Final

Environmental Impact Statement

for T-7A Recapitalization at
Laughlin Air Force Base, Texas

May
2024

Privacy Advisory

This Environmental Impact Statement (EIS) has been provided for public comment in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508), and 32 CFR Part 989, *Environmental Impact Analysis Process (EIAP)*. EIAP provides an opportunity for public input on United States Department of the Air Force (DAF) decision-making, allows the public to offer input on alternative ways for DAF to accomplish what it is proposing, and solicits comments on DAF's analysis of environmental effects.

Public input allows DAF to make better-informed decisions. Letters or other written or verbal comments provided may be published in this EIS. Providing personal information is voluntary. Private addresses will be compiled to develop a mailing list for those requesting copies of this EIS. However, only the names of the individuals making comments and specific comments will be disclosed. Personal information, home addresses, telephone numbers, and email addresses will not be published in this EIS.

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ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
ACAM	Air Conformity Applicability Model
ACM	asbestos-containing material
AETC	Air Education and Training Command
AFB	Air Force Base
AFFF	aqueous film forming foam
AFH	Air Force Handbook
AFI	Air Force Instruction
AFMAN	Air Force Manual
AGL	above ground level
AICUZ	Air Installations Compatible Use Zones
AmaTerra	AmaTerra Environmental, Inc.
APE	area of potential effect
APZ	accident potential zone
BASH	Bird/Wildlife Aircraft Strike Hazard
BMP	best management practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	equivalent emissions of CO_2
CWA	Clean Water Act
CY	calendar year
CZ	clear zone
DAF	Department of the Air Force
dB	decibels
dBA	A-weighted decibels
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
FAA	Federal Aviation Administration
FBF	Fighter/Bomber Fundamentals
FEMA	Federal Emergency Management Agency
FSRM	facilities sustainment, restoration, and modernization
ft^2	square foot
FTW	Flying Training Wing
GBTS	ground-based training system
GHGs	greenhouse gases
GIS	Geographic Information System
Gryphon	Gryphon Environmental LLC
HDR	HDR, Inc.
HMMH	Harris Miller Miller & Hanson, Inc.
HWMP	Hazardous Waste Management Plan
IDP	Installation Development Plan
IFF	Introduction to Fighter Fundamentals
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IRP	Installation Restoration Program
ISWM	Integrated Solid Waste Management
JBSA	Joint Base San Antonio
JLUS	Joint Land Use Study
LBP	lead-based paint
L_{dnmr}	Onset-Rate Adjusted Monthly Day-Night Average Sound Level
L_{eq}	Equivalent Sound Level
$L_{eq(24h)}$	24-Hour Equivalent Sound Level
$L_{eq(8h)}$	8-Hour Equivalent Sound Level
$L_{eq(h)}$	Hourly Equivalent Sound Level
L_{max}	Maximum Sound Level
MBTA	Migratory Bird Treaty Act
MILCON	military construction

MMRP	Military Munitions Response Program
MMT	million metric tons
MOA	Military Operations Area
MSL	mean sea level
MTR	Military Training Route
N/A	not applicable
NA	Number of events (at or) above a specified threshold
$NA75L_{max}$	total number of events that meet or exceed 75 dB L_{max}
NA90SEL	total number of events that exceed 90 dB SEL
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIPTS	Noise Induced Permanent Threshold Shifts
NOI	Notice of Intent
NOTAM	Notice to Air Missions
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
PCBs	polychlorinated biphenyls
PCI	Pavement Condition Index
pCi/L	picocuries per liter
PFAS	polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PHC	Prospect Hill Consulting LLC
PHL	Potential for Hearing Loss
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
POI	Points of Interest
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SO_X	sulfur oxides
SPCC	Spill Prevention, Control, and Countermeasure
SUA	special use airspace
SWPPP	Storm Water Pollution Prevention Plan
TA	Time (at or) above a Specified Threshold
$TA75L_{max}$	total time that meets or exceeds 75 dB
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
tpy	tons per year
TxNDD	Texas Natural Diversity Database
U.S.	United States
UFC	Unified Facilities Criteria
UMMC	unspecified minor military construction
UMT	unit maintenance training
UPT	Undergraduate Pilot Training
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compounds

Cover

Environmental Impact Statement
for T-7A Recapitalization at Laughlin AFB, Texas

Responsible Agency: United States Department of the Air Force (DAF), Air Education and Training Command (AETC).

