-threatened Central California distinct population segment of the California tiger salamander (*Ambystoma californiense*). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the removal of the concrete foundation of Building 1182 and surrounding concrete structures. Pursuant to 50 CFR 402.12(j), you submitted a consultation template for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the California tiger salamander. Although critical habitat has been designated for the California tiger salamander, no critical habitat for any listed species exists on Travis AFB. Therefore, critical habitat will not be discussed in the remainder of this document.

Travis AFB, requested that the proposed project be appended to the June 1, 2018, *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3) (Programmatic Biological Opinion). The Service has determined that the proposed project meets the suitability criteria of, and is within the geographic area, analyzed in the Programmatic Biological Opinion. Therefore, this letter is an agreement by the Service to append the proposed project to the Programmatic Biological Opinion and represents the Service's biological opinion on

the effects of the proposed project on the California tiger salamander. By appending the proposed project to the Programmatic Biological Opinion, Travis AFB acknowledges and accepts all of the conservation measures outlined within the Programmatic Biological Opinion, including, but not limited to, the measures to minimize adverse effect. Travis AFB will also follow all reasonable and prudent measures, and all terms and conditions as directed by the Programmatic Biological Opinion. Travis AFB will ensure that all construction personnel and activity meets all of these obligations.

In considering your request, we based our evaluation on the following: (1) Programmatic Biological Opinion (Service file 08ESMF00-2017-F-2294-3); (2) *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* dated March 2017, Service 2018; (3) your October 19, 2018, letter initiating formal consultation; (4) the accompanying consultation template prepared to assess potential project impacts to federally-listed species and their habitat; (5) email and telephone correspondence between the Service and Travis AFB; and (6) other information available to the Service.

Consultation History

October 19, 2018: The Service received from Travis AFB, a request for formal consultation and to append to the Programmatic Biological Opinion.

BIOLOGICAL OPINION

Description of the Action

The proposed project is located at Travis AFB in Solano County, California. Building 1182 is located on the south side of the airfield in a remote, unpopulated, primarily vegetated area on the north side of Perimeter Road and about 50 feet from the eastern installation boundary. The proposed project staging area will be located on the graveled area adjacent to Building 1182.

The purpose of the proposed project is to provide and maintain infrastructure that is adequate to the needs of 60 Air Mobility Wing, and support the Air Force mission requirements that meet applicable Department of Defense (DoD), federal, state, and local laws and regulations. This proposed project is a maintenance project that consists of the removal of a concrete foundation and associated fuel tank and foundation.

The project area encompasses 0.20 acre of high risk California tiger salamander habitat. The existing concrete foundation of Building 1182 and associated infrastructure will be removed at grade. Upon completion, the area will be backfilled, graded for positive drainage, hydro-seeded and allowed to return to natural conditions.

The construction equipment that will be used includes excavator, tractor, loader, backhoe, trucks, roller, grader, rubber-tired dozer, and water trucks. Construction equipment will enter the Base through the Suisun Gate (South Gate). All other access to the Base will be through the Main Gate. All construction traffic will exit the Base through the Main Gate.

The proposed project will occur to the greatest extent possible during the dry season (May 1- October 15) to avoid rain events and California tiger salamander migration. Wet season Conservation Measures have been included in the proposed project in the event work extends into the wet season. Work is estimated to take about 4 months to complete and is anticipated to begin in June 2022.

Conservation Measures

To avoid or minimize effects on the California tiger salamander, Travis AFB will fully implement the following conservation measures including all of the relevant conservation measures outlined *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service 2018). The relevant conservation measures have been included below or modified to be project specific, as needed.

Monitoring

1. At least 10 business days prior to the onset of activities, Travis AFB will submit to the Service the name(s) and credentials of Biologists who will conduct biological monitoring oversight of the project. No project activities will begin until proponents have received written approval from the Service that the Biologist(s) is qualified to conduct the work.
2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service by telephone within 1 working day and in writing within 5 working days.
3. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE.
4. During construction activities, all trash will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.
5. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit (maximum) will be adhered to while conducting demolition operations.
6. No pets or personal firearms will be allowed in the project area.

California Tiger Salamander

1. Construction personnel will be instructed to exercise caution when commuting within the proposed project area (encompasses taxiways, ramps, and runways).
2. Work schedules will be modified to a 24 hour work day. A Service-approved Biologist(s) will be on-site for morning and night time inspections before the start of work. Inspections consist of examination of all equipment, and all areas within the project site. The Service-approved Biologist(s) will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50 percent or greater probability of rain (trace or more) forecasted. The weather forecast and hourly weather data for Travis AFB will be monitored. If there is measureable rain forecasted, then before work begins the Service-

approved Biologist(s) will conduct even more extensive inspections to include searching the work area and a wider perimeter of the area for presence of California tiger salamander. In addition, the proposed project work crew will be notified to maintain vigilance regarding California tiger salamander activity. If feasible, the work crew will participate in the inspections. Modifications to this timing may be approved on a case-by-case basis by the Service.

3. For all night time work (30 minutes before sunset – 30 minutes after sunrise) and daytime/night time work where trace rain or more (drizzling, raining, downpour) is forecasted or occurring, a Service-approved Biologist(s) will conduct an inspection of the work areas prior to the start of work. During work, a Service-approved Biologist(s) will walk in front of equipment at the project site(s) and while ingressing and egressing along the fire access road to and from the proposed project site(s), surveying the ground for California tiger salamander movement. The Service-approved Biologist(s) will follow the California Tiger Salamander Relocation Plan for any California tiger salamander found within the proposed project site. Equipment must move at the slowest speed possible. The Service-approved Biologist(s) will survey the areas in front of and next to equipment more frequently; using an adequate personal lighting source (i.e. flashlight) to ensure good visibility to see small dark objects moving on a dark surface in rainy conditions.
4. For daytime work only (30 minutes after sunrise – 30 minutes before sunset), if no measurable rain is in the forecast, only a morning inspection will be conducted by a Service-approved Biologist
5. Travis AFB will offset the temporary disturbance of 0.20 acre high risk upland habitat by creating 0.015 acre of upland grassland habitat and purchasing 0.093 credits at a Service-approved conservation bank for the remaining 0.185 acre of temporary disturbance (0.5:1 as described in Table 3 of the Programmatic Biological Opinion).

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses all areas subject to the demolition of Building 1182. The action area is 0.20 acre of high risk California tiger salamander upland habitat and also includes all areas up to 6 feet from the demolition footprint in which dust and other particles from construction activities may affect any species occupying suitable habitat.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the

Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

California Tiger Salamander

For the most recent comprehensive assessment of the range-wide status of the California tiger salamander, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014). No change in the California tiger salamander listing status was recommended in the 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses of California tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Environmental Baseline

Travis AFB is located in the Solano-Colusa Vernal Pool Region (Service 2005), which covers the majority of Solano County. Agricultural practices, water diversion and impounding for waterfowl enhancement, development, and road-building have impacted vernal pools in the region. The Solano Land Trust and the California Department of Fish and Wildlife manage adjacent reserves to protect portions of the northern claypan type (totaling about 2,300 acres). In addition, the Wilcox Ranch, adjacent to the base on the east, is a preservation area under restricted land use. Many vernal pool areas in the region have been converted to agriculture or developed for residential, commercial, or industrial uses. Restored agricultural lands are targets for land acquisitions through direct purchases, conservation easements, or other cooperative agreements.

Seasonal wetlands and vernal pools located on the Travis AFB are known to support the California tiger salamander. Terrestrial habitats at Travis AFB consists of annual grasslands (main vegetation community present), early successional ruderal, and riparian. The undeveloped upland annual grassland area on Travis AFB is known to support the California tiger salamander.

An extensive survey was conducted on the main Travis AFB in 2017, to categorize and quantify vernal pool habitat as either providing high, medium or low habitat conservation values for vernal pool species. Emulating what was done for the jurisdictional area covered in the draft Solano County Multi-species Habitat Conservation Plan (Solano HCP); Travis AFB has surveyed and categorized habitat on Travis AFB and its geographically separated units (GSU's) into three habitat conservation value categories (high, medium and low value conservation areas). This methodology is based on a number of existing criteria including: (1) disturbance levels; (2) distribution of federally-listed species; (3) unique or uncommon habitat features; (4) proximity to existing and proposed Preserves/Reserves; (5) presence of physical barriers; (6) located in Core Recovery Areas and/ or designated critical habitat; and (7) corridors and linkage areas. Based on this methodology, Travis AFB classified and mapped vernal pool conservation areas. Currently, there are 729 acres of high

value vernal pool habitat, 920 acres of medium value vernal pool habitat, and 1,559 acres of low value vernal pool habitat located at Travis AFB.

California Tiger Salamander

California tiger salamander have been documented near Building 1182 (CNDDDB, 2018; Marty, 2017). Most of the California tiger salamander occurrences are clustered north of Building 1182 and additional breeding ponds are located on off-site lands to the southwest. California tiger salamanders have been documented dispersing up to 1.3 miles from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff 2007). Suitable upland refugia and dispersal habitat are present within the proposed project area.

A breeding habitat assessment for the tiger salamander was conducted on Travis AFB during the wet season of 2005 (Jennings 2005). The assessment concluded that tiger salamanders are not likely to breed within the proposed project area because it does not provide the hydrology necessary to support breeding habitat. The University of California, Davis, conducted a spring survey of potential breeding pools to the west and east of the project site and within the project area during April 2010 and found that the aquatic habitat on Travis AFB this area was not conducive for continuous inundation for successful larval metamorphosis (Johnson and Shaffer 2010). Although the proposed project action area does not contain suitable breeding ponds for the tiger salamander, the species has been observed in breeding ponds to the northeast and east of the proposed project action area, within the dispersal range of tiger salamanders (TNC 2002, LSA 2004, CH2M HILL 2006, CNDDDB 2018).

Dispersing tiger salamanders have been known to occur on runways and surrounding grassland areas of the base (CNDDDB 2018). For examples, on January 29, 2014, Travis AFB informed the Service of a live adult tiger salamander on a runway about 2.3 miles northeast of the proposed project action area. On July 5 and 8, 2015, two dead individuals were found about 2.1 miles to the northeast of the proposed project action area, on and near Runway 03R/21L (Service file #08ESMF00-2014-F-0633-R001). These two individuals were likely responding to ponded water from a break in a water main, which was near their aestivation sites. More recently, runway surveys and relocation efforts between May 31 and July 14, 2017, relocated 154 juvenile tiger salamanders to suitable burrow sites, while 39 dead tiger salamanders also were found (Marty 2017). In addition, pitfall trapping efforts between June 22, 2017, and July 14, 2017, captured and relocated 658 juvenile tiger salamanders and found 7 dead tiger salamanders (Marty 2017). There have been no reports of injury or mortality of a California tiger salamander in projects appending to the Programmatic Biological Opinion.

Effects of the Action

Effects to California tiger salamander are determined by proximity of the proposed project boundary to high risk California tiger salamander upland habitat, type of proposed project (all demolition and removal work), historical information on California tiger salamander movement within the area of the proposed project, and the close consideration of appropriate Conservation Measures to be implemented for the proposed project. Since the foundation of Building 1182 and the surrounding concrete structures will be removed (about 0.015 acre) and these areas will be returned to their natural, or pre-construction condition and small mammal activities are expected to resume Travis proposes to offset the temporary disturbance of 0.20 acre high risk upland habitat with the 0.015 acre that will be returned to upland grassland leaving a total of 0.185 acre of temporary disturbance ($0.20 - 0.015 = 0.185$). To compensate, Travis will purchase 0.093 credits at Service-approved conservation bank for the temporary disturbance of 0.185 acres of CTS high risk upland habitat at a rate of 0.5:1 (Table 3 of the Travis PBO).

Direct Effects

The potential for take that the proposed project may cause on the California tiger salamander include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, this potential is greatly reduced by implementation of appropriate Conservation Measures and especially through monitoring by a Service-approved Biologist(s).

Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. No indirect effects are expected to occur from the proposed project based on the minimization measures proposed.

Cumulative Effects

Cumulative effects include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

Federally-Listed Species

After reviewing the current status of the California tiger salamander, the environmental baseline for the action area, the effects of the proposed Demolition of Building 1182 Project and the cumulative effects, it is the Service's biological opinion that the Demolition of Building 1182 Project, as proposed, is not likely to jeopardize the continued existence of the California tiger salamander. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the potential of lethal take of individual California tiger salamanders will be minimized by the implementation of the proposed conservation measures; (2) the project fits within the scope of the actions described in the Programmatic Biological Opinion; (3) the effects analyzed are identical work similar to those that were analyzed in the Programmatic Biological Opinion; (4) sensitive time periods for listed species will be avoided to the extent practicable; and (5) all minimization measures will be implemented.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section

7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Travis AFB so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this incidental take statement. If Travis AFB (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

California Tiger Salamander

The Service anticipates that incidental take of California tiger salamander will be difficult to detect due to its life history and ecology. Specifically, California tiger salamander can be difficult to locate due to their cryptic appearance, their use of underground burrows as habitat, their multiplicity of life forms, and the fact that finding a dead or injured individual is unlikely due to their relatively small size. Losses of salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, or the likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. There is a risk of harm, harassment, injury and mortality as a result of the proposed demolition and removal activities; therefore, the Service is authorizing take incidental to the proposed action as: (1) the harassment and capture of all salamanders within the 0.20 acre action area; and (2) the injury or mortality of one juvenile or adult salamander as observed by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of California tiger salamander associated with the Demolition of Building 1182 Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California tiger salamander.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or *minimize* effects on the California tiger salamander resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to *minimize* incidental take of the California tiger salamander.

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Travis AFB will fully implement and adhere to the conservation measures, as a condition of any permit or contract issued for the proposed project. Travis AFB shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
2. To monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Travis AFB will adhere to the following reporting requirement. Should the anticipated amount or extent of incidental take be exceeded, Travis AFB must immediately reinstate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Travis AFB will provide quarterly updates to the Service with a precise accounting of the total acreage of habitat impacted. Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the Project Description and not analyzed in this Biological Opinion.
 - b. For those components of the action that result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Travis AFB shall immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6563 to report the encounter. If the encounter occurs after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.
 - c. For those components of the action that will require the capture and relocation of any listed species, Travis AFB shall immediately contact the Service's SFWO at (916) 414-6563 to report the action. If capture and relocation need to occur after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

Travis AFB should continue to work with the Service to assist us in meeting the goals for: (1) the California tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*)* (Service 2017); and (2) vernal pool species as outlined in the *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems in California and Southern Oregon* (Service 2005). In order for the Service to be kept informed of actions

minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Demolition of Building 1182 Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Cathy Johnson, Fish and Wildlife Biologist, Cathy_Johnson@fws.gov, (916) 414-6596 or Doug Weinrich, Assistant Field Supervisor, douglas_weinrich@fws.gov, (916) 414-6563, or at the letterhead address.

Sincerely,



 Jennifer M. Norris, Ph.D.
Field Supervisor

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- U.S. Fish and Wildlife Service. 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. June 2018.



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

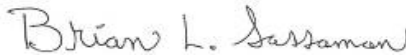
The intent of this letter is to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Demolition of Building 1201 Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, and is likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) from construction activities. Construction includes temporary ground disturbance of 0.22 acres of high risk CTS habitat for the removal of the foundation and utilities for building 1201. Travis AFB is prepared to purchase mitigation credits at a 0.5:1 areal ratio as specified in the June 2018 Travis AFB Programmatic Biological Opinion.

Please contact Mr. Matthew Blazek (707) 424-5127 or matthew.blazek@us.af.mil of my staff regarding this consultation request.

Sincerely

9/26/2018

X 

BRIAN L. SASSAMAN, GS-13, DAFC

Flight Chief, Installation Management

Signed by: SASSAMAN.BRIAN.L.1080522793

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report Template

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Building 1201

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: East of the Base, along Bidwell Street.

Species impacted: California tiger salamander

Effects Assessment: May Affect, Likely to Adversely Affect

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations. The building is currently deteriorated beyond the point of economical repair and cannot be reasonably altered or economically used. This project would include demolition of Building 1201 and the existing concrete foundation and utilities would be removed.

Project site location including all work, staging and storage areas. Building 1201 is near the airfield northwest of Inner Perimeter Road between the intersections of Inner Perimeter and Baker Drive to the north/northeast, and Inner Perimeter and Sutter Road to the south/southwest (Figure 1). A staging area would be established in the associated parking lot (31,879 SF).

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The project area encompasses approximately 59,677 square feet (staging area, building, upland habitat). Building 1201 and the existing concrete foundation would be removed at grade (18,215 SF). Due to the proximity of this area to the BASH controlled areas, the footprint of the demolished structure would likely be leveled and filled with asphalt, as opposed to being hydro-seeded, to minimize grassy areas that birds could use for feeding.
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2022.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).

- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, and the California Natural Diversity Data Base (CNDDDB) were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are no wetlands within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	7,173 ft
Vernal pool fairy shrimp	1,210 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	2,939 ft
California tiger salamander (sighting)	1,829 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered high value upland habitat. CTS have been documented in the north, southeast and south of the Base, dispersing from breeding ponds and traveling through the Base along the runways. A 2017 CTS runway survey and relocation effort began on 31 May 2017 at Travis AFB. A total of 154 juvenile CTS were relocated off the runway and placed in suitable burrow sites along the eastern boundary of the Base (Marty, 2017; Figure 1). The project is located within designated high risk CTS upland habitat.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the project area was not mapped, however due to BASH activities that minimize small mammal activity in the surrounding airfield areas, the burrow density is generally assumed to be moderate in this area. Deanne Weber, CEMML Biologist, conducted a site visit on 25 September 2018 and observed 15-20 gopher burrows and 6 ground squirrel burrows in the areas surrounding Building 1201.

- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information.
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (ground disturbing), historical information on CTS movement within area of the project, and the close consideration of appropriate Conservation Measures to be implemented for the project. This project occurs within high risk area for CTS and the building to be demolished borders pavement and upland habitat. Approximately 9,583 SF (0.22 acre) of upland habitat will be temporarily disturbed by the removal of the foundation of building 1201, grading, and maneuvering of equipment during demolition.

CTS have been documented within 1,829 ft of Building 1201. Most of the CTS occurrences are clustered southeast of Building 1201 and breeding ponds are located on offsite lands to the south and east. CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007). Suitable upland refugia and dispersal habitat are present within the Project area.

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Project Area (mile)
Breeding Pond (off Base)	0.55
Breeding Pond (off Base)	0.81
Potential Breeding Pond (off Base)	2.6

The Natural Resources Management team believes implementation of this important Conservation Measure (among others) should ensure no harm to CTS:

1. The Service-approved biologist (SAB) will conduct morning inspections of the project area prior to the start of work each day, and if necessary, relocate CTS according to CTS Relocation Plan described in Section 4.4.5 of the *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* (Travis, 2018).
2. Monitoring the weather forecast for rain events and increasing SAB oversight after rain events.

No designated critical habitats or conservation areas for CTS are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 0.22 acre of CTS high risk upland habitat will be disturbed as a result of the proposed project.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. Direct impacts on CTS include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, operational mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of this building would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

Conservation Measure	Modified?
MM-1	No
MM-2	Yes
MM-3	No
MM-4	No
MM-6	Yes
MM-7	No
MM-8	No
MM-9	No
MM-10	No
MM-11	Yes
MM-13	No
MM-14	No
MM-15	Yes
MM-17	No
MM-18	No
CTS-1	No
CTS-2	No
CTS-3	No
CTS-4	No
CTS-5	No
CTS-6	No
CTS-7	No

CTS-8	No
CTS-10	No
CTS-11	No
CTS-12	No
CTS-16	No
CTS-17	No
CTS-19	No

CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within one working day and in writing within five working days.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow up monitoring by a Service approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-15. No pets or ~~non-military~~ **personal** firearms will be allowed in the project area.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 5, 12
Species-Specific (CTS)	Prefix CTS 9, 13-15, 18

All other Species-Specific (VPFS, VPTS, CFS, CCG, DGGB)	All
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Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Travis will compensate for the temporary disturbance of 0.22 acres of High Risk CTS upland habitat at a rate of 0.5:1 (Table 3 of the Travis PBO).

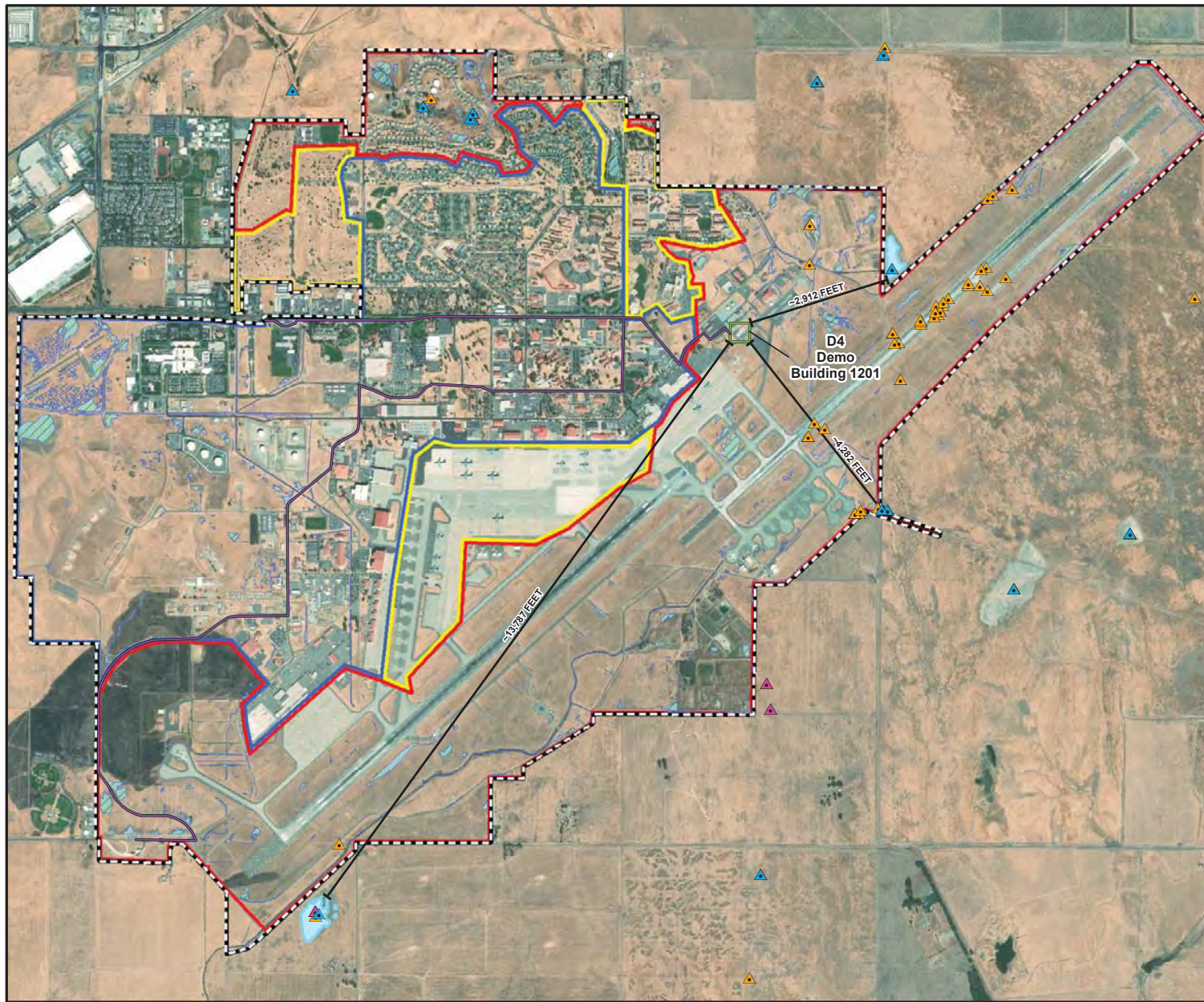
We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

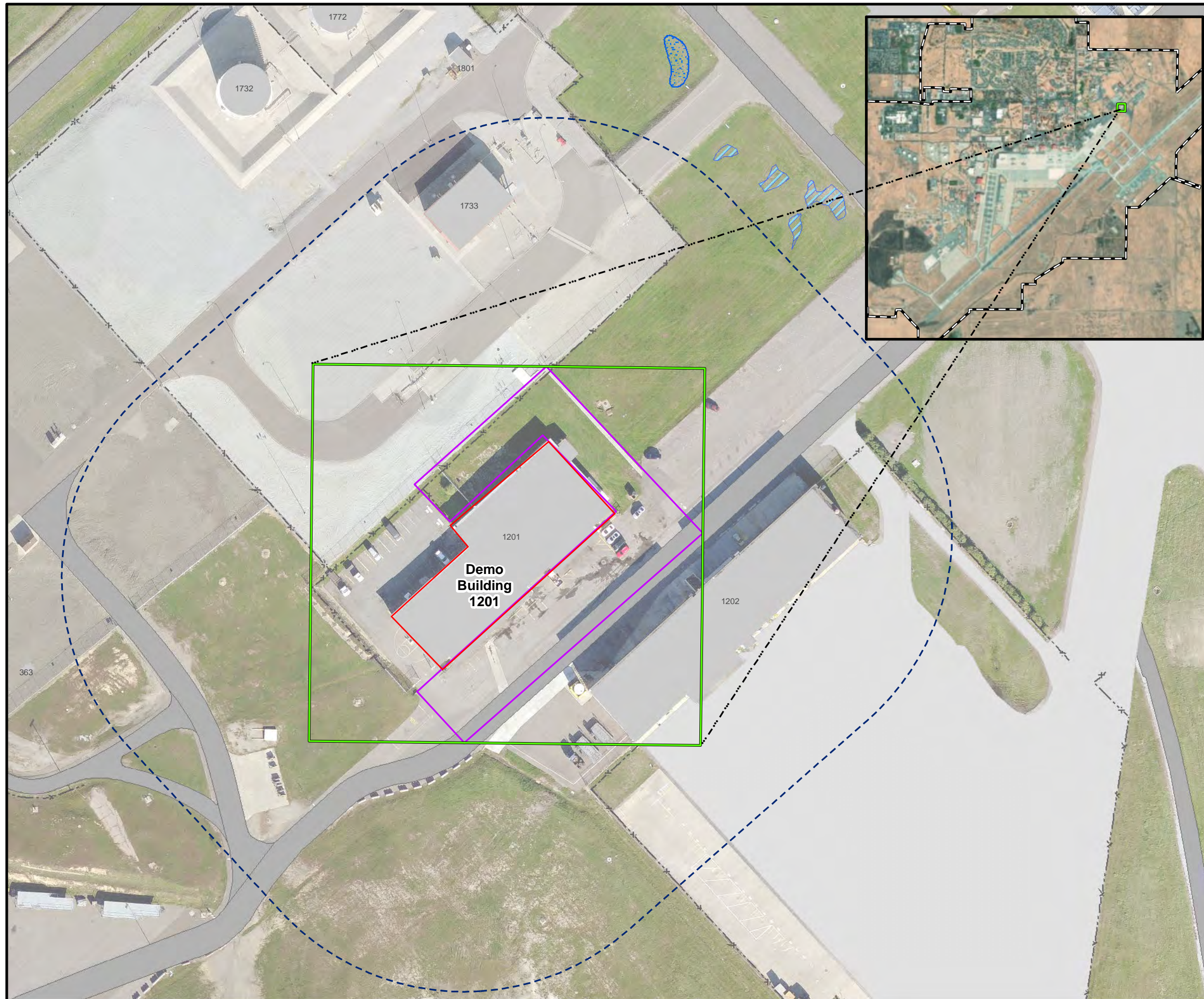
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- Travis AFB. 2018. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.
- U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. 08ESMF00-2017-F-2294-3. June 1.



- LEGEND**
- California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY

FIGURE 1
CALIFORNIA TIGER SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 1201
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- FENCE
 - ACTION AREA
 - DEMOLITION BOUNDARY
 - STAGING BOUNDARY
 - PROJECT AREA 250' BUFFER
- WETLAND FEATURES**
- SEASONAL WETLAND
 - VERNAL POOL

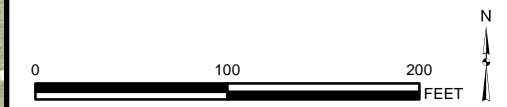


FIGURE 2
PROJECT COMPONENTS
 DEMOLITION OF BUILDING 1201
 TRAVIS AIR FORCE BASE, CALIFORNIA



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2018-F-3336-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

OCT 17 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Formal Consultation for the Demolition of Building 1201 Project at Travis Air Force Base under the Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California

Dear Mr. Sassaman:

This letter is in response to the Travis Air Force Base (Travis AFB) September 26, 2018, electronic mail (email) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Demolition of Building 1201 (proposed project), Travis AFB in Solano County, California. Your September 26, 2018, email and attachment include the required and complete *Covered Project Analysis Template* (consultation template) as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file FF08ESMF00-2017-F-2294-3) (Programmatic Biological Opinion). At issue are the proposed project's effects on the federally-threatened Central California distinct population segment of the California tiger salamander (*Ambystoma californiense*). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the removal of the foundation and utilities for Building 1201 at Travis AFB. The proposed project is described in the Programmatic Biological Opinion as part of Facility Maintenance and Demolition (p. 15). Pursuant to 50 CFR 402.12(j), you submitted a consultation template for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the California tiger salamander. Although critical habitat has been designated for the California tiger salamander, no critical habitat for any listed species exists on Travis AFB. Therefore, critical habitat will not be discussed in the remainder of this document.

In considering your request, we based our evaluation on the following: (1) Programmatic Biological Opinion; (2) *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* dated March 2017; (3) your September 26, 2018, letter initiating formal consultation; (4) the accompanying consultation template prepared to assess potential project impacts to federally-listed species and their habitat; (5) email and telephone correspondence between the Service and Travis AFB; and (6) other information available to the Service.

Consultation History

September 26, 2018: The Service received from Travis AFB a request to initiate formal consultation for the proposed project effects on the California tiger salamander. Included with the initiation request was the consultation template that assesses the proposed project.

BIOLOGICAL OPINION

Description of the Action

The proposed project is located at Travis AFB in Solano county. Building 1201 is near the airfield northwest of Inner Perimeter Road between the intersections of Inner Perimeter and Baker Drive to the north/northeast, and Inner Perimeter and Sutter Road to the south/southwest. A staging area would be established in the associated parking lot (31,879 square feet).

The purpose of the proposed project is to provide and maintain infrastructure that is adequate to the needs of 60 Air Mobility Wing, and support the Air Force mission requirements that meet applicable Department of Defense (DoD), federal, state, and local laws and regulations. Building 1201 is currently deteriorated beyond the point of economical repair and cannot be reasonably altered or economically used. This proposed project is a maintenance project that consists of the demolition of Building 1201 and the existing concrete foundation and the removal of utilities.

The project area encompasses approximately 59,677 square feet (staging area, building, upland habitat). Building 1201 and the existing concrete foundation would be removed at grade (18,215 square feet). Due to the proximity of this area to the Bird Aircraft Strike Hazard controlled areas, the footprint of the demolished structure will be leveled and filled with asphalt, as opposed to being hydro-seeded, to minimize grassy areas that birds could use for feeding.

The construction equipment that would be used includes excavator, tractor, loader, backhoe, trucks, roller, grader, rubber-tired dozer, and water trucks. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate.

The proposed project will occur during the dry season and work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2022.

Conservation Measures

To avoid or minimize effects on the California tiger salamander, Travis AFB will fully implement the following conservation measures including all of the relevant conservation measures outlined *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service 2018). The relevant conservation measures have been included below or modified to be project specific, as needed.

Monitoring

1. At least 10 business days prior to the onset of activities, Travis AFB will submit to the Service the name(s) and credentials of Biologists who will conduct biological monitoring

oversight of the project. No project activities will begin until proponents have received written approval from the Service that the Biologist(s) is qualified to conduct the work.

2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service by telephone within 1 working day and in writing within 5 working days.
3. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE.
4. During construction activities, all trash will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.
5. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit (maximum) will be adhered to while conducting demolition operations.
6. No pets or personal firearms will be allowed in the project area.

California Tiger Salamander

1. Construction personnel will be instructed to exercise caution when commuting within the proposed project area (encompasses taxiways, ramps, and runways).
2. Proposed project activities will occur day and night for a period of no more than 6 days. A Service-approved Biologist will be on-site during activities that could result in the take of listed species.
3. Work schedules will be modified to a 24 hour work day. Service-approved Biologist(s) will be on-site for morning and night time inspections before the start of work. Inspections consist of examination of all equipment, and all areas within the project site. The Service-approved Biologist(s) will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50 percent or greater probability of rain (trace or more) forecasted. The weather forecast and hourly weather data for Travis AFB will be monitored. If there is measureable rain forecasted, then before work begins the Service-approved Biologist(s) will conduct even more extensive inspections to include searching the work area and a wider perimeter of the area for presence of California tiger salamander. In addition, the proposed project work crew will be notified to maintain vigilance regarding California tiger salamander activity. If feasible, the work crew will participate in the inspections. Modifications to this timing may be approved on a case-by-case basis by the Service.
4. For all night time work (30 minutes before sunset – 30 minutes after sunrise) and daytime/night time work where trace rain or more (drizzling, raining, downpour) is

forecasted or occurring, Service-approved Biologists will conduct an inspection of the work areas prior to the start of work. During work, Service-approved Biologist(s) will walk in front of equipment at the project site(s) and while ingressing and egressing along the fire access road to and from the proposed project site(s), surveying the ground for California tiger salamander movement. The Service-approved Biologist(s) will follow the California Tiger Salamander Relocation Plan for any California tiger salamander found within the proposed project site. Equipment must move at the slowest speed possible. Service-approved Biologist(s) will survey the areas in front of and next to equipment more frequently; personal adequate lighting source (i.e. flashlight) to ensure good visibility to see small dark objects moving on a dark surface in rainy conditions.

5. For daytime work only (30 minutes after sunrise – 30 minutes before sunset), if no measurable rain is in the forecast, only a morning inspection will be conducted by a Service-approved Biologist.
6. Travis AFB will compensate for the temporary disturbance of 0.22 acre of high risk CTS upland habitat at a ratio of 0.5:1 (Table 3 of Travis PBO).

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses all areas subject to the demolition of Building 1201. The action area is 0.22 acre of high risk California tiger salamander upland habitat. The action area also includes all areas up to 6 feet from the demolition footprint in which dust and other particles from construction activities may affect any species occupying suitable habitat.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

California Tiger Salamander

For the most recent comprehensive assessment of the range-wide status of the California tiger salamander, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014). No change in the California tiger salamander listing status was recommended in the 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses of California tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Environmental Baseline

Travis AFB is located in the Solano-Colusa Vernal Pool Region (Service 2005), which covers the majority of Solano County. Agricultural practices, water diversion and impounding for waterfowl enhancement, development, and road-building have impacted vernal pools in the region. The Solano Land Trust and the California Department of Fish and Wildlife manage adjacent reserves to protect portions of the Northern claypan type (totaling about 2,300 acres). In addition, the Wilcox Ranch, adjacent to the base on the east, is a preservation area under restricted land use. Many vernal pool areas in the region have been converted to agriculture or developed for residential, commercial, or industrial uses. Restored agricultural lands are targets for land acquisitions through direct purchases, conservation easements, or other cooperative agreements.

Seasonal wetlands and vernal pools located on the Travis AFB are known to support the California tiger salamander. Terrestrial habitats at Travis AFB consists of annual grasslands (main vegetation community present), early successional ruderal, and riparian. The undeveloped upland annual grassland area on Travis AFB is known to support the California tiger salamander.

An extensive survey was conducted on the main Travis AFB in 2017, to categorize and quantify vernal pool habitat as either providing high, medium or low habitat conservation values for vernal pool species. Emulating what was done for the jurisdictional area covered in the draft Solano County Multi-species Habitat Conservation Plan (Solano HCP); Travis AFB has surveyed and categorized habitat on Travis AFB and its geographically separated units into three habitat conservation value categories (high, medium and low value conservation areas. This methodology is based on a number of existing criteria including: (1) disturbance levels; (2) distribution of federally-listed species; (3) unique or uncommon habitat features; (4) proximity to existing and proposed Preserves/Reserves; (5) presence of physical barriers; (6) located in Core Recovery Areas and/ or designated critical habitat; and (7) corridors and linkage areas. Based on this methodology, Travis AFB classified and mapped vernal pool conservation areas. Currently, there are 729 acres of high value vernal pool habitat, 920 acres of medium value vernal pool habitat, and 1,559 acres of low value vernal pool habitat located at Travis AFB.

California Tiger Salamander

A breeding habitat assessment for the tiger salamander was conducted on Travis AFB during the wet season of 2005 (Jennings 2005). The assessment concluded that tiger salamanders are not likely to breed within the project area because it does not provide the hydrology necessary to support breeding habitat. The University of California, Davis, conducted a spring survey of potential

breeding pools to the west and east of the project site and within the project area during April 2010 and found that the aquatic habitat on Travis AFB in this area was not conducive for continuous inundation for successful larval metamorphosis (Johnson and Shaffer 2010). Although the proposed project action area does not contain suitable breeding ponds for the tiger salamander, the species has been observed in breeding ponds to the northeast and east of the proposed project action area, within the dispersal range of tiger salamanders (TNC 2002, LSA 2004, CH2M HILL 2006, CNDDDB 2018).

Travis AFB does contain suitable upland grassland habitat with small mammal burrows which support tiger salamander populations during the non-breeding season (Johnson and Shaffer 2010). Dispersing tiger salamanders have been known to occur on runways and surrounding grassland areas of the base (CNDDDB 2018). For examples, on January 29, 2014, Travis AFB informed the Service of a live adult tiger salamander on a runway about 2.3 miles northeast of the proposed project action area. On July 5 and 8, 2015, two dead individuals were found about 2.1 miles to the northeast of the proposed project action area, on and near Runway 03R/21L (Service file #08ESMF00-2014-F-0633-R001). These two individuals were likely responding to ponded water from a break in a water main, which was near their aestivation sites. More recently, runway surveys and relocation efforts between May 31 and July 14, 2017, relocated 154 juvenile tiger salamanders to suitable burrow sites, while 39 dead tiger salamanders also were found (Marty 2017). In addition, pitfall trapping efforts between June 22, 2017, and July 14, 2017, captured and relocated 658 juvenile tiger salamanders and found 7 dead tiger salamanders (Marty 2017).

Effects of the Action

Effects to California tiger salamander are determined by proximity of the proposed project boundary to high risk California tiger salamander upland habitat, type of proposed project (all demolition work), historical information on California tiger salamander movement within the area of the proposed project, and the close consideration of appropriate Conservation Measures to be implemented for the proposed project.

Direct Effects

The potential for take that the proposed project may cause on the California tiger salamander include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, this potential is greatly reduced by implementation of appropriate Conservation Measures and especially through monitoring by Service-approved Biologists. The entire proposed project site consists of operational mowing activities that maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows.

Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. No indirect effects are expected to occur from the proposed project based on the minimization measures proposed.

Cumulative Effects

Cumulative effects include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service

did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

Federally-Listed Species

After reviewing the current status of the California tiger salamander, the environmental baseline for the action area, the effects of the proposed Demolition of Building 1201 Project and the cumulative effects, it is the Service's biological opinion that the Demolition of Building 1201 Project, as proposed, is not likely to jeopardize the continued existence of the California tiger salamander. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the potential of lethal take of individual California tiger salamanders will be minimized by the implementation of the proposed conservation measures; (2) the project fits within the scope of the actions described in the Programmatic Biological Opinion; (3) the effects analyzed are identical work similar to those that were analyzed in the Programmatic Biological Opinion; (4) sensitive time periods for listed species will be avoided to the extent practicable; and (5) all minimization measures will be implemented.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Travis AFB so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this incidental take statement. If Travis AFB (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally-listed endangered plants or the malicious damage

of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of state law or regulation or in the course of any violation of a state criminal trespass law.

Amount or Extent of Take

California Tiger Salamander

The Service anticipates that incidental take of California tiger salamander will be difficult to detect due to its life history and ecology. Specifically, California tiger salamander can be difficult to locate due to their cryptic appearance, their use of underground burrows as habitat, their multiplicity of life forms, and the fact that finding a dead or injured individual is unlikely due to their relatively small size. Losses of salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, or the likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. There is a risk of harm, harassment, injury and mortality as a result of the proposed demolition activities; therefore, the Service is authorizing take incidental to the proposed action as: (1) the harassment and capture of all salamanders within 0.22 acre of the action area; and (2) the injury or mortality of one larval or adult salamander as observed by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of California tiger salamander associated with the Demolition of Building 1201 will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California tiger salamander.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the California tiger salamander resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the California tiger salamander.

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Travis AFB will fully implement and adhere to the conservation measures, as a condition of any permit or contract issued for the proposed project. Travis AFB shall require that all

personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.

2. To monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Travis AFB will adhere to the following reporting requirement. Should the anticipated amount or extent of incidental take be exceeded, Travis AFB must immediately reinitiate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Travis AFB will provide quarterly updates to the Service with a precise accounting of the total acreage of habitat impacted. Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the Project Description and not analyzed in this Biological Opinion.
 - b. For those components of the action that result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Travis AFB shall immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6563 to report the encounter. If the encounter occurs after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.
 - c. For those components of the action that will require the capture and relocation of any listed species, Travis AFB shall immediately contact the Service's SFWO at (916) 414-6563 to report the action. If capture and relocation need to occur after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

Travis AFB should continue to work with the Service to assist us in meeting the goals for: (1) the California tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (Service 2017); and (2) vernal pool species as outlined in the *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems in California and Southern Oregon* (Service 2005). In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT


This concludes formal consultation on the Demolition of Building 1201 Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Cathy Johnson, Fish and Wildlife Biologist (cathy_s_johnson@fws.gov) or Doug Weinrich, Assistant Field Supervisor (douglas_weinrich@fws.gov), at the letterhead address, (916) 414-6563, or by e-mail.

Sincerely,



 Jennifer M. Norris, Ph.D.
Field Supervisor

LITERATURE CITED

- California Natural Diversity Data Base. 2018. California Department of Fish and Wildlife. RAREFIND. Natural Heritage Division, Sacramento, California. Accessed June 26, 2018.
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DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Brian L. Sassaman
Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Demolition 1332 Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, but is not likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) from construction activities. Construction includes temporary ground disturbance of 0.30 acres of medium risk CTS habitat for the demolition of building 1332, removal of the foundation, and staging and movement of equipment. Travis AFB is prepared to implement applicable conservation measures as specified in the June 2018 Travis AFB Programmatic Biological Opinion.

Please contact Mr. Matthew Blazek (707) 424-5127 or matthew.blazek@us.af.mil of my staff regarding this consultation request.

Sincerely

10/1/2018

X 

BRIAN L. SASSAMAN, GS-13, DAFC

Flight Chief, Installation Management

Signed by: SASSAMAN.BRIAN.L.1080522793

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Building 1332

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: East of the Base, along Prallow Street.

Species impacted: California tiger salamander

Effects Assessment: May Affect, Not Likely to Adversely Affect

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project to provide and maintain infrastructure that is adequate to the needs of 60 AMW, supports the Air Force mission requirements, and meets applicable DoD, Federal, State, and local laws and regulations. This project would include the demolition of a vacant dormitory and removal of the concrete foundation. The dormitory is no longer in use, has deteriorated beyond the point of economical repair, and cannot be reasonably altered or economically used.

Project site location including all work, staging and storage areas. Building 1332 is in the northeastern extent of the developed area north of the Travis AFB Airfield (Figure 1), adjacent to dormitories currently in use. The project area encompasses approximately 46,728 square feet (SF) which includes a staging area, the dormitory building to be demolished, and surrounding previously disturbed grassland areas (Photo 1; Figure 2).

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The vacant, three-story dormitory (25,120 SF) and the associated infrastructure, such as the foundation and utilities, would be demolished at grade. Upon completion, the area would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions. Staging and laydown area for the project encompasses approximately 8,684 SF. The surrounding previously disturbed grassland areas impacted by the project is approximately 12,924 SF (0.30 acres).
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2022.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through

the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).

- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Wetlands Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are no wetlands within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	4,808 ft
Vernal pool fairy shrimp	1,772 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	4,131 ft
California tiger salamander (sighting)	2,465 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. The undeveloped areas surrounding the dormitory consist of compacted soil with gravel embedded in the soil and invasive upland grasses. CTS upland habitat surrounding the project boundary is considered low value upland habitat due to its proximity to developed areas, high urban use by dormitory residents, roads, and curbs. The project is located within designated medium risk CTS upland habitat.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the project area was not mapped, however due to area's high urban use by dormitory residents the burrow density is assumed to be low. A site visit was performed by Deanne Weber, CEMML Biologist, on 28 September 2018 and no burrows were observed within the project areas

mapped in Figure 2.

- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information.

- Describe how effects were considered for each species:

Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in developed areas), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within medium risk area for CTS. Demolition work occurs within developed areas consisting of landscaped areas with sod, plants ginger rock, and sidewalks. Approximately 0.3 acre of medium risk upland habitat will be temporarily disturbed for staging of equipment and maneuvering of equipment during the demolition of building 1332.

CTS have been documented approximately 0.47 mi east of Building 1332. During the 2017 CTS Relocation Effort (Marty, 2017), most of the CTS occurrences occurred within 0.8 to 1.2 miles east of Building 1332 along the runway. Breeding ponds are located on offsite lands to the east (Wilcox West Pond) and north in the Castle Terrace Conservation Area (Figure 4). CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007).

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Closest Action Area (mile)
Off Base Breeding Pond	0.78
Off Base Breeding Pond	1.32
Off Base Potential Breeding Pond	2.85

The Natural Resources Management team believes implementation of this important Conservation Measure (among others) should ensure no harm to CTS:

1. Monitoring the weather forecast for rain events and increasing SAB oversight after rain events.

No designated critical habitats or conservation areas for CTS are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat

type present) for the species (in acres). The project area encompasses approximately 46,728 SF (staging area, building 1332, upland habitat). Approximately 0.30 acre of medium risk CTS upland habitat will be temporarily disturbed during construction.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. Direct impacts on CTS include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. However, operational mowing activities maintain grass and ruderal vegetation at a low height, allowing for observation of any small mammal burrows.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of this building would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

Conservation Measure	Modified?
MM-1	No
MM-2	Yes
MM-3	No
MM-4	No
MM-6	Yes
MM-7	No
MM-8	No
MM-9	No
MM-10	No
MM-11	Yes
MM-13	No
MM-14	No
MM-15	Yes
MM-17	No
MM-18	No
CTS-1	No
CTS-2	No
CTS-3	No
CTS-4	No
CTS-5	No
CTS-7	No
CTS-8	No

CTS-10	No
CTS-11	No
CTS-12	No
CTS-16	No
CTS-17	No
CTS-19	Yes

CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed-out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service and the California Department of Fish and Wildlife (CDFW) by telephone within one working day and in writing within five working days.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-15. No pets or ~~non-military~~ **personal** firearms will be allowed in the project area.

CTS-19. In the event that CTS are encountered on the project site, the Service-approved Biologist or Natural Resource Monitor will contact the Travis AFB Natural Resource Manager who will then contact the Service. ~~If CTS are captured, they should be released as near as possible to the point of capture, in a manner that maximizes their survival. Refer to the CTS Relocation Plan described in Section 4.4.5.~~

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 5, 12
Species-Specific (CTS)	Prefix CTS 6, 9, 13-15, 18

All other Species-Specific (VPFS, VPTS, CFS, CCG, DGGB)	All
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Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Project Components

References

California Natural Diversity Data Base (CNDDDB). 2018. Database maintained by the California Department of Fish and Wildlife, Natural Heritage Branch. Sacramento, CA.

Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, CA. September.

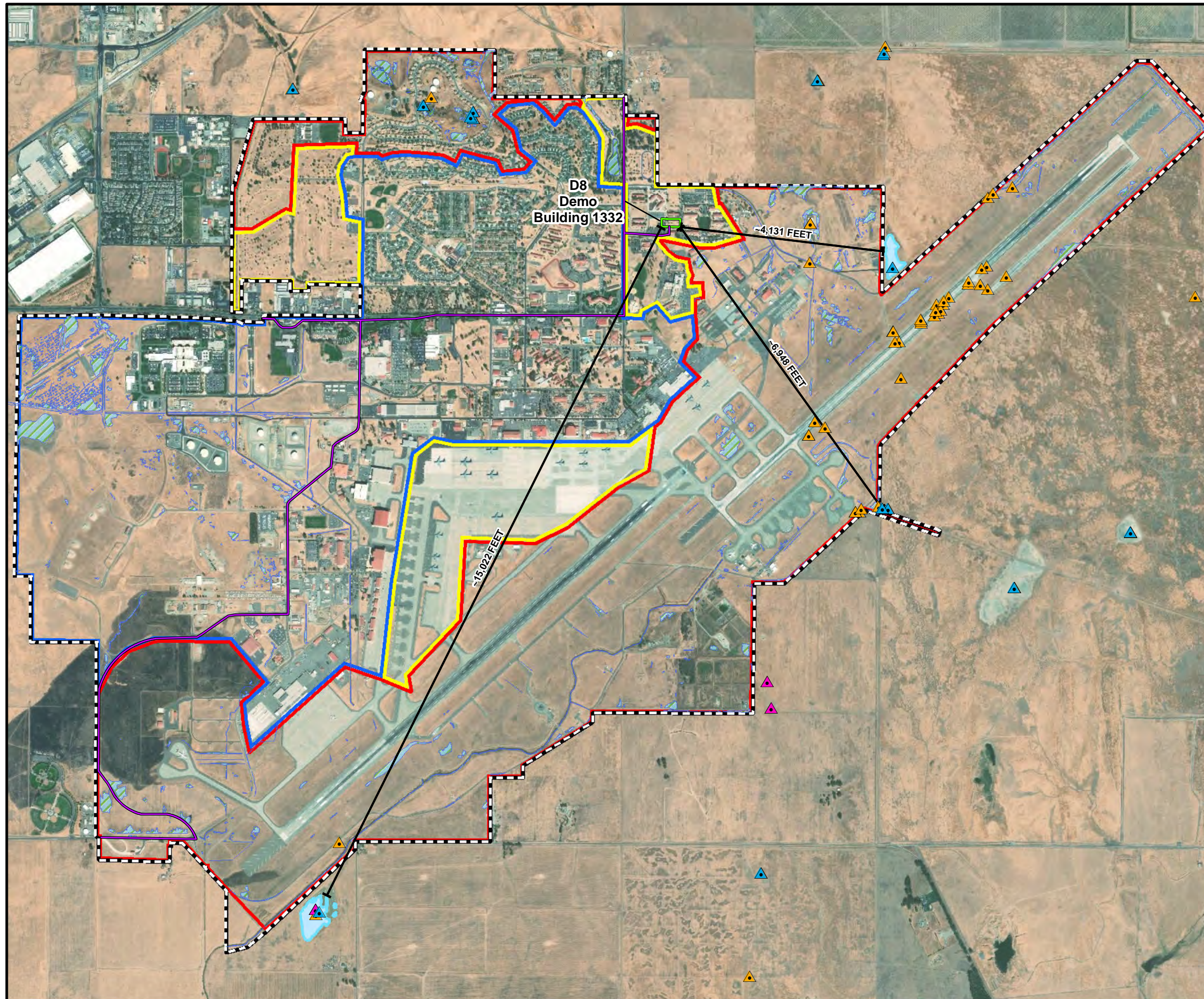
Orloff, S. 2007. Migratory movements of California tiger salamander in upland habitat – a five-year study (Pittsburg, California). Ibis Environmental, Inc., prepared for Bailey Estates LLC, May.

Travis AFB. 2018. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.

U.S. Fish and Wildlife Service (FWS). 2018. Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California. June 1.

Photo 1: Building 1332 and surrounding areas to be disturbed during demolition of Building 1332





- LEGEND**
- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY

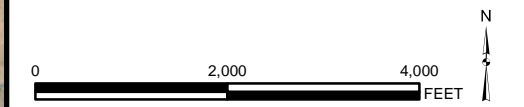


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 1332
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- FENCE
 - PROJECT AREA
 - DEMOLITION BOUNDARY
 - STAGING BOUNDARY
 - PROJECT AREA 250' BUFFER

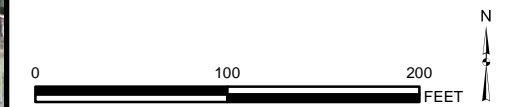


FIGURE 2
PROJECT COMPONENTS
 DEMOLITION OF BUILDING 1332
 TRAVIS AIR FORCE BASE, CALIFORNIA



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2019-I-0083-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

OCT 17 2018

Mr. Brian L. Sassaman
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Informal Consultation for the Demolition 1332 Project at Travis Air Force Base under the Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California

Dear Mr. Sassaman:

This letter is in response to the Travis Air Force Base (Travis AFB) October 1, 2018, electronic mail (email) request for informal consultation with the U.S. Fish and Wildlife (Service) on the proposed Demolition 1332 Project (proposed project), Travis AFB in Solano County, California. In the email, Travis AFB requested concurrence with the determination that the proposed project may affect, but is not likely to adversely affect, the federally-listed as threatened California tiger salamander (*Ambystoma californiense*; tiger salamander or CTS). The October 1, 2018, email and enclosure include the required proposed project information as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file FF08ESMF00-2017-F-2294-3; Programmatic Biological Opinion). Our response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the demolition and removal of Building 1332 in the northeast of Travis AFB. Building 1332 is a dormitory that is no longer in use, has deteriorated beyond the point of economical repair, and cannot be reasonably altered or economically used. Building 1332 occupies an area of about 25,120 square feet, and the laydown and staging area to be used occupies about 8,684 square feet. Ingress and egress to the construction area will occur on established Base roads. Including the grassland areas surrounding Building 1332, the action area entails about 1.07 acres.

Typical equipment for demolition includes an excavator, tractor, loader or backhoe, haul trucks, roller, grader, rubber-tired dozer, and a water truck. The demolition includes the removal of the concrete foundation and all associated utilities. Upon completion, the demolition area will be backfilled, graded, hydroseeded, and allowed to return to natural conditions. Work is expected to occur within a 4-month period beginning in June 2022.

No seasonal wetlands exist within 250 feet of the proposed project demolition area. Building 1332 is about 0.78 mile west of an off-Base pond to the west of Runway 03R_21L that is known to be a

tiger salamander breeding pond. On-Base, Duck Pond is about 0.3 mile to the north and west, and known tiger salamander breeding ponds near Valley View Way are about 0.85 mile away. During relocation efforts in 2017, Marty (2017) encountered numerous migrating tiger salamanders about 0.47 mile east of Building 1332. Travis AFB considers the Building 1332 to be in a medium risk area for tiger salamander occurrence.

Proposed Conservation Measures

Travis AFB proposes to implement numerous conservation measures listed in the Programmatic Biological Opinion. Conservation measures to be implemented include:

- MM -1 through MM -18;
- CTS 1 -8;
- CTS 10 -12;
- CTS 16 -17; and
- CTS 19.

Five of the measures to be implemented will be modified from the descriptions provided in the Programmatic Biological Opinion. In the following descriptions of these five measures, ~~strikethrough~~ text indicates language that will be omitted upon implementation from the text as written in the Programmatic Biological Opinion, and **bold** text indicates language that will be added upon project implementation to the text as written in the Programmatic Biological Opinion:

- From MM -2, remove the ~~strikethrough~~ text: A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within 1 working day and in writing within 5 working days.
- From MM -6, remove the following ~~strikethrough~~ text: All areas of upland grass disturbance or exposed soil will be reseeded with a native “weed-free” seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within the vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~
- From MM -11, remove the ~~strikethrough~~ text: During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.
- From MM -15, change the following ~~strikethrough~~ text to the text in bold: No pets or ~~non-military~~ **personal** firearms will be allowed in the project area.

- From MM -19, remove the strikethrough text: In the event that CTS are encountered on the project site, the Service-approved Biologist or Natural Resource Monitor will contact the Travis AFB Natural Resource Manager who will the contact the Service. ~~If CTS are captured, they should be released as near as possible to the point of capture, in a manner that maximizes their survival. Refer to the CTS Relocation Plan described in Section 4.4.5.~~

After reviewing all the available information, we concur with your determination that the proposed project may affect, but is not likely to adversely affect, the tiger salamander. The proposed project reached the 'may affect' level due to the fact that there is potentially suitable breeding habitat within 1.3 miles of the proposed demolition area, and because migrating tiger salamanders are known to have occurred in the past 2 years within 0.47 mile of the proposed project demolition area. However, the proposed project is timed to occur during the dry season, and proposed project activities will be confined to areas where Building 1332 currently exists. The likelihood of tiger salamanders migrating from the known breeding ponds through developed areas of the Base along A Street, Napa Street, and Vandenberg Drive to the east of Building 1332; or through housing along Bradley Boulevard and First Street to the west; to the demolition area is particularly low and is therefore a discountable effect. Furthermore, the implementation of proposed conservation measures as part of the proposed project will avoid and minimize potential effects from proposed project construction activities on the tiger salamander.

The proposed project fits within the scope of the actions described in the Programmatic Biological Opinion, and proposed project effects analyzed are comparable to those analyzed in the Programmatic Biological Opinion. Therefore, unless new information reveals effects of the proposed project that may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed project, no further action pursuant to the Act is necessary.

If you have any questions regarding our response concerning the proposed Building 1332 Project, please contact Harry Kahler, Fish and Wildlife Biologist (harry_kahler@fws.gov) or Doug Weinrich, Assistant Field Supervisor (douglas_weinrich@fws.gov), at the letterhead address, (916) 414-6563, or by e-mail.

Sincerely,



Doug Weinrich
Assistant Field Supervisor

Reference

Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, California. September 2017 report to Sacramento Fish and Wildlife Office. Marty Ecological Consulting, Incorporated, Sacramento, California. 28 pages.



DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)



Mr. Matthew B. Foster
Interim Flight Chief, Installation Management
60th Civil Engineer Squadron
411 Airman Dr. (Building 570)
Travis AFB, CA 94535-2001

Mr. Douglas Weinrich
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Dear Mr. Weinrich

The intent of this letter is to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Demolition of the Waste Water Treatment Plant (WWTP) Project at Travis AFB, California.

As described in the enclosed package, the Air Force believes that the proposed action may affect, and is likely to adversely affect, the California tiger salamander (*Ambystoma californiense*) but not likely to adversely affect vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardii*) from construction activities. Construction includes temporary ground disturbance of 1.85 acres of high risk CTS habitat for the demolition of the former WWTP facility, concrete foundations, tanks, manhole structures, and other associated equipment and piping.

Travis AFB is prepared to implement applicable conservation measures and purchase 0.925 acres in mitigation credits for temporary disturbance to high risk CTS habitat per ratios specified in the June 2018 Travis AFB Programmatic Biological Opinion. Please contact my staff at (707) 424-5127 or matthew.blazek@us.af.mil if you have any questions.

Sincerely,

12/26/2018

X Matthew B. Foster

MATTHEW B. FOSTER, GS-12, DAFC
Interim Flight Chief, Installation Management
Signed by: FOSTER.MATTHEW.BYRON.1044142569

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Infrastructure Associated with Former WWTP

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: South of the Base, off Perimeter Road along Vallejo Road.

Species impacted: California tiger salamander (CTS); Vernal pool fairy shrimp (VPFS), Vernal pool tadpole shrimp (VPTS)

Effects Assessment: May Affect, Likely to Adversely Affect (CTS); Not Likely to Adversely Affect (VPFS, VPTS)

Expected start date of project: May 2019

Project Description

Describe in detail:

Purpose and need for the project. This project would involve demolishing the remaining infrastructure associated with the former waste water treatment plant (WWTP). The purpose for this project is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission. The need for this project is to remove infrastructure that violates the airfield operation clear zone (CZ) due to its proximity to the flight line. The facilities are obsolete, do not have a future use, and would count against the Travis AFB real property inventory for the 2020 base reduction.

Project site location including all work, staging and storage areas. The former WWTP is on the south side of the Travis airfield, approximately 1,000 feet southwest of the Navy TACAMO facility. The location is remote, unpopulated, primarily vegetated, and approximately 900 feet from the southeastern Travis AFB boundary (Figure 1). An approximately 0.88-acre staging area would be established within the site.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The area of temporary disturbance is approximately 2.16 acres. Work includes demolition of the former WWTP structure and the existing concrete foundation (13,412 square feet [SF] in total), including 2 Imhoff tanks (2,500 SF each), 2 digesters (706 SF each), a primary settling tank (5,000 SF), manhole structures (approximately 2,000 SF) and other associated inactive equipment and piping. Some of these structures extend up to approximately 25 feet below grade. The active wastewater treatment equipment and pumphouse would remain. Upon completion, the area would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions. The existing topography will be maintained for the two areas in close proximity to wetlands SW.SU.094 and SW.SU.005.
- Seasonal constraints of activity. If feasible, the proposed project would occur during

the dry season, however, wet season work would be authorized with implementation of appropriate Conservation Measures. Work is estimated to take approximately 6 months to complete (active construction). Work is anticipated to begin in May 2019.

- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate or South Gate (Figure 1).
- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, a site visit, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are six (6) wetlands within 250 feet of the project boundary (Figure 3).

Wetland ID	Distance
SW.SU.094	9 ft
SW.SU.005	30 ft
PS.SU.757	34 ft
VP.FL.512	86 ft
VP.FL.513	145 ft
VP.FL.511	169 ft

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	8,208 ft
Vernal pool fairy shrimp	5,362 ft

Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	3,572 ft
California tiger salamander (sighting)	3,208 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered high value upland habitat. During the 2017 CTS Relocation Effort (Marty, 2017), multiple CTS were found on the runway approximately 1 mile northeast of the Former WWTP site. Some of these individuals were relocated to a designated area approximately 0.3 mile from the Former WWTP. The project is located within designated high risk CTS upland habitat.
 - Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density at the proposed project site was not mapped, however, a site visit was conducted November 2. The burrow density was low, only 2-3 burrows observed. The area in general is overgrown with tall vegetation which may contribute to the low density of small mammal burrows present at the site (see Photo).
 - Figures showing all applicable species and habitat information. Refer to Figures 1 through 3 that show the project site and all applicable species and habitat information
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in disturbed habitat), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within high risk area for CTS; Demolition work occurs within graveled areas, previously disturbed surfaces, and upland habitat. Approximately 1.85 acres of upland habitat will be temporarily disturbed for demolition and staging of equipment.

CTS have been documented near the former WWTP. Most of the CTS occurrences are clustered in the northeastern portion of the Base and breeding ponds are located on offsite lands to the south and north (Figure 1). CTS were relocated to burrows near the former WWTP during the 2017 CTS Relocation Effort (Marty, 2017). The project boundary is 0.41 miles from the location where CTS were relocated. CTS have been documented dispersing up to 1.3 mi from breeding sites to utilize upland refugia, such as small mammal burrows (Orloff, 2007).

Pond type (Breeding Pond or Potential Breeding Pond)	Distance to Closest Action Area (mile)
Potential Breeding Pond	0.31
Potential Breeding Pond	0.42
Breeding Pond	0.68

The Natural Resources Management team believes implementation of these important Conservation Measures (among others) should ensure no harm to CTS:

1. The Service-approved biologist (SAB) will monitor the active project as the work is being done to ensure no CTS are harmed, and if necessary, relocate CTS according to CTS Relocation Plan described in Section 4.4.5.
2. Monitoring the weather forecast for rain events and increasing SAB oversight after rain events.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project.

Wetland features identified near the project site are situated along the gravel roadways that will be used for ingress/egress. Installation and monitoring of wetland protection measures should ensure no impacts to these features. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). The wetland features located within 250 feet of the project site are consistent with the Low Value Vernal Pool criteria (Travis AFB, 2018):

- Small, infill parcels surrounded by existing development;
- Little or no connectivity to medium or high value conservation areas;
- Areas with extensive soil disturbance that has impacted underlying claypan; and
- Areas that have been surveyed using appropriate protocols with no known records of listed species.

Vernal pools on the Base are known to support suitable habitat for vernal pool fairy shrimp (VPFS) (CNDDDB, 2018); therefore, presence in all suitable habitat in the Project Areas is assumed for this project. During the 2016 non-protocol wet season survey conducted by Marty Ecological Consulting, VPFS were identified in 16 vernal pools/wetlands on Base (Marty, 2016). No vernal pool tadpole shrimp (VPTS) were observed on Base during this survey. The closest vernal pool fairy shrimp occurrence from this study is approximately 1.3 miles northwest. Known occurrences of VPFS and VPTS are shown in Figure 2. Based on available data, no listed branchiopod species have been documented within vernal pools in the Project area. If feasible, the project would be scheduled to occur during the dry season (1 May to 15 October) to minimize temporary indirect effects (e.g. alteration to drainage patterns, construction runoff) to VPFS and VPTS and potential habitats for these species, however, contractual issues may prevent all work from being conducted during the dry season. In the event work should occur during the wet season, installation and monitoring of wetland protection measures should ensure no harm to VPFS/VPTS or their habitat.

We do not anticipate that hydrological changes to the wetland features within 100 feet of the demolition boundary will occur as following removal of the concrete structures, the area will be filled in, compacted, graded, seeded with a native upland seed mix, and allowed to return to natural conditions.

The Natural Resources Management team believes implementation of these important Conservation Measures (among others) should ensure no harm to VPFS/VPTS:

1. Prior to initiation of construction activities, sensitive areas, such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., VPFS/VPTS, CCG, CTS), will be staked and flagged as exclusion zones where construction activities cannot take place.
2. Implementation and monitoring of wetland protection measures (wattles, silt fencing, etc.).

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 2.16 acres will be disturbed as a result of the proposed project. Of this amount, approximately 1.85 acres of high risk CTS upland habitat will be temporarily disturbed during construction. With implementation of Conservation Measures, there is no expected disturbance to vernal pool species habitat.

Disturbance Area (Project Components)	Acres
Staging area	0.88
Demolition Boundary	1.28
Structures to be demolished	0.31
Total acreage high risk CTS upland habitat disturbance (staging and demolition boundary minus demolished structures footprint)	1.85 acres

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. Direct impacts on CTS include crushing of burrows, temporary loss of refugia, and direct mortality from construction activities. Construction could also result in an increase in accidental road-killed wildlife due to increased vehicle traffic along existing roads.

No direct effects to VPFS and VPTS are expected to occur as a result of the proposed action. Work area and staging areas are within 250 feet of vernal pools/wetlands, of which 3 vernal pools are within 50 feet of the work area (Figure 3). Indirect impacts to vernal pools will be avoided with the implementation and monitoring of wetland protection measures. Best Management Practices (BMPs) such as silt fencing and straw wattles would be installed to provide a barrier from construction to the wetland features. Hydro-seeding (with native seed) of the disturbed areas will be included in the project.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of the former WWTP would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and

pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

Note: CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed-out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-1. A Service-approved Biologist will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present prior to the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat. If any federally-listed species are found during the preconstruction surveys, the Service-approved Biologist will contact the Service to determine how to proceed. At least 10 business days prior to the onset of activities, Travis AFB will submit the name(s) and credentials of biologists who will conduct these preconstruction surveys if they have not previously received Service approval for similar surveys. No project activities will begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.

MM-2. A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within one working day and in writing within five working days.

MM-3. A Service-approved Biologist will conduct environmental awareness training for all construction personnel working within and near sensitive habitat on Base. Training will be provided at the start of work and within 15 days of any new worker arrival. The program will consist of a briefing on environmental issues relative to the proposed project. The training program will include an overview of the legal status, biology, distribution, habitat needs, and compliance requirements for each federally-listed species that may occur in the project area. The presentation will also include a discussion of the legal protection for endangered species under the Act, including penalties for violations. A fact sheet conveying this information will be distributed to all personnel who enter the project site. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all avoidance and minimization measures. These forms will be maintained at Travis AFB and will be accessible to the appropriate resource agencies.

MM-4. Travis AFB will track the areal extent and location of impacts resulting from projects covered under the PBO and will submit an annual report to the Service listing each project covered under the PBO and summarizing the impacts to each species and their habitat on a project by project basis.

MM-5. Wetlands/drainages/vernal pools, if present, will have erosion control measures (straw wattles, silt fencing) installed where hydrological continuity exists between the construction activities and the wetland. A Service-approved Biologist will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species including CTS. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note,~~

~~that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-7. Off-road travel outside of the demarcated construction boundaries will be prohibited.

MM-8. Prior to initiation of construction activities, sensitive areas, such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., VPFS/VPTS, CCG, CTS), will be staked and flagged as exclusion zones where construction activities cannot take place. Orange construction barrier fencing (or an appropriate alternative method) will designate exclusion zones where construction activities cannot occur. The flagging and fencing will be clearly marked as an environmentally sensitive area (ESA). The contractor will remove all fencing, stakes and flagging within 60 days of construction completion.

MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the on-site Biologist. The Biologist will inform the Travis Natural Resource Manager (NRM) immediately (60 CES/CEIE). The Travis NRM will verbally notify the Sacramento Fish and Wildlife Office within one day and will provide written notification of the incident within five days.

MM-10. Motor vehicles and equipment will only be fueled and serviced in designated service areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur in a designated area with appropriate spill containment. Any newly established, project specific fueling and maintenance areas will be located at least 250 feet from any wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB will ensure a plan to allow a prompt and effective response to any accidental spills is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-13. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.

MM-14. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit on unpaved roads.

MM-17. No trenches will be left open at the end of the day; trenched areas will be compacted and restored to normal grade once the project is completed.

MM-18. No work requiring vehicles/equipment will be done when the ground is soft enough where travel will cause depressions.

CTS-1. Within 14 days of the start of construction activities, a Service-approved Biologist will perform a pre-construction survey and identify potential refuge habitats (burrows) suitable for CTS. In the unlikely event that a CTS is encountered, the Biologist will contact the Service for instructions.

CTS-2. A Service-approved Biologist will be on-site during all activities that could result in the take of listed species. As outlined in PBA Section 1.4.3, the qualifications of the biologist(s) will be presented to the Service for review and approval at least 10 working days prior to any groundbreaking activity at the project site. If any of the requirements associated with these measures are not being fulfilled, the Biologist will have the authority to stop project activities, through communication with the Project Manager.

CTS-3. Construction personnel will be instructed to exercise caution when commuting within the area to be disturbed.

CTS-4. Construction activities will occur between 30 minutes after sunrise and 30 minutes before sunset unless otherwise specific in the Project Analysis.

CTS-5. At the end of every work day, **open manholes**, trenches, pits, and excavations shall be provided with escape ramps constructed of earth fill or wooden planks at a 3:1 slope **or covered**. Before such **manholes**, trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife.

CTS-6. If CTS exclusion barriers or fencing are used, a Service-approved Biologist will be on-site to conduct morning inspections of the barrier fencing before construction activities begin each day of work activity on work days and within 30 minutes of dawn on non-work days (includes weekends and holidays). If a CTS is observed within or near the barrier fencing, the individual will be relocated outside of the project area following the procedure provided in Section 4.4.5) and the Sacramento Fish and Wildlife Office will be contacted.

CTS-7. Seasonal Avoidance/Wet Season Procedures (Oct 16 – Apr 30): Work will not be conducted in the rain. The Service-approved Biologist will monitor the weather forecast and authorize work when the forecast indicates a period of dry days (5 – 10 days of no rain) before starting the project. The Travis Environmental Office will document through email notification to the Service when work will commence. The weather forecast and hourly weather data for Travis AFB will be monitored and can be found by entering the zip code 94535 (Travis AFB) at <http://www.weather.gov/srh/>. A Service-approved Biologist will be on-site for morning inspections before the start of work. Morning inspections consist of examination of all trenches, pits, excavations, equipment, California tiger salamander exclusionary barriers (if present), all suitable upland habitat including refugia habitat such as small woody debris, refuse, burrow entries, etc. will be properly inspected and all other areas within the project site. In addition, the project work crew will be notified to maintain vigilance regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service.

CTS-8. Seasonal Avoidance Dry Season Rain/High Humidity Procedures (May 1 to October 15): Work will not be conducted if raining. The Service-approved Biologist will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50% or greater probability of rain forecasted overnight. If there is, then before work begins the next morning, the Service-approved Biologist will conduct an even more extensive morning inspection. The inspection will include searching the work area and a wider perimeter of the area for presence of CTS. In addition, the work crew will be notified to maintain vigilance regarding CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service. The weather forecast and hourly weather data for Travis AFB should be monitored and can be found by entering the zip code 94535 (Travis AFB) at <http://www.weather.gov/srh/>

CTS-10. Water shall not be pumped, sprayed, or allowed to flow over undisturbed uplands that can support CTS as part of planned project activities outside of pre-approved requirements (i.e. dust control). Water applied for pre-approved requirements shall be applied in the minimum quantities necessary only to disturbed soils. If excess water accumulates as the result of construction activity, water may be pumped through a screened pump and removed from the construction area as deemed necessary by the on-site biologist in coordination with Travis Natural Resources Management (NRM) staff. If water inadvertently or purposefully enters construction trenches, pits, or excavations, a Service-

approved Biologist will remain on site until water is pumped from the trench, pit, or excavation. Following pumping, the Biologist shall inspect the trench, pit, or excavation area and the surrounding uplands to determine if disturbance to CTS has occurred and implement any other measures necessary (e.g. placement of cover boards, exclusionary fencing or barriers) to protect CTS that may emerge due to the wet soil.

CTS-11. Pipes laid underground or stored on the ground shall be capped, covered, or taped in a manner that exclude CTS from entering the pipe prior to the completion of the construction project. Long-term storage of pipes and other construction material should be placed on asphalt and raised above the ground by no less than 1.5 inches (on top of 2 by 4 inch supports).

CTS-12. Trenches, pits, and excavations shall be covered in a manner that exclude CTS from entering during weekends, holidays, humid days, rain events, etc. Specifically, gaps no greater than one inch shall be allowed within cover materials if biologists will not be present the following day or if rain events or high humidity days are expected to occur. Before such trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife.

CTS-16. Erosion control Best Management Practices implemented in accordance with the Travis AFB Storm Water Pollution Prevention Plan will be placed so as not to create a hazard to CTS.

CTS-17. A Service-approved Biologist or Natural Resource Monitor (depending on effect level of project) shall perform construction site inspections to ensure the contractor completes the proposed action as described and complies with all proposed minimization measures.

CTS-19. In the event that CTS are encountered on the project site, the Service-approved Biologist or Natural Resource Monitor will contact the Travis AFB Natural Resource Manager who will then contact the Service. If CTS are captured, they should be released as near as possible to the point of capture, in a manner that maximizes their survival. Refer to the CTS Relocation Plan described in Section 4.4.5.

VP-4. A Service-approved Biologist will mark vernal pool species' habitat and a reasonable buffer to be avoided with flagging material. The area will be protected by placing construction fencing or other appropriate protective fencing around the pools including a buffer. Fencing will be used in locations where project equipment and/or personnel will be situated adjacent to or in the near vicinity of suitable vernal pool species habitat. If in a High or Medium Risk CTS area, small mammal burrows will be avoided when placing stakes or posts.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM 12, 15
Species-Specific (CTS)	Prefix CTS 9, 13-15, 18

Species-Specific (VPFS, VPTS)	Prefix VP 1, 2, 3, 5, 6, 7, 8
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Travis will compensate for the temporary disturbance of 1.85 acres of CTS upland habitat at a rate of 0.5:1 (Table 3 of the Travis PBO).

We request concurrence from FWS within 30 days of the date of this document. This project will also be discussed and/or listed within our annual report.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

References

California Natural Diversity Data Base (CNDDDB). 2018. Database maintained by the California Department of Fish and Wildlife, Natural Heritage Branch. Sacramento, CA.

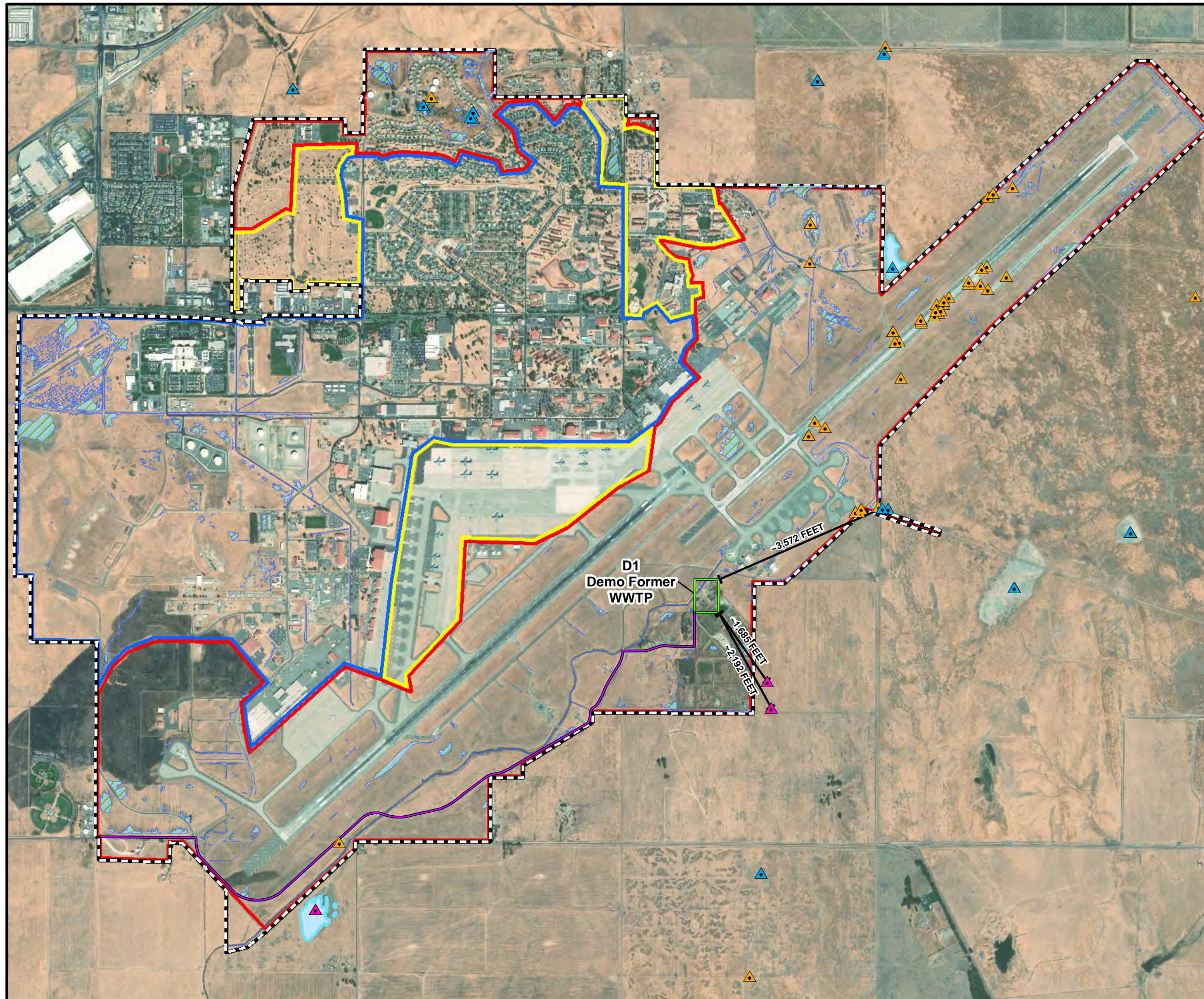
FWS 2018. United States Department of the Interior, Fish and Wildlife Service, Biological Opinion 08ESMF00- 2017-F-2294-3 for Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Constructed at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California

Marty, J. 2017. Final Report for California Tiger Salamander Drift Fence Study and Runway Relocation Effort on Travis Air Force Base, CA. September.

Marty Ecological Consulting. 2016. 2016 Vernal Pool Aquatic Species Survey Report.

Orloff, S. 2007. Migratory movements of California tiger salamander in upland habitat – a five-year study (Pittsburg, California). Ibis Environmental, Inc., prepared for Bailey Estates LLC, May.

Travis AFB. 2018. Programmatic Biological Assessment Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. Travis Air Force Base. Fairfield, California.



- LEGEND**
- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY

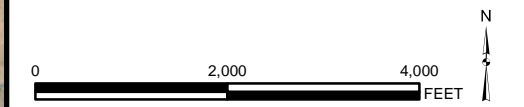
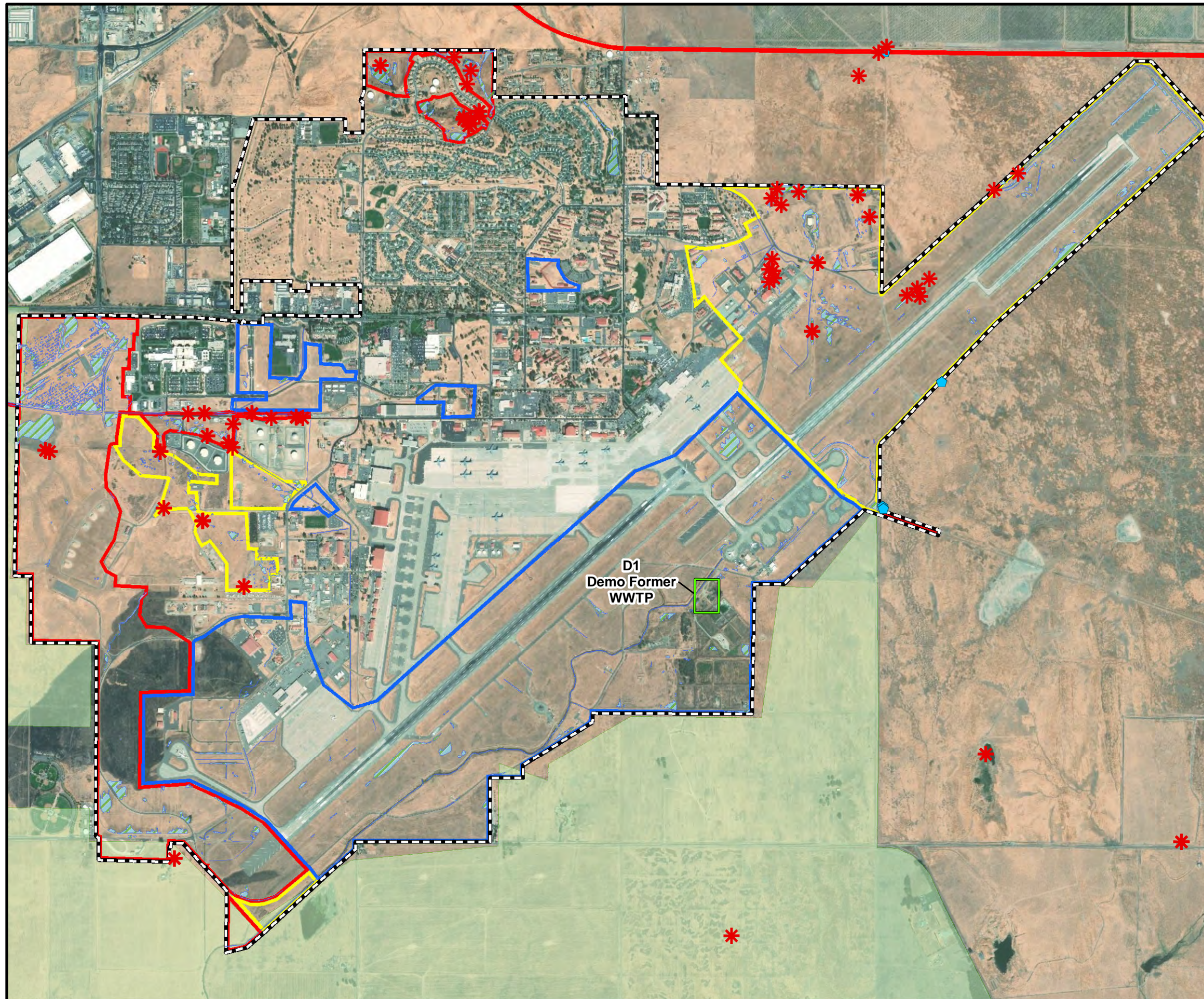


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 DEMOLITION OF FORMER WWTP
 TRAVIS AIR FORCE BASE, CALIFORNIA



LEGEND

- ◆ Vernal pool tadpole shrimp, (*Lepidurus packardii*)
- ✱ Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Vernal pool fairy shrimp and vernal pool tadpole shrimp Critical Habitat
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

VERNAL POOL CONSERVATION AREAS

- HIGH VALUE
- MEDIUM VALUE
- LOW VALUE

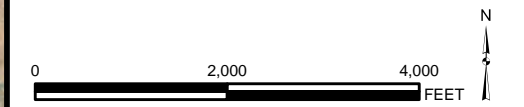
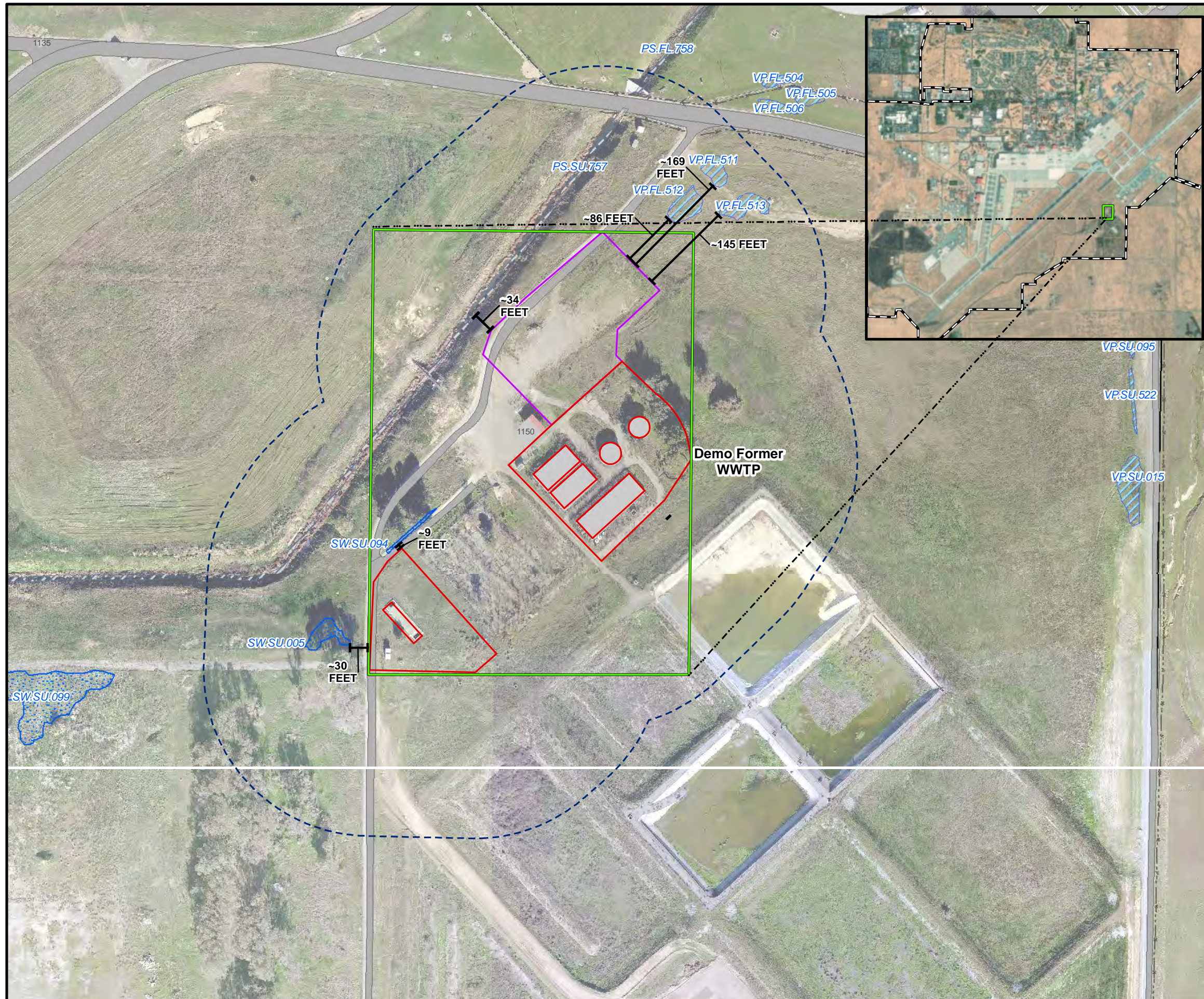


FIGURE 2
BIOLOGICAL RESOURCES -
VERNAL POOL AND WETLAND
 DEMOLITION OF FORMER WWTP
 TRAVIS AIR FORCE BASE, CALIFORNIA



LEGEND

- FENCE
- ▭ PROJECT AREA
- ▭ DEMOLITION BOUNDARY
- ▭ STAGING BOUNDARY

Wetland Features

- ▨ PERENNIAL STREAM
- ▨ SEASONAL WETLAND
- ▨ VERNAL POOL

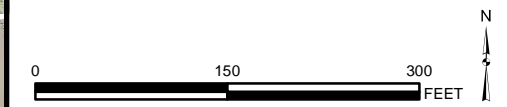


FIGURE 3
VERNAL POOLS/WETLANDS
 DEMOLITION OF FORMER WWTP
 TRAVIS AIR FORCE BASE, CALIFORNIA

Photos from Demolish Infrastructure Associated with Former WWTP site visit conducted on November 2, 2018



View showing infrastructure to be demolished



View of established gravel/dirt road that will be utilized for the project. Building 1150 in the distance will not be demolished.



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2019-F-0682-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

FEB 20 2019

Mr. Matthew B. Foster
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Formal Consultation on the Demolition of the Waste Water Treatment Plant Project at Travis Air Force Base, Solano County, California, and Appending to the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California*

Dear Mr. Foster:

This letter is in response to the Travis Air Force Base (Travis AFB or Base) December 26, 2018, electronic mail (email) request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Demolition of the Waste Water Treatment Plant (WWTP) Project (proposed project), Travis AFB in Solano County, California. Your December 26, 2018, email and attachment include the required and complete *Covered Project Analysis Template* (consultation template) as outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service file 08ESMF00-2017-F-2294-3; Programmatic Biological Opinion). At issue are the proposed project's effects on the federally-listed as endangered vernal pool tadpole shrimp (*Lepidurus packardii*; tadpole shrimp or VPTS), as well as the federally-listed as threatened vernal pool fairy shrimp (*Branchinecta lynchi*; fairy shrimp or VPFS) and Central California distinct population segment of the California tiger salamander (*Ambystoma californiense*; tiger or CTS). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act) and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action we are consulting on is the demolition and removal of obsolete WWTP infrastructure equipment no longer need to support the Travis AFB mission. Pursuant to 50 CFR §402.12(j), you submitted a biological assessment for our review and requested that the proposed project be appended to the Programmatic Biological Opinion. Travis AFB has concluded that the proposed project may affect, and is likely to adversely affect the tiger salamander. Travis AFB has also concluded that the proposed project may affect, but is not likely to adversely affect the tadpole shrimp and the fairy shrimp. The proposed project is not within designated or proposed critical habitat for any federally-listed species.

The Service has determined that the proposed project meets the suitability criteria of, and is within the geographic area analyzed in, the Programmatic Biological Opinion. Therefore, this letter is an agreement by the Service to append the proposed project to the Programmatic Biological Opinion and represents the Service's biological opinion on the effects of the proposed project on the tiger

salamander, tadpole shrimp, and fairy shrimp. By appending the proposed project to the Programmatic Biological Opinion, Travis AFB acknowledges and accepts all of the conservation measures outlined within the Programmatic Biological Opinion, including, but not limited to, the measures to minimize adverse effects. Travis AFB also will follow all reasonable and prudent measures, and all terms and conditions as directed by the Programmatic Biological Opinion.

In considering your request, we based our evaluation on the following: (1) the Programmatic Biological Opinion; (2) the Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species received January 2019; (3) your December 26, 2018, letter initiating formal consultation; (4) the accompanying consultation template prepared to assess potential project impacts to federally-listed species and their habitat; (5) email and telephone correspondence between the Service and Travis AFB; and (6) other information available to the Service.

Vernal Pool Tadpole Shrimp and Vernal Pool Fairy Shrimp

The tadpole shrimp and the fairy shrimp have been adversely affected by development and modification of the vernal pool, grassland, and open woodland habitat within the Solano-Colusa vernal pool region (Service 2014). Vernal pool tadpole shrimp have not identified on Travis AFB, yet 11 presumed extant occurrences of the vernal pool tadpole shrimp have been reported in the Denverton and Elmira U.S.G.S quadrangles, where Travis AFB is located (CNDDDB 2019). Most of these occurrence records are on the North Suisun Mitigation Bank and Wilcox Ranch, to the south and east of Travis AFB. The closest occurrence record of the tadpole shrimp is in a pool near the Perimeter Road, about 0.75 mile northeast of the proposed project action area. Also, although the fairy shrimp has been found in numerous pools throughout Travis AFB, the closest occurrence of the fairy shrimp is about 0.94 mile off base, south of the proposed project.

All project-related demolition, staging, and access will avoid direct effects to vernal pools. Six wetlands are known to occur within 169 feet of demolition areas and may be indirectly affected by changes in hydrology that may result from proposed project activities. Although the tadpole shrimp and fairy shrimp are not known to occur in these wetlands, the hydrological changes could affect the viability of both the tadpole shrimp and the fairy shrimp that may be present. Potential indirect effects to hydrology will be greatly reduced by conducting construction during the dry season (June-October), or during the wet season with the appropriate conservation measures discussed in the Programmatic Biological Opinion and on pages 6 through 9 of the consultation template.

After reviewing all the available information, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the tadpole shrimp or the fairy shrimp. The proposed project reached the 'may affect' level, and the subsequent requirement for a biological assessment, due to the fact that the proposed project occurs within the range of both the tadpole shrimp and the fairy shrimp, and potentially suitable habitat for both species is present in the action area. Due to the fact that the proposed project activities will occur in the dry season, mapped wetland areas will not be directly affected, and the conservation measures that will implemented as part of the proposed project, the Service believes that adverse effects to the tadpole shrimp and the fairy shrimp are unlikely to occur, and are therefore discountable for the purposes of this consultation.

Consultation History

- June 1, 2018: The Service provided Travis AFB with the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California*.
- February 4, 2019: The Service received from Travis AFB a request to initiate formal Consultation, dated December 26, 2018, for the proposed project effects on the tiger salamander, tadpole shrimp, and fairy shrimp. Included with the initiation request was the consultation template that assesses effects of the proposed project on the species.