Affected Locations: Laughlin Air Force Base (AFB) in Val Verde County, Texas; the airspace of Military Operations Areas Laughlin 1, Laughlin 2, and Laughlin 3 and Military Training Routes IR-169, IR-170, VR-143, VR-165, VR-168, and VR-187 in south-central Texas.

Report Designation: Final Environmental Impact Statement (EIS)

Abstract: DAF has prepared this EIS to address AETC's proposal to recapitalize the T-38C Talon flight training program at Laughlin AFB with T-7A Red Hawk aircraft. This proposal supports the Secretary of the Air Force's strategic basing decisions to recapitalize existing T-38C pilot training installations and is referred to as the Proposed Action. Laughlin AFB is the third of five installations to be analyzed environmentally for possible recapitalization. Recapitalization would entail introduction of T-7A aircraft and flight operations at Laughlin AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; changes to the number of personnel and dependents in the Laughlin AFB region; and construction and upgrade of operations, support, and maintenance facilities. DAF is considering three alternative ways to implement the Proposed Action (i.e., Alternatives 1, 2, and 3), the No Action Alternative, and several military construction (MILCON)/unspecific minor military construction (UMMC) project alternatives.

For Alternative 1, Laughlin AFB would receive up to 63 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in up to 63 T-7A aircraft being delivered to Laughlin AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in this EIS provides analysis to evaluate future capacity needs. For Alternative 3, Laughlin AFB would receive up to 79 T-7A aircraft and annual T-7A operations would occur at a level that is 25 percent greater than Alternative 1 and equal to the annual operations proposed for Alternative 2. Alternative 3 also incorporates a UMMC project alternative to install up to 12 additional shelters to accommodate the additional T-7A aircraft. If Alternative 3 were selected for implementation, the Secretary of the Air Force would issue another strategic basing decision memorandum for record to authorize the additional T-7A aircraft. The No Action Alternative would not implement T-7A recapitalization at Laughlin AFB.

Alternatives 1, 2, and 3 satisfy the purpose of and need for the Proposed Action and meet all selection standards that determine reasonability. Therefore, these three alternatives have been carried forward with the No Action Alternative for analysis in this EIS. The UMMC project alternative to install up to 60 T-7A shelters has been carried forward for analysis as part of Alternative 3. None of the other MILCON/UMMC project alternatives have been carried forward for analysis in this EIS because each failed to meet one or more selection standards.

Inquiries: Inquiries regarding this document should be directed by mail to Chinling Chen, AFCEC/CIE, Attn: Laughlin AFB T-7A Recapitalization EIS, Headquarters AETC Public Affairs, 100 H. East Street, Suite 4, Randolph AFB, Texas 78150.

Estimated Cost to Prepare this EIS: $1,028,270.

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ENVIRONMENTAL IMPACT STATEMENT

FOR

T-7A RECAPITALIZATION

AT

LAUGHLIN AIR FORCE BASE, TEXAS

AIR EDUCATION AND TRAINING COMMAND

MAY 2024

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1. Purpose of and Need for the Proposed Action

1.1 Introduction and Background

This Environmental Impact Statement (EIS) addresses the United States (U.S.) Department of the Air Force (DAF), Air Education and Training Command (AETC) proposal to recapitalize the T-38C Talon flight training program at Laughlin Air Force Base (AFB), Texas, with T-7A Red Hawk aircraft. This proposal is referred to as the Proposed Action. This EIS analyzes the environmental impacts associated with T-7A recapitalization at Laughlin AFB and its alternatives, including the No Action Alternative.