BIOLOGICAL OPINION

Description of the Action

The project involves demolishing the remaining infrastructure associated with the former WWTP. Travis AFB needs to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Base mission. The unnecessary infrastructure violates the airfield operation clear zone due to its proximity to the flight line. Also, the WWTP facilities are obsolete, do not have a future use, and would be included in the Travis AFB real property inventory for the 2020 base reduction.

The former WWTP is southeast of the Travis airfield, about 1,000 feet southwest of the Navy TACAMO facility. The location is remote, unpopulated, and mostly covered with grassland species, about 900 feet from the southeastern Travis AFB boundary. A 0.88-acre staging area would be established within the site. In total, about 2.16 acres will be temporarily disturbed by the proposed project actions. The area of temporary disturbance includes about 0.31 acre that is currently occupied by structures that will be removed; therefore, the amount of existing high-risk tiger salamander habitat that will be temporarily disturbed is about 1.85 acres.

Work includes demolition of the former WWTP structure and the existing concrete foundation (13,412 square feet [SF] in total), including two Imhoff tanks (2,500 SF each), two digesters (706 SF each), a primary settling tank (5,000 SF), manhole structures (2,000 SF) and other associated inactive equipment and piping. Structure removal is anticipated to extend up to 25 feet below the existing grade. Active wastewater treatment equipment and a pumphouse that currently exist within the demolition area footprint will remain. Upon completion, the area will be backfilled, graded, hydroseeded, and then allowed to return to natural conditions. The existing topography will be maintained for the two areas in close proximity to wetlands SW.SU.094 and SW.SU.005.

The construction equipment that will be used includes excavator, tractor, loader, backhoe, trucks, roller, grader, rubber-tired dozer, and water trucks. Construction equipment will enter the Base through the Suisun Gate. All other access to the Base will be through the Main Gate. All construction traffic will exit the Base through the Main Gate. If feasible, the proposed project would occur during the dry season; however, wet season work would be authorized with implementation of appropriate Conservation Measures. The active demolition work is estimated to take about 6 months to complete. Work is anticipated to begin in May 1, 2019.

Conservation Measures

To avoid or minimize effects on the California tiger salamander, Travis AFB will fully implement the following conservation measures listed in Table 1, including all of the relevant conservation

measures outlined in the *Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California* (Service 2018).

Table 1. Conservation measures described in the programmatic biological assessment (Travis 2017) that will be included as part of the proposed project.

Minimization Measures	California Tiger Salamander Measures	Vernal Pool Measure
MM-1, MM-2, MM-3, MM-4, MM -5, MM-6, MM-7, MM -8, MM-9, MM-10, MM-11, MM-13, MM-14, MM-17, MM-18	CTS-1, CTS-2, CTS-3, CTS-4, CTS-5, CTS-6, CTS-7, CTS-8, CTS-10, CTS-11, CTS-12, CTS-16, CTS-17, CTS-19	VP -4

Of the conservation measures listed in Table 1, three measures will be modified from the text of the programmatic biological assessment (Travis 2017) when applied to the proposed project. In the following descriptions of these five measures, strikethrough text indicates language that will be omitted upon implementation from the text as written in the programmatic biological assessment, and **bold** text indicates language that will be added upon project implementation to the text as written in the programmatic biological assessment:

- From MM -2, remove the strikethrough text: A Service-approved Biologist will monitor construction activities in or adjacent to sensitive habitats as required. The Biologist will ensure compliance with all applicable avoidance and minimization measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved Biologist will have the authority to stop any aspect of the project that could result in unauthorized take of a federally-listed species. If the Biologist exercises this authority, he/she must coordinate this with 60 CES/CEIE who will notify the Service ~~and the California Department of Fish and Wildlife (CDFW)~~ by telephone within 1 working day and in writing within 5 working days.
- From MM -6, remove the strikethrough text: All areas of upland ground disturbance or exposed soil will be reseed with native “weed-free” seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit from the State Regional Water Quality Control Board.~~
- From MM -11, remove the strikethrough text: During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

In addition to the conservation measures listed in Table 1, Travis AFB also has proposed to compensate for the temporary loss of upland habitat through the purchase of compensation credits at a ratio of 0.5:1, which follows the ratios outlined in Table 3 of the Programmatic Biological Opinion (Service 2018). Temporary grassland habitat loss is estimated to be 1.85 acres; therefore Travis AFB has proposed to compensate through the purchase of 0.925 acre of upland habitat at a Service-approved conservation bank.

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses all areas subject to the demolition and removal of WWTP infrastructure that remains within a boundary of about 1.28 acres. It also includes about 0.31 acre of structures to be demolished, and a staging area of about 0.88 acre. In all, the demolition footprint included in the action area totals about 2.16 acres. The action area also includes all areas up to 6 feet from the demolition footprint in which dust and other particles from construction activities may affect any species occupying suitable habitat.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

Status of the Species

For the most recent comprehensive assessment of the range-wide status of the tiger salamander, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014). No change in the tiger salamander listing status was recommended in the 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses of tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Environmental Baseline

Travis AFB is located in the Solano-Colusa Vernal Pool Region (Service 2005), which covers the majority of Solano County. Agricultural practices, water diversion and impounding for waterfowl enhancement, development, and road building have affected vernal pools in the region. The Solano Land Trust and the California Department of Fish and Wildlife manage adjacent reserves to protect portions of the northern claypan type (totaling about 2,300 acres). In addition, the Wilcox Ranch, adjacent to the base on the east, is a preservation area under restricted land use. Many vernal pool areas in the region have been converted to agriculture or developed for residential, commercial, or

industrial uses. Restored agricultural lands are targets for land acquisitions through direct purchases, conservation easements, or other cooperative agreements.

Most of the proposed project demolition will occur in areas that are currently paved. However, the natural vegetation community found in the project area is a disturbed annual grassland/vernal pool complex. Some construction will occur in an area that is currently grassland, and is intensively managed by regular mowing. Throughout Travis AFB, the grassland/vernal pool complex is highly disturbed due to alterations of surface and subsurface hydrology for the construction of road and runway features, the dominance of introduced grasses in upland areas, and the effects from current land management activities. Past land use practices and grading activities within the project area included construction of the original airfield that leveled much of the wetland habitat.

A breeding habitat assessment for the tiger salamander was conducted on Travis AFB during the wet season of 2005 (CH2M Hill 2006). The assessment concluded that tiger salamanders are not likely to breed within wetlands within 250 of the proposed project action area because they do not provide the hydrology necessary to support breeding habitat. Although the proposed project action area does not contain suitable breeding ponds for the tiger salamander, the species has been observed in breeding ponds to the east, north, south, and west of the proposed project action area, within the dispersal range of tiger salamanders (TNC 2002, LSA 2004, CH2M Hill 2006, CNDDDB 2018).

The proposed project only involves work on landscaped and hardscape areas in High Risk areas for tiger salamanders, yet the action area does contain some grassland habitat with small mammal burrows that can support tiger salamander populations during the non-breeding season (Johnson and Shaffer 2010). Dispersing tiger salamanders have been known to occur on roadways, runways, and surrounding grassland areas of the base (Marty 2017). For examples, on January 29, 2014, Travis AFB informed the Service of a live adult tiger salamander on a runway about 1.2 miles north of the proposed project action area. On July 5 and 8, 2015, two dead individuals were found on and near Runway 03R/21L about 0.68 mile from the proposed project action area (Service file #08ESMF00-2014-F-0633-R001). These two individuals were likely responding to ponded water from a break in a water main, which probably triggered dispersal behavior. More recently, runway surveys and relocation efforts between May 31 and July 20, 2017, relocated 154 juvenile tiger salamanders to suitable burrow sites, while 39 dead tiger salamanders also were found (Marty 2017). In addition, pitfall trapping efforts between June 22, 2017, and July 14, 2017, captured and relocated 658 juvenile tiger salamanders and found seven dead tiger salamanders (Marty 2017).

Effects of the Action

The proposed project will result in the temporary disturbance of about 1.85 acres of upland habitat for the tiger salamander. The affected upland habitat exists in High Risk areas of Travis AFB for potential tiger salamander effects (Travis 2017). In all, the implementation of the listed conservation measures will minimize proposed project affects to tiger salamanders.

Juvenile and adult tiger salamanders have been known to use the hardscape of runways, roadways, and parking areas as dispersal habitat. Proposed project actions will reduce the amount of upland dispersal habitat for the tiger salamander during the proposed construction period at Travis AFB. Any tiger salamanders attempting to move into or through the proposed project area will be restricted in their movements. Mortality, injury, or harassment of tiger salamanders could occur due to crushing, entombment, relocating, or disruption of their movements as a result of construction activities related to the proposed project.

Travis AFB has analyzed the likelihood of theoretical project activities across the Base encountering and affecting a tiger salamander (Travis 2017). The analysis is chiefly based on the known dispersal distance and migration movements of tiger salamanders, which may be as much as 1.2 miles across upland habitat from breeding ponds (Orloff 2011). Due to the proximity of the proposed project action area to known numerous breeding ponds for the tiger salamander, the proposed project action area falls in a zone deemed High Risk. The runway surveys and relocation efforts of the past 2 years manifest the potential for proposed project effects on tiger salamanders moving across upland habitat from the nearby breeding ponds. The potential exists to encounter and affect a tiger salamander.

Travis AFB has proposed to work during the dry season if and when possible, which minimizes the chances of tiger salamanders dispersing across upland habitat. In addition, Travis AFB has proposed monitoring of the work area by a Service-approved biologist (MM-2), will not work when it is raining (CTS -7), and will check rain forecasts daily (CTS -8). Because precipitation can spur dispersal events of tiger salamanders, if there is a 50% or greater probability of rain forecasted for a following day, a Service-approved biologist will conduct an extensive morning inspection for tiger salamanders prior to work activities (CTS-8). Also, work will not be conducted if it is raining (CTS-8), which will avoid any potential effects to tiger salamanders that may be moving across the upland habitat. The chances of encountering a tiger salamander during proposed project activities will be further minimized by the implementation of conservation measures listed in Table 1. Travis AFB has also proposed to purchase 0.06 acre of upland habitat for the tiger salamander at a Service-approved conservation bank.

Cumulative Effects

Cumulative effects include the effects of future state, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of the tiger salamander, the environmental baseline for the action area, the effects of the propose project and the cumulative effects, it is the Service's biological opinion that the Waste Water Treatment Plant Project, as proposed, is not likely to jeopardize the continued existence of the California tiger salamander. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) the potential of lethal take of individual California tiger salamanders will be minimized by the implementation of the proposed conservation measures; (2) the project fits within the scope of the actions described in the Programmatic Biological Opinion; (3) the effects analyzed are identical work similar to those that were analyzed in the Programmatic Biological Opinion; (4) sensitive time periods for listed species will be avoided to the extent practicable; and (5) all minimization measures will be implemented.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to

harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Travis AFB so that they become binding conditions of any grant or permit issued to a contractor, as appropriate, for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this incidental take statement. If Travis AFB (1) fails to assume and implement the terms and conditions or (2) fails to require the contractor to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service anticipates that incidental take of tiger salamander will be difficult to detect due to its life history and ecology. Specifically, tiger salamander can be difficult to locate due to their cryptic appearance, their use of underground burrows as habitat, their multiplicity of life forms, and the fact that finding a dead or injured individual is unlikely due to their relatively small size. Losses of salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, or the likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. There is a risk of harm, harassment, injury and mortality as a result of the proposed demolition activities; therefore, the Service is authorizing take incidental to the proposed action as: (1) the harassment and capture of all tiger salamanders within 6 feet of the construction footprint and access routes; and (2) the injury or mortality of one juvenile or adult tiger salamander as observed by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of tiger salamanders associated with the Waste Water Treatment Plant Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California tiger salamander.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the tiger salamander resulting from implementation of this project have been incorporated into the project's proposed

conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the tiger salamander.

1. All conservation measures, as described in the biological assessment and restated here in the *Project Description* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the *Terms and Conditions* below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. Travis AFB will fully implement and adhere to the conservation measures, as a condition of any permit or contract issued for the proposed project. Travis AFB shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.
2. To monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, Travis AFB will adhere to the following reporting requirement. Should the anticipated amount or extent of incidental take be exceeded, Travis AFB must immediately reinitiate formal consultation, as per 50 CFR §402.16.
 - a. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Travis AFB will provide quarterly updates to the Service with a precise accounting of the total acreage of habitat impacted. Updates shall also include any information about changes in project implementation that result in habitat disturbance not described in the Project Description and not analyzed in this Biological Opinion.
 - b. For those components of the action that result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Travis AFB shall immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) at (916) 414-6563 to report the encounter. If the encounter occurs after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.
 - c. For those components of the action that will require the capture and relocation of any listed species, Travis AFB shall immediately contact the Service's SFWO at (916) 414-6563 to report the action. If capture and relocation need to occur after normal working hours, Travis AFB shall contact the SFWO at the earliest possible opportunity the next working day.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid

adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions: Travis AFB should continue to work with the Service to assist us in meeting the goals for:

- (1) the tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (Service 2017); and
- (2) vernal pool species as outlined in *the Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems in California and Southern Oregon* (Service 2005).

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT


This concludes formal consultation on the Demolition of the Waste Water Treatment Plant Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Harry Kahler, Fish and Wildlife Biologist (harry_kahler@fws.gov) or Doug Weinrich, Assistant Field Supervisor (douglas_weinrich@fws.gov), at the letterhead address, (916) 414-6563, or by e-mail.

Sincerely,



 Jennifer M. Norris, Ph.D.
Field Supervisor

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[Travis AFB] Travis Air Force Base. 2017. Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species. 60th Civil Engineer Squadron, Environmental Element, Travis Air Force Base, California. 145 pages plus appendices.

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Building 1

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: Flightline, along Airlift Drive

Species impacted:

Effects Assessment: No Effect

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. Building 1 is currently in use as a Squadron Operations & Warehouse but is outdated and in constant need of repair. The maintenance function would be moved to other facilities with ample space to accommodate the equipment and personnel. It is located within the airfield CZ and APZ and is in violation of height requirements. The purpose for this project is to comply with airfield requirements as well as eliminate unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.

Project site location including all work, staging and storage areas. Building 1 is located adjacent to the north end of the Travis Airfield, in a heavily populated area established to provide airfield support (Figure 1). Staging will occur on the paved parking lots surrounding the building.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The area of temporary disturbance is approximately 11.41 acres (4.23 acres of demolition boundary and 7.18 acres of staging). Work includes demolishing the main structure (161,000 SF) and the associated infrastructure such as the foundation and utilities would be demolished at grade. Upon completion, the area would be graded for positive drainage, and paved.
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 5 months to complete. Work is anticipated to begin in June 2022.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, cement truck, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).
- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. No wetlands are within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	6,940 ft
Vernal pool fairy shrimp	2,634 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	4,090 ft
California tiger salamander (sighting)	2,701 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered low value upland habitat and is within the designated Low Risk CTS Upland Habitat area.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the runways was not mapped, however due to the scheduled mowing and maintenance activities that minimize small mammal activity in these areas the burrow density is assumed to be low.
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in disturbed habitat), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to

be implemented for the project. The project occurs within a low risk area for CTS; Demolition work occurs within graveled areas, previously disturbed surfaces, and upland habitat. CTS upland habitat will not be disturbed as part of this project. No effects to CTS are anticipated as a result of project construction.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). No vernal pools occur within 250 feet of the project. No effects to these species are anticipated as a result of project construction.

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). A total of 11.41 acres will be disturbed as a result of the proposed project, of which all the acreage is within paved surfaces. No CTS upland habitat will be disturbed during construction.

Disturbance Area (Project Components)	Size/Area (SF/Ac)
Demolition Boundary	184,217/4.23
Demolition of structure ^a	161,000/3.69
Staging area	312,620/7.18
^a Demolition of structure contained within acreage of demolition boundary	

Based on the tiered level of consultation in the PBO, this project will have No Effect on any federally-listed species that may be present within the action area. As a Level 1 project for vernal pool branchiopods and Contra Costa Goldfields (No Effect) and a Level 1a project for CTS (No Effect), no consultation or further reference to the PBO will be required.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. No direct effects to listed species are expected to occur as a result of the proposed action.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of the Building 1 would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards

with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

- All equipment and excess soil must stay on paved/gravel surfaces.

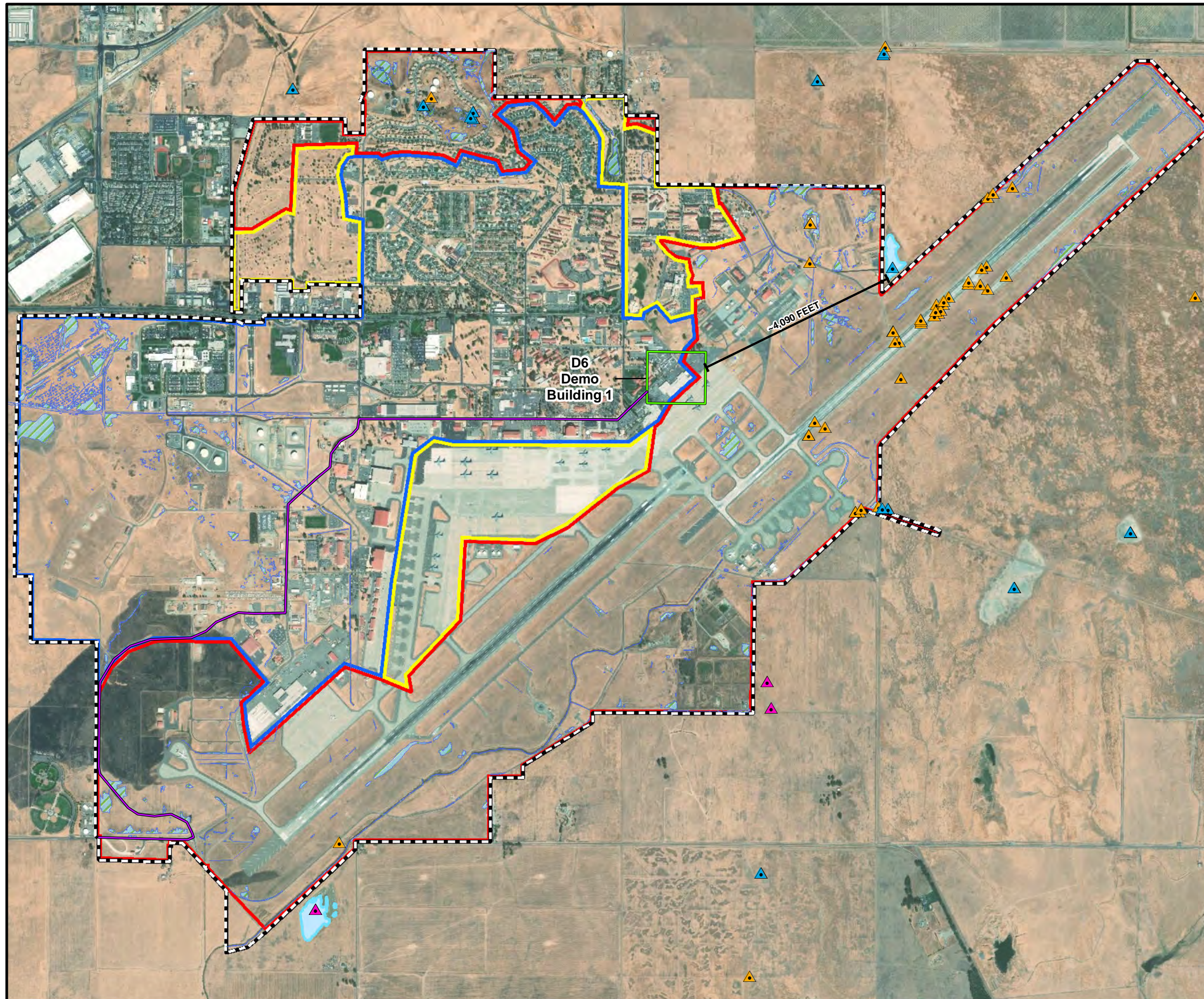
Species-Specific Minimization Measures Which Will <u>NOT</u> be Implemented for this Project	
General measures (PBA section 1.5)	Prefix MM All
Species-Specific (CTS)	All
Species-Specific (VPFS, VPTS)	All
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

No concurrence from FWS will be requested for this project.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands



- LEGEND**
- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY

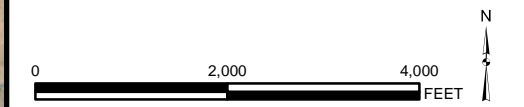
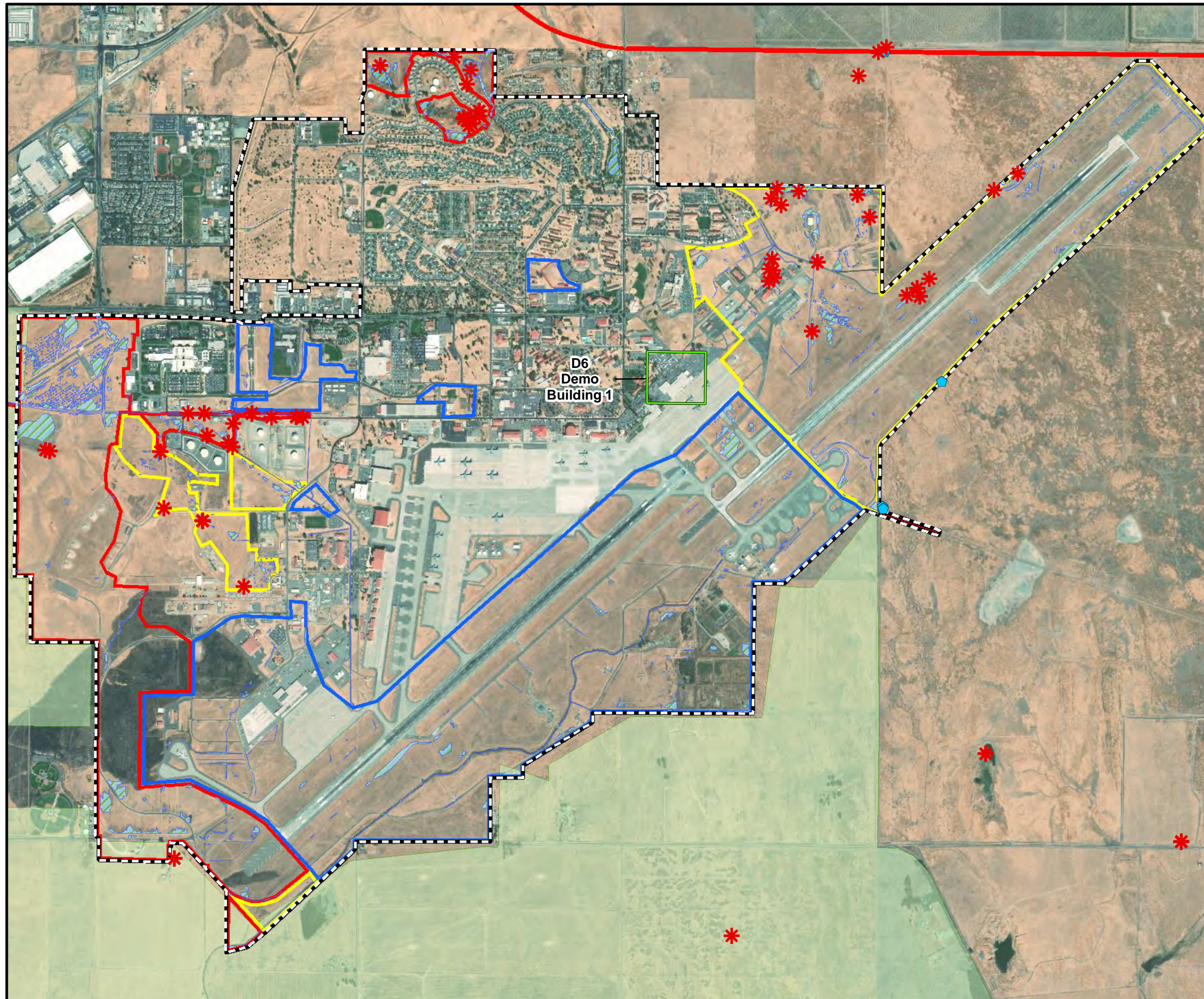


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 1
 TRAVIS AIR FORCE BASE, CALIFORNIA



LEGEND

- ◆ Vernal pool tadpole shrimp, (*Lepidurus packardii*)
- ✱ Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Vernal pool fairy shrimp and vernal pool tadpole shrimp Critical Habitat
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

VERNAL POOL CONSERVATION AREAS

- HIGH VALUE
- MEDIUM VALUE
- LOW VALUE

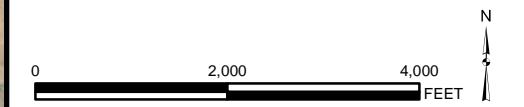
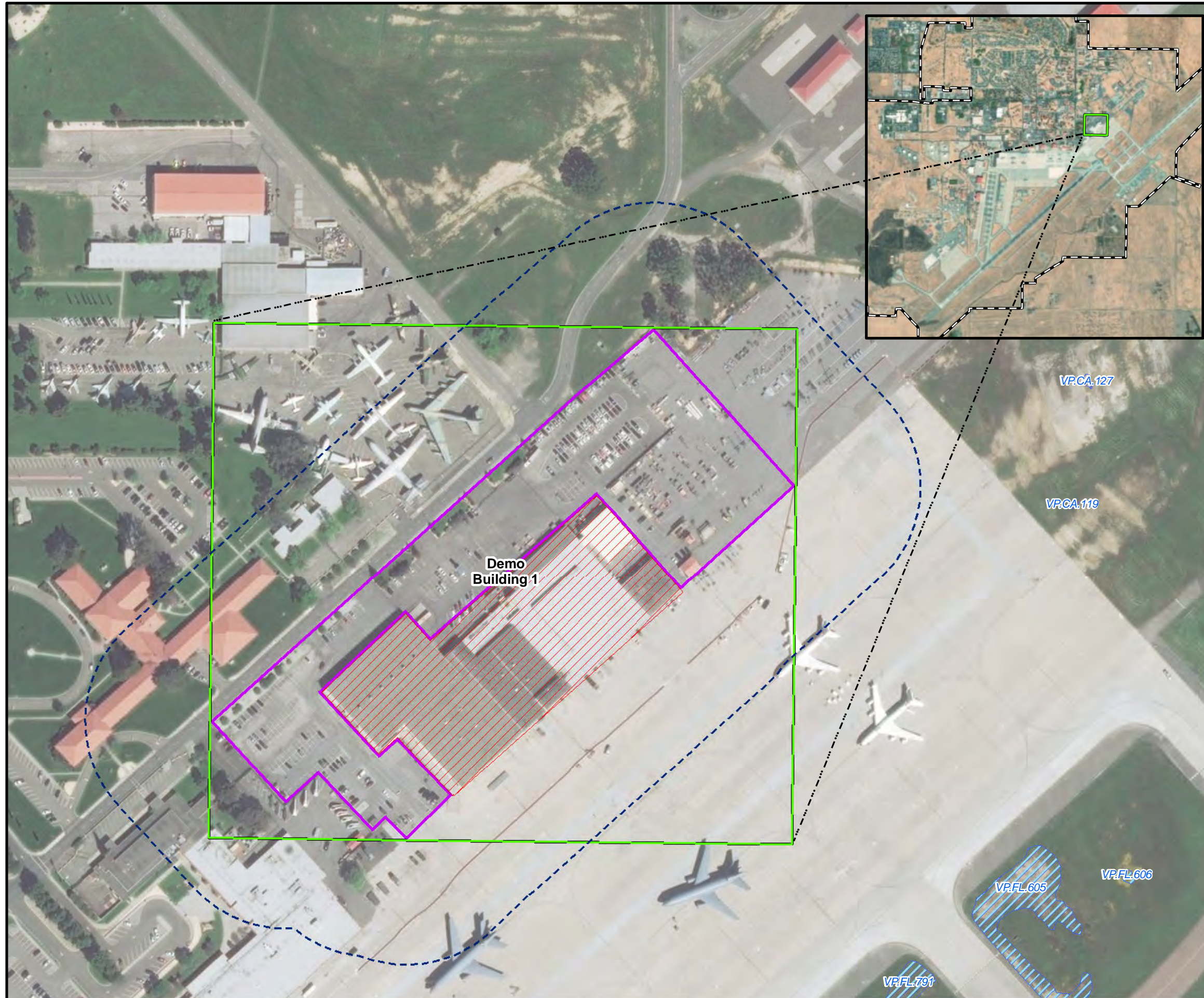


FIGURE 2
BIOLOGICAL RESOURCES -
VERNAL POOL AND WETLAND
 DEMOLITION OF BUILDING 1
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- PROJECT AREA
 - DEMOLITION BOUNDARY
 - STAGING BOUNDARY
- WETLAND FEATURES**
- VERNAL POOL
 - PROJECT AREA 250' BUFFER

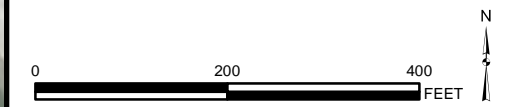


FIGURE 3
VERNAL POOLS/WETLANDS
 DEMOLITION OF BUILDING 1
 TRAVIS AIR FORCE BASE, CALIFORNIA

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Building 819

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: SW of the Base, along Ragsdale Street between Boyles Street and First Drive

Species impacted:

Effects Assessment: No Effect

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. The building is currently still in use as an aircraft maintenance shop but is outdated and in constant need of repair. The maintenance function would be moved to another facility with ample space to accommodate current equipment and personnel. The purpose for this project is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.

Project site location including all work, staging and storage areas. Building 819 is in a developed and populated area dedicated to airfield support west of the center portion of the Travis Airfield (Figure 1). Building 819 is just west of Hangar Building 818, on the northeast side of Ragsdale Street between the intersections of Boyles Street and First Drive. Staging will occur on the paved parking lots to the north and south of the building.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The area of temporary disturbance is approximately 3.23 acres (1.17 acres of demolition boundary and 2.06 acres of staging). Work includes demolition of the main building (39,000 SF) and the associated infrastructure such as the foundation and utilities would be demolished at grade. Upon completion, the area would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions.
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 5 months to complete. Work is anticipated to begin in June 2022.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).

- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. No wetlands are within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	1,326 ft
Vernal pool fairy shrimp	2,131 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	7,226 ft
California tiger salamander (sighting)	6,196 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered low value upland habitat and is within the designated Low Risk CTS Upland Habitat area.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the runways was not mapped, however due to the scheduled mowing and maintenance activities that minimize small mammal activity in these areas the burrow density is assumed to be low.
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland

habitat, type of project (work in disturbed habitat), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within a low risk area for CTS; Demolition work occurs within graveled areas, previously disturbed surfaces, and upland habitat. CTS upland habitat will not be disturbed as part of this project. No effects to CTS are anticipated as a result of project construction.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). No vernal pools occur within 250 feet of the project. No effects to these species are anticipated as a result of project construction.

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). A total of 3.23 acres will be disturbed as a result of the proposed project, of which all the acreage is within paved surfaces. No CTS upland habitat will be disturbed during construction.

Disturbance Area (Project Components)	Size/Area (SF/Ac)
Demolition Boundary	51,145/1.17
Demolition of structure ^a	39,000/0.90
Staging area (North)	59,294/1.36
Staging area (South)	30,363/0.70
^a Demolition of structure contained within acreage of demolition boundary	

Based on the tiered level of consultation in the PBO, this project will have No Effect on any federally-listed species that may be present within the action area. As a Level 1 project for vernal pool branchiopods and Contra Costa Goldfields (No Effect) and a Level 1a project for CTS (No Effect), no consultation or further reference to the PBO will be required.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. No direct effects to listed species are expected to occur as a result of the proposed action.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of the Building 819 would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

- All equipment and excess soil must stay on paved/gravel surfaces.

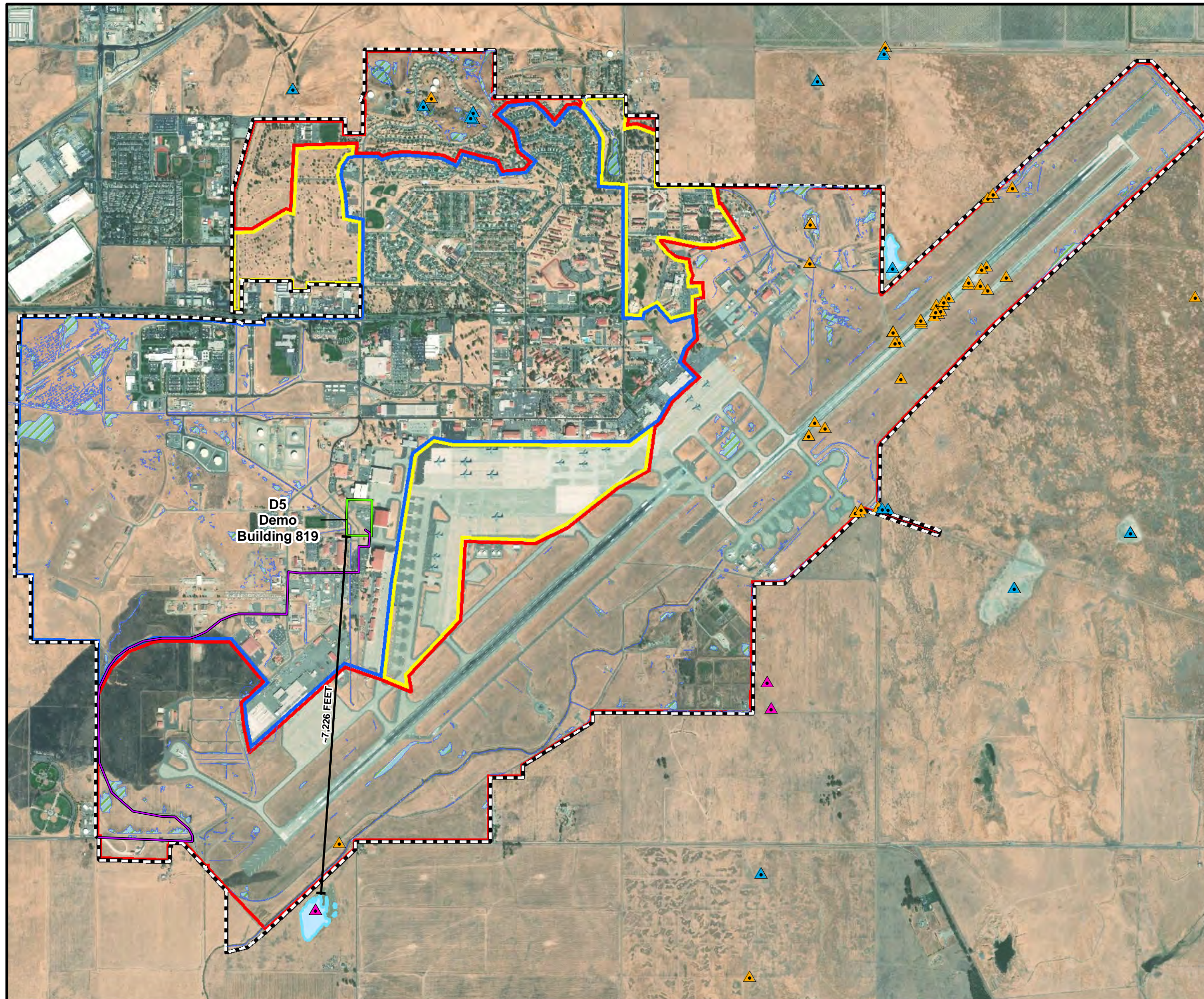
Species-Specific Minimization Measures Which Will <u>NOT</u> be Implemented for this Project	
General measures (PBA section 1.5)	Prefix MM All
Species-Specific (CTS)	All
Species-Specific (VPFS, VPTS)	All
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

No concurrence from FWS will be requested for this project.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands



LEGEND

- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
- ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
- ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
- INGRESS/EGRESS

CTS RISK AREAS

- 1 HIGH RISK
- 2 MEDIUM RISK
- 3 LOW RISK
- CTS BREEDING HABITAT
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

D5
Demo
Building 819

~7,226 FEET

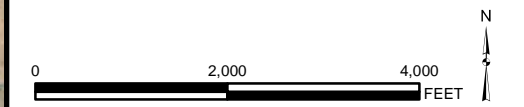
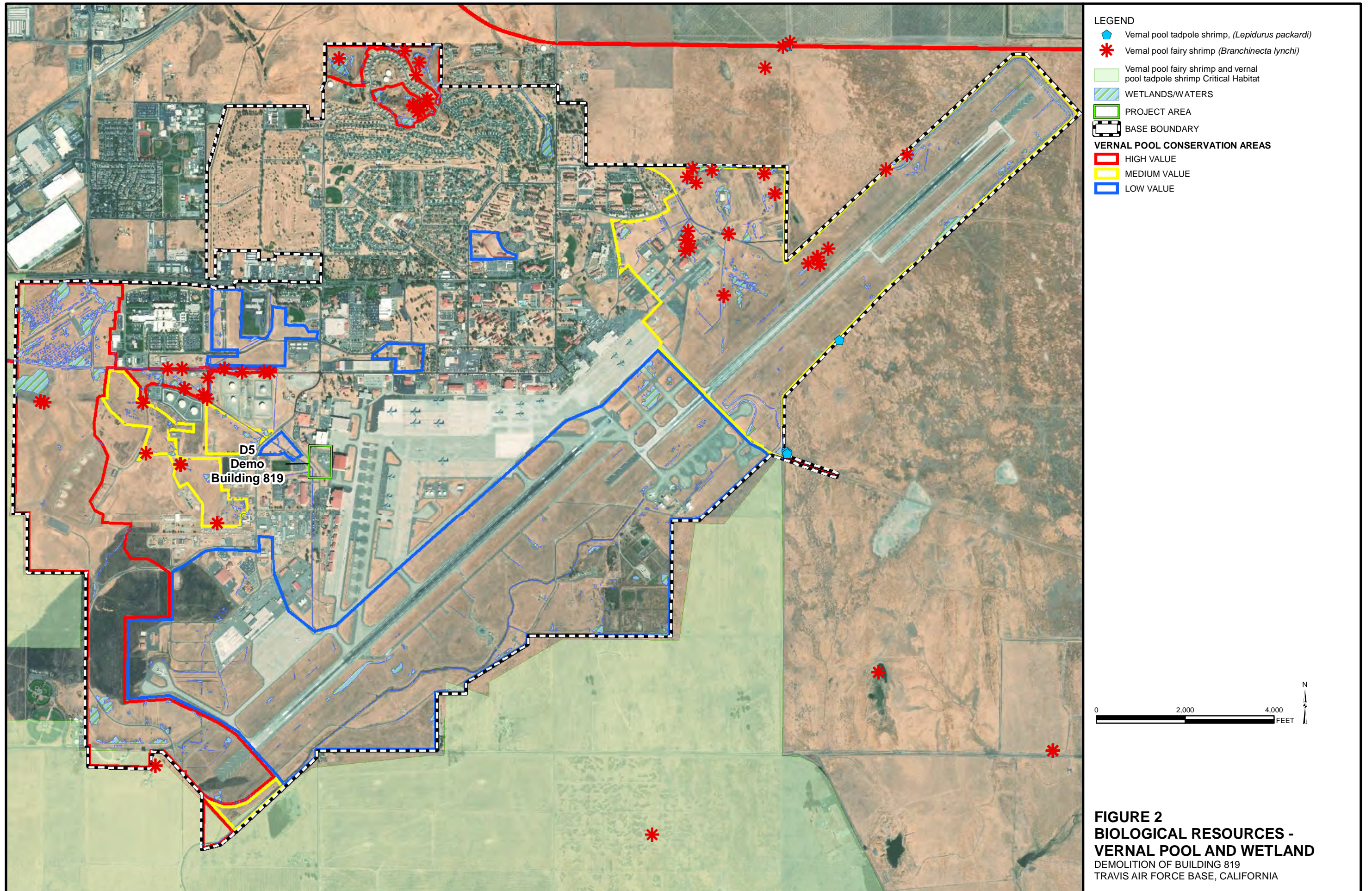
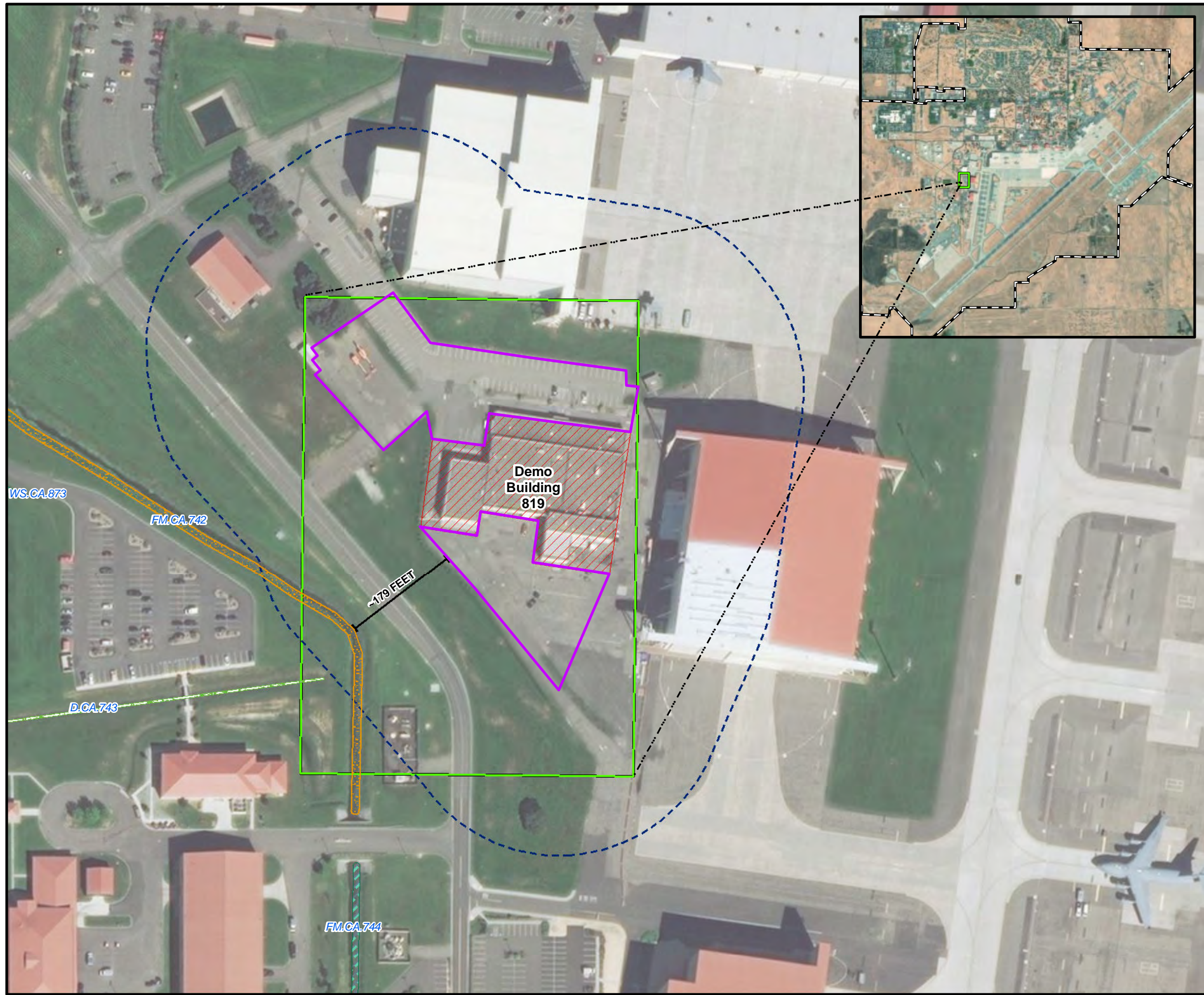


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 819
 TRAVIS AIR FORCE BASE, CALIFORNIA





- LEGEND**
- PROJECT AREA
 - DEMOLITION BOUNDARY
 - STAGING BOUNDARY
- WETLAND FEATURES**
- DITCH
 - FRESHWATER MARSH
 - WETLAND SWALE
 - PROJECT AREA 250' BUFFER

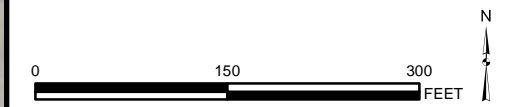


FIGURE 3
VERNAL POOLS/WETLANDS
 DEMOLITION OF BUILDING 819
 TRAVIS AIR FORCE BASE, CALIFORNIA

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Demolish Building 891

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: SW of the Base, along Ragsdale Street

Species impacted:

Effects Assessment: No Effect

Expected start date of project: June 2022

Project Description

Describe in detail:

Purpose and need for the project. This project would involve demolishing the vacant building and associated infrastructure. The purpose for this project is to reduce unnecessary operation and maintenance costs associated with sustaining facilities no longer required to support the Travis AFB mission.

Project site location including all work, staging and storage areas. Building 891 is located near the center of the installation, in an area set back from direct airfield support (Figure 1). The general area is populated and within an operational/maintenance support district. It is on the north side of Ragsdale Street, approximately 1,000 feet northeast of the intersection with Dixon Avenue.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) The area of temporary disturbance is approximately 0.14 acre. Work includes demolition of the process building (288 square feet [SF]), an adjacent aboveground storage tank (AST) (80 SF), and two additional ASTs (620 SF each) for propane with associated aboveground and underground piping. Some of these structures extend up to approximately 15 feet below grade. Upon completion, the area would be backfilled, graded for positive drainage, hydroseeded and allowed to return to natural conditions.
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2022.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).
- Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. No wetlands are within 250 feet of the project boundary (Figure 3).

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	2,723 ft
Vernal pool fairy shrimp	1,595 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	5,449 ft
California tiger salamander (sighting)	4,406 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered low value upland habitat and is within the designated Low Risk CTS Upland Habitat area.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the runways was not mapped, however due to the scheduled mowing and maintenance activities that minimize small mammal activity in these areas the burrow density is assumed to be low.
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information
- Describe how effects were considered for each species:
Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in disturbed habitat), historical information on CTS movement

within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within a low risk area for CTS; Demolition work occurs within graveled areas and previously disturbed surfaces. CTS upland habitat will not be disturbed as part of this project. No effects to CTS are anticipated as a result of project construction.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). No vernal pools occur within 250 feet of the project. No effects to these species are anticipated as a result of project construction.

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 15; Facility Maintenance and Demolition (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 0.14 acre will be disturbed as a result of the proposed project. No CTS upland habitat will be disturbed during construction.

Disturbance Area (Project Components)	Size/Area (SF/Ac)
Demolition Boundary	5,986/0.14
Demolition of structures	1,608/0.04 ^a
^a Demolition of structures included in acreage of demolition boundary	

Based on the tiered level of consultation in the PBO, this project will have No Effect on any federally-listed species that may be present within the action area. As a Level 1 project for vernal pool branchiopods and Contra Costa Goldfields (No Effect) and a Level 1a project for CTS (No Effect), no consultation or further reference to the PBO will be required.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. No direct effects to listed species are expected to occur as a result of the proposed action.

Describe the impact if project not completed. If the project is not completed, ongoing maintenance of the Building 891 would result in continued expenditure of Air Force funds for sustainment and would not accomplish the goal of removing excess, obsolete, deteriorating, and underused facilities and pavements throughout the installation. The remaining structure would be in conflict with Base Selection Standards with regards to use and mission support.

Conservation Measures (CMs) that will be implemented for the project are:

- All equipment and excess soil must stay on paved/gravel surfaces.

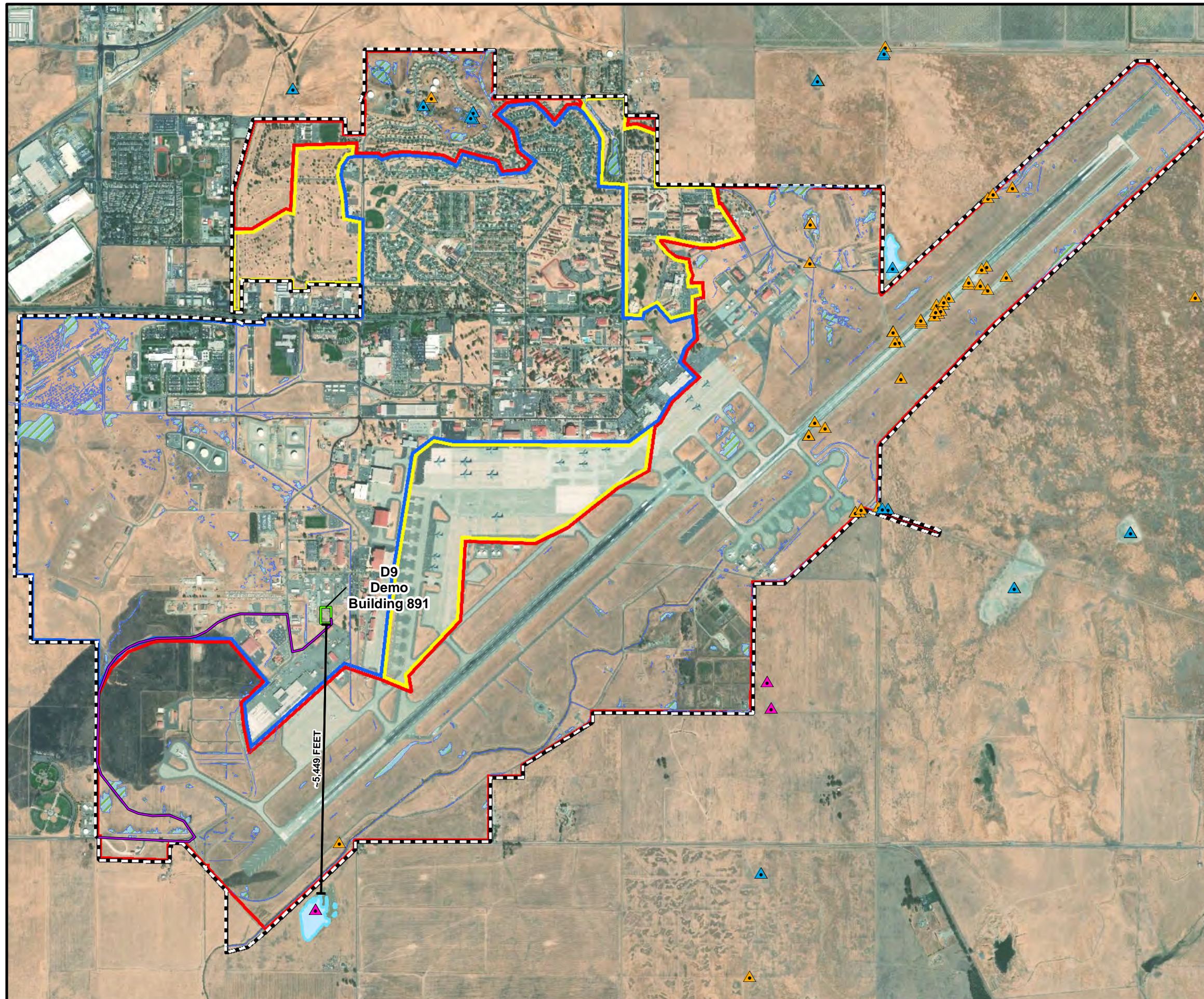
Species-Specific Minimization Measures Which Will <u>NOT</u> be Implemented for this Project	
General measures (PBA section 1.5)	Prefix MM All
Species-Specific (CTS)	All
Species-Specific (VPFS, VPTS)	All
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

No concurrence from FWS will be requested for this project.

Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands



LEGEND

- California tiger salamander (*Ambystoma californiense*) (Occurrence)
- California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
- California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
- INGRESS/EGRESS

CTS RISK AREAS

- 1 HIGH RISK
- 2 MEDIUM RISK
- 3 LOW RISK
- CTS BREEDING HABITAT
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

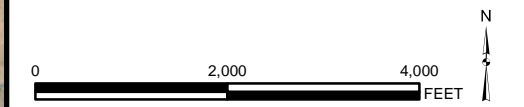
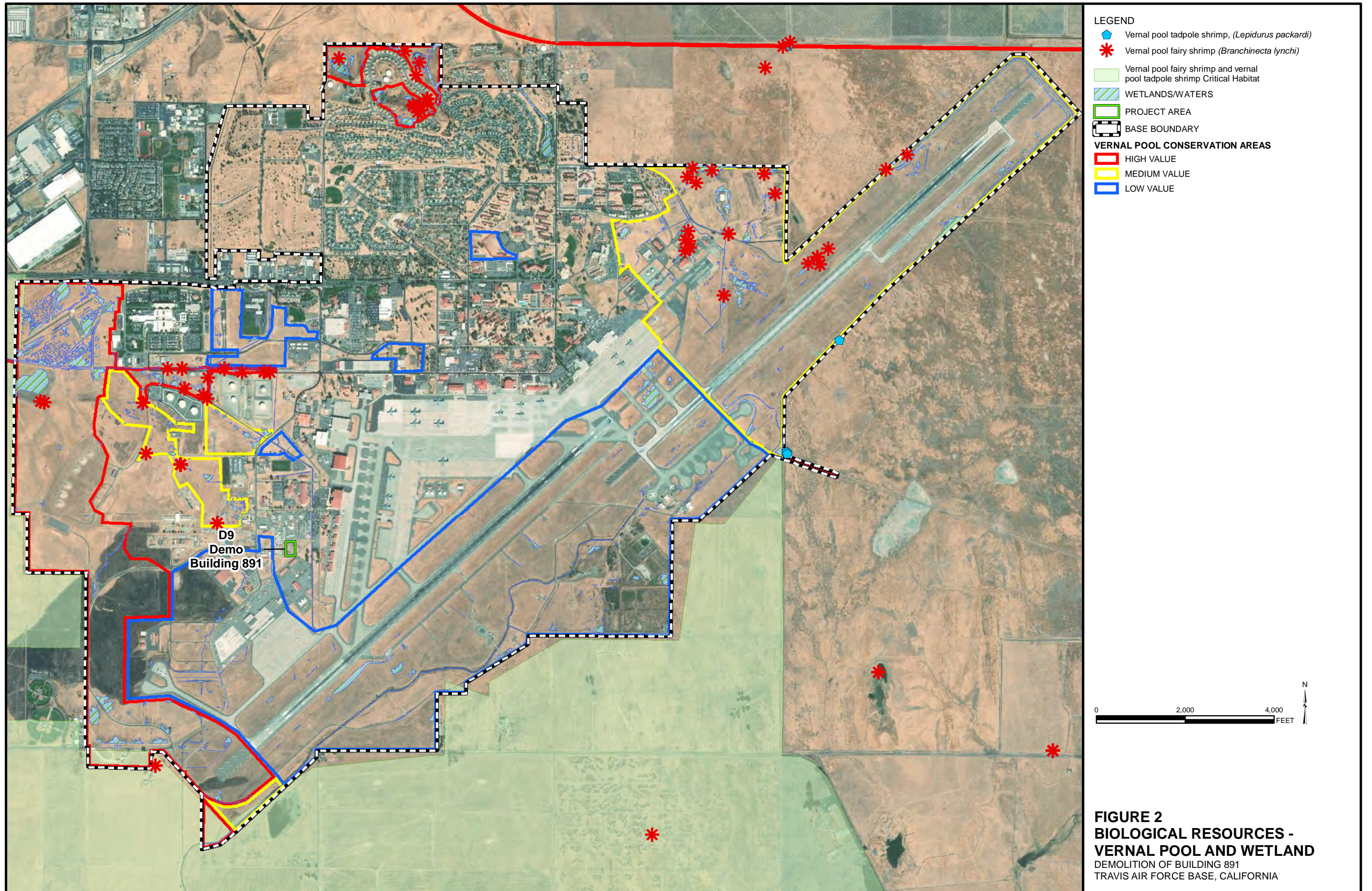


FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 DEMOLITION OF BUILDING 891
 TRAVIS AIR FORCE BASE, CALIFORNIA





- LEGEND**
- PROJECT AREA
 - DEMOLITION BOUNDARY
- WETLAND FEATURES**
- FRESHWATER MARSH
 - WETLAND SWALE
 - PROJECT AREA 250' BUFFER

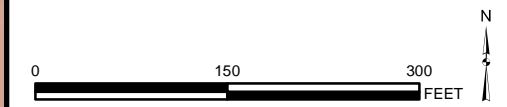


FIGURE 3
VERNAL POOLS/WETLANDS
 DEMOLITION OF BUILDING 891
 TRAVIS AIR FORCE BASE, CALIFORNIA

PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Construct C5 Static Display

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: Central of the Base, at the intersection of Travis Avenue and Burgan Boulevard

Species impacted:

Effects Assessment: No Effect

Expected start date of project: June 2019

Project Description

Describe in detail:

Purpose and need for the project. This project would establish a permanent display area that would symbolize the heritage of the C-5 airframe and its significance in history to Travis AFB.

Project site location including all work, staging and storage areas. The C-5 Galaxy display construction site is adjacent to the existing airframe display area, immediately south of Travis Avenue and east of Burgan Boulevard, near the “Y” intersection at Challenger Lane and Travis Avenue. Staging areas will be established on previously paved areas within the vicinity of the project.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.). The new facility would require a permanent, reinforced six-inch concrete pad to support the weight of the airframe (55,000 SF). Lighting, sidewalks, handicapped accessible ramps, two memorial display plaques, and permanent landscaping (consisting of ginger rock and vegetation to match the adjacent “Golden Bear” display) are included as part of the proposed project. A temporary haul-road (56,520 SF) would be needed to transport the airframe from the flight line to its destination. Construction of this haul-road would involve removing a small stand of trees, grading existing topography, and restoring the haul road and surrounding area to its current state, to the maximum extent possible, after the airframe has been moved.
- Seasonal constraints of activity. The proposed project will occur during the dry season and work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2019.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, cement truck, tractor, loader, or backhoe, trucks, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through

the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).

○ Maps:

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. No wetlands are within 250 feet of the project boundary.

Known occurrences of T&E species in Project Area including closest populations of all affected species. There are no known vernal pool species crustacean populations within 250 feet of the project boundary. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	2,435 ft
Vernal pool fairy shrimp	2,216 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	4,011 ft
California tiger salamander (sighting)	2,482 ft

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered low value upland habitat and is within the designated Low Risk CTS Upland Habitat area. The area consists of disturbed ground and compact earth.
- Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the area was not mapped, however small mammal activity is minimal due to the compacted earth and routine maintenance and mowing.
- Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information

- Describe how effects were considered for each species:

Effects to CTS were determined by proximity of project boundary to high risk CTS upland habitat, type of project (work in disturbed habitat), historical information on CTS movement within area of project, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project occurs within a low risk area for CTS; Construction will work occur within previously disturbed surfaces. CTS upland habitat will not be disturbed as part of this project. No effects to CTS are anticipated as a result of project construction.

Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. The project is located within a Low Value Vernal Pool Conservation Area (Figure 2). No vernal pools occur within 250 feet of the project. No effects to these species are anticipated as a result of project construction.

No designated critical habitats or conservation areas for CTS or vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 18; Minor Construction Projects (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 2.1 acres will be disturbed as a result of the proposed project. No CTS upland habitat will be disturbed during construction.

Disturbance Area (Project Components)	Size/Area (SF/Ac)
Construction Boundary	90,167/2.1
C5 Display	55,000/1.26 ^a
^a Construction of display included in acreage of construction boundary	

Based on the tiered level of consultation in the PBO, this project will have No Effect on any federally-listed species that may be present within the action area. As a Level 1 project for vernal pool branchiopods and Contra Costa Goldfields (No Effect) and a Level 1a project for CTS (No Effect), no consultation or further reference to the PBO will be required.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present. No direct effects to listed species are expected to occur as a result of the proposed action.

Describe the impact if project not completed. If the project is not completed, the goal of increasing warfighter morale, and providing a lasting patriotic symbol of the Travis AFB mission will not be accomplished.

Conservation Measures (CMs) that will be implemented for the project are:

- All equipment and excess soil must stay on paved/gravel surfaces.

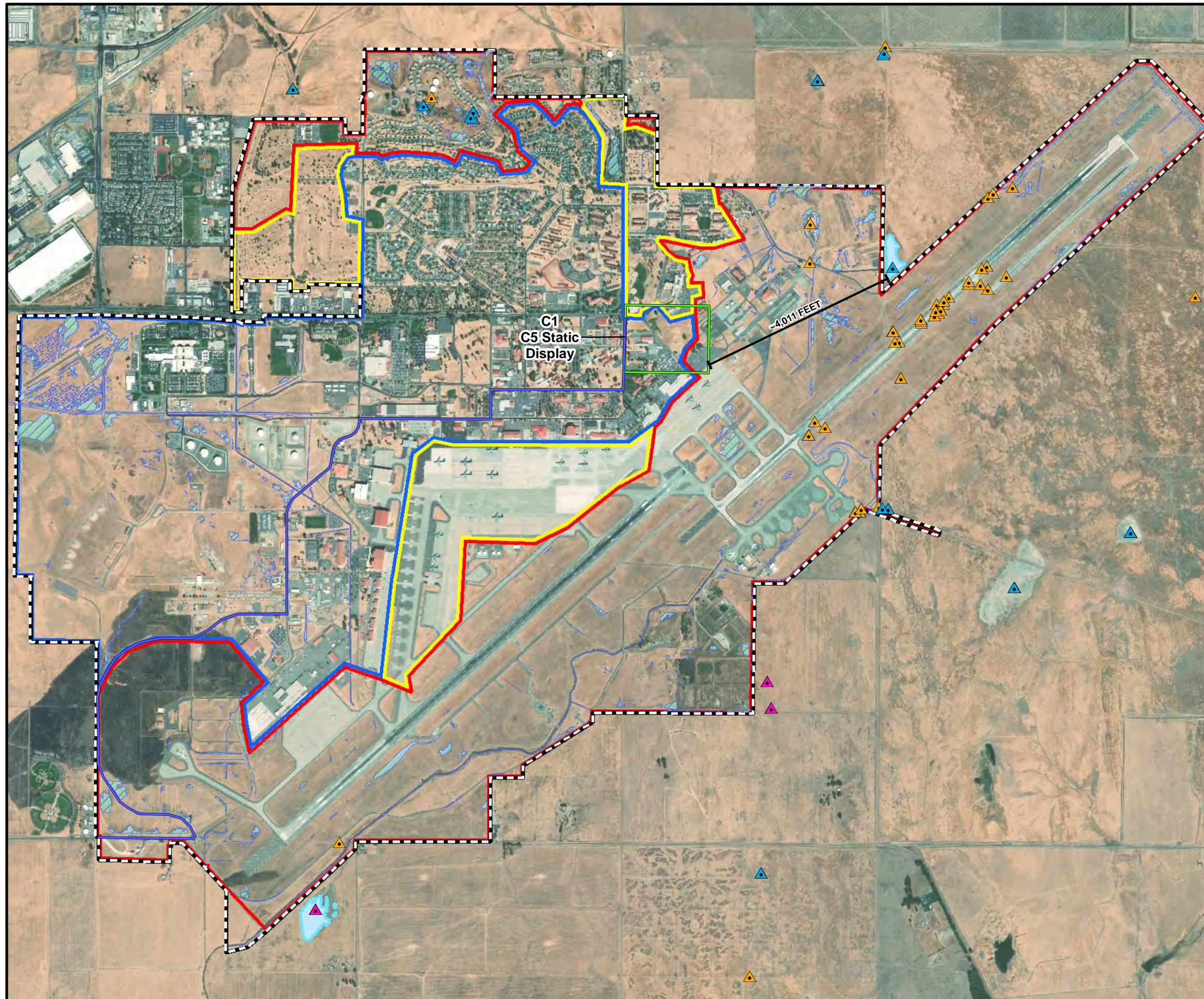
Species-Specific Minimization Measures Which Will <u>NOT</u> be Implemented for this Project	
General measures (PBA section 1.5)	Prefix MM All
Species-Specific (CTS)	All
Species-Specific (VPFS, VPTS)	All
All other Species-Specific (CFS, CCG, DGGB)	All

Summary

No concurrence from FWS will be requested for this project.

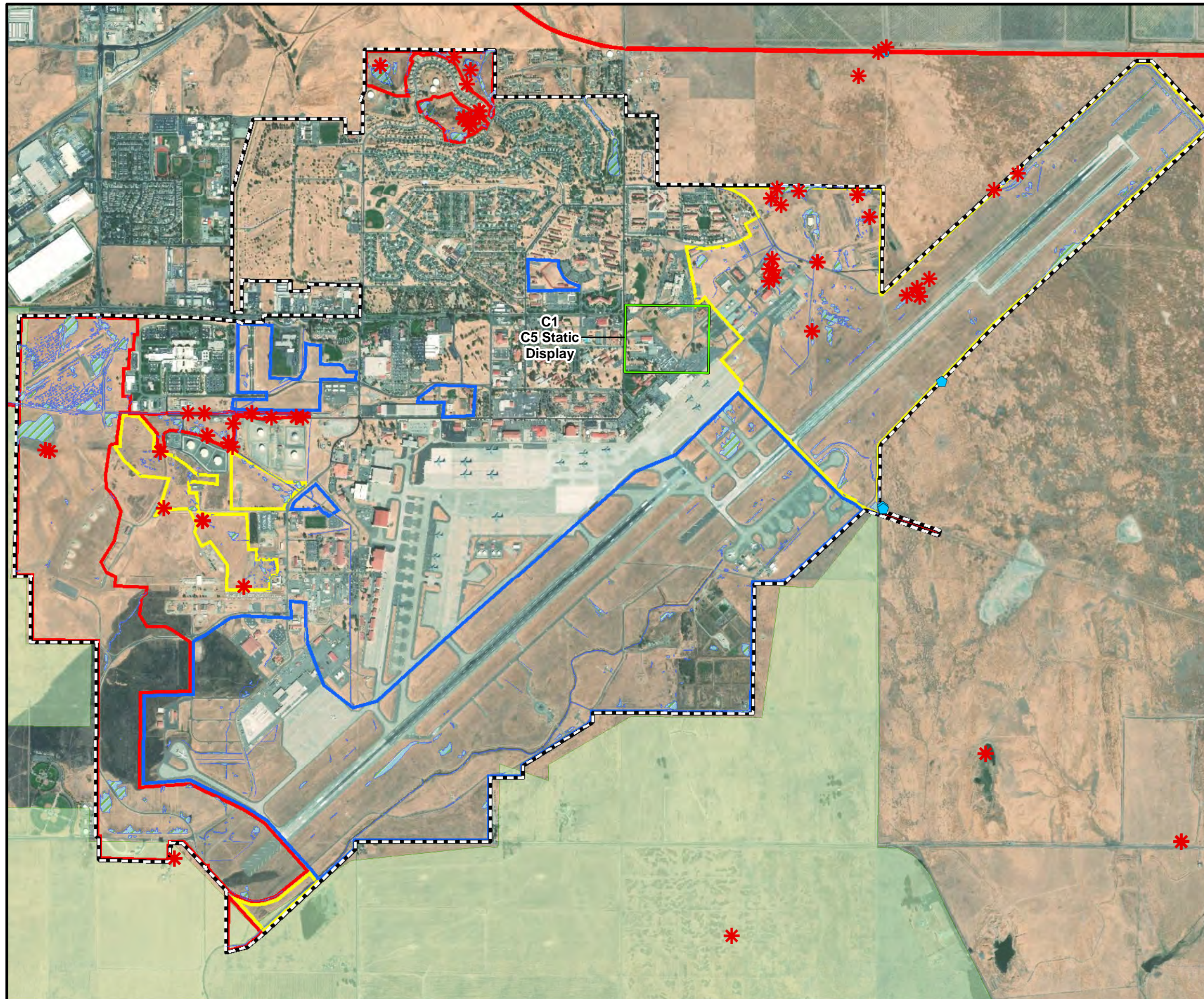
Site Maps and Project Figures

Figure 1	California Tiger Salamander Occurrences
Figure 2	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 3	Vernal Pools/Wetlands



- LEGEND**
- ▲ California tiger salamander (*Ambystoma californiense*) (Occurrence)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Breeding Pond)
 - ▲ California tiger salamander (*Ambystoma californiense*) (Potential Breeding)
 - INGRESS/EGRESS
- CTS RISK AREAS**
- 1 HIGH RISK
 - 2 MEDIUM RISK
 - 3 LOW RISK
 - CTS BREEDING HABITAT
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY

FIGURE 1
CALIFORNIA TIGER
SALAMANDER OCCURRENCES
 C5 STATIC DISPLAY
 TRAVIS AIR FORCE BASE, CALIFORNIA



LEGEND

- ◆ Vernal pool tadpole shrimp, (*Lepidurus packardii*)
- ✱ Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Vernal pool fairy shrimp and vernal pool tadpole shrimp Critical Habitat
- WETLANDS/WATERS
- PROJECT AREA
- BASE BOUNDARY

VERNAL POOL CONSERVATION AREAS

- HIGH VALUE
- MEDIUM VALUE
- LOW VALUE

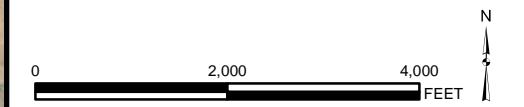
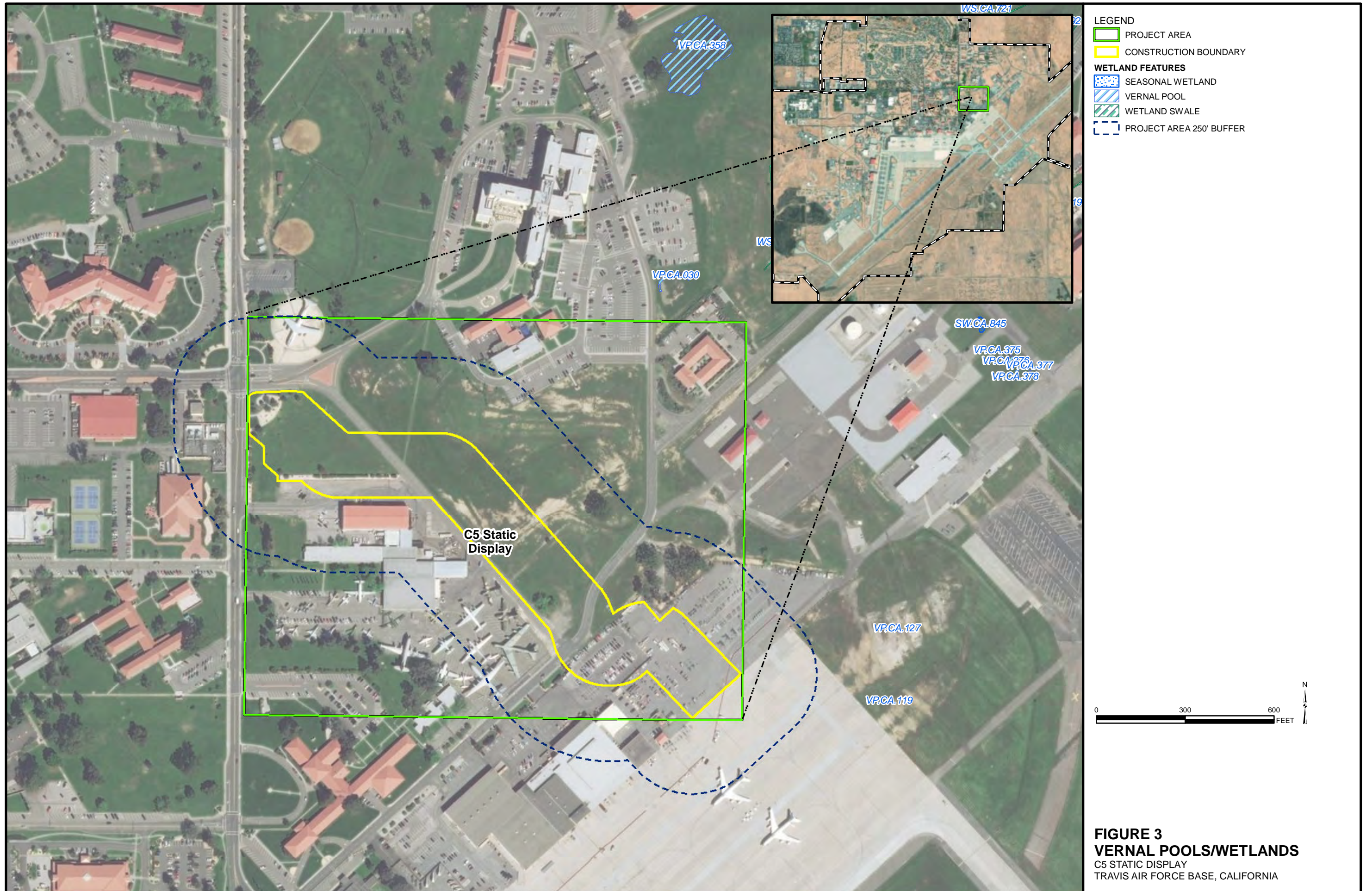


FIGURE 2
BIOLOGICAL RESOURCES -
VERNAL POOL AND WETLAND
 C5 STATIC DISPLAY
 TRAVIS AIR FORCE BASE, CALIFORNIA



PROGRAMMATIC BIOLOGICAL ASSESSMENT
Travis Air Force Base
Project Effects Analysis Report

Date sent to U.S. Fish and Wildlife Service (FWS):

Project Title: Recreational Vehicle (RV) Storage Area and Demolition of Building 927

Project Proponent:

CEIE POC: Penn Craig/Deanne Weber

Location: West of the Base near the intersection of W Street and Dixon Avenue.

Species impacted: Vernal pool fairy shrimp (VPFS); Vernal pool tadpole shrimp (VPTS)

Effects Assessment: No Effect (VPFS, VPTS)

Expected start date of project: June 2020

Project Description

Describe in detail:

Purpose and need for the project. The purpose of the project is to provide additional RV storage capacity to meet current demands for personnel stationed at Travis AFB. The need is to support the Travis AFB family through provision of adequate Morale, Welfare, and Recreation (MWR) facilities offering on-installation parking for RVs. This project consists of repurposing an un-used parking lot and adjacent lands next to the existing RV storage lot. Building 927 is adjacent to the proposed RV storage lot and is proposed for demolition. This building has deteriorated beyond the point of economical repair and cannot be reasonably altered or economically used.

Project site location including all work, staging and storage areas. The proposed site for the RV storage area expansion and demolition of Building 927 is located to the south of the existing MWR RV Storage Area and in the south-central industrial area of the installation (Figure 1). The proposed RV Storage Area would utilize approximately 2.38 acres of paved parking and previously developed lands in the space between Building 927 and Building 902, on the north side of W Street, approximately 500 feet west of the intersection of W Street and Dixon Avenue. Improvements to this area would include installing fencing and establishing numbered parking stalls. Staging and laydown will be located offsite, near the corner of Hangar Road and Ragsdale Street.

Detailed narrative description of proposed project activity to include:

- Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.) Approximately 2.38 acres of paved (1.13 acres) and previously disturbed (1.25 acres) lands will be paved and converted into additional parking spaces for RV storage. Fencing will be installed around the perimeter of the expanded RV storage area. Demolition of Building 927 and associated infrastructure (7,200 SF; 0.17 acre) includes the modular building (6,800 SF), including foundation/tie-downs, roof mounted mechanical units (four each) (approximately 25 SF each), porches (four each) (approximately 65 SF each), as well as a storage shed (140 SF) north of the modular building. All utilities would be abandoned in place at-grade. The associated asphalt parking lot and surrounding landscaping, including all trees, would remain. Upon completion of demolition activities, the disturbed area

would be backfilled, graded for positive drainage, hydroseeded, and allowed to return to natural conditions.

- Seasonal constraints of activity. None. Work is estimated to take approximately 4 months to complete. Work is anticipated to begin in June 2020.
- Equipment needed to perform activity. Typical construction equipment that would be used includes excavator, tractor, loader, or backhoe, trucks, cement truck, roller, grader, rubber-tired dozer, water truck.
- Site ingress and egress plan. Construction equipment would enter the Base through the Suisun Gate (South Gate). All other access to the Base would be through the Main Gate. All construction traffic would exit the Base through the Main Gate (Figure 1).
- Maps:

Figure 1	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 2	Biological Resources and Vernal Pools/Wetlands

60 CES/CEIE Analysis

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.). Historical reports, Travis Natural Resources GIS data, Travis CTS Risk Map, Travis Vernal Pool Conservation Area Map, and the California Natural Diversity Data Base were used for analysis of effects.
- Description of all potential or known listed species habitat within the project area including wetlands within 250 feet, if applicable.

Wetlands. There are two (2) wetlands within 250 feet of the project boundary.

Wetland ID	Distance
VP.GA.220	40 ft
WS.GA.044	223 ft

Known occurrences of T&E species in Project Area including closest populations of all affected species. The closest populations of T&E species to the project site are listed below:

Species	Distance
Contra costa goldfields	2,498 ft
Vernal pool fairy shrimp	338 ft
Vernal pool tadpole shrimp	To date, none on base
Conservancy fairy shrimp	To date, none on base
Delta green ground beetle	To date, none on base
California tiger salamander (breeding pond)	5,722 ft
California tiger salamander (sighting)	4,798 ft

Burrowing owls are known to occur in the vicinity of the proposed project, including one documented occurrence within the construction boundary (H.T. Harvey & Associates, 2014; Figure 2).

- CTS upland habitat description and risk area location (Appendix A), if applicable. CTS upland habitat surrounding the project boundary is considered low value upland habitat. The project is located within designated low risk CTS upland habitat.
 - Density and abundance of small mammal burrows in any uplands to be disturbed on the site. Burrow density in the areas surrounding the project was not mapped, however this area is heavily used by small mammals and consequently, burrow density is very high. Historical records indicate burrowing owl nesting is known to occur here (Figure 2).
 - Figures showing all applicable species and habitat information. Refer to Figures 1 and 2 that show the project site and all applicable species and habitat information.
- Describe how effects were considered for each species:
Effects to vernal pool branchiopods were determined by proximity of project boundary to known occurrences of vernal pool fairy shrimp, historical information on aquatic species surveys, and the close consideration of appropriate Conservation Measures to be implemented for the project. Vernal pools on the Base are known to support suitable habitat for vernal pool fairy shrimp (VPFS) (CNDDDB, 2018), see Figure 1. During the 2016 non-protocol wet season survey conducted by Marty Ecological Consulting, VPFS were identified in 16 vernal pools/wetlands on Base (Marty, 2016). No vernal pool tadpole shrimp (VPTS) were observed on Base during this survey. The closest vernal pool fairy shrimp occurrence from this study is approximately 338 feet northwest, see Figure 2. Based on available data, no listed branchiopod species have been documented within vernal pools within 250 feet of the construction boundary. Construction work and staging will occur within 250 feet of wetlands (VP.GA.220 AND WS.GA.044); however, no work is occurring with 200 feet of VP.GA.220, and WS.GA.044 is 40 feet away but also separated from the project by a roadway. Appropriate Best Management Practices (BMPs) will be implemented to protect wetland features.

No designated critical habitats or conservation areas for vernal pool branchiopods are present in the Project area; therefore, the proposed action will not result in adverse modification to critical habitat.

Programmatic Biological Opinion Reference

Programmatic Biological Opinion (PBO) Page 18; Minor Construction Projects (FWS 2018).

Analysis of Effects

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres). Approximately 2.55 acres will be disturbed as a result of the proposed project. Of this amount, approximately 1.30 acres are already developed or paved. With implementation of Conservation Measures, there is no expected disturbance to vernal pool species habitat.

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present.

No direct effects to VPFS and VPTS are expected to occur as a result of the proposed action. There are physical barriers roads/paved surfaces between the project limits and wetland features within 250 feet. The two vernal pools within 250 feet of the project (WS.GA.044 [223 ft] and VP.GA.220 [40 ft]) are separated from the project by roads (VP.GA.220) and parking lot (WS.GA.044) (Figure 2).

Impacts to burrowing owls will be minimized by implementing BMPs prescribed in the *Burrowing Owl Management Plan for Travis Air Force Base* (H.T. Harvey & Associates, 2014).

Describe the impact if project not completed. If the project is not completed, the existing RV storage and parking will be inadequate to fulfill the needs of the military residents and does not meet MWR goals for establishment of recreational opportunities for families on Base.

Conservation Measures (CMs) that will be implemented for the project are:

Note: CMs that have been modified to fit the project are detailed below and the following method has been used to modify each CM: ~~crossed-out text~~ indicates text that has been *removed* from a CM. **Bold text** indicates text that has been **added** to a CM.

MM-1. A ~~Service-approved~~ **Biologist** will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present prior to the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat. If any federally-listed species are found during the preconstruction surveys, the **NR Manager** ~~Service-approved Biologist~~ will contact the Service to determine how to proceed. ~~At least 10 business days prior to the onset of activities, Travis AFB will submit the name(s) and credentials of biologists who will conduct these preconstruction surveys if they have not previously received Service approval for similar surveys. No project activities will begin until proponents have received written approval from the Service that the biologist(s) is qualified to conduct the work.~~

MM-3. A ~~Service-approved~~ **Biologist** will conduct environmental awareness training for all construction personnel working within and near sensitive habitat on Base. Training will be provided at the start of work and within 15 days of any new worker arrival. The program will consist of a briefing on environmental issues relative to the proposed project. The training program will include an overview of the legal status, biology, distribution, habitat needs, and compliance requirements for each federally-listed species that may occur in the project area. The presentation will also include a discussion of the legal protection for endangered species under the Act, including penalties for violations. A fact sheet conveying this information will be distributed to all personnel who enter the project site. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all avoidance and minimization measures. These forms will be maintained at Travis AFB and will be accessible to the appropriate resource agencies.

MM-5. Wetlands/drainages/vernal pools, if present, will have erosion control measures (straw waddles, silt fencing) installed where hydrological continuity exists between the construction activities and the wetland. A Service-approved Biologist will determine whether erosion control measures should be utilized, weighing the potential for impacts to other species including CTS. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources.

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native "weed-free" seed mix approved by the Travis AFB 60 CES/CEIE. ~~Ground disturbance within vernal pools will require a restoration plan and 2 years of follow up monitoring by a Service approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.~~

MM-7. Off-road travel outside of the demarcated construction boundaries will be prohibited.

MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the ~~base NR Manager on-site Biologist. The Biologist will inform the Travis Natural Resource Manager (NRM) immediately (60 CES/CEIE).~~ The Travis NRM will verbally notify the Sacramento Fish and Wildlife Office within one day and will provide written notification of the incident within five days.

MM-10. Motor vehicles and equipment will only be fueled and serviced in designated service areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur in a designated area with appropriate spill containment. Any newly established, project specific fueling and maintenance areas will be located at least 250 feet from any wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB will ensure a plan to allow a prompt and effective response to any accidental spills is in place. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

MM-11. During construction activities, all trash ~~that may attract predators~~ will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-13. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.

MM-14. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit on unpaved roads.

MM-17. No trenches will be left open at the end of the day; trenched areas will be compacted and restored to normal grade once the project is completed.

GM-1. Designated areas for construction project material storage, staging, trailers, and laydown areas will be on a paved surface or an area approved by 60 CES/CEIE.

GM-2. At least 14 days prior to the start of work, a biologist will conduct a bird survey to identify any active bird nests. If bird nesting is present, Conservation Measures will be put in place such as, establishing a buffer between the active nest and the project site or waiting until birds have fledged the nest before starting the project. Conservation Measures from the Travis Burrowing Owl Management Plan will be implemented for any active Burrowing Owl nests.

Species-Specific Minimization Measures Which Will NOT be Implemented for this Project

General measures (PBA section 1.5)	Prefix MM All MM CMs not mentioned above
Species-Specific (VPFS, VPTS)	Prefix VP All

All other Species-Specific (CFS, CCG, DGGB, CTS)	All
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Summary

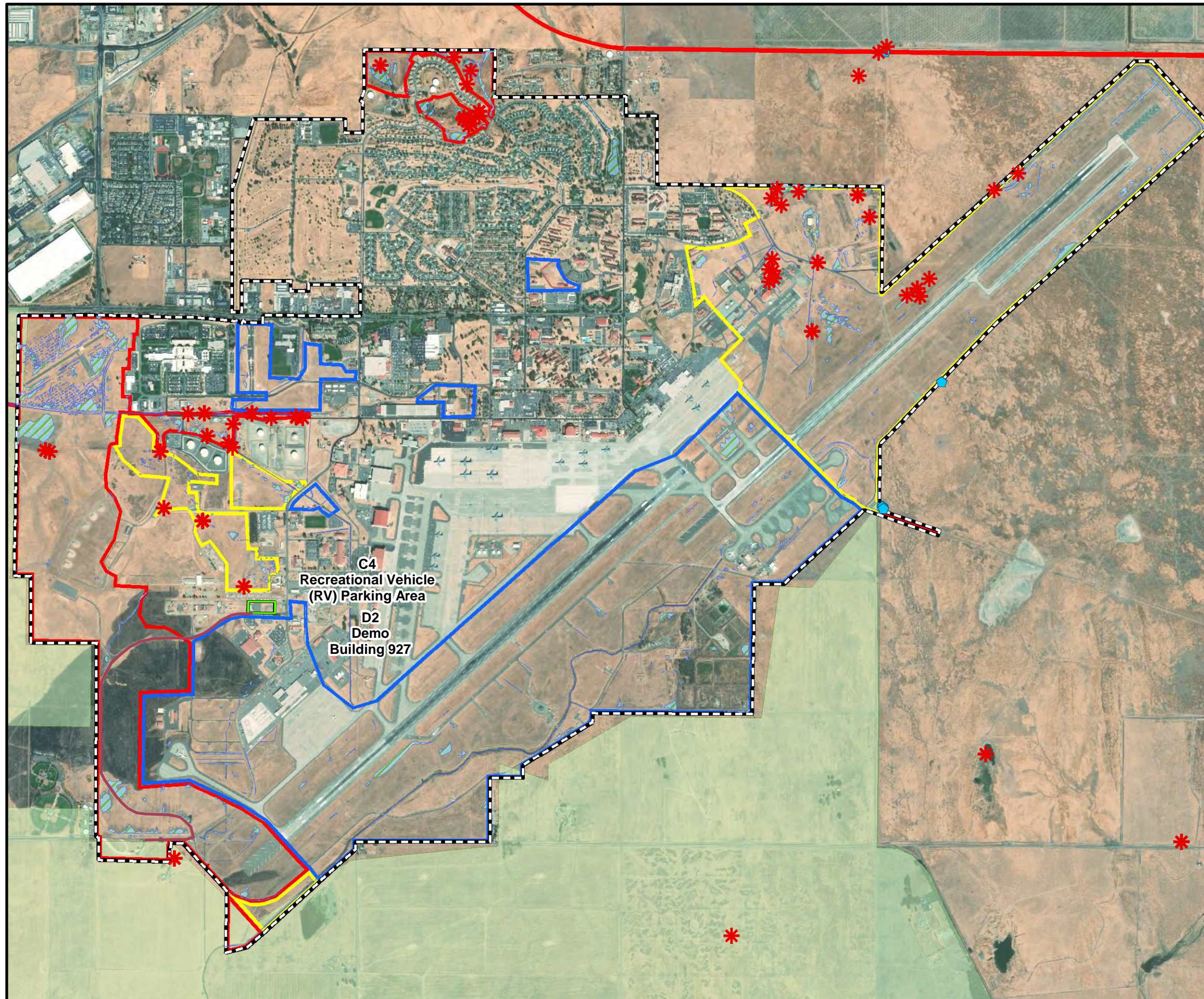
Travis AFB has determined that the proposed project should be considered and authorized for action because: 1) the project fits within the scope of the actions described in the PBO; 2) the effects analyzed are identical or similar to those that were analyzed in the PBO; 3) sensitive time periods for listed species will be avoided to the extent practicable; and 4) all pertinent minimization measures will be implemented.

Site Maps and Project Figures

Figure 1	Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Occurrences
Figure 2	Biological Resources and Vernal Pools/Wetlands

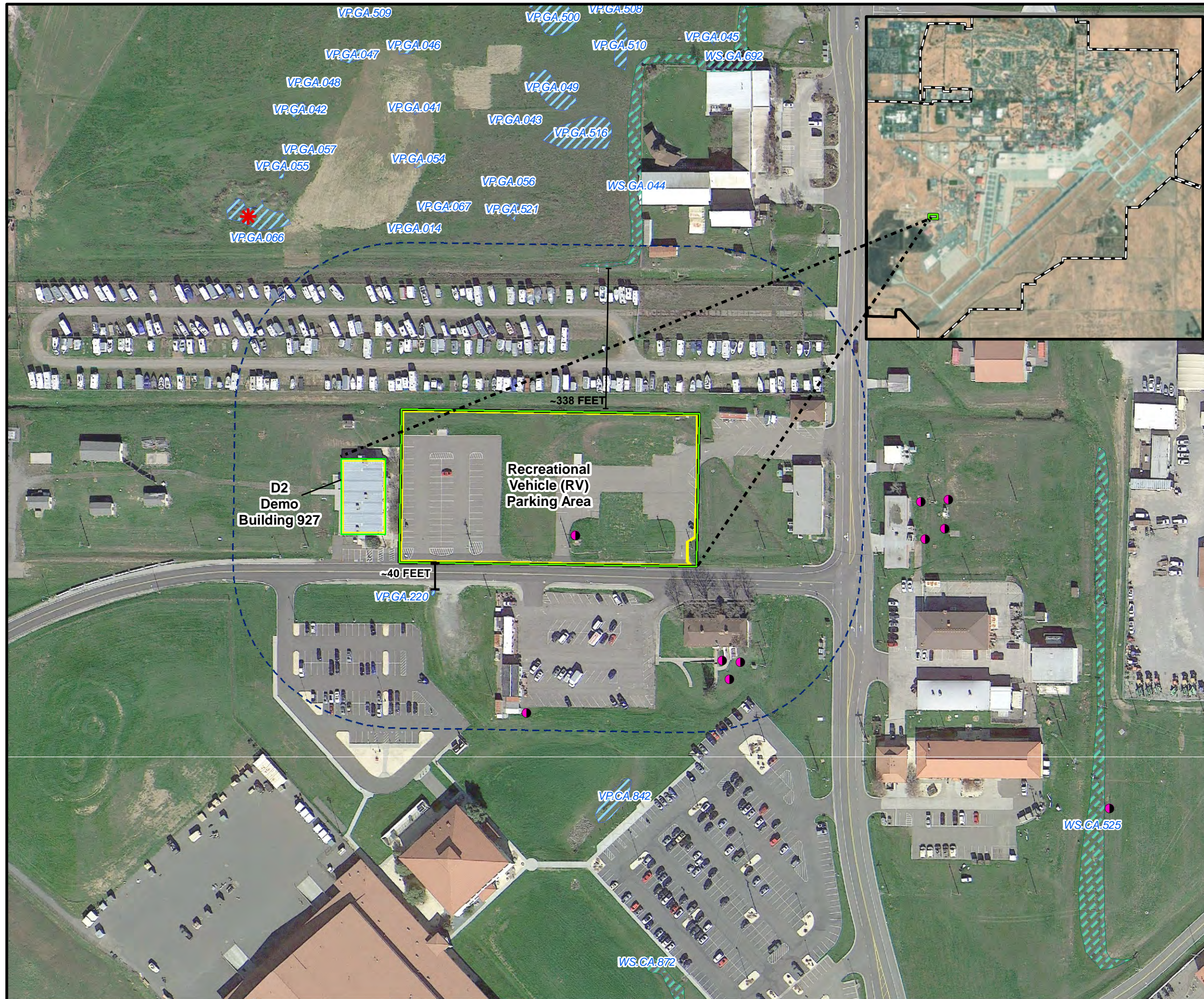
References

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- LEGEND**
- ◆ Vernal pool tadpole shrimp, (*Lepidurus packardii*)
 - ✱ Vernal pool fairy shrimp (*Branchinecta lynchi*)
 - Vernal pool fairy shrimp and vernal pool tadpole shrimp Critical Habitat
 - WETLANDS/WATERS
 - PROJECT AREA
 - BASE BOUNDARY
- VERNAL POOL CONSERVATION AREAS**
- HIGH VALUE
 - MEDIUM VALUE
 - LOW VALUE
 - INGRESS/EGRESS

FIGURE 1
VERNAL POOL SPECIES OCCURENCES
 RECREATIONAL VEHICLE (RV) PARKING AREA
 DEMOLITION OF BUILDING 927
 TRAVIS AIR FORCE BASE, CALIFORNIA



- LEGEND**
- PROJECT AREA
 - CONSTRUCTION BOUNDARY
- WETLAND FEATURES**
- VERNAL POOL
 - WETLAND SWALE
 - PROJECT AREA 250' BUFFER
- Burrowing owl (*Athene cunicularia*)
 - ✱ Vernal pool fairy shrimp (*Branchinecta lynchi*)

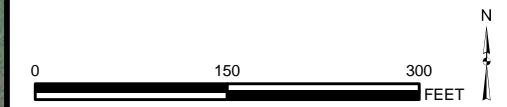


FIGURE 2
BIOLOGICAL RESOURCES AND VERNAL POOLS/WETLANDS
 RECREATIONAL VEHICLE (RV) PARKING AREA
 DEMOLITION OF BUILDING 927
 TRAVIS AIR FORCE BASE, CALIFORNIA

Photos of Recreational Vehicle (RV) Storage Area project site from site visit conducted November 2, 2018



Existing storm water drainage ditch (on the northern boundary of the project site) will remain after construction of new RV Storage lot

Below are the existing parking lot and surrounding areas



1
2
3
4
5

APPENDIX E

PROGRAMMATIC BIOLOGICAL ASSESSMENT



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2017-F-2294-3

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

JUN 01 2018

Brian L. Sassaman
60th Civil Engineer Squadron
Flight Chief, Installation Management
411 Airman Drive, Building 570
Travis Air Force Base, California 94535-2001

Subject: Programmatic Formal and Informal Consultation on the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, Solano County, California

Dear Mr. Sassaman:

This letter is in response to your March 30, 2017, letter requesting initiation of formal and informal programmatic consultation with the U.S. Fish and Wildlife Service (Service) for the proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, California (proposed projects/activities). The proposed projects include typical activities that will be authorized as a framework programmatic action. Your request, which included the March 2017 document titled *Programmatic Biological Assessment: Effects of Activities Conducted at Travis Air Force Base, California, on Six Federally Threatened and Endangered Species* (programmatic biological assessment) was received by the Service via email on March 30, 2017. However, the request and the programmatic biological assessment were insufficient to initiate consultation. On June 12, 2017, the Service requested additional information needed (2017-F-2294-1). On July 11, 2017, and May 01, 2018, the Service received emails from Travis Air Force Base (Travis AFB) providing the additional information requested. All of the necessary information was received and consultation commenced on May 01, 2018. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action that you requested consultation on is for typical activities which will be conducted over the next 5 years at Travis AFB and at its eight geographically separated units (GSUs) (see Figure 1 of the Enclosure). These activities are necessary for the functioning of the Base, and are divided into the following four core programs: Mission Operations; Infrastructure Support; Infrastructure Development; and Environmental Management. The programmatic biological assessment describes categories of activities related to construction of new facilities, operations and maintenance, flight-related activities, and restoration activities that will occur in accordance with these core programs.