The environmental documentation process associated with preparing this EIS was carried out in compliance with DAF's *Environmental Impact Analysis Process* (EIAP) (32 Code of Federal Regulations [CFR] Part 989), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality's (CEQ) Regulations for Implementing NEPA (Title 40 CFR Parts 1500–1508).[1] NEPA is a federal statute requiring the identification and analysis of potential environmental impacts associated with proposed federal actions before those actions are taken. NEPA helps decision-makers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. CEQ regulations specify that an EIS be prepared to provide full and fair discussion of significant environmental impacts and inform decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

In compliance with NEPA, DAF has prepared this EIS as the appropriate EIAP level for the Proposed Action. The primary purpose of an EIS is to ensure agencies consider the environmental impacts of their actions in decision-making. This EIS would also be used to guide DAF in implementing the Proposed Action in a manner consistent with DAF standards for environmental stewardship, should the Proposed Action be approved for implementation.

1.1.1 The T-7A Recapitalization Program

1.1.1.1 Aircraft and the T-7A Recapitalization Program

The T-38C is a twin-engine, high-altitude, supersonic jet used by DAF and other nations for pilot training. The T-38C trains airmen for various fighter and bomber aircraft, including the A-10 Thunderbolt, B-1B Lancer, F-15C Eagle, F-15E Strike Eagle, F-16 Fighting Falcon, F-22 Raptor, and F-35 Lightning II (DAF 2014a). AETC operates the T-38C from five pilot training installations: Joint Base San Antonio (JBSA)-Randolph in Texas, Columbus AFB in Mississippi, Laughlin AFB in Texas, Vance AFB in Oklahoma, and Sheppard AFB in Texas.

The T-38C was originally developed in the 1950s with production occurring between 1961 and 1972. The fleet has undergone periodic upgrades over time, including in 2001 when modern avionics and upgraded propulsion components were installed to provide increased performance

[1] EIAP for this EIS began on January 17, 2023, when the Notice of Intent (NOI) to prepare this EIS was published in the *Federal Register*.

and superior reliability (DAF 2014a). Nevertheless, as an older aircraft, training with the T-38C does not prepare pilots adequately for the technological advancements of modern fourth and fifth generation aircraft.[2] Furthermore, T-38C aircraft incur greater maintenance requirements as they age. Greater maintenance issues lead to more individual aircraft downtime, which threatens the availability of pilot training hours. The T-38C is expected to reach the end of its service life within the next decade.

DAF plans to recapitalize the T-38C fleet with T-7A aircraft to provide a training environment suitable for modern aircraft. Program-wide, DAF expects to procure approximately 350 T-7A aircraft from Boeing and deliver these aircraft to the five T-38C pilot training installations using a geographically phased replacement plan.

1.1.1.2 Why Laughlin AFB?

In a strategic basing decision memorandum for record, dated February 16, 2018, the Secretary of the Air Force identified JBSA-Randolph and Columbus, Laughlin, Sheppard, and Vance AFBs for T-7A recapitalization. DAF pilot training relies on a unique runway structure and special use airspace (SUA) capable of supporting high volume pilot training. As such, the potential locations for T-7A aircraft are limited to the five existing pilot training installations. DAF evaluated each of the five installations using criteria that included mission factors (e.g., weather and the ability to meet syllabus requirements), infrastructure capacity, and potential environmental constraints and costs. In a second strategic basing decision memorandum for record, dated June 19, 2022, the Secretary of the Air Force selected JBSA-Randolph as the first installation to undergo recapitalization because it provides the majority of instructor pilot training and is an Introduction to Fighter Fundamentals (IFF) location. Recapitalizing JBSA-Randolph would serve as an essential first step in establishing a T-7A instructor pilot pipeline and would set the conditions to transition to T-7A training at the other four pilot training installations (DAF 2018).