The programmatic biological assessment presents an evaluation of the proposed project's effects on species federally-listed. At issue are the proposed project's effects on the federally-listed as threatened Central Valley population of the California tiger salamander (*Ambystoma californiense*) (California tiger salamander), vernal pool fairy shrimp (*Branchinecta lynchi*), Contra Costa goldfields

(*Lasthenia conjugens*); delta green ground beetle (*Elaphrus viridis*); as well as the federally-listed as endangered vernal pool tadpole shrimp (*Lepidurus packardii*), and the Conservancy fairy shrimp (*Branchinecta conservatio*) and critical habitat designated for these species.

The following sources of information were used to develop this programmatic biological opinion: (1) the programmatic biological assessment for the proposed projects; (2) Travis AFB's *Integrated Natural Resource Management Plan*, dated July 2016; (3) additional information provided by Travis AFB in a response letter dated July 11, 2017; (4) emails, phone conversations between representatives of the Service, Travis AFB, and consulting biologists; and (5) other information available to the Service.

Consultation History

<i>March 30, 2017</i>	The Service received a letter from Travis AFB requesting initiation of formal and informal programmatic consultation for the proposed projects.
<i>June 12, 2017</i>	The Service sent a letter to Travis AFB requesting additional information needed regarding the proposed projects potential affects to federally-listed species.
<i>July 11, 2017</i>	The Service received the information requested on June 12, 2017, from Travis AFB for the proposed projects.
<i>March 16, 2018</i>	The Service received a request from Travis AFB to add further information to the proposed project. This information provided acreages of "low, medium, and high value habitat suitability areas" for the federally-listed species covered in this consultation.
<i>May 01, 2018</i>	The Service received a request from Travis AFB to update Table 6: <i>Summary Effects Determination for Federally-Listed Species</i> , provided in the programmatic biological assessment.

Programmatic Section 7 Consultation Approach

The programmatic biological assessment submitted for routine activities conducted by Travis AFB analyzes proposed activities as a whole, for impacts to the six federally-listed species and their habitat. Based upon this analysis, Travis AFB proposes specific criteria within this document for proposed projects and activities that will have either have **no effect** (Level 1); **may affect, but is not likely to adversely affect** (Level 2); and **may affect and is likely to adversely affect** (Level 3), federally-listed species.

All projects meeting the consultation criteria defined under this framework, established by this programmatic consultation (Levels 2 and 3), will have individual abbreviated project-specific analysis completed by Travis AFB, following the *Covered Project Analysis Template* (consultation template) provided in the Enclosure, and explained in detail in Appendix B of the programmatic biological assessment. Specific habitat effect thresholds have been developed for the four federally-listed species known to occur on the main Base and its GSUs and is provided in Tables 1 and 2 of the Enclosure. Because there are no verified occurrences of either the Conservancy fairy shrimp or delta green ground beetle on Travis AFB or its GSUs; informal consultation for potential effects to Conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp, will occur within 250 feet of known or potential habitat, and designated critical habitat for this species (See Tabs A, B and F of the programmatic biological assessment). Similarly, informal consultation

for potential effects to the delta green ground beetle and its potentially suitable habitat will be limited to projects conducted which may affect potentially suitable habitat, located ≤ 1 mile, from known occurrences or potential habitat, or is located within 250 feet of critical habitat designated for this species (See Tab C of the programmatic biological assessment). Informal consultation will occur on projects within medium (yellow) and some high (red) risk California tiger salamander areas (see Table 2-Level 2 activities included in the Enclosure).

For each project, Travis AFB will implement conservation measures pertinent to the project, in order to avoid or **minimization** potential effects to species and their habitat. Within this framework the following three possible effect levels are possible:

- The first level is “**no effect**” on any federally-listed species discussed in this document (Table 1-Level 1, and Table 2-Levels 1a and 1b of the Enclosure). Level 1 activities (no effect) will not require further analysis or reporting to the Service. It applies to all situations where none of the federally-listed species with the potential to occur on Travis AFB are likely to be present, within the proposed action area, or the nature of the activity itself will have no effect on federally-listed species and their habitat.
- The second level is “**may affect, not likely to adversely affect**” federally-listed species (Level 2 in Table 1 and 2 of the Enclosure). This level refers to those activities that are not likely to adversely affect federally-listed species, or their habitat. These effects on species are expected to be discountable, insignificant, or entirely beneficial. This level of effect will apply to all proposed projects where the implementation of avoidance and **minimization** measures (section 1.5 of the programmatic biological assessment), and species-specific measures (Tabs A-F of the programmatic biological assessment) will ensure project’s activities are not likely to adversely affect a federally-listed species, or their habitat.

Travis AFB will complete the consultation template for Level 2 projects. The completed consultation template and any other pertinent information will be mailed or emailed to the Service at least 30 days prior to project start date. The completed consultation template will be addressed to the Assistant Field Supervisor, Doug Weinrich at the Sacramento Fish and Wildlife Office (SFWO). The Service will respond within 14 days if we do not concur with the Base’ determination, and will provide an explanation as to why the Service does not concur. Level 2 projects that meet the requirements described in this programmatic biological opinion will be appended on an annual basis, after the Service receives an annual report from Travis AFB requesting to have Level 2 projects that were completed the prior year appended to the biological opinion. Although no habitat compensation will be required for projects that fit these criteria; appropriate general **minimization** measures (*Conservation Measures* section), and species-specific avoidance measures (Tabs A-C, E and F of the programmatic biological assessment) will be implemented to avoid potential adverse effects to federally-listed species. Project effects located >100 feet from all wetlands will be summarized and retained by the Base, and will be submitted in the Level 2 annual report to the Service.

- The third level is “**may affect, likely to adversely affect**” federally-listed species (Level 3 in Tables 1 and 2 of the Enclosure), and their habitat. This level refers to proposed projects that are likely to directly or indirectly adversely affect the federally-listed species or their critical habitat present (Table 6 of the Enclosure). This level of effect will require formal consultation prior to project implementation, adhering to this programmatic framework, and will include a project-specific analysis following the consultation template. Travis AFB will

mail or email projects requested to be appended to this programmatic biological opinion to the Assistant Field Supervisor, Doug Weinrich at the SFWO. The Service will issue a biological opinion after all necessary information is received, which will include a project-specific incidental take statement (ITS), if it is determined that a project covered under this programmatic biological opinion is likely to adversely affect federally-listed species. The appended biological opinion will include a project-specific ITS; if take is reasonably certain to occur, and will also document any changes to species data (e.g., species occurrences) since issuance of this document. Before a biological opinion can be appended to this programmatic biological opinion, the Service will determine that: (1) the proposed project's activities are within the scope of the activities described in the programmatic biological assessment; (2) the potential effects of the proposed action are consistent with those analyzed in this programmatic biological opinion; and (3) the appropriate conservation measures will be implemented.

Activities that will have No Effect on the Species and Informal Consultation on Categorical Activities that May Affect but are Not Likely to Adversely Affect the Species

Background and Federally-listed Species

In their programmatic biological assessment, Travis AFB determined that many activities typically conducted on the Base and its eight GSU's will either not effect or are not likely to adversely affect the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, Conservancy fairy shrimp, Contra Costa goldfields and the delta green ground beetle, and their critical habitat; Travis AFB requests our concurrence with the this determination. In addition, Travis AFB determined that certain activities proposed to occur on the Base and its eight GSU's are likely to adversely affect vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields. These activities are evaluated in the programmatic biological opinion that follows. Activities which are not likely to adversely affect these federally-listed species or their habitat are described in the sections below and are summarized in Tables 1, 2, and 6.

Typical activities performed at Travis AFB that are likely to trigger section 7 consultation requirements are described in the sections below, and in the *Description of the Proposed Action* section included in the following biological opinion. Several guiding conservation principles apply to the implementation of all projects, regardless of habitat types and species, and are engrained in an ecosystem approach for the management of natural resources and the conservation of federally-listed species. As such, Travis AFB has developed, and will implement, general avoidance and minimization measures, and general conservation measures described below under *Conservation Measures*. In addition to these measures, species-specific conservation measures described in Tabs A-F of the programmatic biological assessment may apply to some projects and activities to avoid or minimize potential impacts. This will be determined during the project analysis conducted by Travis AFB's Natural Resource Management Team (60 CES/CEIE) following the consultation template, titled *Project Effects Analysis Report Template* (consultation template) provided in the Enclosure.

Conservancy Fairy Shrimp and its Critical Habitat

Surveys for special status invertebrates have not detected Conservancy fairy shrimp on Travis AFB (CH2M Hill 2006). However, nine occurrences of this species have been reported within 3 miles of Travis AFB, including seven locations on the Wilcox Ranch; located immediately southeast of the Base, California Natural Diversity Database (CNDDDB) 2016). Limited habitat is present on Travis AFB for Conservancy fairy shrimp because it is most often found in large, deep, pools that typically remain ponded late into the spring (June). Critical habitat for Conservancy fairy shrimp occurs on the main Base at the South Gate; a triangular parcel south of Runway 03R/21L not within the

fenced boundary of the Base; and south of Runway 03R/21L (See Figure 3 of the Enclosure). In the Solano-Colusa Vernal Pool Region, Conservancy fairy shrimp are reported as occurring in Olcott Lake at Jepson Prairie about 6 miles east of Travis AFB. Presence of this species has been documented off-Base on the Muzzy Ranch and Wilcox Ranch (CNDDDB 2015). In the Solano-Colusa region, Conservancy fairy shrimp populations are protected from development on some locations at the Jepson Prairie Preserve. Other occurrences of the species on private land in this region are threatened by development, particularly in the rapidly urbanizing areas of Fairfield and Vacaville (Service 2005).

Although Travis AFB does not believe the Conservancy fairy shrimp occurs on the Base or its eight GSUs, conservation measures and avoidance and minimization measures will be implemented to ensure this species and its habitat are not affected. Specifically, all projects occurring within 250 feet of known or potential Conservancy fairy shrimp habitat, will implement appropriate general minimization measures. See *Conservation Measures* section for general avoidance and minimization measures, and species-specific avoidance measures (Tab F of the programmatic biological assessment) to avoid potential adverse effects to the species and its habitat.

For each project area within designated critical habitat, Travis AFB will evaluate whether the physical and biological features (PBFs) of critical habitat for the Conservancy fairy shrimp are present, and may be adversely affected with project implementation which would require separate section 7 consultation for potential adverse effects to this species and its critical habitat (See Figure 4 of the Enclosure for a map of designated critical habitat). The PBFs considered to be essential to the conservation and survival of Conservancy fairy shrimp are: (1) topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands; (2) depressional features including isolated vernal pools with underlying restrictive layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days in all but the driest years; (3) sources of food, expected to be detritus occurring in the pools; and (4) structure within the pool consisting of organic and inorganic materials that provide shelter (USFWS 2005).

Because the Conservancy fairy shrimp has not been identified on Travis AFB or its GSU's, activities proposed in the programmatic biological assessment are not expected to result in adverse effects to the species. However, Travis AFB routinely monitors the status of listed species on its properties and will continue to monitor for Conservancy fairy shrimp as necessary. If at any time this species is detected by surveys, Travis AFB will immediately contact the Service to initiate discussions on how best to proceed regarding the revised status of the species and whether proposed project activities may affect the species or its habitat.

Delta Green Ground Beetle and its Critical Habitat

The closest known population of the delta green ground beetle to Travis AFB is located about 1,500 feet off-Base in playa pools on the Wilcox Ranch, owned by the City of Fairfield and Solano County (adjacent to the eastern boundary of Travis AFB; CNDDDB 2016). The delta green ground beetle has been recorded in a total of 18 playas on the eastern portion of the Wilcox Ranch. It is important to note that not all playas on the western Wilcox parcel have been surveyed for this species, and additional suitable habitat exists closer to Travis AFB. Other playa pools on private lands adjacent to Travis AFB have the potential to provide habitat for this species, but surveys have not been conducted or reported to CNDDDB.

A habitat assessment on Travis AFB was conducted for the delta green ground beetle in 2012 by Dr. Richard Arnold, who found no evidence of appropriate habitat for this species. Dr. Jaymee Marty also conducted surveys for this species on the Base in 2016, as a follow up survey and reached the same conclusion: that no suitable habitat for the species was present. While appropriate habitat for the delta green ground beetle likely does not exist on the main Base at Travis AFB, critical habitat for the species was designated over lands owned by Travis AFB at the former Sacramento Northern Railroad Right-of-Way GSU. Additionally, because little is known about the ecology of the species including dispersal distances and upland habitat use, Travis AFB has established a 1-mile buffer around known and potential delta green ground beetle habitat. Projects within the 1-mile buffer will consider the delta green ground beetle in informal project consultation. The buffer for potential delta green ground beetle is based on buffers used for critical habitat around Olcott Lake and habitat polygons shown in the CNDDDB for the species (See Figure C-1 in Tab C of the programmatic biological assessment). This is also based on the assumption that surveys of potential delta green ground beetle habitat on private lands adjacent to the Base have not been extensive. Because little is known about the life history, particularly dispersal distances of this species and use of upland habitat surrounding vernal pools, Travis AFB has determined that the larger buffer is warranted.

Travis AFB anticipates projects proposed within designated critical habitat for the delta green ground beetle and in areas within 1 mile of known habitat for this species, will have no effect or are not likely to adversely affect the species or its habitat (See Figure 4 for a map of designated critical habitat). However for projects proposed within designated critical habitat for the delta green ground beetle, Travis AFB will evaluate whether the PBFs of the critical habitat are present and may be adversely affected, requiring separate section 7 consultation for potential adverse effects to this species and its critical habitat. The PBFs considered essential to the conservation and survival of this species are: (1) vernal pools with their surrounding vegetation; and (2) land areas that surround and drain into these pools (USFWS 2005). If activities are proposed in designated critical habitat for the delta green ground beetle on Travis AFB GSU Former Sacramento Northern Railroad-Right-of-Way, separate section 7 consultation will be completed for the proposed project.

Because Travis AFB lacks suitable habitat for the delta green ground beetle, activities proposed in the programmatic biological assessment are not expected to result in effects to the species or its habitat. Travis AFB will conduct future surveys if new information comes to light that alters the scientific understanding of this species habitat requirements and changes the likelihood of its potential to occur on Base. At this time, Travis AFB does not believe the species exists on the Base, but will conduct future surveys if new information is found that changes the scientific understanding of the species' habitat requirements and changes the likelihood of its potential to occur on the Base.

California Tiger Salamander, Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Contra Costa Goldfields and their Critical Habitat

See the *Environmental Baseline* section in the following biological opinion for details on these species occurrences, and potential suitable habitat, including critical habitat for the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields for which Travis AFB has determined are not likely to be adversely effected by the activities described in this section.

Categorical Activities that will have No Effect on Federally-Listed Species and their Habitat

Travis AFB has determined that there will be **no effect on California tiger salamander or its habitat** on projects located within low (green) risk CTS areas. See Appendix A of the programmatic biological assessment for the CTS risk analysis and model used at Travis AFB. In the analysis,

Travis AFB designated and defined areas on the Base as either having a low, moderate or high potential for supporting CTS. For simplicity of interpreting the three levels for potential risk for CTS, the corresponding colors are used to describe these risk levels: green (low), yellow (medium) and red (high). A map of the green, yellow, and red risk areas are depicted in Figure 2 of the Enclosure. No effect projects will include activities completed between May 1 and October 15, occurring on paved or gravel surfaces and shoulders, and projects that utilize all equipment and leave excess soil on paved or gravel surfaces. Additionally, with the incorporation of avoidance and minimization measures Travis AFB has determined that there will be no effect on California tiger salamander or its habitat on projects: occurring on paved or gravel surfaces and shoulders in green or yellow risk CTS areas from October 16 – April 30, and/or projects having temporary and permanent disturbances in upland habitat in green risk CTS areas. See Table 2; Levels 1a, and 1b of the Enclosure for a list of the avoidance and minimization measures which will be implemented for these activities. No effect activities do not require consultation with the Service.

In addition, with the incorporation of avoidance and minimization measures, Travis AFB has determined that the following activities will have **no effect on the vernal pool fairy shrimp, vernal pool tadpole shrimp, Conservancy fairy shrimp, Contra Costa goldfields, and the delta green ground beetle or their habitat:** on projects that will occur on paved or gravel surfaces, and/or are within paved or graveled road shoulders; and/or work located >250 feet from a wetland (see Table 1; Level 1 of the Enclosure). As a conservation measure, Travis AFB will ensure that all equipment and excess soil will be contained on the project site and will stay on either paved or surfaces.

Mowing

Travis AFB has determined that mowing activities will provide beneficial effects to federally-listed species and their habitats when completed during the dry season (May 1 - October 15). Additionally, if mowing occurs in or near vernal pools, it will occur only when the soil is no longer saturated to ensure tracks are not left in or near wetlands. Mowing activities will avoid California tiger salamander breeding ponds during the spring and early summer months in efforts to avoid any effects to this species.

Mowing occurs in both landscaped areas and natural habitat throughout the Base on about 2,900 acres (Figure 8 of the Enclosure). Routine mowing occurs for safety and security reasons around the airfield munitions storage facilities, and along roadway shoulders. Vegetation is also mowed for habitat management in areas not grazed by cattle or horses, and for aesthetic purposes in planted turf areas and open spaces within the cantonment area. Mowing activities in grassland and vernal pool habitat is done to maintain vegetation height and thatch levels that are optimal for the federally-listed species. Mowing may occur as often as weekly in developed areas and around the flightline. In undeveloped areas, mowing occurs once or twice per year, depending on the time of year and the growth rate of vegetative material. This is accomplished with gasoline and diesel mowers (manual, ride-on, or commercial mowers), hedge trimmers, and weed whackers. Mowing in undeveloped areas generally commences in the spring once the soil is no longer saturated. Vegetation around the flightline is maintained between 7-14 inches, while vegetation around buildings and facilities, along roadways, and in landscaped areas is generally kept to ≤ 6 inches.

Grazing and Livestock Management

Travis AFB has determined that grazing activities will benefit federally-listed species and their habitats. The duration, intensity, and frequency of current and future seasonal grazing on Travis AFB is designed to improve habitat for federally-listed species occurring on the Base; promote native species; minimize soil erosion; reduce non-native plant species; reduce wildfire risk; and prevent the spread of undesirable plant species (Travis AFB 2016b). See the *Conservation Measures*

section below for general measures, and Tabs A-F for species-specific conservation measures that will be implemented during grazing to avoid potential effects to federally-listed species:

To prevent non-native plant species from becoming increasingly dominant in upland grassland areas, and in vernal pools, management in the form of grazing is necessary (Travis AFB 2017b). While grazing alone does not eradicate invasive species; it is effective in reducing infestation and slowing the spread of some undesirable species. Grazing is one of the most compatible long-term management tools for grassland habitat on the Base, because nearby infrastructure makes burning less practical and risks injury and damage to human health and property.

Travis AFB accommodates agricultural out-leasing as a major land use. Grazing currently occurs within designated fields, or Grazing Management Units (GMUs), located along the southwestern portion of the Base (see Figure 7 of the Enclosure). Both cattle and horse grazing occur within these areas from November - July for cattle and year round for horses. Table 7 of the programmatic biological assessment provides information on the current size of each GMU, its capacity for grazing (measured in animal unit months), and the type of livestock that it supports. Cattle grazing currently occurs on 425 acres and 75 acres are grazed by horses (Travis AFB 2016a).

In addition to the pastures currently being grazed on Travis AFB, the Base proposes to graze up to an additional 595 acres of land in areas that are either unmanaged or mowed, and where habitat degradation has been observed. All lands currently being grazed and lands proposed to be grazed are located on the west side of the Base, extending from the southwestern boundary to the boundary of the former Aero Club in one continuous parcel. Most of these areas do not have infrastructure currently to support livestock grazing, so improvements to fencing and development of water sources as described in the programmatic biological assessment will be required (See the *Description of the Proposed Action* section in the following programmatic biological opinion for proposed fence installation). Existing access roads within grazing units are maintained and the Base will not install new access roads within the grazing units. See section 4.4.3 of the programmatic biological assessment for a description of how grazing units will be developed and maintained for grazing purposes.

Aero Club Grazing Study

At the Aero Club Preserve, fencing and grazing infrastructure improvements were initiated in 2017, as part of another project, in order to facilitate livestock grazing within a 106-acre pasture. The grazing program at the Aero Club will be implemented as a management tool to enhance habitat for vernal pool species by controlling non-native species. Generally, livestock grazing at the Aero Club will occur from about October - July. The duration, intensity, and frequency of seasonal grazing will be managed to benefit federally-listed species; improve native habitat; sustain native vegetative cover; minimize soil erosion; and prevent the spread of invasive plants. Travis AFB will adopt sampling and monitoring methods for 3-7 years, which will allow for adaptive management by informing decisions about each year's grazing duration and intensity to maximize habitat improvements for federally-listed species. For further details, see the *Aero Club Grazing Study* proposed in section 4.4.3 of the programmatic biological assessment, pages 52-53. Site-specific management and monitoring plans are included in Travis AFB's Grazing Management Plan (Travis AFB 2016a).

Travis AFB will implement the following additional Avoidance and Minimization Measures for Livestock Grazing Practices, identified in their response letter dated, July 11, 2017, and in *Travis AFB's Grazing Management Plan, Revised February 2017*:

- Grazing compliance surveys will be conducted monthly to verify grazing lease and grazing

land use regulations (Travis AFB 2017c) are properly implemented;

- Minimum residual dry matter (RDM) level range of 500-900 pounds per acre by October of every year, through stocking rate manipulations and grazing season adjustments (shorter or longer seasons);
- Reduce invasive plant species over the next 5 years;
- Monitor and collect fall RDM data, followed by an annual meeting with the cattle lessee and equestrian center to review, discuss, and analyze results of past grazing practices for adaptive management; and
- Monitor and collect 2018 baseline vegetation composition data to inform management prescriptions for weed control.

Categorical Activities that May Affect but are Not Likely to Adversely Affect Federally-Listed Species and their Habitat

The following section describes activities that are not likely to adversely affect these species or their habitat. Also, see Level 2 activities in Tables 1 and 2 (“not likely” activities), and Table 6, for a list of “not likely” activity categories.

Travis AFB has determined, with the incorporation of the appropriate avoidance and **minimization** measures, the following activities are **not likely to adversely affect the California tiger salamander or its habitat**: projects having temporary disturbance of upland habitat in yellow risk CTS areas; and/or work limited to paved/gravel surfaces and shoulders in red risk CTS areas (Table 1-Level 2, with the appropriate conservation measures). Project effects located in upland habitat, having a disturbance of $\leq 1/4$ acre in yellow risk CTS areas, will be summarized and retained by the Base, and will be submitted in an annual report to the Service. Although no habitat compensation will be required for projects that fit these criteria; appropriate general **minimization** measures (*Conservation Measures* section), and species-specific avoidance measures (Tab D of the Enclosure) will be implemented to avoid potential adverse effects to California tiger salamander and its habitat.

In addition, Travis AFB has determined, with the incorporation of the appropriate avoidance and **minimization** measures, the following activities are **not likely to adversely affect the vernal pool fairy shrimp, vernal pool tadpole shrimp, Conservancy fairy shrimp, Contra Costa goldfields, and the delta green ground beetle, or their habitat**: projects occurring outside wetlands, but within 250 feet of wetlands that meet any of the following criteria; the wetland is located higher in elevation than the work site; the wetland area is upstream of the project; a physical barrier to hydrological connectivity is present; shallow excavation; or other valid reasons why wetlands will not be affected (see Table 2-Level 2 activities).

Invasive Plant Species Management

The Travis AFB Invasive Species Management Plan (Travis AFB 2017b) was developed to address invasive species control which describes activities that are completed for the sole purpose of providing a conservation benefit to federally-listed species and their habitat. This plan identifies 11 invasive plant species that are of particular concern on Travis AFB that are known to occur in plant communities on the Base. Section 4.4.2 of the programmatic biological assessment lists the invasive plant species of particular concern at Travis AFB, and also lists weed species known to be prevalent in the region.

Prescribed Burns

Prescribed burn actions as proposed by Travis AFB, in general, are not likely to adversely affect federally-listed species and their habitat (requiring Level 2 consultation). Travis AFB anticipates prescribed fire will result in overall benefits to federally-listed species and their habitat. However on

a project by project basis, prescribed burns may require Level 3 consultation for potential adverse effects to the California tiger salamander, depending on which prescribed fire practices are employed. See the *Prescribed Burns* section under the *Proposed Action*, and potential adverse effects to the California tiger salamander described under the *Effects of the Action* section in the following programmatic biological opinion. Furthermore, in order to avoid potential adverse effects to Contra Costa goldfields, prescribed fires will not occur in occupied habitat when the vegetation is green (April – June), and will be scheduled after the federally-listed plant has senesced and seed dispersal is complete.

Burning of dry vernal pool habitat is expected to have a beneficial effect to vernal pool habitat by reducing viable seeds of non-native annual grasses still holding seeds; removing thatch; changing vegetation composition over the following one to three growing seasons, and benefiting native forbs within vernal pools (Marty 2015). Prescribed burning reduces competition from annual grasslands and broad-leaf weeds such as yellow-star thistle, which will be targeted by prescribed fires. Marty (2015) found that native plant cover and diversity were higher in burned vernal pools than unburned vernal pools and nonnative annual grass cover was significantly lower than in unburned plots for at least 3 years after treatment at the Jepson Prairie Preserve. They also monitored fire behavior in the vernal pools in this study and found that most fires did not carry into the vernal pool basin (Marty personal communication 2017).

Herbicide Treatment

Travis AFB anticipates that most herbicide application will have an overall benefit to federally-listed species and their habitat, due to complete avoidance and implementation of species-specific conservation measures. However, there may be some instances where full avoidance of federally-listed species and their habitat is not feasible, and potential insignificant or discountable affects may occur. Full avoidance will be achieved by designating 250 foot no access buffers around suitable species habitat. Mechanical methods will be used for the removal of invasive plant species within 20 feet of the mapped wetlands. Herbicide treatment will not be applied within 20 feet from the edge of mapped wetlands. See additional avoidance and minimization measures under the *Conservation Measures* section. Potential insignificant or discountable affects to federally-listed species and their habitat may occur if invasive plants are targeted within, or in close proximity, to these species and their habitat.

The *Invasive Species Management Plan - Treatment Options for Travis AFB Weed Species* developed for Travis AFB identifies targeted weeds and outlines control strategies for these species (Travis AFB 2017b). Specifically, Appendix B of the plan (pages B-12 to B-29), includes recommendations regarding the best timing and herbicide formulation for each weed species that will be followed if herbicide application occurs. Although, it is not known at this time which chemicals will be used; Travis AFB proposes to use any of the herbicides recommended for use in their referenced *2017 Invasive Species Management Plan*. Decisions on specific nontoxic surfactants and specific herbicides to be used will be made by personnel licensed/certified by the State of California in coordination with the Base's Natural Resource Management Team, and only those certified shall apply herbicides. Herbicides will be applied per their label and follow the additional minimization measures developed, as noted in an excerpt provided by Travis AFB from the Solano RCD's *Final Weed Report 2015-2016*.

Grassland Restoration

Habitat restoration treatments such as replanting or reseeding may be used in Travis AFB grasslands to promote native species and restore natural and habitat conditions. Reseeding or replanting using native species may occur if the Base determines that restoration treatments are required due to

invasion by problematic weed species or significant degradation of habitat value. The most common planting methods which may be used at Travis AFB are drill seeding and plug planting. See section 4.4.6 of the programmatic biological assessment for a list of native plant species that may be used and a description of these planting methods.

Hand pulling of non-native plants before restoration occurs may also be completed prior to restoration; although, manual removal methods are labor intensive and costly for large infestations and may not be feasible. Hand-pulling of seedlings has shown to be very effective at inhibiting new growth of some invasive species; however, a shovel or Pulaski will be used for removing well-established clumps of larger plants. Manual removal of invasive plants may be the most desirable weed control method for projects located in suitable habitat for federally-listed species.

The Service concurs with Travis AFB's determination that the projects and activities described in the section above (i.e., *Categorical Activities that May Affect but are Not Likely to Adversely Affect the Species*, and summarized in Tables 1, 2 (Level 2), and 6 may affect, but are not likely to adversely affect the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, Conservancy fairy shrimp, Contra Costa goldfields, and the delta green ground beetle, or their habitat. If during the 5-year term of this programmatic action new information reveals effects of the proposed action may affect federally-listed species or their habitat in a manner or to an extent not previously considered Travis AFB will contact the Service to determine whether these determinations are still valid.

The remainder of this document provides our biological opinion on the effects of the proposed projects on the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, Contra Costa goldfields, and their designated critical habitat.

BIOLOGICAL OPINION

This programmatic biological opinion provides the framework for species habitat compensation, conservation measures, species salvage and relocation efforts, avoidance and minimization measures.

Description of the Proposed Action

The following proposed action consists of typical activities performed by Travis AFB which are likely to require section 7 consultation requirements at Travis AFB Base and the GSUs managed by the Base. General conservation measures described below under *Conservation Measures* will be implemented for all applicable proposed projects described in this programmatic biological opinion. In addition, species-specific conservation measures are included in Tabs A, B, D and E of the programmatic biological assessment, and will be implemented for all applicable proposed projects. Project specific conservation measures will be selected from these lists of measures during the project analysis phase conducted by the Base, and following the consultation template provided in the Enclosure. Table 1-Level 3, and Table 6 provide a list of the proposed projects and activities which have the potential to adversely affect vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander and Contra Costa goldfields, or their habitat. If both direct and indirect effects have been identified, only the higher level of effect is noted in this table.

The Air Force conducts numerous mission-related activities and operations on Travis AFB. For the purposes of this consultation only, the actions proposed by the Air Force consist of four core programs (Mission Operations, Infrastructure Support, Infrastructure Development, and Environmental Management), which occur throughout the Base and associated GSUs, and are likely

to adversely affect vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields, or their habitat. The following paragraphs consist of a brief description of the four programs and describe categories of flight- related, construction, and maintenance activities that will occur in accordance to these core programs:

Mission Operations

Airfield and Flight Operations

Travis AFB hosts the 60th and 349th Air Mobility Wings (AMW). The 60th AMW is the largest air mobility organization within the Air Force (in terms of personnel), and supports maintaining and flying the C-5 Galaxy cargo aircraft, the KC-10 Extender refueling aircraft, and the C-17 Globemaster III cargo aircraft. In partnership with the 60th AMW, the 349th AMW, the largest reserve wing, also makes its home at Travis AFB with its four flying squadrons, three Aerial Port Squadrons, and three Aircraft Maintenance Squadrons.

The 60th AMW is responsible for strategic airlift and air refueling missions circling the globe. The unit's primary roles are to provide rapid, reliable airlift of American fighting forces anywhere on earth in support of national objectives, and to extend the reach of American and allied air power through mid-air refueling. The 60th AMW maintains a work force of approximately 5,800 active-duty military and more than 1,000 appropriated fund civilians and more than 400 non-appropriated fund civilians to support its global mission. In addition, more than 3,500 Reservists are assigned to the associated 349th AMW; combined with their active duty and civilian counterparts form a fully integrated Total Force team.

Travis AFB maintains two main runways; Runway 3R/21L and 3L/21R, which are both oriented northeast/southwest. Both runways are protected by a 2,000-foot wide primary surface in which development is prohibited. The primary surface of the two runways consumes about 1,036 acres of land. A new runway facility, the Assault Landing Zone (ALZ), was recently constructed parallel to 3R/21L on 58 acres. Other facilities supporting flight operations include associated taxiways, cargo ramps, hangars, and associated maintenance facilities.

Travis AFB supports about 42,000 annual total aircraft operations of which 41 percent occur at night, between 10:00 p.m. and 7:00 a.m. Many operations at Travis AFB are conducted by the military aircraft based at the installation, but a large number also include many transient military aircraft and contract commercial aircraft. Flight frequency is variable and future operation rates are subject to change based on mission need. As part of flight operations and other non-mission related flight activities including air shows, the Air Force may alter or expand existing facilities. In most cases, these activities will occur within previously disturbed or developed areas. To reactivate, operate, and maintain existing facilities at Travis AFB, the Air Force may demolish and/or remove existing equipment, fences, antenna towers, and power poles; install structures above and below ground such as subsurface communication lines and utilities, concrete pads for mounting equipment, new power poles and power lines, firebreaks, diesel-powered generators, security barriers, fences and lighting; and repave access roads.

Limited expansion of existing airfield operations and maintenance facilities is projected under the Air Force's Installation Development Plan, including a new War Reserve Material storage facility, Aerial Port facility renovation and new fencing around the airfield development area. About 783,285 square feet (ft²) of facilities are scheduled for demolition within the developed area north of the flightline.

Security and Antiterrorism Operations

Security and antiterrorism operations primarily include law enforcement patrols and boundary evaluation. These operations include using vehicles to conduct the patrols, which typically traverse the Base via existing roads and trails; installing high-powered lights; and removing vegetation via mechanical removal (e.g. mowing, weed eating), or herbicide treatment to improve visibility at secure facilities, gates, and similar locations. Fence maintenance and repair is another crucial component of security and antiterrorism operations.

Other Military Training

Travis AFB military personnel may conduct field operations training for personnel on a routine basis. Training may consist of erecting temporary shelters (e.g., tents), staging of equipment and vehicles, and locating generators near the temporary training sites. Some of these activities will occur in upland areas.

Infrastructure Support

The general types of operations and maintenance projects that routinely occur on Travis AFB include: repair and maintenance of paved and unpaved roads and parking lots; maintenance and demolition of structures and buildings; maintenance, inspection, repair, and replacement of drinking water, wastewater, storm water, natural gas, and other compressed gas pipelines; fuel systems; installation of under- and above-ground utilities such as fiber-optic cables, conduits, power lines, and sensors and poles; landscaping and mowing; and maintenance and replacement of fences and signs.

Road and Bridge Construction and Maintenance

Road Maintenance

The Air Force maintains more than 76 miles of arterial roadways and 118 miles of secondary roadways that vary from one to four lanes in width. The average life span for most roads is anticipated to be 20 years before complete replacement. Travis AFB's 60 AMW Civil Engineer Squadron maintains roads annually after the rainy season. Repair activities may range from filling potholes to replacing road segments. Under most circumstances, replacement will require removal, grading, curb repair, placing new foundation and pavement, placing culverts, testing, sealing, painting, and installation of reflectors or other warning devices. Unpaved roads are used by security, operations, maintenance, and other personnel at all times of the year.

The Air Force performs unpaved road maintenance activities to make the roads usable by standard and four-wheel drive vehicles. These actions include, but are not limited to, installing and grading gravel material or shale to improve road stability and decrease washouts and weathering, installing drainage culverts where needed, filling holes, and repairing any areas where erosion has impacted the road. Recreational pathways for non-motorized vehicles and pedestrians occur throughout the Base in recreational areas as well as throughout Base housing. These paths are primarily comprised of decomposed granite or asphalt and are typically 4 to 6 feet wide. These paths are maintained during the dry season as needed to ensure they are safe for use. Maintenance activities include repairing and filling cracks on paved paths, smoothing and redistributing trail surface material for unpaved paths, and mowing as necessary.

Road paving and repair will generally disturb up to 25 feet from the paved road surface, which allows for equipment to access the area. The existing surface will be leveled and then base rock will be laid down up to 6 inches thick and then covered by up to 6 inches of asphalt or concrete. For gravel roads, the surface will be leveled and 2 to 4 inches of gravel will be laid down. The depth of

disturbance will be no more than 18 inches for paved roads and 12 inches for gravel roads. The heavy equipment used for construction may include scrapers, loaders, grinders, pavers, or rollers.

Bridge Construction and Maintenance

New bridges will be constructed throughout Travis AFB as needed. Materials such as rock, concrete, and sand will be used to upgrade the physical structure so that the bridges can support vehicles. Bridge construction may also include removal/excavation of sediments and bottom material. Bridge construction will typically involve the use of heavy equipment such as excavators, scrapers, loaders, dozers, backhoe, cranes, and dump trucks.

Existing bridges throughout Travis AFB will be repaired, maintained, or upgraded to existing safety standards as needed. Routine repair activities include the repair of footings to prevent future erosion, the installation of railings and support beams for structural support, the sealing of cracks, and the filling of potholes in roadways. Materials such as rock, concrete, and sand will be used to upgrade the physical structure so that the bridges can support vehicles. Bridge repairs may also include removal/excavation of sediments and bottom material and the use of an excavator and a dump truck.

Runway, Aircraft Ramps and Taxiway Repair and Maintenance

The existing concrete aircraft runways, parking ramps and taxiways on Travis AFB may become deteriorated over time to the point where there is an increased risk of foreign object damage to aircraft. As these areas are identified, Travis AFB will replace the existing concrete runway, taxiways and parking ramp and repave the asphalt shoulders as needed. The work typically consists of the removal of existing concrete and granular base, and placement of the new concrete layer. The concrete layer is placed over a drainage layer, which is placed over aggregate base layers and a lime-modified subgrade layer. The asphalt shoulders are then repaved with hot mix asphalt. Lastly, joint sealing and paint striping is completed. The cementitious material, aggregates, water and admixtures are placed in transit agitator trucks or mixer trucks and transported from a temporary concrete batch plant to the project site and unloaded into a paver machine. It is anticipated that between two to four 10 cubic yard mixer trucks will be needed for these types of activities (depending on contractor production rates).

Joint and Crack Sealing

Travis AFB runways, taxiways and ramps require routine maintenance and include repair and sealing of pavement joints and cracks. Joint and crack repair includes the removal of the existing joint, sandblasting or other means of cleaning the joint or crack and then resealing the joint with an appropriate sealant. The equipment used for this operation typically includes a 200-gallon capacity heated asphalt joint seal machine or equivalent.

Runway Rubber Removal

Twice per year, Travis AFB is required to remove the rubber that accumulates on the active runway surfaces. Rubber deposits are removed using specialized rubber removal equipment that uses high pressure water without additional chemicals. The water is recirculated within the equipment and all waste water and rubber debris is contained for proper disposal off- Base. During this activity, all equipment remains on paved surfaces at all times. Following rubber removal, the runway surface is typically restriped and any cracks are sealed.

Facility Maintenance and Demolition

Maintenance and Upgrade

Facilities will be repaired, upgraded, and maintained throughout Travis AFB. Most work will be located in the developed areas of the main Base, the flightline and housing areas. Facility repair or upgrades will generally occur in areas that are previously developed. Activities may include maintenance and upgrades to existing facilities, munitions storage structures, parking lots, storage sheds, concrete pads for utility boxes, sidewalks and communications structures. Each project will have a ground disturbance footprint of up to 1 acre. These activities may involve the use of heavy equipment including excavators, bulldozers, dump trucks, pavers, and scrapers.

Air Force recreational facilities such as running tracks and soccer and softball fields may require periodic maintenance to ensure the surfaces are safe for use and may include filling holes, replacing turf and minor ground leveling. The munitions bunkers on the Base have soil roofs that require periodic repair and/or replacement, in part due to ground squirrel activity. To replace the soil roofs, Travis AFB will remove the existing turf covering on a bunker (roughly 2,500 ft² each) and fill with soil at a minimum of 2 feet in thickness. The new soil roofs will consist of a smooth slope down to the base of each bunker and will be treated with lime. Grass will then be reestablished to stabilize the earthen cover. Repair of these structures may include filling cracks and holes in the earthen surfaces. Other repairs may include trenching through upland habitat to repair electrical system deficiencies and the placement of concrete pads for installation of associated service equipment.

Demolition

Travis AFB will remove degraded, unsafe, and/or unnecessary facilities. Removal of the facilities is necessary to minimize safety concerns, reduce maintenance costs, and/or provide land for new construction. Demolition activities will typically occur in the developed areas of the main Base, such as the flightline and housing areas. These activities may involve ground disturbance of up to 3 feet in depth, and may include removal of: existing facility structures; associated equipment and utilities; facility parking lots; and fencing. Activities may require use of heavy equipment including excavators, bulldozers and dump trucks.

Utility Installation, Maintenance, and Removal

Aboveground Utility Lines

Existing utilities will be replaced and maintained throughout the Base in support of Air Force's missions. Additionally as Travis AFB implements new missions, the installation of new utilities will likely be required. Most of the existing utilities are located in the developed areas of Travis AFB. Occasionally, there will be utilities installed in the undeveloped areas when expanding existing lines is needed. Utility poles on the Base are generally placed 180 to 250 feet apart. This generally allows for avoidance of wetlands during the installation and replacing of poles. Guy wires for pole stability are sometimes required, which are installed surrounding the pole using tie downs secured in concrete blocks (<5 ft²).

Utilities will generally be installed within 25 feet of existing roads; however, some traverse open grassland areas. Pole installation will involve disturbance of a 100-foot diameter area. This will allow for heavy equipment to conduct the installation by digging down 6-10 feet to install the pole. A 24-inch truck mounted auger is typically used to excavate down to 6-10 feet and install the pole. A similar process is used to install guy wires (anchors) and guy poles. Typical equipment includes: pole trailers; line (bucket) trucks; and digger (pole) trucks.

Annual inspection will require access to utility poles, transformers and electrical equipment in undeveloped areas on Travis AFB. Typical equipment used to access these areas will involve disturbances of a 50-foot diameter area around the equipment. Access for typical annual equipment inspections is limited to the dry season, barring emergencies when life and death situations are presented due to electrical system malfunctions.

Underground Utility Lines

New and existing utilities including in-ground electrical; communication cables; pipes for below ground water; fuel; and sewer lines will be installed and maintained throughout the Base to support new workload, missions or an increased capacity of existing workloads. Most of the existing utilities are located in the developed areas of Travis AFB. Occasionally, there will be utilities installed in the undeveloped areas when expanding existing lines is needed. Utilities will generally be installed within 25 feet of existing roads, however some traverse open grassland areas. Trenching varies for different utilities. For electrical, the trench will be between 2-5 feet wide and 3-6 feet deep. The trench for cable and pipe placement will be between 2-5 inches wide and 3-4 feet deep. When installation of utilities involves directional drilling underground, a 6 x 6 x 6 foot entrance and exit pit is required for drill head access and removal. A trencher or backhoe will be used for these tasks. Soil will be backfilled into all trenches.

Underground electrical utility projects frequently include the installation, removal, or maintenance of pad-mounted electrical transformers that provide electrical service to structures on the Base. The concrete/fiberglass pads typically range from 3' x 3' x 6" to 10' x 12' x 12" (width x length x depth), and are typically located in close proximity to the structure they feed. Some electrical infrastructure/designs necessitate pad-mount transformer locations be located in upland grassland areas. Other typical electrical infrastructure include: pullboxes; junction boxes; switches; handholes; manholes; circuit breakers; etc.; all of which vary in size and require different installation methods. Occasionally, underground electrical lines experience faults, requiring access for immediate repairs. These repairs will require a minimum 4 x 4 x 4 foot entrance pit to perform repairs. More significant excavation may be required depending on the severity of the damage. All disturbed areas will be restored to its preconstruction state upon completion of the repairs.

Electrical manholes are occasionally dewatered in order to prevent underground electrical infrastructure damages, and to ensure safe working environments. Utility vault pumps will be constructed in accordance with the National Pollutant Discharge Elimination System Utility Vault Discharge Permit conditions. Depending on the time of year and location of the vault, discharges vary between a couple hundred gallons, to thousands of gallons.

Culverts and Drainage Ditches

New culverts will be installed at drainage crossings and high surface water flow areas throughout Travis AFB. Existing culverts and drainage ditches are mostly located in the developed areas of Travis AFB. Occasionally, there will be new culvert and drainage ditches constructed in the undeveloped areas when necessary. This will ensure surface water is adequately captured and contained to reduce potential flooding on the Base. Existing culverts will be upgraded or repaired at drainage crossings. This work will involve replacing existing culverts with larger ones, and may require minimal widening or deepening of current drainages. Soil, sediment, and vegetation will be excavated during culvert installations, which require an excavator, back hoe, and dump truck. New culverts and culvert repairs may also include constructing new concrete support structures at road culverts.

Landscape Maintenance

Landscape maintenance activities include planting, trimming and mowing, and the removal of turf, shrubs, and flowerbeds. Landscaped areas occur predominantly in the main cantonment and housing areas, at high visibility facilities, and in the vicinity of the airfield and flightline. The Air Force may remove existing vegetation and landscape areas associated with the construction of new facilities in areas not previously landscaped.

Fencing Installation, Maintenance, and Replacement

To enhance security and protect assets and resources, fences are erected throughout Travis AFB around buildings, facilities, and areas containing natural resources. Fences may also be used to contain livestock, prevent pedestrian access in natural areas, and to demarcate various areas. Currently, there are about 100 miles of existing fence, and the type (chain link, barbed wire, electric) and height of these fences vary based on its purpose. Fence installation, maintenance and replacement typically involves clearing brush, digging holes mechanically or by hand, and installing new poles and fencing. Maintenance schedules are highly variable and depend on the condition of the fence and the asset it is protecting.

Travis AFB repairs or replaces 5,000 to 10,000 feet of fencing each year. In addition, due to changing security requirements, the Base may install about 10 miles of new chain link fence over the next 5 years. Installation of fencing will require a 15-foot area to be mowed clear of all vegetation and area leveled. Equipment such as a tractor and truck with an auger that will access the area in the 15-foot work zone may be required. A 3-foot deep hole will be dug to install the support poles that are 1 foot in diameter. Support poles will be installed every 10 feet. If necessary to avoid wetlands, the poles can be extended out to 15 feet and concreted in. The chain-link fence will be constructed to a height of 7-8 feet with three strands of barbed wire placed on outriggers.

Infrastructure Development

Development Pattern

The existing development pattern provides a basic guidance for the future development of land resources and attempts to integrate future requirements with decisions made over the last 50 years. The development pattern attempts to balance the need to maintain a maximum capability for: the Base's mission; locating new facilities in economical and convenient locations; and for the conservation of federally-listed species and their habitat. Because flight operations are the primary mission of the Air Force at Travis AFB, the land use is a high priority in regards to future facility planning.

Future Development

Land use at Travis AFB is not expected to change significantly; however, hardscape development such as the addition of new parking lots, roads compacted gravel, and other hardscape surfaces is planned to occur. Additionally, there are multiple opportunities to make better use of space and consolidate functions efficiently. This is particularly true of the north flightline, which is considered the prime real estate of the installation. Over time, uses that do not require adjacency to the airfield will be moved off the flightline. The other major consolidation of land uses is in the southwest. Industrial uses that are currently scattered across the installation will be co-located in the future, forming a super-industrial district. This will reduce compatibility issues with other uses, and also create space on the flightline and in other areas.

Administrative uses will expand but functions will be concentrated together more densely. The current patchwork of multiple land uses will be phased out over time to create a more cohesive, campus-like environment. Recreational uses, which are currently spread out across the Base, will be

consolidated into a recreation campus in the northwest corner of the installation, providing easy access to and from accompanied housing.

Space is projected for additional recreational facilities that serve the Base population, including the addition of new soccer fields, community park development and the expansion of other outdoor recreation land use growth areas. These are generally located adjacent to housing and the dormitories in the urbanized portion of the cantonment area. Expansion of these recreational areas will entail increasing their acreage and incorporating landscaping and recreational equipment for children and adults.

Minor Construction Projects

New facilities will be constructed throughout Travis AFB. Development of new industrial, commercial, and residential facilities may include airfields; munitions storage facilities; communication structures; concrete pads; parking lots; storage yards; and detention basins. Most of the new facility construction will occur in developed areas of the main Base, such as the flightline or housing areas. New construction will be generally limited to designated development areas; although, new construction may occasionally involve minimal disturbance to undeveloped areas. Projects occurring in developed areas may cause disturbances down to 6 feet. Projects requiring excavation to 6 feet will use heavy equipment including excavators, bulldozers, dump trucks, pavers, and scrapers.

Environmental Management Programs

Environmental Restoration Program (ERP)

The ERP is a congressionally authorized Department of Defense (DOD) program for the identification, investigation and remediation of past DOD waste releases (prior to January 1, 1984). The ERP is designed to identify and correct problems arising from past releases of hazardous substances and petroleum products into the environment. Travis AFB is a National Priority List site; therefore, the Base is required to address ERP sites in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and the Resource Conservation and Recovery Act (RCRA). The Environmental Protection Agency (EPA) Region 9 is the lead regulatory agency for the investigation and cleanup of contaminated areas in coordination with the California Department of Toxic Substances Control (DTSC) and the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.

Most of the installation's ERP sites have undergone clean-up actions and are closed, but 29 sites with land use controls (LUCs) remain. These sites are undergoing remediation and until closed will require special consideration to limit exposure to contaminants. Travis AFB has been involved in environmental cleanup for over 30 years. Currently, Travis has 10 contaminated soil sites with LUCs and 19 contaminated soil and/or groundwater sites also under LUCs. At each remaining restoration site, Travis AFB restricts the land use to industrial purposes only; prohibits on-Base water supply well construction and consumption of contaminated groundwater; and places constraints on soil excavation and other subsurface work where a worker might encounter contaminated groundwater or vapors. The 19 contaminated groundwater locations are primarily located near the flightline. Major soil clean-up actions were completed in 2003 and 2007. Efforts to clean up remaining sites are ongoing.

Site Investigations and Remediation Methods

A substantial amount of investigation has been completed to characterize the nature and extent of contamination and the potential response actions for each location. A typical methodology to

determine the type and extent of contamination at a site is the collection of soil samples from varying depths, depending on the specific site and the known historical contaminants present at the site. While some borings may be as shallow as 1 to 2 feet, some may exceed 50 feet. Soil samples may be collected with hand equipment (i.e., hand auger) or mechanical tools (i.e. air knifing, drill rigs with augers or direct push technology). Soil borings are generally made in areas surrounding the contaminated site to determine the extent of contamination. If groundwater contamination is being investigated, groundwater samples may be collected using a direct-push technology rig or a hollow-stem auger drill rig. Investigation groundwater samples are generally collected from depths of 15-40 feet. Drilling activities generally generate soil cuttings that are stored in soil bins or 55-gallon drums that placed in close proximity to where drilling activities occur.

While most of the ERP sites on Travis AFB have been cleaned up and closed, some sites may require further action. Remediation activities can include well installation (extraction, injection, and monitoring wells); redevelopment of existing wells; decommissioning of wells once they are no longer needed; soil excavation and backfill; hauling; soil capping; phytoremediation plantings; chemical or biological amendment injection to groundwater; single or multiphase extraction and aboveground treatment; in-ground permeable reactive barrier or barrier wall; air sparging; and thermal treatment. Most of these technologies require installation of access to monitoring wells for periodic monitoring of the treatment system. The nature and area of disturbance associated with each of these activities can vary greatly as indicated below:

- Well Installation involves utility clearance, drilling, construction of the well and surface completion, well development, and surveying of the well. Disturbances range from 10 ft² to less than 1 acre.
- Well Redevelopment of existing wells to optimize the performance of the wells. Disturbances range from 10 ft² to less than 1 acre.
- Well Decommissioning involves either pressure grouting or over drilling and grouting of the well. Disturbances range from 10 ft² to less than 1 acre.
- Soil Excavation involves removal of contaminated soil. Disturbances range from 10 ft² to several acres.
- Soil Capping involves covering contaminated soil with either a few feet of soil or a layer of concrete/asphalt to prevent contact with the contaminated material. This technique is often applied to former landfills, such as the former Landfill 2 on Travis AFB, where 94 acres were capped with 5 feet of clean soil. Disturbances range from 10 ft² to less than 1 acre.
- Phytoremediation involves the planting of trees in order to extract shallow contaminated groundwater. They also absorb contaminants and thereby cleanse the aquifer. The level of these effects will depend on the water uptake capacity of the plants and the size of the aquifer. Disturbances range from 0.25 to 2 acres.
- Chemical or Biological Amendment Injection involves injection of compounds into the subsurface either through the use of a direct-push rig or an injection well network. The injection array can be installed to concentrate on a source area or as a flow-through barrier with spacing ranging from 5 to 20-foot centers. Disturbances range from 100 ft² to 2 acres.
- Permeable Reactive Barrier Installation involves the installation of a narrow barrier generally 2-5 feet wide extending into groundwater containing a material that enhances treatment. The reactive material varies and may include, but is not limited to, iron filings, bark mulch, oxygen, emulsified vegetable oil, or ozone injection. Permeable Reactive Barrier remediation can also involve driving sheet piling into the surface or using direct-push rigs to create a grout curtain to direct the flow of groundwater through a localized barrier. Disturbances range from 100 to 3,000 feet.

- Multiphase Extraction or Sparging with Aboveground Treatment involves trenching and the installation of piping to connect 1 to 50 or so wells to an aboveground treatment system that consists of a concrete pad with the necessary treatment equipment. The area for trenching will range from 10 to 3,000 feet per trench. The treatment pad can range from 100-2,500 ft².
- Thermal Treatment involves installation of subsurface heating elements and thermal couples on 10 to 20-foot centers over the extent of the treatment zone. It includes installation of a multiphase extraction system with associated aboveground treatment system described above. The area for trenching will range from 10 to 3,000 feet. The treatment pad will range from 500 to 2,500 ft². During this treatment, the ground is heated to volatilize contaminants therein and the volatilized compounds are then vacuumed off, captured and removed.

ERP Site Maintenance and Groundwater Monitoring

Most sites also require regular operation and maintenance activities. The groundwater restoration extraction wells, conveyance pipelines, underground electrical systems, and groundwater treatment plants at Travis AFB are operated and maintained on a continuous basis throughout each year. The purpose of this activity is to maximize the run-time of the systems in order to remediate contaminated groundwater beneath the Base as efficiently as possible.

Groundwater wells are sampled throughout each year to monitor contaminant plume mobility, degradation, and potential for new releases. There are currently 962 groundwater wells, 385 of which are typically sampled each year. In addition to sampling, 665 of the wells associated with Travis AFB are typically monitored for depth-to-water at least annually to assess water table fluctuations and hydraulic gradients. Well sampling and water level measurements are generally conducted two times per year (in April/May and in October/November). However, sampling may be conducted on a smaller scale throughout the year. Additionally, surface water samples are typically collected in April/May from five locations along Union Creek, where the creek intersects groundwater plumes. The surface water sampling data is used to evaluate whether groundwater discharging to the creek is adversely affecting surface water quality.

Invasive Plant and Pest Management (Fauna)

The U.S. Department of Agriculture conducts the non-lethal removal of raptors under a permit from the Service's Migratory Bird Permit Office in support of the Travis AFB BASH Program (Travis AFB 2008). Bullfrogs (*Rana catesbeiana*) and non-native fish may require removal from ponds on the Base. These species will be removed using seine nets, traps, and other commonly used devices. Alternately, ponds on Travis AFB may be pumped dry to eliminate populations of bullfrogs and fish in order to improve habitat conditions for the California tiger salamander.

Common pest wildlife on Travis AFB includes turkeys, skunks, opossums and raccoons. Pests are removed on an as needed basis. Physical removal and relocation of these animals is done with HAVAHART live traps. Additionally, Macabee traps and Wilco Gopher Getter are used to remove pocket gophers. Manicured lawns, parade grounds, golf course greens and fairways, and athletic fields are treated for gopher removal. Ground squirrels are found nesting along ditch banks and in open fields. Squirrel control is allowed using Wilco Ground Squirrel Bait in areas greater than 1.3 miles from known California tiger salamander breeding ponds (Travis AFB 2016b). If control is required in areas within 1.3 miles of a breeding pond, the Natural Resources Manager will be contacted to develop a plan that minimizes the risk to federally-listed species and their habitat. Rats and mice infest Base buildings and housing areas and are controlled without use of chemicals by employing practices; such as, closing entryways, practicing good sanitation procedures, and using snap traps and glue boards. Food handling establishments and commissary warehouses are the main

concern.

Herbicide Application

Herbicide treatment is one method that will be used to control some invasive plant infestations. All herbicides used on Travis AFB are in accordance with Natural Resource Conservation Service's best management practices. In addition, the DOD must approve herbicides used at Travis AFB.

Glyphosate (e.g., Roundup Pro®, Glyfos® Pro, Glypro™ Plus) is a nonselective, systemic herbicide that carries plant toxins to the roots, and may be the most effective method for extensive infestations in disturbed areas with little desirable vegetation. Effective control can also be achieved by using a broadleaf herbicide that does not harm grasses.

Application of Telar XP to a dry wetland is consistent with the Telar XP label which states that application is permissible to intermittently flooded low lying sites, seasonably dry flood plains, and areas between upland and lowland sites (Dupont 2011). Pepperweed is a target weed for this herbicide along with many non-native grasses, mustards, starthistles, and clovers depending on the application rate (DuPont 2011). According to the Weed Science Society of America's Herbicide Handbook, Telar XP has an average field half-life of 40 days, and this decreases with lower soil pH. The Telar XP label lists the replant interval for several common pasture grasses, which provides an idea on how long the pre-emergent qualities can last for some plants. These range from 1 month after application at low herbicide rates (0.5 ounce/acre), and up to 4-6 months at higher rates (2 ounces/acre). One study had 95 percent weed control for 2 years at rates of 0.75-1 ounce/acre. The Solano Resource Control District (RCD) has a current recommendation of 1.5 ounce/acre; thus, different application rates will be experimented at Travis AFB to best control pepperweed and avoid or minimize adverse effects to federally-listed species.

Federally-Listed Species Habitat Management

Sensitive species management uses an ecosystem approach because some areas contain more than one species, and also support multiple Base-related activities. The intent of sensitive species management activities is to enhance habitat for federally-listed species or contribute to scientific understanding of their life history and habitat requirements. Species surveys may be conducted by either a biologist holding a section 10(a)(1)(A) of the ESA permit or a biologist with equivalent training and experience to better understand the distribution of federally-listed species at the Base. These surveys may include wet-season sampling in wetlands for vernal pool fairy shrimp, vernal pool tadpole shrimp, and California tiger salamanders; dry-season sampling in wetlands for vernal pool crustaceans; and drift-net studies for the salamander. Prior to conducting these studies, a detailed work plan and qualifications of the biologists conducting the work will be sent to the Service for approval.

These management actions may include removing invasive plant species in and around vernal pools and other seasonal wetlands; installing new and maintaining existing protective fencing in suitable species habitat; collecting native seeds for restoration; and conducting species surveys. Two perennial ponds occur in the Castle Terrace Preserve and have the potential to provide breeding habitat for the California tiger salamander (with management intervention); although, they currently have very low habitat suitability due to the presence of predaceous non-native fishes and bullfrogs. Eradication of fishes and reduction of bullfrogs may transform these ponds into suitable breeding habitat for the California tiger salamander. Eradication will require that these ponds be drained completely and allowed to refill naturally. Pond draining will occur after August and before the start of the next rainy season, to more closely mimic the hydrology of suitable California tiger salamander breeding habitat (which dries out in late spring and summer). Before draining occurs, as a conservation measure, screens will be placed over the drain pipe or hose in order to exclude

potential California tiger salamanders. The drained water will be pumped into an area where erosion will not occur, and in an upland area that will not trigger emergence/movement of the salamander. Pond draining will be repeated once every 3-4 years to effectively reduce the risk of bullfrog reintroduction.

California Tiger Salamander Burrow Inspection and Relocation

For some activities, it may be necessary for a qualified wildlife biologist to inspect suitable burrows with a scope and possibly hand-excavate burrows during pre-construction surveys, or at other times as deemed necessary by Travis AFB and the Service for protection of federally-listed species. If any California tiger salamander are found during these excavation activities or encountered at other times on the Base and require relocation, the *CTS Relocation Plan* as describe in section 4.4.5 of the programmatic biological assessment, pages 55-57 will be followed.

Vernal Pool and Seasonal Wetland Restoration

Habitat restoration may be conducted in vernal pools and seasonal wetland habitat in the event that impacts result from projects or unforeseen activities. The goal of these restoration activities will be to restore impacted habitat to as close to pre-disturbance conditions as possible. Unavoidable wetlands will be surveyed prior to proposed projects, in order to characterize the preconstruction conditions. Existing vegetation and hydrology will be characterized in order to document a preconstruction condition with which to compare post-construction characteristics. The preconstruction conditions will be one of the factors used to determine restoration success.

Prior to grading within wetlands, the top 4-6 inches of topsoil will be removed from the surface and stored separately from all other spoil piles, including non-wetland topsoil, in order to maintain integrity of the soil composition and character. Wetland topsoil will be replaced in the same wetland it was taken from following backfill and grading. Restoration of wetland areas will commence as soon as is practicable following construction. Generally, monitoring of wetland areas for the success of restorative efforts will occur at a minimum of 2 years. For further detail, see section 4.4.6 of the programmatic biological assessment.

Fire Management

Fire Suppression

Emergency fire department actions will be conducted Base-wide and allow personnel to respond to emergency fires without delay. This will allow quick containment of any unexpected threat to human health, safety or the environment. These actions may require the use of excavators, bulldozers, dump trucks, and fire trucks. Because of the nature of these actions they will most likely be consulted on after an emergency action has occurred. Any emergency action that occurred and potentially impacted federally-listed species requires verbal or email notification to the Service within 24 hours and a follow-up request to the Service to append the incident to this programmatic biological opinion as soon as all information is available.

Firebreak Maintenance

A system of strategic roads and fire and fuel breaks are located throughout Travis AFB for fire control and management. Currently, there are about 10.5 miles of maintained firebreaks. Firebreaks are used to prevent or hinder the spread of fire and are usually blocks or linear strips of land, managed to maintain very low or no fuel loading. The width of a firebreak is site specific and dependent on the fuel type, asset being protected and risk of potential wildfire. Prior to 2013, all firebreaks on Travis AFB were disked to reduce fuel loading. Since 2013, the mowing of these areas has been included in the grounds maintenance contract. Firebreaks are maintained by mowing all vegetation within a 20 to 30-foot wide strip.

Certain areas of the Base including the southeast boundary and the location of the Tactical Airborne Communications and Maritime Operations Project are considered high wildfire risk with potential to impact the flying mission (Figure 8). In these areas, a disked firebreak may be installed along the Base boundary, and maintained to reduce the fire risk. This firebreak will be 20-foot wide, no more than 12 inches deep, and approximately 1.0 mile long (about 2.5 acres). Additionally, a 25-foot area surrounding the DASR radar site will be maintained as a vegetation free zone by removing all vegetation and soil down to a depth of 3 inches. The cleared area will be leveled and geotextile fabric will be placed for weed prevention. A 3-inch layer of rock will be placed on top of the geotextile fabric. Additionally, fire hazards and safety concerns within the Explosive Ordinance Disposal (EOD) range will be eliminated by removing the soil that comprises the existing berms within the EOD range, and dispersing it in the adjacent upland area. Gravel will be placed on top of the dispersed soil to provide weed control over an area of about 2.5 acres. Gravel will also be placed on about 1,400 feet of unimproved roadways (10-15 feet wide) within the EOD range to improve road conditions and access (Figure 8).

As part of wildfire suppression and fuels management activities, the Base uses access roads that are single-lane secondary dirt roads (10 to 15 feet wide) to access remote portions of the Base. These roads are used to break-up contiguous fuel loads and provide a line of defense to execute fire-fighting actions. These roads are maintained once a year, after the rainy-season. For certain fuel-reduction projects, mastication may be used. The result of the mastication is about a 6-inch mulch layer left in place on top of the soil. This mulch is left in place to limit the amount of invasive weeds that establish within the area and to assist in erosion control.

Prescribed Burns

On a project by project basis, prescribed burns may require Level 2 or Level 3 consultation for potential adverse effects to federally-listed species, depending on which prescribed fire practices are employed. Potential adverse impacts may occur from the installation of roads or fire breaks for protection of resources, or to define fire boundaries; although, Travis AFB anticipates prescribed fire to result in overall benefits to federally-listed species and their habitat.

Prescribed burns include the planned, controlled application of fire to vegetation to achieve a specific natural resource management objective on land areas selected in advance of that application. Prescribed fires conducted on Travis AFB will be ignited by qualified personnel in accordance with an approved site-specific burn plan as described in the *Travis AFB Wildland Fire Management Plan* (Travis AFB 2015). Prescribed burning operations will utilize existing manmade and natural fuel breaks as much as possible. Fuel breaks will be mowed in support of prescribed fire operations, and will not be disked or graded. Prescribed fire has not yet been conducted on Travis AFB, but may be considered.

Implementation of prescribed burns may occur within 23 proposed burn plots, covering about 985 acres of land along the perimeter of the installation (Figure 8). Prescribed burns may occur during the spring and early summer (April, May, June, and July). Typically, up to 40 acres will be burned at one time on the Base; large burn plots will be split into smaller sub-plots for safety and cost reasons. A typical prescribed fire in annual grasslands consumes 75 to 100 percent of fine fuels; therefore, reducing fire risk for at least one season post-burn; each plot may be burned up to once per year to reduce fine fuel loads for the upcoming fire season in summer and fall. Prescribed burning is one tool out of several vegetation management options and use of prescribed burning will not be maximized, but rather used only when it best meets ecological objectives for a particular area and time.

Conservation Measures

General Avoidance and Minimization Measures:

Travis AFB proposes to implement the following general avoidance and measures in order to avoid and/or minimize potential adverse effects to federally-listed species and their habitats over the next 5 years. *Species-Specific Conservation Measures* will also be implemented to avoid and/or minimize potential adverse impacts effects to the following federally-listed species, and are included in Tabs A, B, D and E of the programmatic biological assessment (Tab A - *Vernal Pool Fairy Shrimp*; Tab B - *Vernal Pool Tadpole Shrimp*; Tab D - *California Tiger Salamander*; and Tab E - *Contra Costa Goldfields*).

Monitoring and Surveying

MM-1. A Service-approved biologist will conduct preconstruction surveys of all ground disturbance areas within sensitive habitats to determine if any federally-listed species may be present prior to the start of construction. These surveys will be conducted prior to the start of construction activities in and around any sensitive habitat. If any federally-listed species are found during the preconstruction surveys, the Service-approved biologist will contact the Service to determine how to proceed. At least 10 business days prior to the onset of activities, Travis AFB will submit the name(s) and credentials of biologists who will conduct these preconstruction surveys if they have not previously received Service approval for similar surveys. See the *Biological Monitor Qualifications* section 1.4.3 of the programmatic biological assessment for the minimum experience and qualifications required to serve as a Service-approved biologist or a Natural Resource Monitor. No project activities will begin until Travis AFB has received written approval from the Service that the biologist(s) is qualified to conduct the work.

MM-2. A Service-approved biologist will monitor construction activities in or adjacent to sensitive habitats as required. The biologist will ensure compliance with all applicable avoidance and **minimization** measures required to protect federally-listed species and their habitats. If federally-listed species are found that are likely to be affected by work activities, the Service-approved biologist will have the authority to stop any aspect of the project that may result in unauthorized take of a federally-listed species. If the biologist exercises this authority, they must coordinate this with Travis 60 CES/CEIE who will notify the Service and the California Department of Fish and Wildlife by telephone within 1 working day and in writing within 5 working days.

MM-3. A Service-approved biologist will conduct environmental awareness training for all construction personnel working within and near sensitive habitat on the Base. Training will be provided at the start of work, and within 15 days of any new worker arrival. The program will consist of a briefing on environmental issues relative to the proposed project. The training program will include an overview of the legal status, biology, distribution, habitat needs, and compliance requirements for each federally-listed species that may occur in the project area. The presentation will also include a discussion of the legal protection for endangered species under the Act, including penalties for violations. A fact sheet conveying this information will be distributed to all personnel who enter the project site. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all avoidance and **minimization** measures. These forms will be maintained at Travis AFB and will be accessible to the appropriate resource agencies;

CTS-4. Construction activities will occur between 30 minutes after sunrise and 30 minutes before sunset unless otherwise specified in the proposed project description and analysis;

CTS-5. At the end of every work day, trenches, pits, and excavations shall be provided with escape ramps constructed of earth fill or wooden planks at a 3:1 slope. Before such trenches, pits, and excavations are filled, they will be thoroughly inspected for trapped wildlife;

Service Notification

MM-4. Travis AFB will track the areal extent and location of impacts resulting from projects covered under the programmatic biological opinion, and will submit an annual report to the Service

listing each project covered and summarizing effects to each federally-listed species and their habitat on a project by project basis. Travis AFB will submit an annual report to the Service by February 15 of each year, for the previous year (over the next 5-years), that documents the following information:

- Summary of projects covered under the programmatic biological opinion;
- Federally-listed species occurrences and potentially suitable habitat in each proposed project area; and
- A summation of the total effect, including beneficial effects and associated compensation, on listed species and their habitat for each proposed project.

Seasonal Avoidance Procedures

CTS-7. Seasonal Avoidance - **Wet-Season Procedures** (October 16 – April 30): Work will not be conducted in the rain. The Service-approved Biologist will monitor the weather forecast and authorize work when the forecast indicates a period of dry days (5 to 10 days of no rain) before starting the project. The Travis Environmental Office will document through email notification to the Service when work will commence. The weather forecast and hourly weather data for Travis AFB will be monitored and can be found by entering the zip code 94535 (Travis AFB) at <http://www.weather.gov>. A Service-approved biologist will be on-site for morning inspections before the start of work. Morning inspections consist of examination of all trenches, pits, excavations, equipment, California tiger salamander exclusionary barriers (if present), all suitable upland habitat including refugia habitat such as small woody debris, refuse, burrow entries, etc. will be properly inspected, and all other areas within the project site. In addition, the project work crew will be notified to maintain vigilance regarding potential California tiger salamander activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service.

CTS-8. Seasonal Avoidance – **Dry-Season Procedures** during Rain/High Humidity Events (May 1 – October 15): Work will not be conducted if raining. The Service-approved biologist will check the National Weather Service by 6:00 AM on the day prior to a scheduled work day to see if there is a 50% or greater probability of rain forecasted overnight. If there is, then before work begins the next morning (after the rain event has stopped), the Service-approved biologist will conduct an even more extensive morning inspection. The inspection will include searching the work area and a wider perimeter of the area for presence of the species. In addition, the work crew will be notified to maintain vigilance regarding potential CTS activity. If feasible, the work crew will participate in the morning inspection(s). Modifications to this timing may be approved on a case-by-case basis by the Service. The weather forecast and hourly weather data for Travis AFB will be monitored at <http://www.weather.gov>.

CTS-9. If Dry-Season (May 1 – October 15) night time work is necessary, the following additional conservation measures shall be implemented:

- Work will only occur within paved areas (greater than 20 feet from uplands);
- A 6-inch high exclusionary barrier for California tiger salamander will surround the work area during work, with ingress/egress access being the only break in the barrier;
- A Service-approved biologist will be on-site during all night time work and will routinely monitor the exclusionary barrier and the project site; and
- Work will not be conducted at night time if there is a 50% or more chance of rain predicted overnight;

Buffers and Site Restoration

VP-1. No work will be conducted within 250 feet of federally-listed vernal pool species' habitat during the wet-season (October 16 – April 30); unless specifically approved by the Travis AFB

Natural Resource Management Team who must first field verify soil saturation, visual ponding, and expected surface disturbance. The Service will be notified of any off-pavement work within the designated 250 foot buffer.

MM-5. All vernal pools, drainages, and wetlands, if present, will have erosion control measures (straw wattles, silt fencing) installed where hydrological continuity exists between the construction activities and the wetland. A Service-approved biologist will determine whether erosion control measures should be utilized, weighing the potential for effects to federally-listed species. Construction boundaries within the buffer will be designated with fencing or other suitable means to ensure no equipment and/or construction workers access protected wetland resources.

Prescribed Burning

CCG. Prescribed fires will not occur in Contra Costa goldfields occupied habitat when the vegetation is green (April - June). Prescribed burns will be scheduled after Contra Costa goldfields plants have senesced and seed dispersal is complete.

Mowing

VP-2. Mowing will be completed in and around vernal pool habitat, after Contra Costa goldfields seeds set, but during the dry season (May 1 – October 15). Mowing conducted earlier in the season may be desirable to maintain appropriate conditions for vernal pool species including Contra Costa goldfields. If mowing occurs in or near vernal pools, it will occur only when the soil is no longer saturated to ensure tracks are not left in or near wetlands. The mower height will be set to avoid the flowering heads of sensitive vernal pool plant species. Populations of Contra Costa goldfields, and known California tiger salamander breeding ponds will be avoided during the spring and early summer months.

Herbicide Application

Herbicide application and invasive species management activities will comply with the Updated Invasive Plant Species Management Plan (note, changes to this plan are identified below. Travis AFB will implement additional buffers during herbicide application which were identified in their response letter dated, July 11, 2017; in an excerpt from the Solano RCD, titled *Invasive Plant Mapping and Management, 2016 Annual Activity Report*; and are also included below:

- Mechanical methods will be used for the removal of invasive plant species within 20 feet of the mapped wetlands. Herbicide treatment will not be applied within 20 feet from the edge of mapped wetlands, with the following exceptions: in areas where mechanical treatments within 20 feet of a wetland will not be effective in eliminating the infestation and herbicide application within this buffer is required when water is present in pools;
- Herbicide application will occur once pools are dry (May – June), allowing for a 4 to 6 month dry period;
- All mixing of herbicides will be conducted at least 150 feet from water and often off-Base;
- Herbicide applicators will prescribe and use only non-ionic surfactants near open water (i.e., TERGITOL™ 15-S surfactants);
- When spraying on roadsides, applicators will use a surfactant such as GROUNDED® that increases soil particle absorption and modulates droplet size to prevent soil mobility and decrease aerial drift to prevent movement of chemical into sensitive habitat areas; and
- Herbicides will be applied with a hand held backpack sprayer, targeted to hit only the pepperweed with a focused nozzle and careful application.

Minimization/Conservation Measures Proposed (Travis AFB's letter dated July 11, 2017):

1. Herbicides will only be administered by State Licensed Qualified Applicators;
2. The application of any pesticide, including herbicides will be conducted in accordance with approved Integrated Pest Management Plan, Updated Invasive Species Management Plan, and Integrated Natural Resources Management Plan which includes submission of monthly herbicide use reports, summarized in annual activity reports;
3. Herbicides will be applied according to the chemical manufacturer's instructions on the label, along with other applicable conservation measures. All mixing of herbicides will be conducted at least 150 feet from water.
4. Herbicide applicators will prescribe and use only non-ionic surfactants near open water. These surfactants are readily biodegradable and low in aquatic toxicity. An example is the TERGITOL™ 15-S surfactants by Dow; and
5. While spraying on roadsides, applicators will use a surfactant such as GROUNDED® that increases soil particle absorption and modulates droplet size to prevent soil mobility and decrease aerial drift; thus, preventing movement of chemical into sensitive habitat areas (primarily wetlands).

MM-6. All areas of upland ground disturbance or exposed soil will be reseeded with a native “weed-free” seed mix approved by the Travis AFB 60 CES/CEIE. Ground disturbance within vernal pools will require a restoration plan and 2 years of follow-up monitoring by a Service-approved biologist. Note, that direct impacts to wetlands require a Clean Water Act Section 404 permit issued by the U.S. Army Corps of Engineers and Section 401 permit from the State Regional Water Quality Control Board.

Additional Measures

MM-7. Off-road travel outside of the demarcated construction boundaries will be prohibited;

MM-8. Prior to initiation of construction activities, sensitive areas, such as vernal pools, wetlands, riparian areas, and potential habitat for federally-listed species (i.e., vernal pool fairy shrimp, tadpole shrimp, CTS, and Contra Costa goldfields), will be staked and flagged as exclusion zones where construction activities will not take place. Orange construction barrier fencing (or an appropriate alternative method) will designate exclusion zones where construction activities are prohibited. Flagging and fencing will be clearly marked as an “Environmentally Sensitive Area”. The contractor will remove all fencing, stakes and flagging within 60 days of construction completion.

MM-9. Any worker that inadvertently kills or injures a federally-listed species, or finds one injured or trapped, will immediately report the incident to the on-site biologist. The biologist will inform the Travis AFB 60 CES/CEIE immediately, who will verbally notify the SFWO within 1 day, and will provide written notification of the incident within 5 days.

MM-10. Motor vehicles and equipment will only be fueled and serviced in designated service areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur in a designated area with appropriate spill containment. Any newly established, project specific fueling and maintenance areas will be located at least 250 feet from any wetland/drainage habitat or water body. Prior to the onset of work, Travis AFB will ensure that a plan is in place that will allow for a prompt and effective response to any accidental spill. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur;

MM-11. During construction activities, all trash will be properly contained, removed from the work site daily, and disposed of properly. Following construction, all refuse and construction debris will be removed from work areas. All garbage and construction-related materials in construction areas will be removed immediately following project completion.

MM-12. Unless otherwise designated as part of a habitat restoration plan, all excess soil excavated during construction occurring near vernal pools and other wetlands will be removed and disposed of

outside the project area. Coordination with the Travis AFB 60 CES/CEIE and appropriate regulatory agencies is required prior to disposal of the excavated soil;

MM-13. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will avoid wetlands/drainage areas whenever feasible.

MM-14. All vehicle operators will follow the posted speed limit on paved roads and a 10-mile per hour speed limit on unpaved roads;

MM-15. No pets or non-military firearms will be allowed in the project area;

MM-17. No trenches will be left open at the end of the day; trenched areas will be compacted and restored to normal grade once the project is completed; and

MM-18. No work requiring vehicles/equipment will be done when the ground is soft enough where travel will cause depressions.

Furthermore, Travis AFB has agreed to limit the amount of disturbances that will occur in suitable habitats for the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields. See the *Effects of the Action* section below for specific acreage amounts that will not be exceeded annually, or over a 5-year period.

Compensation Measures

Travis AFB proposes the following habitat compensation for adverse effects to the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields, or their habitat (Table 3 below). These ratios are dependent on whether the proposed project results in adverse effects that are direct or indirect, and whether these adverse effects are temporary or permanent. Habitat compensation may be met by Travis AFB by purchasing habitat at a Service-approved Conservation Bank, or through the preservation and protection in perpetuity of high value habitat at an acquired site near the Base.

Table 3. Habitat Compensation Ratios for Direct and Indirect Effects to the California Tiger Salamander, Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Contra Costa Goldfields.

Species	Level of Effect		Compensation ratios
CTS Upland	Temporary		0.5:1 Preservation of Upland Habitat
	Permanent		2:1 Preservation of Upland Habitat
CTS Breeding	Direct		3:1 Preservation of CTS breeding habitat; and 2:1 (or 0.35 ac., whichever is greater) Creation of CTS breeding habitat
	Indirect		2:1 Preservation or creation of CTS breeding habitat
VPFS/VPTS*	Direct	High value	7:1 Preservation of existing VPFS/VPTS habitat
		Medium value	3:1 Preservation of existing VPFS/VPTS habitat
		Low value	1:1 Preservation of existing VPFS/VPTS
	Indirect		1:1 Preservation of existing VPFS/VPTS habitat
CCG**	Direct		7:1 Preservation of existing CCG habitat; and 2:1 Establish self-reproducing populations in protected habitat areas
	Indirect		1:1 Preservation of existing CCG habitat

*The compensation ratio may also be met by 6:1 or 2:1 preservation with a 1:1 creation component in the high and medium value conservation areas respectively.

**The restoration requirement may be met by establishing new CCG populations at a single-project mitigation site or by purchasing credits at an approved mitigation bank authorized to sell credits for this species in an amount equal to the 2:1 mitigation ratio.

Action Area

The action area is defined in 50 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 proposed project, the action area encompasses Travis AFB properties consisting of a main Base (Solano County) and

eight GSUs (Solano and Contra Costa counties). Travis AFB is situated on about 5,137 acres of fee-owned land with lesser interests (easements) on additional land surrounding the Base. The eight GSUs controlled by Travis AFB are the: Defense Fuel Supply Point Ozol (51.40 acres - fuel facility within the Carquinez Strait, Contra Costa County); Potrero Hills Annex (24.81 acres - former Nike missile site in the Potrero Hills, Solano County); Middle Runway Marker (1.86 acres - airfield infrastructure, Solano County); Outer Runway Marker (0.23 acre - airfield infrastructure, Solano County); Water Well 1 (1.75 acres - well facility, Solano County); Cypress Lakes Golf Course (207.52 acres - golf course facility, Solano County); and the Former Sacramento Northern Railroad Right-of-Way (70.00 acres - railroad right-of-way, Solano County).

Analytical Framework for the Jeopardy and Adverse Modification Analysis

Section 7(a)(2) of the Endangered Species Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of the federally-listed species covered in this consultation. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this programmatic biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range-wide survival and recovery of federally-listed species. It relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species.

The following analysis places an emphasis on using the range-wide survival and recovery needs of the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields, and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Analytical Framework Adverse Modification

Section 7(a)(2) of the ESA requires that federal agencies insure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. A final rule revising the regulatory definition of “destruction or adverse modification” (DAM) was published on February 11, 2016 (81 FR 7214). The final rule became effective on March 14, 2016. The revised definition states:

“Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features.”

The DAM analysis in this programmatic biological opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the range-wide condition of the critical habitat in terms of the key components (i.e., essential habitat features, primary constituent elements, or physical and biological features) that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat overall for the conservation/recovery of the listed species; (2) the *Environmental Baseline*, which analyzes the condition of the critical habitat in the action area, the factors responsible for that condition, and the value of the critical habitat in the action area for the conservation/recovery of the listed species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the key components of critical habitat that provide for the conservation of the listed species, and how those impacts are likely to influence the conservation value of the affected critical habitat; and (4) *Cumulative Effects*, which evaluate the effects of future non-Federal activities that are reasonably certain to occur in the action area on the key components of critical habitat that provide for the conservation of the listed species and how those impacts are likely to influence the conservation value of the affected critical habitat.

For purposes of making the DAM determination, the Service evaluates if the effects of the proposed federal action, taken together with cumulative effects, are likely to impair or preclude the capacity of critical habitat in the action area to serve its intended conservation function to an extent that appreciably diminishes the rangewide value of critical habitat for the conservation of the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields. The key to making that finding is understanding the value (i.e., the role) of the critical habitat in the action area for the conservation/recovery of these listed species based on the *Environmental Baseline* analysis.

Status of the Species

California Tiger Salamander

For the most recent comprehensive assessment of the California tiger salamander's range-wide status, please refer to the *California Tiger Salamander Central California Distinct Population Segment (Ambystoma californiense) 5-year Review: Summary and Evaluation* (Service 2014), and the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)*, signed June 06, 2017 (Service 2017). No change in the California tiger salamander's listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2014; 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses of California tiger salamander habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for this species.

Vernal Pool Fairy Shrimp

For the most recent comprehensive assessment of the vernal pool fairy shrimp's range-wide status, please refer to the *Vernal Pool Fairy Shrimp (Branchinecta lynchi) 5-year Review: Summary and Evaluation* (Service 2007a). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2007 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses and fragmentation of vernal pool habitat throughout these species range, to date no project has proposed a level of effect for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for this species.

Vernal Pool Tadpole Shrimp

For the most recent comprehensive assessment of the vernal pool tadpole shrimp's range-wide status, please refer to the *Vernal Pool Tadpole Shrimp (Lepidurus packardii) 5-Year Review: Summary and Evaluation* (Service 2007a) for the current Status of the Species. No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2007 5-year review was finalized, with loss of habitat being the most significant effect. While there continue to be losses and fragmentation of vernal pool habitat throughout these species range, to date no project has proposed a level of effect for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for this species.

Contra Costa Goldfields

For the most recent comprehensive assessment of Contra Costa Goldfields' range-wide status, please refer to the *Contra Costa Goldfield (Lasthenia conjugens) 5-Year Review: Summary and Evaluation* (Service 2013) for the current Status of the Species. No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2013 5-year review was finalized, with loss of habitat being the most significant effect (See *Environmental Baseline* section below for further threats to the species). While there continue to be losses and fragmentation of vernal pool habitat throughout these species range, to date no project has proposed a level of effect for which the Service has issued a biological opinion of jeopardy for this species.

Environmental Baseline

Travis AFB is located about 62 feet above mean sea level, and is near the Carquinez Strait; a major break in the Coast Range that allows the ocean to moderate temperatures. The climate at Travis AFB is Mediterranean; with wet winters and dry summers, with a mean annual temperature of 68°F (mean monthly temperature ranges from 37°F in December to 89°F in August). Monthly mean relative humidity typically ranges from a low of 50% in June, to a high of 77% in January (<https://weatherspark.com> 2017).

Travis AFB's main development area is clustered on the west side of the airfield, which spans diagonally from southwest to northeast. The north side of the airfield is primarily used for airfield operations and maintenance, with some industrial and outdoor recreation areas. Currently at Travis AFB, there is a combination of administrative, community, open space, recreation, industrial, and airfield operations and maintenance uses. Industrial land uses are scattered across the Base, but are concentrated in the southwest. The perimeter of the installation is mostly characterized by open space except in the north, where accompanied housing is clustered closely together. Medical land uses are concentrated at the David Grant Medical Center along Air Base Parkway.

Seasonal wetlands and vernal pools located on the Base are known to support the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields. Terrestrial habitats at Travis AFB consists of annual grasslands (main vegetation community present), early successional ruderal, and riparian. The undeveloped upland annual grassland areas on the Base are known to support the California tiger salamander.

Travis AFB is located on a nearly level to gently rolling terrace; therefore, many pools are hydrologically connected. Wetlands, vernal pools, streams, drainages, and other aquatic resources, are scattered throughout Travis AFB. These aquatic resources include almost 6 miles of streams and ditches, 4 ponds, over 700 vernal pools and swales, and nearly 90 other seasonal wetland features.

The water restrictive layer in Northern claypan vernal pools, like the ones found on Travis AFB, is formed by a surface clay layer rather than a duripan type subsurface structure (Rains *et al.* 2008). Vernal pool hydrology is therefore controlled primarily by surface water runoff. Subsurface flows have limited importance in maintaining hydroperiods in vernal pools associated with the action area.

Seasonal wetland, annual grassland, riparian and marsh habitat in Union Creek surround the airfield on Travis AFB, and is actively managed to reduce its suitability to wildlife for aircraft safety reasons. Vegetation clearing in Union Creek along its bed and banks is conducted periodically to remove vegetation since mowing/cutting is difficult to accomplish because of the steepness of slopes along much of the drainage. Additionally, grassland and vernal pool vegetation along the runways and taxiways (up to a distance of 800 feet from their edge) are maintained at a height of 7 to 14 inches. All shrubs and brush within this zone are removed. Vegetation clearing occurs in the fall after the migratory bird nesting season has concluded, but prior to the first rains of the season. Vegetation is removed along the bed of Union Creek either by hand, using hand tools where the bed is inaccessible to heavy equipment, or with the use of an excavator to pull vegetation from the channel bottom. All material removed from Union Creek is placed directly in a truck and hauled off the Base at the end of each work day.

Travis AFB has mapped wetlands that may be considered habitat for some of the listed species across the Base and its GSUs. Much of the vernal pool grasslands on Travis AFB have been subject to extensive disturbance over at least the past century including: land leveling for past agricultural uses; grading for development and drainage improvements; paving and excavation to establish and improve roads and runways; installation of pipelines, wells, and other utilities; and other past and current land uses. The soil surface over most of the vernal pool grasslands has been modified by these activities, eliminating the natural mima mound topography normally present in the grasslands. However, in most if not all areas, the underlying claypan remains intact. In areas with the appropriate surface topography, water can pond at the soil surface in depressions creating a seasonal wetland feature with representative aquatic plant and animal species. Upland habitat surrounding vernal pools on Travis AFB is dominated by non-native annual grass and forb species, and the pools themselves support both native and non-native species (such as various bromes, ryegrass, medusahead and perennial pepperweed).

An extensive survey was conducted on the main Base in 2017, to categorize and quantify vernal pool habitat as either providing high, medium or low habitat conservation values for vernal pool species (See Figure 3). Emulating what was done for the jurisdictional area covered in the draft Solano County Multi-species Habitat Conservation Plan (Solano HCP); Travis AFB has surveyed and categorized habitat on the Base and its GSU's into three habitat conservation value categories (high, medium and low value conservation areas; see Figure 3). This methodology is based on a number of existing criteria including: (1) disturbance levels; (2) distribution of federally-listed species; (3) unique or uncommon habitat features; (4) proximity to existing and proposed Preserves/Reserves; (5) presence of physical barriers; (6) located in Core Recovery Areas and/or designated critical habitat; and (7) corridors and linkage areas. Based on this methodology, Travis AFB classified and mapped vernal pool conservation areas. Currently, there are 729 acres of high value vernal pool habitat, 920 acres of medium value vernal pool habitat, and 1,559 acres of low value vernal pool habitat located at Travis AFB (see map in Figure 3). Specific criteria used to categorize habitat conservation values as either high, medium, or low is provided below:

High Value Vernal Pool Conservation Areas; 729 acres present:

- Large blocks (greater than 100 acres) of vernal pool complexes and associated habitats with low to moderate levels of disturbance, and containing or potentially supporting federally-listed species;
- Unique or uncommon habitat features (such as large playa pools or lakes, alkali flats, and unique soil types) and areas with high concentrations of federally-listed species and biological diversity;
- Moderately to highly disturbed habitats, within and adjacent to, moderate to high quality vernal pool complexes that have a high potential for restoration and enhancement of vernal pools and associated habitats;
- Complexes that support isolated populations of extremely rare or range-limited species and/or core populations of Contra Costa goldfields regardless of size, level of disturbance or existence of barriers;
- Areas that may serve as corridors or linkages between other high value lands; and
- Areas designated in the Integrated Natural Resource Management Plan (INRMP) as on-Base Preserves.

Medium Value Vernal Pool Conservation Areas; 920 acres present:

- Watershed and buffer lands to High Value Conservation Areas;
- Areas that support (or may support) populations of more common and widespread listed species (e.g. vernal pool fairy shrimp);
- Sites of limited size that are isolated and/or subject to significant anthropogenic pressures, and the potential for restoration is limited.

Low Value Vernal Pool Conservation Areas; 1,559 acres present:

- Small, infill parcels surrounded by existing development;
- Little or no connectivity to medium or high value conservation areas;
- Areas with extensive soil disturbance that has impacted underlying claypan; and
- Areas that have been surveyed using appropriate protocols with no known records of federally-listed species.

Federally-Listed Species:***California Tiger Salamander and its Critical Habitat***

Presence within the Action Area: Based on California tiger salamander occurrences reported by Travis AFB and documented on the California Natural Diversity Database (CNDDDB), this species is known to breed in ponds and vernal pools located on the Base (See Figures 5 and 6 of the Enclosure; CNDDDB 2017). Much of the grassland habitat on Travis AFB and on its GSUs provides suitable aestivation habitat for the California tiger salamander (Figure D-1 of the programmatic biological assessment). The presence of suitable habitat for the California tiger salamander, and documented occurrences suggests that the species is likely to persist on Travis AFB given current conditions. Documented California tiger salamander breeding habitat is concentrated in the Castle Terrace Preserve (former Burke Property) in the far northern portion of the Base (Marty 2016).

During relocation efforts conducted from May 31- July 20, 2017, 874 juvenile California tiger salamanders were documented originating and migrating from an off-Base breeding pond and onto the northeastern portion of the Base (Figures 5 and 6). Furthermore on January 29, 2014, an adult California tiger salamander was reported on CNDDDB in the same area of the Base traveling west from private lands towards the interior of Travis AFB. This occurrence indicates that this area is a California tiger salamander migratory pathway, which encompasses Runway 21L, the Assault Landing Zone (ALZ), and portions of Perimeter Road (Base road). Additionally, on July 5 and July 8, 2015, two dead California tiger salamanders were found on the eastern portion of the Base.

These two individuals were most likely responding to either ponded water, as a result of a break in a water main near suitable upland habitat, humid weather conditions, or both. In the early morning hours of February 4, 2017, a California tiger salamander was observed crossing the ALZ (CNDDDB 2015). All of these indicate that California tiger salamanders are aestivating and dispersing through the upland habitat on the eastern portion of the Base.

The California tiger salamander has also been observed in breeding ponds located at the Wilcox Ranch and Muzzy Ranch. Travis AFB is located within the 1.3 mile migration range for the California tiger salamander (CH2M Hill 2006, CNDDDB 2016). Marty (2016) found CTS larvae in a stock pond located adjacent to the Base's northern boundary (property owned by the City of Fairfield and Solano County). As part of that same study, Marty used aerial photo interpretation and inspection of 2015-2016 hydrology to assess potential California tiger salamander breeding ponds on private property adjacent to Travis AFB, and determined that three ponds on the southern boundary of the Base have a high probability of providing breeding habitat (Figure D-1 of the programmatic biological assessment). Mantech (2016) conducted non-protocol level surveys on Travis AFB GSUs and found potential habitat for the California tiger salamander at the Former Sacramento Northern Railroad Right-of-Way, Outer Runway Marker, Middle Runway Marker, and Potrero Hills Landfill GSUs. Critical habitat is also designated for the California tiger salamander on a section of the Railroad Right-of-Way GSU, managed by Travis AFB (See Figure 4).

A set of tools developed by The Nature Conservancy, called the Resistance and Habitat Calculator Toolset (part of Gnarly Landscape Utilities), was used to create a map of landscape resistance for the California tiger salamander on Travis AFB (McRae et al. 2013). The following criteria were used to define areas as either having a high, medium or low (red, yellow, or green, respectively) risk potential for encountering a California tiger salamander: (1) relative habitat and resistance values were assigned to different landscapes (ranging from zero resistance to 100 for high resistance); (2) a migration distance of 1.3 miles from known breeding ponds was used for the species; and (3) known occurrences of the species. A map of these resistance values (green, yellow, or green CTS risk areas) is included in Figure 2. The methodology used is based on the migration distance of the species from known breeding sites, and is further described in Appendix A of the programmatic biological assessment. Currently within both developed and undeveloped areas at Travis AFB, there is a total of 2,546 acres in red risk, 507 acres in yellow risk, and 1,955 acres in green risk areas for encountering California tiger salamander. Based on habitat suitability mapping in undeveloped areas only, there are about 2,192 acres in the red risk areas, 279 acres in the yellow risk areas, and 1,096 acres in the green risk areas. See Appendix A of the programmatic biological assessment for a detailed description of risk areas developed for the California tiger salamander.