On January 29, 2021, the Acting Secretary of the Air Force approved the preferred alternative sequencing and locations for the four installations following JBSA-Randolph to possibly undergo T-7A recapitalization. Acting on AETC recommendations, the Acting Secretary selected Laughlin AFB to be the third installation to be analyzed environmentally for possible recapitalization, following Columbus AFB and ahead of Vance and Sheppard AFBs. Laughlin AFB was selected to follow Columbus AFB because Columbus AFB hosts an IFF curriculum, which Laughlin AFB does not. Laughlin AFB was selected ahead of Vance and Sheppard AFBs because the Laughlin AFB region's excellent weather allows student pilots to meet training requirements faster than Vance and Sheppard AFBs. Therefore, recapitalizing Laughlin AFB third would result in the least impact on continued pilot production during the transition between aircraft types, provide the most cost-efficient student production and management plan, and align with AETC's student pipeline flow for the Undergraduate Pilot Training (UPT), IFF, and soon to be developed Fighter/Bomber Fundamentals (FBF) curricula. Vance and Sheppard AFBs would follow as the fourth and fifth installations, respectively (DAF 2021a).

[2] "Fourth generation aircraft" refers to those aircraft developed or manufactured with updated variants in the later part of the 20th century, such as the F-15E or the F-16. "Fifth generation aircraft" refers to modern aircraft with advanced avionics developed in the early part of the 21st century, such as the F-22 and F-35.

For the purposes of this EIS, the Proposed Action is T-7A recapitalization at Laughlin AFB. DAF has already prepared a separate EIS addressing T-7A recapitalization at JBSA-Randolph, and DAF is preparing another EIS addressing T-7A recapitalization at Columbus AFB. Subsequent T-7A recapitalization actions may occur at Vance and Sheppard AFBs, but those are separate actions that are not ready for NEPA analysis and are not considered within the scope of this Proposed Action. NEPA documentation for later T-7A recapitalization program locations will be addressed in subsequent NEPA analyses when the scope of those efforts is better understood.

1.2 Location

1.2.1 Laughlin AFB and SUA

Laughlin AFB. Laughlin AFB is in south-central Texas, approximately 6 miles east of the city of Del Rio near the U.S./Mexico international border. Laughlin AFB's main portion occupies 4,091 acres within Val Verde County (see **Figure 1-1**) (Laughlin AFB 2014).

Laughlin AFB is home to the 47th Flying Training Wing (FTW) of AETC's 19th Air Force. The FTW provides UPT using the T-1A Jayhawk, T-6A Texan II, and T-38C (Laughlin AFB 2014).

The Laughlin AFB airfield has three parallel, northwest-southeast runways: 13R/31L, 13C/31C, and 13L/31R. Runway 13R/31L is the inside runway and used primarily for T-6 traffic. Runway 13C/31C is the center runway and used primarily for T-1 and transient aircraft traffic, as well as T-6 and T-38C instrument approaches. Runway 13L/31R is the outside runway and used primarily for T-38C traffic (Laughlin AFB 2008). **Figure 1-2** shows the Laughlin AFB airfield.

SUA. T-38C aircraft stationed at Laughlin AFB use SUA in south-central Texas to perform aircraft operations and supplement training. Such SUA is approved by the Federal Aviation Administration (FAA) and designated on published aeronautical charts. The SUA where Laughlin AFB T-38C aircraft perform operations are as follows:

- **Military Operations Areas (MOA):** Laughlin 1, Laughlin 2, and Laughlin 3
- **Military Training Routes (MTR):** IR-169, IR-170, VR-143, VR-165, VR-168, and VR-187.

Figure 1-3 shows the designated SUA used for T-38C pilot training at Laughlin AFB.

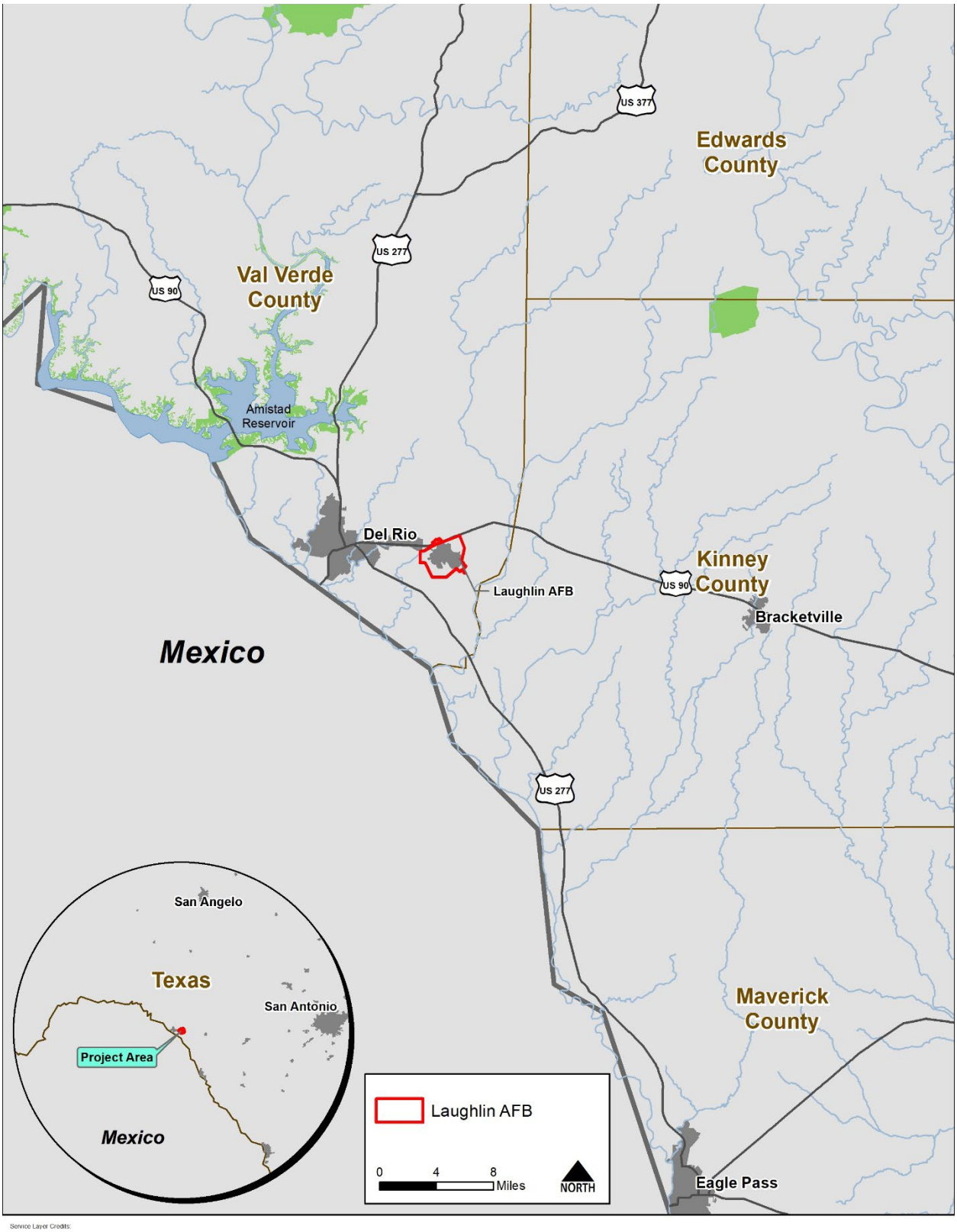

Figure 1-1. Laughlin AFB and Vicinity