Current and Historical Distribution: Although the historical distribution of the California tiger salamander is not known in detail, their current distribution suggests that they may have been continuously distributed along the low-elevation grassland-oak woodland plant communities of the San Joaquin-Sacramento river valleys and foothills. The California tiger salamander occurs from on the Central Valley floor near sea level, up to a maximum elevation of roughly 3,940 feet in the Coast Ranges and 1,640 feet in the Sierra Nevada foothills (Shaffer et al. 1993; Shaffer et al. 2013).

Threats: Multiple factors have contributed to population declines of the California tiger salamander. The primary threats to this species are loss, degradation, and fragmentation of habitat as the result of human activities. Aquatic and upland habitat available to the species has been degraded and reduced in area through agricultural conversion, urbanization, road construction, and other projects. Further threats to the California tiger salamander include predation from, and competition with, invasive species; hybridization with nonnative barred tiger salamanders (*Ambystoma tigrinum*) (sometimes

referred to as *Ambystoma tigrinum mavortium*); mortality from road crossings; contaminants; and small mammal burrow control efforts. Additional threats include introduction of diseases such as ranaviruses and chytrid fungi, and also climate change (Service 2004, 2014). Furthermore, the species' low recruitment and high juvenile mortality makes it particularly susceptible to habitat loss, fragmentation, urbanization, and construction related harm and mortality.

Recovery Plan: In the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) June 06, 2017*, actions are identified to sufficiently reduce the threats to the species. The recovery objectives listed in the plan are to: secure self-sustaining populations of the California tiger salamander throughout the full range of the DPS, ensuring conservation of native genetic variability and diverse habitat types (e.g., across elevation and precipitation gradients); ameliorate or eliminate the threats that caused the species to be listed, and any future threats; and restore and conserve a healthy ecosystem supportive of the species. Specific actions needed to recover the California tiger salamander include the following: 1) maintain current distribution of species; 2) maintain native genetic structure across the species range; 3) minimize road mortality; 4) minimize potential for disease introduction; 5) minimize non-native predator populations; 6) ensure adaptive management and monitoring of habitat; and 7) conduct research.

The Service (2004) recognizes that livestock grazing is for the most part compatible with the continued successful use of rangelands by the California tiger salamander, provided the grazed areas do not also have intensive burrowing rodent control efforts. Grazing animals can be used as a tool to reduce invasive nonnative plant species; thus, improving habitat for the California tiger salamander. For example, taller grass, or grass with significant thatch build-up, may make dispersal difficult for migrating California tiger salamanders and have been associated with declines in ground squirrel populations (EDAW 2008; Ford et al. 2013).

Vernal Pool Fairy Shrimp and its Critical Habitat

Presence within the Action Area: 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 (CNDDDB 2017) (Figures 5 and 6). Vernal pool fairy shrimp are known to occur on Travis AFB and much of the seasonal wetland habitat on the Base and their GSUs provide suitable habitat for the species (Figure A-1 of the programmatic biological assessment). The presence of suitable habitat for the species and documented occurrences suggests that the species is likely to persist on Travis AFB given current conditions. On Travis AFB there are 45 documented occurrences of vernal pool fairy shrimp. These occurrences are concentrated within the northern portion of the Base; though, a number of other occurrences are scattered throughout the center of the Base in natural vernal pools, as well as manmade seasonal wetland features (Marty 2016).

A 1993 survey of the vernal pools in the southwest part of Travis AFB identified adult vernal pool fairy shrimp and its cysts (eggs of this species). A subsequent survey by BioSystems Analysis, Inc. (1994) identified adult vernal pool fairy shrimp on the Base. Base-wide surveys conducted by EcoAnalysts, Inc. (2006) from 2004 to 2006 identified vernal pool fairy shrimp at several locations, mostly on the western side of the Base. During these protocol-level surveys, vernal pool fairy shrimp were identified in a total of eight locations on the Base. Most vernal pool fairy shrimp occurrences were on the western side of the Base. Two large populations of adult vernal pool fairy shrimp have been observed in a roadside pool, and a drainage ditch along the abandoned railroad tracks on the northern side of Hangar Avenue and the eastern side of Union Creek. Additionally, low numbers of adult vernal pool fairy shrimp have been observed in the following locations: five vernal pools west of Union Creek; in a wet depression along the railroad right-of-way at Meridian

Road; in one pool north of the Runway 03R/21L; and in vernal pools along the Railroad Right-of-Way GSU north of the Base.

Protocol-level surveys of the vernal pool habitat around the former Aero Club conducted by ICF International from 2011-2013 found no vernal pool fairy shrimp (ICF International 2011, 2013). Marty (2016) conducted surveys of 142 wetlands during the 2015-2016 wet season and recorded 16 pools with vernal pool fairy shrimp and 1 pool with a close relative, the midvalley fairy shrimp (*B. mesovallensis*). Mantech (2016) conducted non-protocol level surveys of the Travis AFB GSUs and found potential habitat for this species at the Former Sacramento Northern Railroad Right-of-Way, Outer Runway Marker, Middle Runway Marker, and Point Ozol. Critical habitat is designated for vernal pool fairy shrimp on the Travis AFB main Base at the South Gate; a triangular parcel south of Runway 03R/21L (not within the fenced boundary of the Base); and at the Western Railroad Right-of-Way as well as the Potrero Hills Landfill GSU (Figure 4).

Current and Historical Distribution: Vernal pool fairy shrimp are known to occur in a wide range of vernal pool habitats in the southern and Central Valley areas of California, and in two vernal pool habitats within the “Agate Desert” area of Jackson County, Oregon. It is likely the historical distribution of this species coincides with the historical distribution of vernal pools in California’s Central Valley and southern Oregon. Holland (1998) estimated that about 4,000,000 acres of vernal pool habitat existed in the Central Valley prior to the widespread agricultural development that began in the mid-1800s. He found that although the current and historical distribution of vernal pools is similar, vernal pools are now far more fragmented and isolated from each other than during historical times and currently occupy only about 25 percent of their former land area (Holland 1998). The current distribution of the vernal pool fairy shrimp in the Central Valley may be similar to its historical distribution in extent, but remaining populations are now considerably more fragmented and isolated than in pre-agricultural times.

Threats: The primary threats to the species are habitat loss and fragmentation due to urban development on the private property where the species occurs, agricultural conversion, altered hydrology, nonnative invasive species, inadequate regulatory mechanisms, exclusion of grazing in areas where grazing has been a historically occurred, and inappropriate grazing regimes (overgrazing or undergrazing) (Service 2005).

Recovery Plan: The *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems of California and Southern Oregon* identifies conservation actions (divided into five categories) to sufficiently reduce the threats to the species (Service 2005). These categories are to continue to provide: regulatory and legal protections; education and outreach; research; conservation planning and habitat protection; and species-specific management and monitoring for the species.

Vernal Pool Tadpole Shrimp and its Critical Habitat

Presence within the Action Area: Vernal pool tadpole shrimp are known to be present in much of the undeveloped areas surrounding Travis AFB. The CNDDDB includes multiple reports of the species within 0.50 mile surrounding the Base (Figures 5 and 6; CNDDDB 2016). Some observations include those at Wilcox Ranch adjacent to the Base, Muzzy Conservation Bank, North Suisun Conservation Bank, and the Burke Ranch Conservation Bank.

Despite numerous protocol-level and non-protocol-level sampling efforts over the past 20 years, vernal pool tadpole shrimp have not been found on the main Base; although, this species has been found on the Northern Railroad Right-of-Way GSU, located just off the main Base near the Meridian Gate on the eastern boundary (Figure B-1 of the programmatic biological assessment).

During 2004-2005 surveys conducted by EcoAnalysts, this species was observed at eight locations along the Northern Railroad Right-of-Way GSU. In 1994, Biosystems found vernal pool tadpole shrimp in one pool located about 40 feet from the Base's perimeter fence, near the Meridian Gate on the eastern Base boundary (Biosystems 1994). Mantech (2016) conducted non-protocol level surveys of the Travis AFB GSUs. These surveys indicate that suitable habitat for vernal pool tadpole shrimp likely exists at the following GSU's: Former Sacramento Northern Railroad Right of Way; Outer Runway Marker; Middle Runway Marker; and the Defense Fuel Supply Point Ozol. Critical Habitat is designated for vernal pool tadpole shrimp on Travis AFB at the South Gate; a triangular parcel south of Runway 03R/21L (not within the fenced boundary of the Base); the Western Railroad Right-of-Way; and the Potrero Hills Landfill GSU (Figure 4).

Current and Historical Distribution: Historically, about 4,000,000 acres of vernal pool habitat existed in the Central Valley during pre-agricultural time, and vernal pool tadpole shrimp were probably distributed over most of these vernal pool habitats. However, surveys in southern portions of California have never revealed vernal pool tadpole shrimp populations, and the species probably did not occur historically outside of the Central Valley and Central Coast regions (Service 2005). Currently vernal pool tadpole shrimp are distributed across the Central Valley of California and in the San Francisco Bay area. The species' distribution has been greatly reduced from historical times as a result of widespread destruction and degradation of its vernal pool habitat. Vernal pool habitats in the Central Valley now represent only about 25 percent of their former area, and remaining habitats are considerably more fragmented and isolated than during historical times (Holland 1998). Vernal pool tadpole shrimp are uncommon even where vernal pool habitats occur. In 1998, Helm found vernal pool tadpole shrimp in only 17 percent of vernal pools sampled.

Threats: The primary threats to the species are habitat loss and fragmentation due to urban development on private property where vernal pool tadpole shrimp occur in Alameda County. Additional threats to this species are: habitat conversions for agriculture; altered hydrology; competition with nonnative invasive species; inadequate regulatory mechanisms; exclusion of grazing in areas where grazing has historically occurred; and inappropriate grazing regimes (overgrazing or undergrazing) (Service 2005).

Recovery Plan: The *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems of California and Southern Oregon, 2005* states that although conservation efforts have been implemented for vernal pool ecosystems in general; very few actions have been taken specifically to benefit vernal pool tadpole shrimp (Service 2005).

Contra Costa Goldfields and its Critical Habitat

Presence within the Action Area: Rare plant surveys conducted by Biosystems (1994) counted 36 separate occurrences of Contra Costas goldfields on Travis AFB, concentrated on the western portion of the Base. The majority of plants (33 of 36 plants) are located at the former Aero Club and in the grazing areas south of the Aero Club. The remaining occurrences are found in the southwestern corner of the Base along Perimeter Road at the end of the runway (CH2M Hill 2006).

Contra Costa goldfields distribution on Travis AFB included pools within the Aero Club area. In 1999, the Service issued a biological opinion following the loss of individual Contra Costa goldfields, and damage to its habitat in 1997 at the Aero Club and Civil Engineering Training Yard, and to mitigate impacts related to the Castle Terrace Housing project (referred to then as the Burke Property) (Service 1999). The biological opinion required the restoration and/or creation of on-site and off-site habitat for Contra Costa goldfields, as well as the purchase of credits at a vernal pool conservation bank. The resulting Contra Costa goldfields habitat restoration and compensation

entailed the creation of 256 vernal pools around the Aero Club (Collinge 1999). Additionally, Travis AFB has restored and is permanently protecting 0.2 acre of potential Contra Costa goldfields habitat on the main Base. During 2005 surveys and restoration project data collection, Contra Costa goldfields were documented in 43% of reference pools within the Aero Club, and in 39% of created pools (CH2M Hill 2005).

In total, 462 occurrences have been recorded for Contra Costa goldfields on Travis AFB over the years. In 2016, a total of 62 pools on Travis AFB were occupied, of which 80% of those occurrences were within the Aero Club (Marty 2017; Figures E-1 and E-2 of the programmatic biological assessment). The species has also been found in pools totaling about 28 acres, all on the western portion of the Base. Critical habitat is designated for Contra Costa goldfields on the main Base at: the South Gate; a triangular parcel south of Runway 03R/21L; and at the West Railroad Right-of-Way extending to Walters Road (Figure 4 of the Enclosure).

Current and Historical Distribution: Of the 32 historical occurrences of Contra Costa goldfields recorded between 1884 and 2003 that are documented on the CNDDDB (2005), 22 are likely extant. Contra Costa goldfields occurred historically in seven vernal pool regions: Central Coast, Lake-Napa, Livermore, Mendocino, Santa Barbara, Santa Rosa, and Solano-Colusa (Service 2005; Keeler-Wolf et al. 1998). In addition, several historical occurrences in Contra Costa County are outside of the defined vernal pool regions (Keeler-Wolf et al. 1998, CNDDDB 2003). The species presumably remains in all of the vernal pool regions where it occurred historically, except for the Santa Barbara Vernal Pool Region. The greatest concentration of Contra Costa this species occurs in the Solano-Colusa Vernal Pool Region on area located east of Fairfield, Solano County. This location contains 10 occurrences that are presumed extant, plus 1 that may be extirpated (Service 2005).

Threats: Current threats to Contra Costa goldfields include loss of habitat due to conversions for residential development, agriculture and vineyards, inappropriate grazing practices, and expansions drainage channels, landfill and highways. Some projects, such as proposed highways, may disturb habitat on Travis AFB as well as in the Fairfield area (Service 2005). Threats due to conversions to vineyards are also continuing. The largest Napa County occurrence of this plant, at Soscol Ridge is imminently threatened by vineyard conversion (Service 2005) (Figures 5 and 6; CNDDDB 2017). Additionally, competition from invasive plant species, improper or lack of grazing regimes, climate change/drought, intensive grazing and lack of grazing are significant threats to this species (Service 2005). Heavy grazing is cited as a threat to Contra Costa goldfields occurring at Pacific Commons Preserve in Alameda County, and for four occurrences in Solano County, including the Gentry property (CNDDDB 2012). Additionally, lack of grazing is cited as a threat for this plant species at Soscol Ridge in Napa County (CNDDDB 2012). Both lack of grazing and excessive grazing may cause an increase in organic matter in the habitat that can eliminate the natural vernal pool invertebrate community and promote opportunistic and invasive nonnative plant species (Service 2013).

Recovery Plan: The *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems of California and Southern Oregon 2005* provides recovery criteria that either directly or implicitly address three of the listing factors noted in the final rule to list the species: destruction, modification, or curtailment of habitat or range; inadequacy of existing regulatory mechanisms; and other man-made or natural factors affecting its continued existence (Service 2005). The overutilization for commercial, recreational, scientific, or education purposes, and disease or predation, were not included as threats in the listing rule and are not addressed in the Recovery Plan for Contra Costa goldfields. Since the Recovery Plan for this species has only recently begun to be implemented, species surveys and

monitoring efforts that will provide data to evaluate progress towards recovery have not yet occurred (Service 2005).

Effects of the Action

Activities described in the *Description of the Proposed Action* section may result in direct and indirect; permanent and temporary effects to federally-listed species and their habitat occurring at Travis AFB and the eight GSUs owned/managed by the Base (Table D-1 of the Enclosure). Each project proposed for coverage under the programmatic biological opinion was analyzed for the level of effect it may have on each of the federally-listed species and their habitat found on Travis AFB and its GSUs. For the California tiger salamander in particular, Travis AFB has divided the Base lands into three risk categories for encountering the California tiger salamander: green, yellow, and red (Figure 2). See the *Environmental Baseline* section for a summary, and Appendix A of the programmatic biological assessment for an expanded discussion of these risk categories and the methodology used to develop them. A combination of the California tiger salamander risk categories, federally-listed species habitat evaluations, and implementation of the proposed conservation measures and activities proposed are used to determine possible effect levels to federally-listed species and their habitat.

Measures described in the *Conservation Measures* section, and additional species-specific measures included in Tabs A, B, D and E of the programmatic biological assessment will be implemented to minimize or avoid potential adverse effects to the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields or their habitat. Furthermore, the following strategies will be followed during project development and implementation: 1) the project footprint will be reduced to the minimum area needed; 2) project boundaries will be clearly demarcated prior to work; 3) worker education programs to recognize and report federally-listed species will be conducted; 4) a Service-approved biologist will be on-site during project activities that have potential to result in take; 5) a relocation plan for any California tiger salamanders found will be implemented; 6) when feasible disturbed sites will be restored and revegetated with a native weed-free seed mix and/or native plant species; 7) if mowing is implemented in suitable habitat for federally-listed species, it will be occur during the dry-season; 8) if herbicide are used, it will only be applied using non-ionic surfactants when near water; and 9) if prescribed burning occurs, it will be timed to occur after Contra Costa goldfields has senesced and seed dispersal (March – June; Ornduff 1966, Service 2005) is complete.

Additionally, habitat enhancement and restoration projects at Travis AFB may adversely affect individual California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields, or temporarily affect their habitat as described in the *Ground Disturbance and Construction* section below. However, the long-term benefits of restoration and conservation are anticipated to provide these federally-listed species with protection and managed habitat in perpetuity; improve habitat quality and suitability; increase species population size; increase extent of protected habitat; and increase connectivity for species between occupied areas.

The habitat compensation ratios proposed by Travis AFB included in this section for projects adversely affecting either the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, or Contra Costa goldfields were informed by the Solano HCP (SCWA 2012). However, some of the compensation ratios proposed by Travis AFB are scaled to reflect the Air Force's commitment to conserving listed species on the Base and its GSU's through the implementation of the INRMP. Through this natural resource management process, the Air Force funds management, monitoring and research activities that benefit listed species and ultimately

contribute to their recovery. The habitat compensation ratios proposed by Travis AFB in this section are dependent on the quality of the existing habitat which will be affected by proposed projects.

Habitat compensation ratios for the vernal pool fairy shrimp and the vernal pool tadpole shrimp are based on the mitigation ratios developed in the Solano HCP (SCWA 2012). Travis AFB's compensation ratios are centered on habitat preservation, with an additional 1:1 preservation component for projects indirectly effecting either medium or high value vernal pool conservation habitat. The Air Force believes that preservation of vernal pool habitat is a more suitable compensation measure than creation of habitat, which is often done in areas with existing species habitat and may have negative effects to species that use the upland habitat where the wetlands are created (e.g. California tiger salamander) and the watershed in general. Additionally, increasing wetland acreage through wetland creation in mitigation banks and other preserved properties near Travis AFB runways may increase the bird aircraft strike hazard.

Effects to the California Tiger Salamander

Travis AFB has determined that the following list of activities described below and in the *Description of the Proposed Action* section, have the potential to result in temporary and permanent adverse effects to the California tiger salamander and its habitat: airfield and flight operations; security and antiterrorism operations; road maintenance; bridge construction and maintenance; runway, taxiway and ramp repair; facility maintenance and upgrade; demolition; above and under-ground utility lines; culverts and drainage ditches; fence installation, maintenance and replacement; minor construction projects; ERP site investigations and remediation methods; ERP site operations and maintenance; ERP groundwater monitoring; invasive and pest species removal; California tiger salamander burrow and inspection and relocation; wetland restoration; fire suppression; firebreak maintenance; and prescribed fire (Table 6, and Table D-1 of Tab D). The effects analysis for the California tiger salamander is primarily based on the location of the proposed projects, relative to known species observations and/or proximity to breeding habitat for the species (Figure 2).

Ground Disturbance and Construction/Demolition

Ground disturbance and construction activities described in the *Description of the Proposed Action* section may result in temporary or permanent loss of water bodies utilized by the California tiger salamander for breeding and maturation of tadpoles to metamorphs, as well as loss of upland habitat used for aestivation, dispersal, and foraging. Additionally, suitable small mammal burrows or soil cracks (potential aestivation habitat) within construction footprints may contain the California tiger salamander, which are likely to be entombed and killed as burrows and soil cracks are destroyed during grading and ground compaction activities.

The California tiger salamander may be killed or injured from accidental trampling by workers from foot traffic and operation of construction equipment during construction activities. Construction activities may result in harassment from noise, vibration, and night-lighting and may disrupt their natural behaviors causing them to leave their upland refugia and increase their exposure to desiccation and predation. California tiger salamanders may also become trapped in open excavations or construction trenches, making them vulnerable to desiccation, starvation, and predation. Implementation of proper conservation measures and species-specific conservation measures will avoid or minimize habitat alteration and destruction and loss of individuals, including reducing construction footprints (See the *Conservation Measures* section above and species-specific measures listed in Tab D of the programmatic biological assessment).

Ground disturbing activities may cause alterations in hydrology that result in converting a vernal pool to a perennial pond, increasing the likelihood of the pond being colonized by predators and hybrids; thus, exposing California tiger salamanders to increased harassment and mortality from predators and possibly lead to their extirpation from a breeding site. In efforts to avoid these potential adverse effects to the species and its habitat, seasonal breeding sites will not be converted to perennial water bodies, and will not create new perennial ponds in the vicinity of species occurrences. Implementing ongoing actions to keep perennial water bodies free of predatory invasive species may result in overall benefits to the California tiger salamander and its habitat.

Temporary adverse effects to the California tiger salamander and its habitat may result from vernal pool and seasonal wetland restoration projects from associated grading, excavation, disking, trenching, or other types of direct ground disturbances. Monitoring of restoration sites will be monitored for success of restorative efforts for a minimum of 2 years. In general, restoration projects conducted at Travis AFB are expected to have overall benefits to the California tiger salamander by restoring their destroyed or altered habitat, and by enhancing existing habitat. In addition, while most of the ERP sites on Travis AFB have been cleaned up and closed, some sites may require further action and operations and maintenance. See the *Description of the Proposed Action* section for specific activities, including ground disturbing activities, which may adversely affect the California tiger salamander and its habitat.

California Tiger Salamander Relocation Activities

Preconstruction surveys and relocation of California tiger salamanders may reduce injury or mortality within proposed project footprints; however, death and injury of individuals can result at the time of relocation efforts or later subsequent to their release. Although survivorship for relocated California tiger salamanders has not been determined; survivorship of relocated wildlife, in general, is lower because of intraspecific competition; lack of familiarity with the new location including breeding sites; feeding and sheltering habitats; increased risk of contracting disease in a foreign environment; and the risk of predation. Furthermore, improper handling; containment; lack of disease prevention measures; or improper transport of individuals can occur during relocation activities. In order to reduce or prevent these potential adverse effects from occurring, a Service-approved biologist with experience handling this species will conduct these activities. Additionally, the Service-approved biologists will follow *Travis AFB's CTS Relocation Plan*, and will limit the duration of handling and ensure that all California tiger salamanders are released in a timely manner, in order to further reduce potential adverse effects to the species.

Airfield and Flight Operations - Roads, Runways and Other Impediments to Dispersal

Projects that involve roads and highways can result in vehicle caused mortality of individual California tiger salamanders, and can cause habitat fragmentation. Injury and mortality occur when California tiger salamanders cross roads, runways, or other impermeable surfaces during dispersal and migration, as individuals are either unable to avoid being run over or desiccate before successfully passing. Species mortality may increase as a result of road widening projects, or placement of curbs at road edges. Mortality may also increase at constructed barriers within medians, and along roadways which can impede species movement; resulting in individuals being more vulnerable to vehicle and aircraft strikes, predation, and desiccation. Roads and other development, and highly cultivated areas can also indirectly affect the California tiger salamander by functioning as a partial or complete barrier to the species attempting to migrate through. Where interchange of the California tiger salamander between sites is overall beneficial to a population, the retrofitting of barriers to allow for passage (e.g., rounded curbs, ramps for curbs, etc.) and the installation of culverts, tunnels, bridges, and other crossings, specifically designed to facilitate safe wildlife passage under or across roads can minimize direct mortality from vehicle strikes, and

increase habitat connectivity and genetic exchange.

Exposure to Contaminants

The construction of buildings and roadways, repair and use of roadways, and the use of agricultural chemicals next to suitable aquatic and upland habitat for the California tiger salamander can expose the species to chemical contaminants. Substances used in road building materials or to recondition roads or for agricultural purposes can drift or wash off into nearby habitat. Vehicles may leak hazardous substances such as motor oil and antifreeze. Vehicle exhaust emissions can include hazardous substances which may concentrate in soils and in the air along roads (Trombulak and Frissell 2000), and include organic pollutants (*i.e.* dioxins, polychlorinated biphenyls) (Benfenati *et al.* 1992). A variety of substances can be introduced during accidental spills of materials.

Spills can also result from small containers falling off vehicles, or from accidents resulting in whole loads being spilled. Large spills may be partially or completely mitigated by clean-up efforts, depending on the substance. The California tiger salamander can also be exposed to contaminants through inhalation, dermal contact and absorption, direct ingestion of contaminated soil or plants, or consumption of contaminated prey. Exposure to contaminants may cause short-term effects or lead to long-term morbidity. Contaminants may also adversely affect the California tiger salamander's prey diversity and abundance, and diminish the local carrying capacity for the species. Implementation of Conservation Measures related to managing stormwater runoff, fueling, storage of hazardous materials, having a spill containment plan in place, and informing project personnel of the importance of these measures will reduce the potential for adverse effects from contaminants during project construction. However, most of these measures will not eliminate the effects of contaminants from ongoing use of roads and other infrastructure, and from agricultural practices.

Invasive Plants and Pest Management Programs

Herbicide Treatment

Herbicides will be applied per their label, and will also follow additional minimization measures developed, as noted in Solano RCD's *Final Weed Report 2015-2016* (Solano RCD 2015-2016). Changes to the Solano RCD's *Final Weed Report 2015-2016* by Travis AFB are noted in the *Conservation Measures - Herbicide Application* section. These conservation measures were developed to avoid all effects to federally-listed species and their habitat. However, Travis AFB anticipates some instances where full avoidance is not feasible and potential activities may result in adverse effects to the California tiger salamander its habitat.

Potential adverse effects may occur for projects where mechanical treatments within 20 feet of a wetland is not effective at eliminating the non-native plant infestation, and herbicide application inside this buffer is required, while water is present in potential California tiger salamander breeding sites. Such a scenario is also likely at the Aero Club where vernal pools are so numerous; it is not feasible to completely avoid the pools. Spot, directed spray with a backpack sprayer will be used in order to minimize potential adverse effects to this species and its habitat. The use of Telar XP can have some residual soil activity/pre-emergent qualities, but the length of control depends on soil pH, rainfall after application, and rate of application (Solano RCD 2015-2016).

In areas where aquatic resources are present, only a glyphosate-based herbicide without toxic surfactants approved for use in aquatic environments will be used. To minimize potential adverse effects to this species from drift during treatments, chemicals will be applied using spot treatments with a backpack sprayer or truck mounted spray tank with hose. When applied in the summer and fall the herbicide is taken up more rapidly due to photosynthetic byproducts being transported into the root mass at a faster pace. However, applying herbicide in the spring before viable seed

maturation, and again in the fall during this intense photosynthetic process may be necessary to prevent regrowth.

Prescribed Burns

Burning of dry vernal pool habitat is expected to have an overall beneficial effect to California tiger salamander habitat. Prescribed burns may occur during the spring and early summer (April – July). On a project by project basis, prescribed burns may adversely affect the California tiger salamander and its habitat, depending on which prescribed fire practices are employed for protection of resources. Potential adverse impacts may occur from the installation of roads or fire breaks, or to define fire boundaries. Potential California tiger salamander aestivation habitat (small mammal burrows or soil cracks) within the construction footprint will likely be destroyed during installation of roads or fire breaks, as burrows are crushed or as inhabitants of burrows (including the California tiger salamander) are entombed.

Mosquito Abatement

Mosquito abatement agencies have introduced non-native western mosquitofish (*Gambusia affinis*) to wetlands on Travis AFB. Mosquitofish prey upon California tiger salamander developing embryos and larvae and can eliminate an entire cohort (Jennings and Hayes 1994). Additionally, both the California tiger salamander and mosquitofish feed on invertebrates and it is possible that large numbers of mosquitofish may out-compete the salamander larvae for food. However, in efforts to avoid adverse effects to the California tiger salamander, mosquitofish will not be added to known breeding sites for the federally-listed species.

Rodent Control

Rodent control programs can adversely affect California tiger salamander populations on Travis AFB by reducing or eliminating California ground squirrels and/or pocket gophers in or near suitable habitat for the salamander. This is especially true in areas defined as either red or yellow risk CTS areas at Travis AFB (see Appendix A of the programmatic biological assessment). The reduction or elimination of fossorial rodents can lead to eventual loss of suitable burrows that provide both aestivation habitat for the salamander and refugium for their upland prey. If suitable burrows are not available for the California tiger salamander, this species may seek suboptimal upland habitats which increases their exposure to predators, and can lead to desiccation and starvation. However, in efforts to avoid or minimize potential adverse effects to the California tiger salamander, application of pest control programs in yellow and red risk CTS areas will be avoided or reduced.

California Tiger Salamander - Habitat Compensation

Travis AFB anticipates that the majority of projects will result in temporary effects to suitable breeding and upland habitat, resulting from electrical utility system maintenance. All areas that are temporarily affected will be returned back to its preconstruction state upon completion of the proposed project. Activities most commonly producing temporary impacts are: pole replacements; vehicular access to electrical infrastructure; and underground electrical system maintenance. Permanent impacts will typically be the result of new service projects, in which a customer requires electrical service at a location not previously serviced. These activities will include the installation of new aboveground infrastructure such as utility poles and pad mounted transformers and switches. Most subsurface electrical installation (such as underground electrical conductors/conduits) projects will result in temporary effects to suitable breeding and upland habitat, as project sites will be returned to their preconstruction state upon completion.

Travis AFB will compensate for loss of California tiger salamander habitat (suitable upland habitat and aquatic breeding sites) with in-perpetuity preservation and/or restoration of habitat for the species (Table 3). Temporary loss of California tiger salamander upland habitat will be compensated at a habitat preservation ratio of 0.5:1 (area of habitat preserved to area of habitat impacted). Permanent effects to California tiger salamander upland habitat will be compensated at a habitat preservation ratio of 2:1. Direct effects to California tiger salamander breeding habitat will be compensated at a habitat preservation ratio of 3:1 and 2:1 creation (2:1 creation or 0.35 acre, whichever is greater) of California tiger salamander breeding habitat. Indirect effects to California tiger salamander breeding habitat will be compensated at a preservation or creation of 2:1.

Preservation and protection in perpetuity of high value habitat at an acquired site near the Base or by purchasing habitat at a Service-approved Conservation Bank, will allow for the permanent protection, long-term management, and enhancement of habitat for the California tiger salamander; thus, contributing to the recovery of the species. Travis AFB may coordinate with the Solano HCP process to meet habitat compensation requirements. Additionally, projects resulting in temporary effects to California tiger salamander habitat such as revegetation and restoration of project sites post-project will occur when feasible; thus, benefiting the species by improving habitat conditions. Restoration projects described in the *Description of the Proposed Action* section are expected to provide overall benefits to the California tiger salamander by restoring their destroyed or altered habitat, and by enhancing existing habitat. This compensation, combined with the implementation of additional conservation measures described in the *Conservation Measures* section above, and in Tab D of the programmatic biological assessment, are anticipated to offset the adverse effects of harm, resulting from project related habitat modification or loss.

Furthermore to avoid adverse effects to the California tiger salamander, Travis AFB will limit the amount of disturbances occurring in suitable habitat for the California tiger salamander. Specific acreage amounts for disturbance limits that will not be exceeded annually or over a 5-year period are provided below (Tab D of the programmatic biological assessment):

Permanent and Temporary Affects to California Tiger Salamander Habitat will not exceed the following:

Permanent effects to California tiger salamander habitat:

- Total habitat disturbances to yellow and red risk CTS habitat will not exceed 1% (24 acres) annually;
- Total cumulative habitat disturbances for all projects will not exceed 3% (68 acres) over the 5-year period;

Temporary effects to California tiger salamander habitat:

- Total temporary habitat disturbances for all projects will not exceed 2% (48 acres) annually; and
- Total cumulative habitat disturbances for all projects will not exceed 5% (123 acres) over the 5-year period.

The percentages above are based on suitable California tiger salamander upland habitat mapped at Travis AFB which consists of about 2,192 acres in red risk areas, 279 acres in the yellow risk areas, and 1,096 acres in the green risk areas. Because California tiger salamanders are unlikely to utilize habitat located within the green risk areas on Travis AFB, only affected habitat located within yellow and red risk areas (2,471 total acres) will be compensated for temporary and permanent effects to suitable upland habitat. Additionally, habitat quality will be determined and documented through threatened and endangered species surveys prior to project activities.

Effects to Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp – Individuals

Travis AFB has determined that the following list of activities described below and in the *Description of the Proposed Action* section, have the potential to result in direct and indirect adverse effects to the vernal pool fairy shrimp and vernal pool tadpole shrimp, their cysts and their habitat: security and antiterrorism operations; road maintenance; runway, taxiway and ramp repair; facility maintenance and upgrade; demolition; above and under-ground utility lines; culverts and drainage ditches; fence installation, maintenance and replacement; minor construction projects; ERP site investigations and remediation methods; ERP site operations and maintenance; ERP groundwater monitoring; wetland restoration; fire suppression; and firebreak maintenance (Table 6, and Tables A-1 and B-1 of Tabs A and B respectively).

Temporary and permanent effects to these species may occur by displacement or burial, or the permanent loss of individuals and cysts through crushing by construction equipment and vehicles. Mortality or injury of individual vernal pool fairy shrimp and vernal pool tadpole shrimp is likely to occur from suitable or confirmed species habitat being altered hydrologically, by water depth, water quality, and/or water temperature. Restoration projects described in the *Description of the Proposed Action* section are expected to provide overall benefits to vernal pool fairy shrimp and vernal pool tadpole shrimp by restoring their destroyed or altered habitat, and by enhancing existing habitat. This compensation, combined with the implementation of additional conservation measures described in the *Conservation Measures* section above, and in Tabs A and B of the programmatic assessment, are anticipated to offset the adverse effects of harm, resulting from project related habitat modification or loss.

Ground Disturbance and Construction/Demolition

Direct effects to vernal pool fairy shrimp and tadpole shrimp from ground disturbing activities may include damage and removal of suitable vernal pool habitat and other aquatic features, killing individuals and cysts of these species. Indirect effects to these species from ground disturbance in or near occupied habitat may result from alteration of surface hydrology that affects the hydro-period of pools and swales; leading to the eventual loss of suitable habitat and species occurrences. However, with most proposed projects, implementation of proper species-specific conservation measures will avoid or minimize habitat alteration and destruction, and/or the loss of vernal pool fairy shrimp and vernal pool tadpole shrimp and cysts.

Exposure to Contaminants

The construction of buildings and roadways, as well as the repair and use of roadways, and the use of agricultural chemicals next to vernal pools and other suitable wetlands can expose vernal pool fairy shrimp and tadpole shrimp to chemical contaminants. Substances used in road, building materials, and to recondition roads, or for agricultural purposes, can drift or wash off into nearby habitat. Vehicles may leak hazardous substances such as motor oil and antifreeze. See the above section *Effects to California Tiger Salamander - Exposure to Contaminants* for details regarding additional sources of potential contaminants which may also lead to potential affects to vernal pool fairy shrimp and vernal pool tadpole shrimp. Species-specific conservation measures and general measures will be implemented to avoid or minimize potential adverse effects to both of these species including: having a spill containment plan in place; stormwater runoff management plan; and a plan for fueling and storage of hazardous materials. However, most of these measures will not completely eliminate the potential adverse effects of contaminants from ongoing use of roads and other infrastructure, and from agricultural practices.

*Invasive Plant Species Management*Herbicide Application

Travis AFB anticipates that any proposed projects that occur within 250 feet of known or potentially suitable habitat for these vernal pool crustaceans will implement the measures described in the *Conservation Measures* section, and species-specific measures in Tabs A and B to avoid or minimize disturbances and adverse effects to these vernal pool species (unless otherwise noted in the project effects analysis that will be sent to the Service prior to project implementation).

Adverse effects to vernal pool fairy shrimp and tadpole shrimp or their habitat may occur in instances where herbicides treatment within the 250 foot buffer is necessary for larger weed infestations, or where vernal pools are located close together. Any herbicide sprayed within the buffer, will only contain herbicides without toxic surfactants, approved for use in aquatic environments. Such a scenario is likely at the Aero Club where vernal pools are so numerous; it is not feasible to completely avoid the pools. Spot, directed spray with a backpack sprayer will be used to avoid or minimize potential effects to these vernal pool crustaceans. Because of the difficulty in quantifying take of individual vernal pool fairy shrimp and vernal pool tadpole shrimp, effects to these species are determined by the area of impact to suitable or occupied habitat.

Effects to Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp - Habitat

The proposed activities also have the potential to result in temporary and permanent affects to vernal pool fairy shrimp and vernal pool tadpole shrimp through the destruction or removal of their habitat. Where feasible, both occupied and suitable habitat for these vernal pool crustaceans will be avoided; although, unforeseen situations may exist that prevent complete avoidance (i.e., emergency repairs to overhead or underground utilities).

Ground Disturbing Activities

Due to the relatively flat topography on most of Travis AFB, many vernal pools and other suitable wetland features are hydrologically connected; therefore, the aquatic habitat may be affected if trenching, boring, or significant ground disturbance or paving with impermeable surfaces occurs in areas between the aquatic features. These types of activities within a hydrologically connected area may alter the hydrologic flow of the pools, diminishing their ability to function adequately. Vernal pool fairy shrimp, vernal pool tadpole shrimp, and their cysts may be subject to injury or mortality by activities such as grading, excavation, disking, trenching, or other types of direct ground disturbance. Vernal pool fairy shrimp and vernal pool tadpole shrimp habitat may be subject to disturbance as a result of proposed projects, and by vehicle and equipment access to their associated project sites.

Ground disturbing activities in the watershed of vernal pools is expected to result in siltation when pools fill during the wet-season following construction. Construction activities may result in increased sedimentation transport into the habitat for these vernal pool crustaceans during periods of heavy rains. Siltation in pools supporting vernal pool fairy shrimp and vernal pool tadpole shrimp may result in decreased cyst viability, decreased hatching success, and decreased survivorship among early life history stages; thereby, reducing the number of mature adults in future wet-seasons.

The hydrologic regime (e.g., change in rates of surface flow) of vernal pools may be altered due to disturbance of the claypan layer or changing the slope or groundcover of the surrounding landscape. The biota of vernal pools and aquatic swales can change when the hydrologic regime is altered. Survival of aquatic organisms such as vernal pool fairy shrimp and vernal pool tadpole shrimp are directly linked to the water regime of their habitat (Zedler 1987). Therefore, construction near vernal pool areas is likely to result in the decline of local sub-populations of vernal pool organisms,

including vernal pool fairy shrimp and vernal pool tadpole shrimp. These activities can affect the amount and quality of water available to vernal pools and the surrounding areas which drain into the pools. Grading for roads may affect the water regime of vernal pool habitat, particularly when grading involves cutting into the substrata in or near these areas. Exposure of sub-surface layers of soil at road cuts may accelerate the loss of water from adjacent habitat by mass flow through networks of cracks, lenses of coarser material, animal burrows, or other macroscopic channels.

Many temporary wetlands on Travis AFB are manmade and are typically the result of water ponding next to a runway, taxiway, road or railroad in a toe drain. Many roadside localities in the cantonment area are occupied by vernal pool fairy shrimp and vernal pool tadpole shrimp; therefore when feasible, temporary wetland habitats that occur along roadways will be avoided during all aspects of proposed projects, reducing potential adverse effects to vernal pool fairy shrimp and vernal pool tadpole shrimp and their habitat. Access to sites for maintenance projects that are within seasonal wetland habitats will only occur during the dry season in order to minimize or avoid potential impacts to vernal pool fairy shrimp and vernal pool tadpole shrimp and their habitat. Where feasible, all equipment will be staged outside of the immediate vicinity of wetlands and will perform all project activities manually. When this is not feasible and it is necessary to encroach within the perimeter of any vernal pool, it will be accomplished by accessing existing non-sensitive habitat, and using boards or plates placed over the pool to distribute the weight of the equipment in order to reduce or avoid potential adverse effects.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp - Habitat Compensation

Travis AFB will compensate for both direct and indirect adverse effects to suitable vernal pool fairy shrimp and tadpole shrimp habitat with in-perpetuity preservation of existing habitat for these species (See Table 3). Specifically, direct effects to high value vernal pool conservation habitat will be compensated at a 7:1 preservation ratio (area of vernal pool habitat preserved to area of vernal pool habitat effected); medium value vernal pool conservation habitat will be compensated at a 3:1 preservation ratio; and low value vernal pool conservation habitat will be compensated at a 1:1 preservation ratio. Alternatively within high and medium value vernal pool conservation areas, compensation may also be met by purchasing credits at a 6:1 or 2:1 preservation ratio with 1:1 ratio creation, respectively. Indirect effects to suitable vernal pool fairy shrimp and vernal pool tadpole shrimp habitat will be compensated at a 1:1 preservation ratio.

The purchase of habitat at a Service-approved Conservation Bank or the preservation and protection in perpetuity of high value vernal pool habitat near the Base will allow for the permanent protection, long-term management, and enhancement of the habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp; thus, contributing to the recovery of these species. Additionally, Travis AFB may coordinate with the Solano HCP to meet compensation requirements. The conservation and compensation measures described above are anticipated to help offset adverse effects of harm resulting from project-related habitat modification or loss. Additionally, restoration projects will be implemented as described in the *Description of the Proposed Action* section, are expected to benefit vernal pool fairy shrimp and vernal pool tadpole shrimp in the long-term by restoring their destroyed or altered habitat, and by enhancing existing habitat.

Because vernal pool fairy shrimp have been found occurring in numerous locations on the Base, and much of the seasonal wetland habitat on the Base and at the GSUs provide suitable habitat for this species; Travis AFB has agreed to the following annual and cumulative disturbance limits to vernal pool fairy shrimp habitat (Tab A of the programmatic biological assessment):

Permanent and Temporary Affects to Vernal Pool Tadpole Shrimp Habitat will not exceed the following:

Direct affects to occupied habitat:

- Total habitat disturbances for all projects will not exceed 1% (0.08 acre) annually;
- Total cumulative habitat disturbances for all projects will not exceed 3% (0.27 acre) over the 5-year period;

Indirect affects to occupied habitat:

- Total habitat disturbances to hydrologically connected systems will not exceed 5% (0.44 acre) annually;
- Total cumulative habitat disturbances for all projects will not exceed 15% (1.33 acres) over the 5-year period.

Direct affects to potentially occupied habitat:

- Total habitat disturbances for all projects will not exceed 2% (1.6 acres) annually;
- Total cumulative habitat disturbances for all projects will not exceed 3% (2.4 acres) over the 5-year period;

Indirect affects to potentially occupied habitat:

- Total habitat disturbances for all projects will not exceed 5% (4.0 acres) annually;
- Total cumulative habitat disturbances for all projects will not exceed 10% (8.0 acres) over the 5-year period;

Permanent loss of occupied habitat:

- Total permanent loss of habitat will not exceed 0.5% (0.029 acre) annually; and
- Total cumulative permanent loss of habitat will not exceed 1.5% (0.06 acre) over the 5-year period.

The percentages provided above for limits in disturbances to vernal pool fairy shrimp habitat is based on a total of 8.9 acres of occupied vernal pool fairy shrimp habitat, and a total of 80 acres of potentially occupied habitat for the species. This area excludes the GSUs since a wetland delineation and species surveys have not yet been completed for those locations. Therefore, habitat and its quality will be determined and documented through existing and future threatened and endangered species surveys.

Vernal pool tadpole shrimp have not been found to occur on the main Base of Travis AFB despite numerous species focused surveys; therefore, annual and cumulative disturbance limits to vernal pool tadpole shrimp habitat have not been developed.

Effects to Contra Costa Goldfields

Travis AFB has determined that the following list of activities described below and in the *Description of the Proposed Action* section, have the potential to result in direct and indirect adverse effects to Contra Costa goldfields and their habitat: security and antiterrorism operations; road maintenance; runway, taxiway and ramp repair; facility maintenance and upgrade; demolition; above and under-ground utility lines; culverts and drainage ditches; fence installation, maintenance and replacement; minor construction projects; ERP site investigations and remediation methods; ERP site operations and maintenance; ERP groundwater monitoring; invasive species removal; wetland restoration; and fire suppression (Table 6, and Table E-1 and E-1 of Tab E).

Ground Disturbance and Construction/Demolition

Direct effects to Contra Costa goldfields from ground disturbing activities and construction equipment may include damage, burial or displacement, and removal of individual plants and seeds; therefore, potentially leading to permanent loss. Indirect effects to the plant and its seeds from ground disturbance in or near occupied habitat may result in permanent loss of soil structure, soil

water-holding capacity, or loss of microhabitat features (Rains *et al.* 2008). Ground disturbance in occupied habitat may also fragment occurrences, which can lead to isolated individual plants and affect genetic variability within plant populations. Other indirect effects include alteration of surface hydrology that affects the hydro-period of pools and swales which may reduce germination and growth or promote the establishment of non-native invasive plant species. Contra Costa goldfield populations are likely to be adversely affected within vernal pools that are altered hydrologically by water depth, water quality, and or water temperature. The hydrologic regime (e.g., change in rates of surface flow) of the pools may be altered due to disturbance of the claypan layer or changing the slope or groundcover of the surrounding landscape. Therefore, construction within 250 feet of vernal pools occupied with Contra Costa goldfields is likely to result in the decline of local sub-populations of the plant.

Activities such as deep drilling, grading, excavation, disking, trenching, installation of equipment under ground, or other types of direct ground disturbance that perforate the claypan either within a pool basin or adjacent to a pool may cause the area to drain at a faster rate; therefore adversely affecting the hydrology of a pool. Due to the relatively flat topography on most of Travis AFB, many pools are hydrologically connected; thus, may be affected if ground disturbances occur in areas between pools. Construction activities within 250 feet of Contra Costa goldfields habitat may result in increased sedimentation transport into the plants habitat during periods of heavy rains. Siltation in pools supporting this species may result in decreased seed viability, decreased germination success, and decreased survivorship; thereby, reducing the number of flowering plants in future wet seasons.

All projects that occur within 250 feet of known or potential Contra Costa goldfields habitat, will implement the conservation measures to avoid or minimize disturbances and adverse effects to the species and its habitat when feasible. Furthermore, implementing proper conservation measures and species-specific conservation measures will avoid, or minimize, habitat alteration and destruction and loss of individual plants and their seeds. See the *Conservation Measures* section and species-specific measures listed in Tab E of the programmatic biological assessment.

Vernal Pool and Seasonal Wetland Restoration

Restoration projects described in the *Description of the Proposed Action* section may result in temporary adverse effects to Contra Costa goldfields and their habitat. Contra Costa goldfields may be subject to loss or injury of plants and its seeds by activities such as grading, excavation, disking, trenching, or other types of direct ground disturbances. To avoid or minimize potential adverse effects to Contra Costa goldfields and its habitat prior to grading within wetlands, the top 4-6 inches of topsoil will be removed from the surface and stored separately from all other spoil piles, including non-wetland topsoil, in order to maintain integrity of the soil composition and character. Wetland topsoil will be replaced in the same wetland it was taken from following backfill and grading. Generally, monitoring of wetland areas for the success of restorative efforts will occur for a minimum of 2 years. See section 4.4.6 of the programmatic biological assessment for further details on restoration activities. In general, restoration projects conducted at Travis AFB are expected to have overall long-term benefits to Contra Costa goldfields by restoring its destroyed or altered habitat, and by enhancing existing habitat.

In addition, while most of the ERP sites on Travis AFB have been treated and closed, some sites may require further action and operations and maintenance. See the *Description of the Proposed Action* section for specific activities, including ground disturbing activities which may adversely affect Contra Costa goldfields and its habitat.

Fire Suppression

Roads used to access remote portions of the Base as part of wildfire suppression and fuels management activities are maintained once a year, after the rainy season. As a result of wildfire suppression and fuels management activities, Contra Costa goldfields plants and seeds may be adversely affected by injury or mortality caused by grading, excavation, disking, or other types of direct ground disturbances. When feasible, implementing proper conservation measures and species-specific conservation measures will avoid, or minimize, habitat alteration and destruction and loss of individual plants and their seeds. See the *Conservation Measures* section and species-specific measures listed in Tab E of the programmatic biological assessment.

Herbicide Application

Travis AFB anticipates that any proposed projects that occur within 250 feet of known or potentially suitable habitat for Contra Costa goldfields will implement the measures described in the *Conservation Measures* section, and will follow additional species-specific measures in Tab E to avoid or minimize potential adverse effects to the species and its habitat (unless otherwise noted in the project effects analysis that will be sent to the Service prior to project implementation).

In most instances full avoidance of Contra Costa goldfields and its habitat will occur by designating 250 foot no access buffers; however, there may be some instances where effects to this species are unavoidable. Adverse effects to Contra Costa goldfields and its habitat may occur in instances where herbicides treatment within the 250 foot buffer is necessary for larger weed infestations, or where vernal pools are located close together. Any herbicide sprayed within the buffer will only contain herbicides without toxic surfactants, and be approved for use in aquatic environments. Such a scenario is likely at the Aero Club where vernal pools are so numerous; it is not feasible to completely avoid the pools. Spot, directed spray with a backpack sprayer will be used within the buffer in order to avoid or minimize potential effects to Contra Costa goldfields plants and its seeds or habitat.

One instance where full avoidance of this species and its habitat is likely not possible is a pilot study using Telar being planned to occur at Travis AFB. The pilot study will be conducted on pepperweed infested pools at the Aero Club that contain the related common *Lastbenia* plant species. Before and after vegetation data will be collected to determine whether adverse effects to the common species were avoided. If data shows that the related species was adversely affected, Travis AFB will request a Level 3 LAA consultation with appropriate conservation measures.

Because of the difficulty in quantifying take of individual Contra Costa goldfields, effects to this species is determined by the area of effect to suitable habitat. Because of the observed limited distribution of Contra Costa goldfields at Travis AFB, not all vernal pool habitats on the Base are considered suitable for the species. Current populations and vernal pools that have been documented to provide suitable habitat for the Contra Costa goldfields in the past are considered occupied habitat for this species (based on the presumption that the long-lived soil seedbank is still viable).

Effects to Contra Costa Goldfield - Habitat

The proposed activities have the potential to result in short-term temporary effects and permanent removal of Contra Costa goldfields habitat. Where feasible, both occupied and suitable habitat for this species will be avoided; although, unforeseen situations may exist that prevent complete avoidance (i.e., emergency repairs to overhead or underground utilities).

Contra Costa Goldfields - Habitat Compensation

Travis AFB will compensate for direct and indirect effects to Contra Costa goldfields habitat with in-perpetuity preservation and/or restoration of suitable habitat for this species (Table 3). Specifically, direct effects to Contra Costa goldfields habitat will be compensated at a 7:1 ratio through preservation of existing habitat, and will also compensate at a 2:1 creation ratio, establishing self-reproducing populations of Contra Costa goldfields in protected areas. Indirect effects to Contra Costa goldfields habitat will be compensated at a 1:1 ratio through preservation of existing habitat for this species.

The purchase of Contra Costa goldfields habitat at a Service-approved Conservation Bank or the preservation and creation, and protection in perpetuity of high value vernal pool habitat near the Base will allow for the permanent protection, long-term management, and enhancement of habitat for the recovery of the species. Additionally, Travis AFB may coordinate with the Solano HCP process to meet compensation requirements. The conservation and compensation measures described above are anticipated to help offset the adverse effects of harm resulting from project-related habitat modification or loss. Additionally, restoration projects proposed by Travis AFB are expected to benefit Contra Costa goldfields in the long-term by restoring its destroyed or altered habitat, and by enhancing existing habitat.

Furthermore, Travis AFB has agreed to the following disturbance limits to Contra Costa goldfields and its habitat (Tab E of the programmatic biological assessment):

Permanent and Temporary Affects to Contra Costa goldfield habitat will not exceed the following over the next 5 years:

Direct affects to occupied habitat:

- Total habitat disturbances for all projects will not exceed 0.5% (0.14 acre) annually;
- Total cumulative habitat disturbances for all projects will not exceed 1% (0.28 acre) over the 5-year period;

Indirect affects to occupied habitat:

- Total habitat disturbances to hydrologically connected systems will not exceed 5% (1.4 acres) annually;
- Total cumulative habitat disturbances for all projects will not exceed 10% (2.8 acres) over the 5-year period;

Permanent loss of occupied habitat:

- Total irretrievable loss of documented habitat will not exceed 0.25% (0.07 acre) annually; and
- Total cumulative irretrievable loss of documented habitat will not exceed 0.5% (0.14 acre) over a 5-year period.

The percentages above are based on a total of about 28 acres of species occupied vernal pool habitat including previously documented Contra Costa goldfields occurrences; which assumes that this species seedbank is still viable. Existing habitat and its quality will be determined and documented through present and future threatened and endangered species surveys.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area are considered in this programmatic biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section; they require separate consultation pursuant to section 7 of the Act.

Numerous non-federal activities continue to adversely affect vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields in the action area, primarily through the damage or destruction of habitat for these species. In addition, the same activities that affect these federally-listed species also affect critical habitat for vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields. Loss and degradation of habitat affecting these species with or without Service authorization continues as a result of urbanization; road construction and maintenance; utility right-of-way management; flood control projects that may not be funded, permitted, or constructed by a federal agency; and continuing conversion of rangelands to more intensive agricultural crops. Additionally, the California tiger salamander is also adversely affected by ground squirrel reduction, mosquito control, including the planting of non-native mosquito fish, and road-related mortality. However, much of the land surrounding Travis AFB is protected through deed restrictions or conservation easements, reducing some of these potential adverse effects. The portion of the Wilcox Ranch adjacent to the Base is owned by the City of Fairfield and Solano County, and is subject to deed restrictions that prohibit most kinds of development.

Access to sites within vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander and Contra Costa goldfields habitat for proposed projects will continue to occur in the future, therefore continued short-term temporary disturbance to the affected vernal pools and other suitable wetland habitat will occur. However, proposed projects at these sites are relatively rare, and every attempt will be made to minimize and avoid disturbances to these species and their habitat.

Conclusion

Federally-Listed Species

After reviewing the current status of the vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that proposed projects which meet the qualifications for this programmatic biological opinion are not likely to jeopardize the continued existence of these species. Although critical habitat for these species will be affected, none will be destroyed or adversely modified by the projects that meet the qualifications of the programmatic biological opinion. This determination is based on the description of the proposed action that provides numerous measures and additional minimization measures that will be implemented to minimize adverse effects of future proposed projects on federally-listed species and their critical habitat. Implementing these conservation measures, including the standard habitat compensation ratios, ensures more occupied habitat will be conserved than affected. As a result, project-related effects to vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields, and their habitat will not rise to the level of precluding recovery of these species or reducing the likelihood of their survival.

Critical Habitat

After reviewing the current status of designated critical habitat for vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields; the environmental baseline for the action area; the effects of the proposed projects over the next 5-years at Travis AFB and its GSUs; and the cumulative effects, it is the Service's biological opinion that the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species, as proposed, is not likely to destroy or adversely modify designated critical habitat for these species. The Service reached this conclusion because proposed project-related effects to designated critical habitat, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding the function

of these four federally-listed species' designated critical habitat to serve its intended conservation role for these species based on the following. The effects to critical habitat are small and discrete, relative to the entire area designated as critical habitat, and are not expected to appreciably diminish the value of the critical habitat or prevent it from sustaining its role in the conservation of vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, and Contra Costa goldfields.

PROGRAMMATIC INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Travis AFB so that they become binding conditions of any grant, contract, or permit issued by Travis AFB as appropriate, in order for the exemption in section 7(o)(2) to apply. Travis AFB has a continuing duty to regulate the activity covered by this Incidental Take Statement. If Travis AFB: (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, contract, or grant document; and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Travis AFB must report the progress of the action and its impact on the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields to the Service as specified in the incidental take statement (50 CFR §402.14(i)(3)).

Amount or Extent of Take

The specific amount or extent of incidental take of the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields unquantifiable at this time because this consultation has analyzed multiple proposed actions at a programmatic level. Travis AFB will submit individual projects to the Service for specific review and analysis by the Service. If appropriate, incidental take will be authorized upon appendage of the specific project to this programmatic biological opinion. No exemption from section 9 of the Act is granted in this programmatic biological opinion.

Effect of the Take

No incidental take is authorized by this programmatic biological opinion for the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields, resulting from project implementation has been incorporated into this programmatic framework. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the California tiger salamander, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields:

1. All conservation measures, as described in the programmatic biological assessment and restated here in the *Description of the Proposed Action* section of this programmatic biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the terms and conditions below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Travis AFB must ensure compliance with the following term and condition, which implement the reasonable and prudent measure described above. This term and condition is nondiscretionary.

1. Travis AFB shall include full implementation and adherence to the conservation measures proposed in the programmatic biological assessment and restated in this programmatic biological opinion as a condition of any permit issued for the proposed project.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on federally-listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

Travis AFB should continue to work with the Service to assist us in meeting the goals for: 1) the vernal pool fairy shrimp, vernal pool tadpole shrimp, and Contra Costa goldfields as outlined in the *Recovery Plan for Vernal Pool Ecosystems for Vernal Pool Ecosystems of California and Southern Oregon* (Service 2005); and 2) the California tiger salamander as outlined in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*)*, signed June 06, 2017 (Service 2017).

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the actions described in this programmatic biological opinion for the Proposed Effects of Activities Conducted at Travis Air Force Base on Six Federally Threatened and Endangered Species. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the programmatic biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this programmatic biological opinion, please contact Harry Kahler, Biologist (Harry_Kahler@fws.gov) at (916) 414-6577 or Doug Weinrich, Assistant Field Supervisor (Douglas_Weinrich@fws.gov) at (916) 414-6563.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Norris", with a long horizontal flourish extending to the right.

Jennifer M. Norris, Ph.D.
Field Supervisor

Enclosure

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Enclosure

**(Figures 1 – 8; Tables 1, 2 & 6; & Project Effects Analysis Report
Template were provided by Travis AFB in their Programmatic
Biological Assessment, March 2018)**

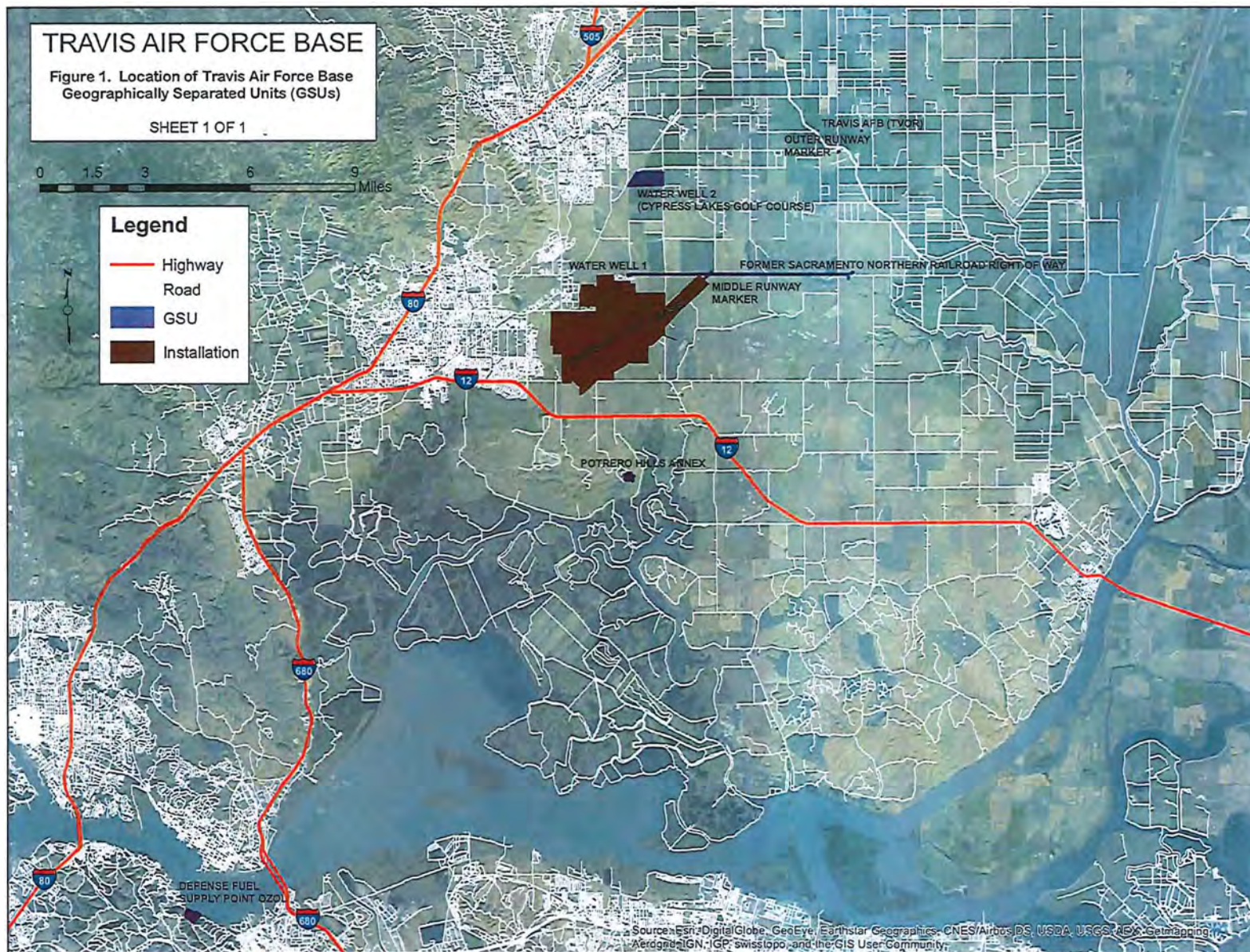
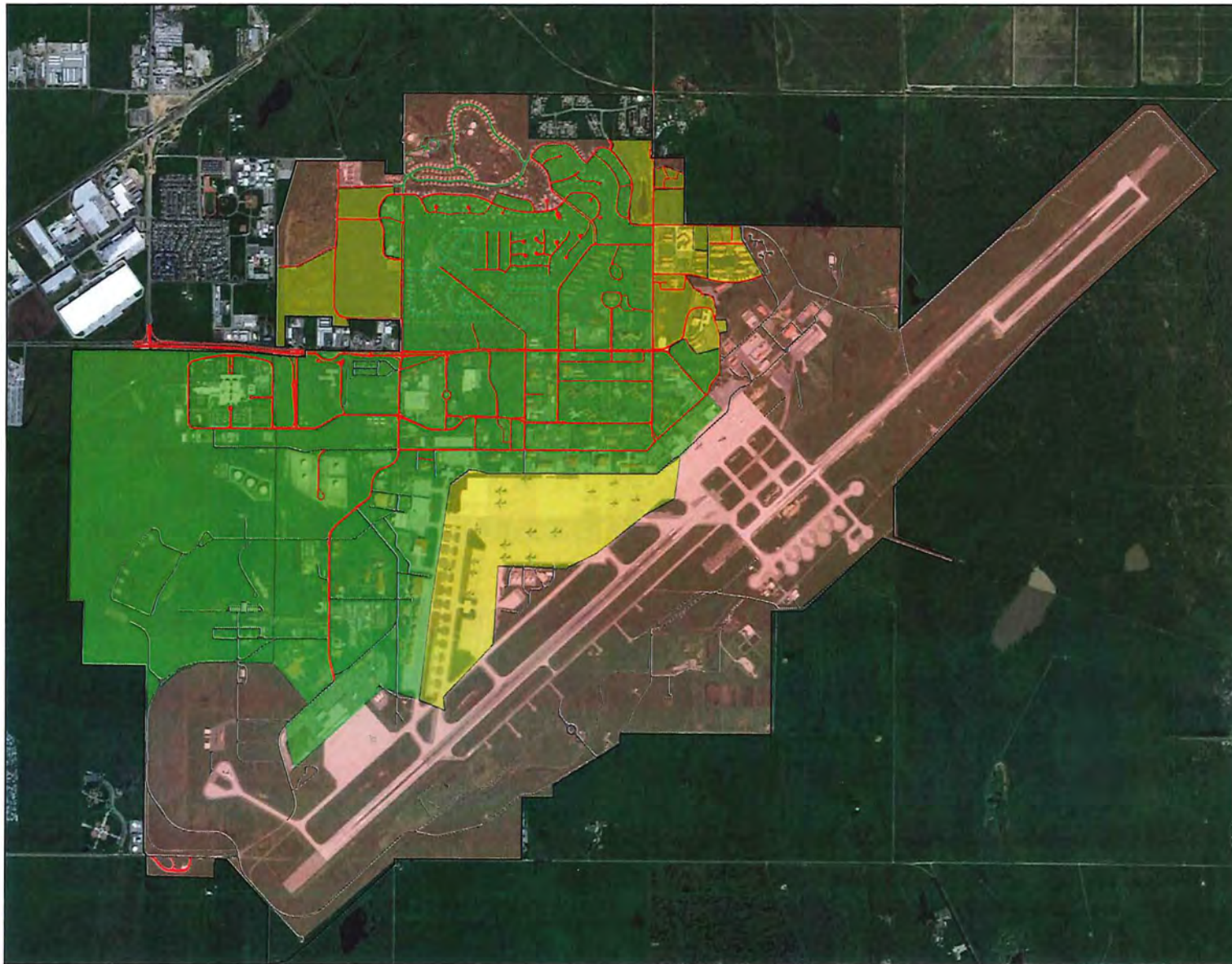


Figure 1. General location of Travis AFB and GSUs.



**Programmatic Biological
Assessment
Travis AFB, CA**

**Figure 2
CTS Risk Areas**






Legend

Roads and Curbs

-  No curb
-  Round
-  Square

CTS Risk Areas

-  High Risk (2546 acres)
-  Medium Risk (507 acres)
-  Low Risk (1955 acres)

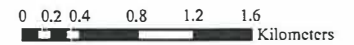
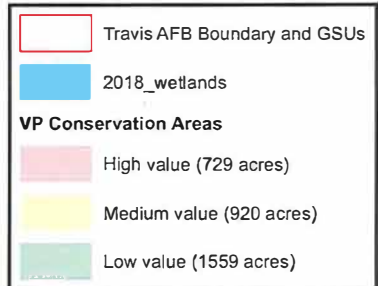


0 0.15 0.3 0.6 0.9 1.2
Kilometers

Credits: ESRI 2017; TAFB 2018
risk mapping based on habitat resistance
modeling conducted as part of TAFB PBA

Programmatic Biological Assessment Travis AFB, CA

Figure 3 Vernal Pool Conservation Areas



Credits: USDA 2016; TAFB 2017
habitat value mapping based on
Solano Co. HCP
mapping conducted as part of TAFB PBA

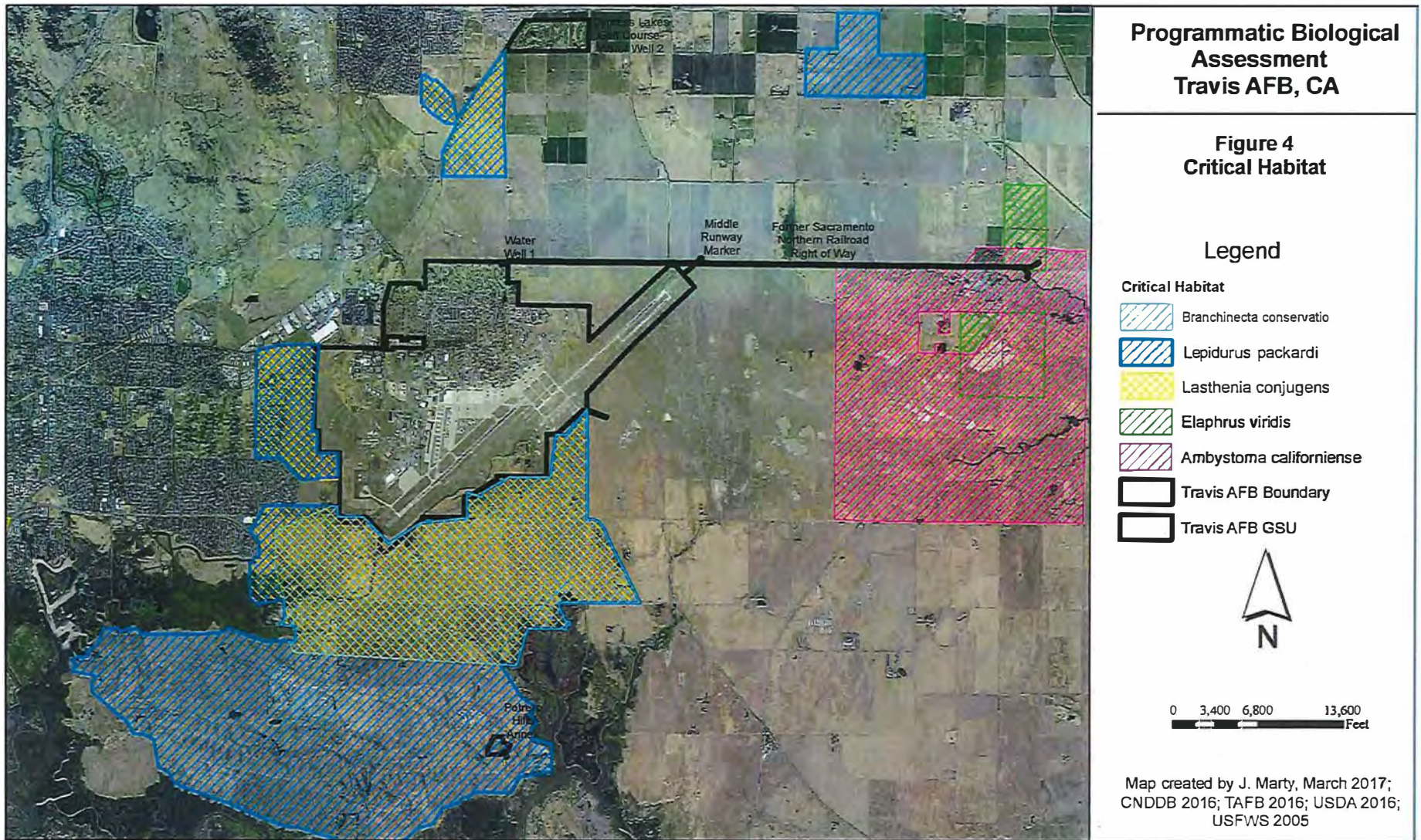


Figure 4. Critical Habitat.

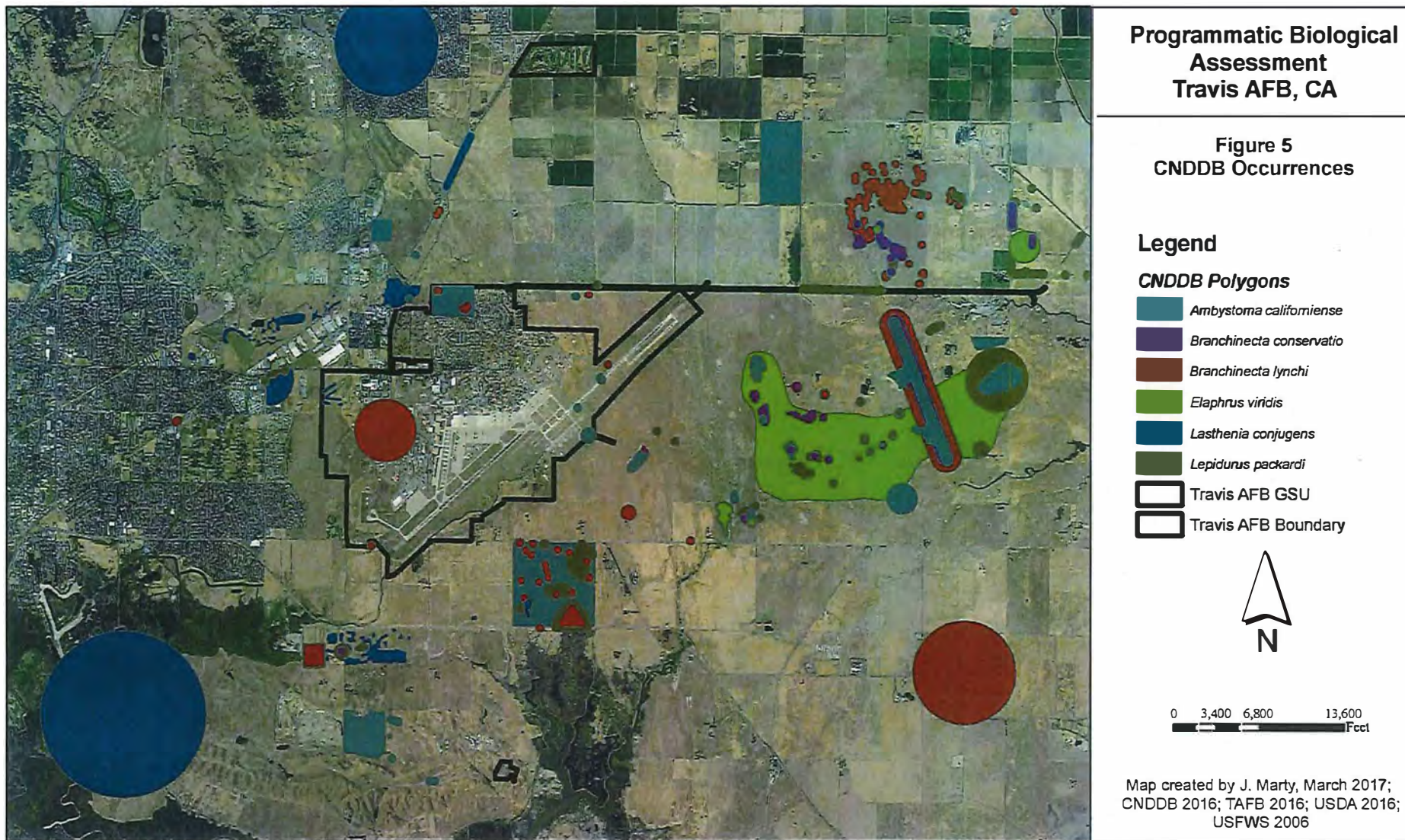


Figure 5. CNDDB Occurrences.

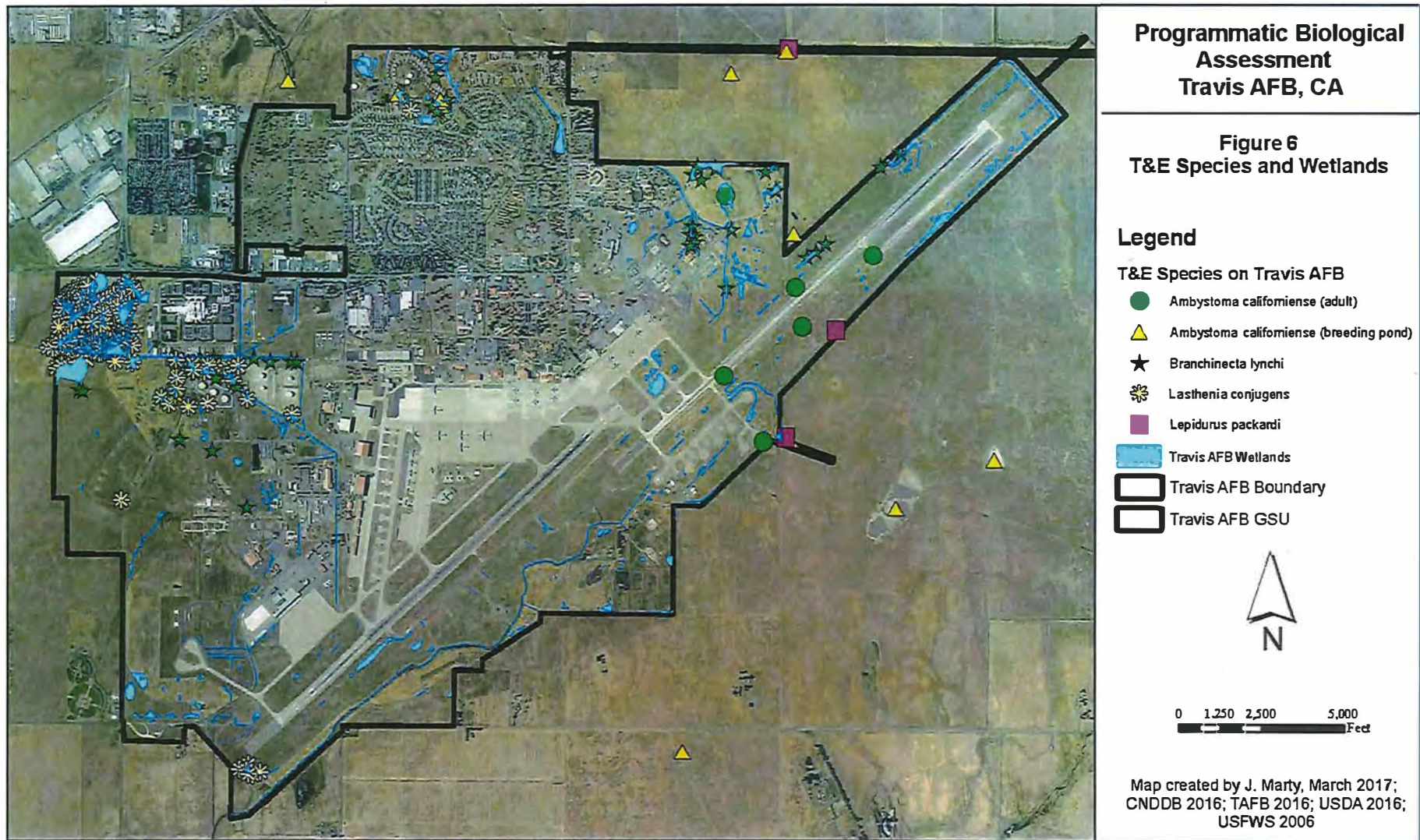


Figure 6. On-Site Species Occurrences.

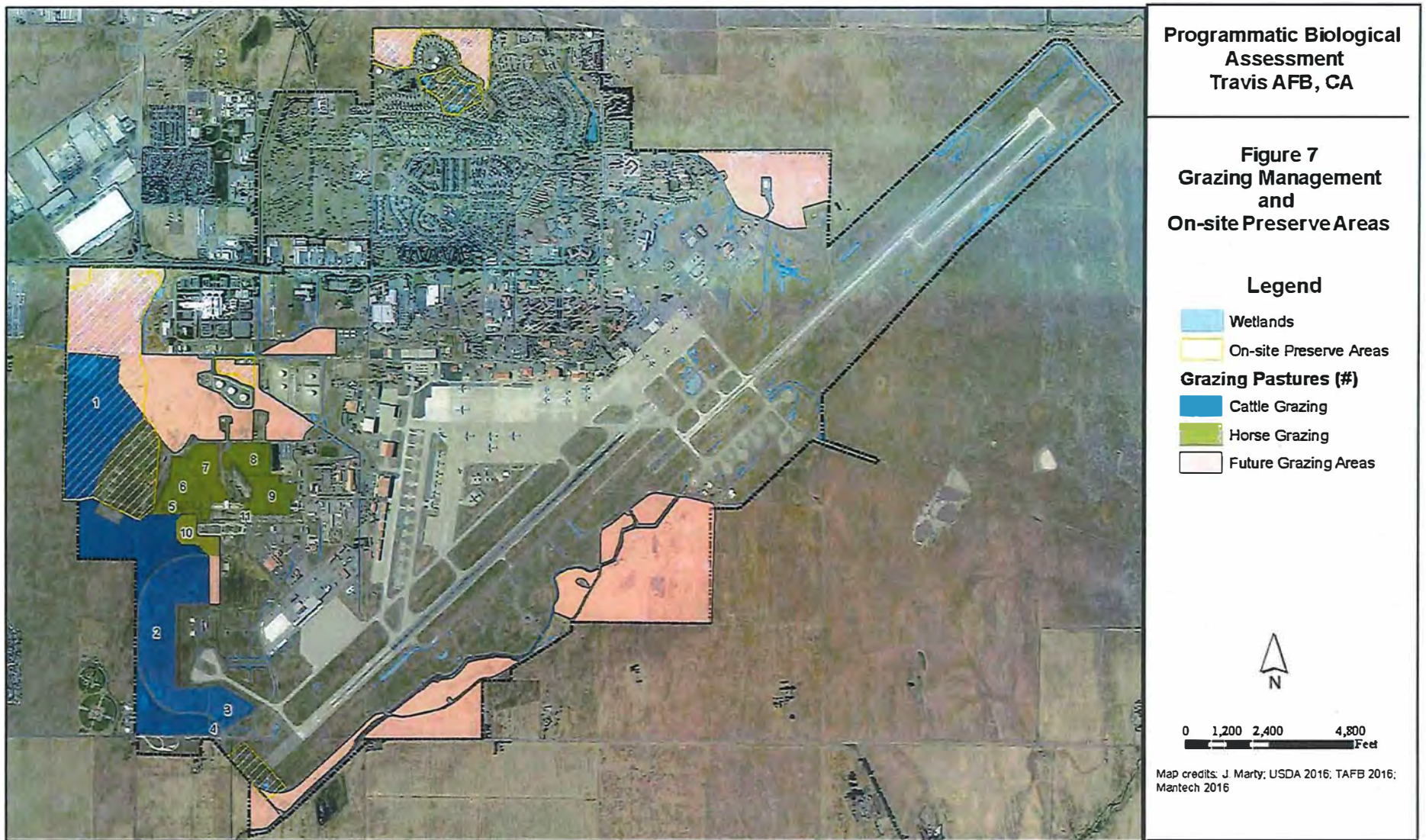


Figure 7. Grazing Management and Preserves.

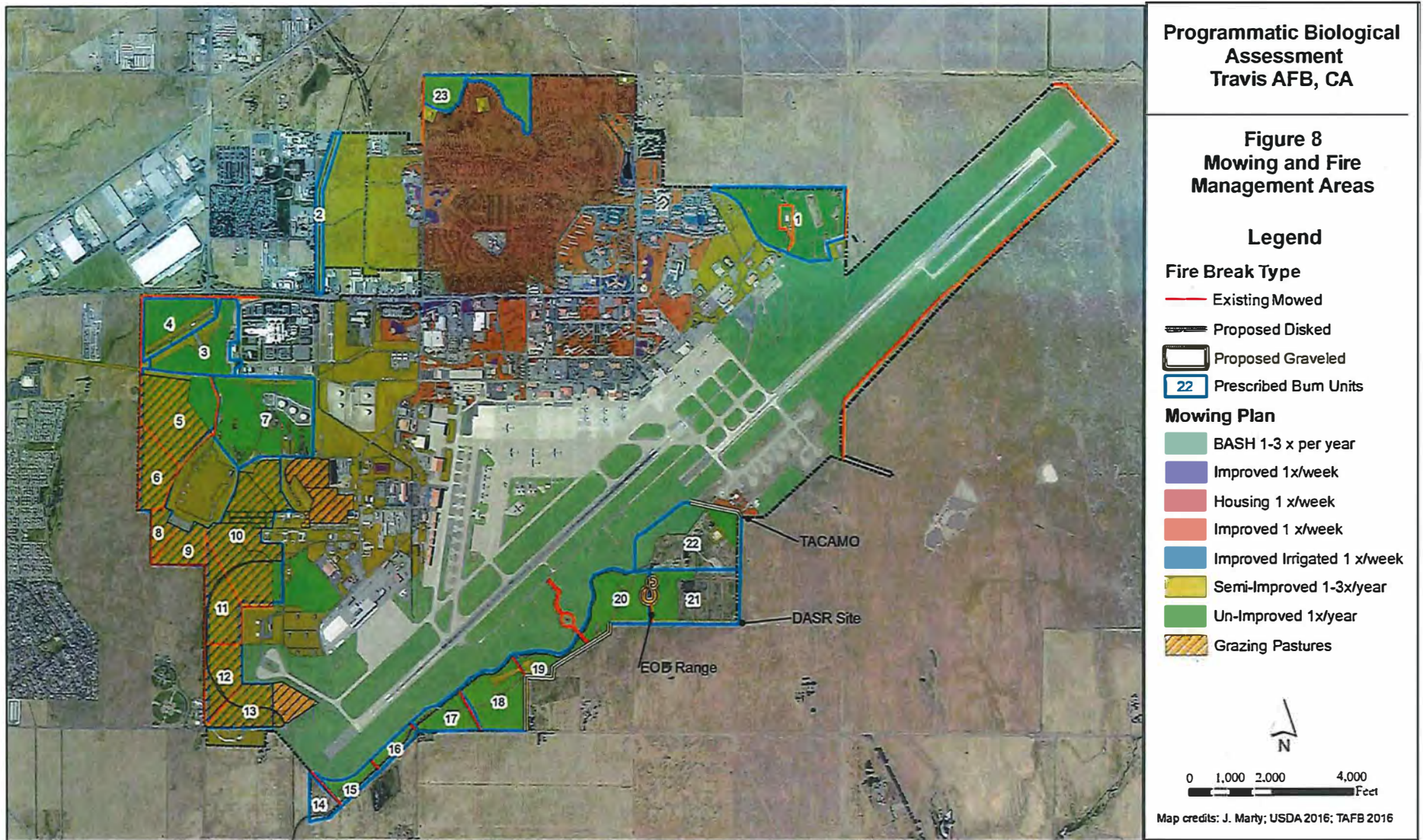


Figure 8. Fire Management and Mowing.

Table 1. Proposed Thresholds for Levels of Consultation for VPFS, VPTS, CFS, and CCG, and selected areas of the base for DGGB. See Figure C-1.

(*upland habitat is defined as land cover value 1; Appendix A)

Criteria	Level 1	Level 2	Level 3
	No Effect	Not Likely to Adversely Affect	May Adversely Affect
Proximity to Resources	<ul style="list-style-type: none"> • Work on paved/gravel surfaces; and/or • Work within paved/gravel road shoulders; and/or • Work > 250 feet from wetland 	<p>Work outside wetlands but within 250 feet of wetlands that meet the following criteria:</p> <ul style="list-style-type: none"> • wetland is higher in elevation than the work site or, • wetland area is upstream of the project or, • a physical barrier to hydrological connectivity is present or, • shallow excavation; or • other reasons why wetlands are not impacted 	Projects that will affect wetlands (directly or indirectly)
Submittal to USFWS	No submittal	<ul style="list-style-type: none"> • Project Analysis (template in Appendix B) sent >30 days prior to project start with two-week FWS response period • When project impacts are >100 ft from all wetlands then documents kept by base; submit in annual report 	A Project Analysis including project description with maps following template in Appendix B.
Avoidance & Minimization Measures	All equipment and excess soil must stay on paved/gravel surfaces	<ul style="list-style-type: none"> • General Minimization Measures • Species-Specific Avoidance Measures • No habitat compensation required 	<ul style="list-style-type: none"> • General Minimization Measures • Species-Specific Avoidance Measures • Habitat compensation and/or monitoring required

Table 2. Proposed Thresholds for Levels of Consultation for CTS (*upland habitat is defined as land cover value 1; Appendix A)

Criteria	Level 1a	Level 1b	Level 2	Level 3
	No Effect	No Effect (With Conservation Measures)	Not Likely to Adversely Affect	May Adversely Affect
Project Impact on Resources	<ul style="list-style-type: none"> • Work limited to paved/gravel surfaces and shoulders; and • Work between 1 May and 15 Oct 	<ul style="list-style-type: none"> • Work limited to paved/gravel surfaces and shoulders in Low Risk areas from 16 Oct to 31 Apr; and/or • Work limited to paved/gravel surfaces and shoulders in Medium Risk areas; and/or • <i>Temporary and permanent</i> disturbance of upland habitat* in Low risk areas 	<ul style="list-style-type: none"> • Temporary disturbance of upland habitat* in Medium Risk areas; and/or • Work limited to paved/gravel surfaces and shoulders in High Risk areas (with appropriate CMs) 	<ul style="list-style-type: none"> • Permanent disturbance of upland habitat in Medium and High Risk areas; and/or • Temporary ground disturbance of upland habitat* within High Risk Areas
Submittal to USFWS	No submittal	No submittal	<ul style="list-style-type: none"> • Project analysis (template in Appendix B) sent >30 days prior to project start with two-week FWS response period; and/or • When upland disturbance ≤1/4 acre in Medium Risk area then documents kept by base; submit in annual report 	Project analysis following template in Appendix B.
Location	Low Risk	Low Risk (Some Medium)	Medium Risk (Some High)	Some Medium, all High Risk
Avoidance & Minimization Measures	All equipment and excess soil must stay on paved/gravel surfaces	<ul style="list-style-type: none"> • CTS awareness training by Service-approved Biologist for all crew members; and • All equipment/vehicles stay on paved surfaces from 16 Oct to 31 Apr; and • All open trenches >6" covered or escape ramp placed in trench/hole at end of every workday if cover not feasible; and • Approved Natural Resource Monitor must inspect equipment/work area for CTS before initial groundbreaking and after rain event 	<ul style="list-style-type: none"> • General Minimization Measures • Species-Specific Avoidance Measures • No habitat compensation required 	<ul style="list-style-type: none"> • General Minimization Measures • Species-Specific Avoidance Measures • Habitat compensation required when permanent impacts to uplands

Table 6. Summary Effects Determination for each T&E Species.

Travis AFB Projects and Activities	EFFECTS DETERMINATION					
	TAB A	TAB B	TAB C	TAB D	TAB E	TAB F
	VPFS	VPTS	CCG	CTS	DGGB	CFS
MISSION OPERATIONS						
Airfield and Flight Operations	NE	NE	NE	LAA	NE	NE
Security and Antiterrorism Operations	LAA	LAA	LAA	LAA	NLAA	NLAA
INFRASTRUCTURE SUPPORT						
Road Maintenance	LAA	LAA	LAA	LAA	NLAA	NE
Bridge Construction and maintenance	NLAA	NLAA	NE	LAA	NLAA	NE
Runway/taxiway/ramp repair	LAA	LAA	LAA	LAA	NE	NE
Runway/taxiway/ramp maintenance	NE	NE	NE	NLAA	NE	NE
Facility Maintenance and Upgrade	LAA	LAA	LAA	LAA	NLAA	NE
Demolition	LAA	LAA	LAA	LAA	NLAA	NE
Aboveground Utility Lines	LAA	LAA	LAA	LAA	NLAA	NE
Underground Utility Lines	LAA	LAA	LAA	LAA	NLAA	NE
Culverts and Drainage Ditches	LAA	LAA	LAA	LAA	NLAA	NE
Mowing	BE	BE	BE	BE	BE	BE
Tree Trimming and Removal	NE	NE	NE	NE	NE	NE
Fencing Installation, Maintenance, and Replacement	LAA	LAA	LAA	LAA	NLAA	NE
INFRASTRUCTURE DEVELOPMENT						
Minor Construction Projects	LAA	LAA	LAA	LAA	NLAA	NE
Facility Maintenance and Upgrade	LAA	LAA	LAA	LAA	NLAA	NE
ENVIRONMENTAL MANAGEMENT PROGRAMS						
ERP Site investigations and Remediation Methods*	LAA	LAA	LAA	LAA	LAA	LAA
ERP Site Operations and Maintenance*	LAA	LAA	LAA	LAA	LAA	LAA
ERP Groundwater Monitoring*	LAA	LAA	LAA	LAA	LAA	LAA
Invasive and Pest Species Removal	NLAA	NLAA	LAA	LAA	NLAA	NE
Grazing and Livestock Management	BE	BE	BE	BE	BE	NE
Sensitive Species Habitat Management	NLAA	NLAA	NLAA	BE	NLAA	NLAA
CTS Burrow Inspection and Relocation	NE	NE	NE	LAA	NE	NE
Grassland Restoration	NLAA	NLAA	NLAA	NLAA	NE	NE
Wetland Restoration	LAA	LAA	LAA	LAA	NE	NE
Fire Suppression	LAA	LAA	LAA	LAA	NLAA	NE
Firebreak Maintenance	NLAA	NLAA	NLAA	LAA	NLAA	NE
Prescribed Fire	NLAA	NLAA	NLAA	LAA	NE	NE

NOTES:

LAA = Likely to Adversely Affect

NLAA = Not Likely to Adversely Affect

BE = Beneficial Effect

NE = No effect

*may include off-base activities

Refer to Project Description for a detailed explanation of the project or management programs. Refer to individual tabs for detailed determinations.

Date sent to FWS:

Project Title:

Project Proponent:

CEIE POC:

Location: *Should Briefly Describe Where on Travis AFB or GSU project is occurring*

Species impacted: *State which species are being analyzed*

Effects Assessment: *State whether this is NLAA/LAA*

Expected start date of project:

Project Description:

Describe in detail:

- Purpose and need for the project.
- Project site location including all work, staging and storage areas.
- Detailed narrative description of proposed project activity to include:
 - Description of work (soil disturbing or not, dimensions of disturbed area, depth of disturbance etc.)
 - Seasonal constraints of activity
 - Equipment needed to perform activity
 - Site ingress and egress plan
 - Other relevant information
- Show all of this on a map.

60 CES/CEIE Analysis:

Describe methods used for effects analysis including:

- Personnel and Methods used to determine effects (e.g. field methods, map analysis, expert consultation, etc.)
- Description of all potential or known listed species habitat within the project area including:
 - wetlands within 250 feet, if applicable
 - known occurrences of T&E species in Project Area including closest populations of all affected species
 - CTS upland habitat description and risk area location (Appendix A), if applicable
 - density and abundance of small mammal burrows in any uplands to be disturbed on the site
 - figures showing all applicable species and habitat information
- Describe how effects were considered for each species

Programmatic Biological Opinion Reference:

List the PBO Section and page number where the activity is described

Analysis of Effects:

Describe maximum expected disturbance area and how much of that is habitat (for each habitat type present) for the species (in acres).

Describe potential take (harm, harassment, etc.) that the activity may cause to the species present

Describe the impact if project not completed

Species-specific Minimization Measures which will NOT be implemented for this project:

Assumes all General measures (PBA section 1.5) will be implemented (if applicable)

Only list species-specific CMs that will not be implemented

Summary:

Summarize as follows:

“Travis AFB has determined that the proposed project should be considered and authorized for action because:

- a.) the project fits within the scope of the actions described in the PBO,
- b.) the effects analyzed are identical or similar to those that were analyzed in the PBO,
- c.) sensitive time periods for listed species will be avoided to the extent practicable, and
- d.) all pertinent minimization measures will be implemented.

We request concurrence from FWS within __ days (*14 days for NLAA and 30 days for LAA*) of the date of this document. This project will also be discussed and/or listed within our annual report.”

Site Maps and Project Figures:

Note: Use as many or few maps as needed to cover the information presented above.

Figure 1: Overview of Project location on Base

Figure 2: Overall project site map, showing project details (disturbance footprint, ingress/egress routes, staging areas, etc.)

Figure 3: Species and habitat information (wetlands, 250-foot buffer, CTS breeding ponds, VPFS/VPTS/CCG point locations, CTS Risk area, etc.)