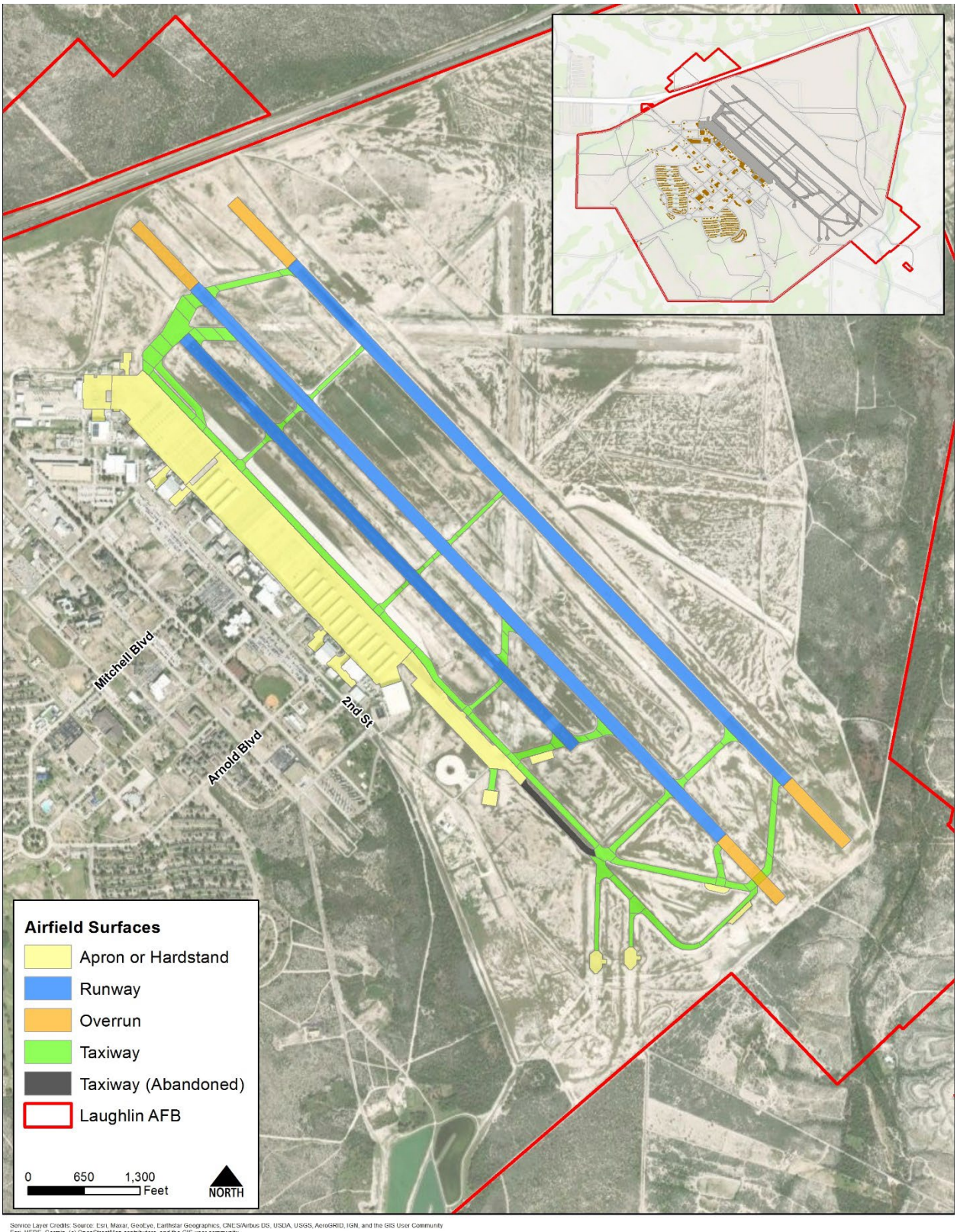

Figure 1-2. Laughlin AFB Airfield

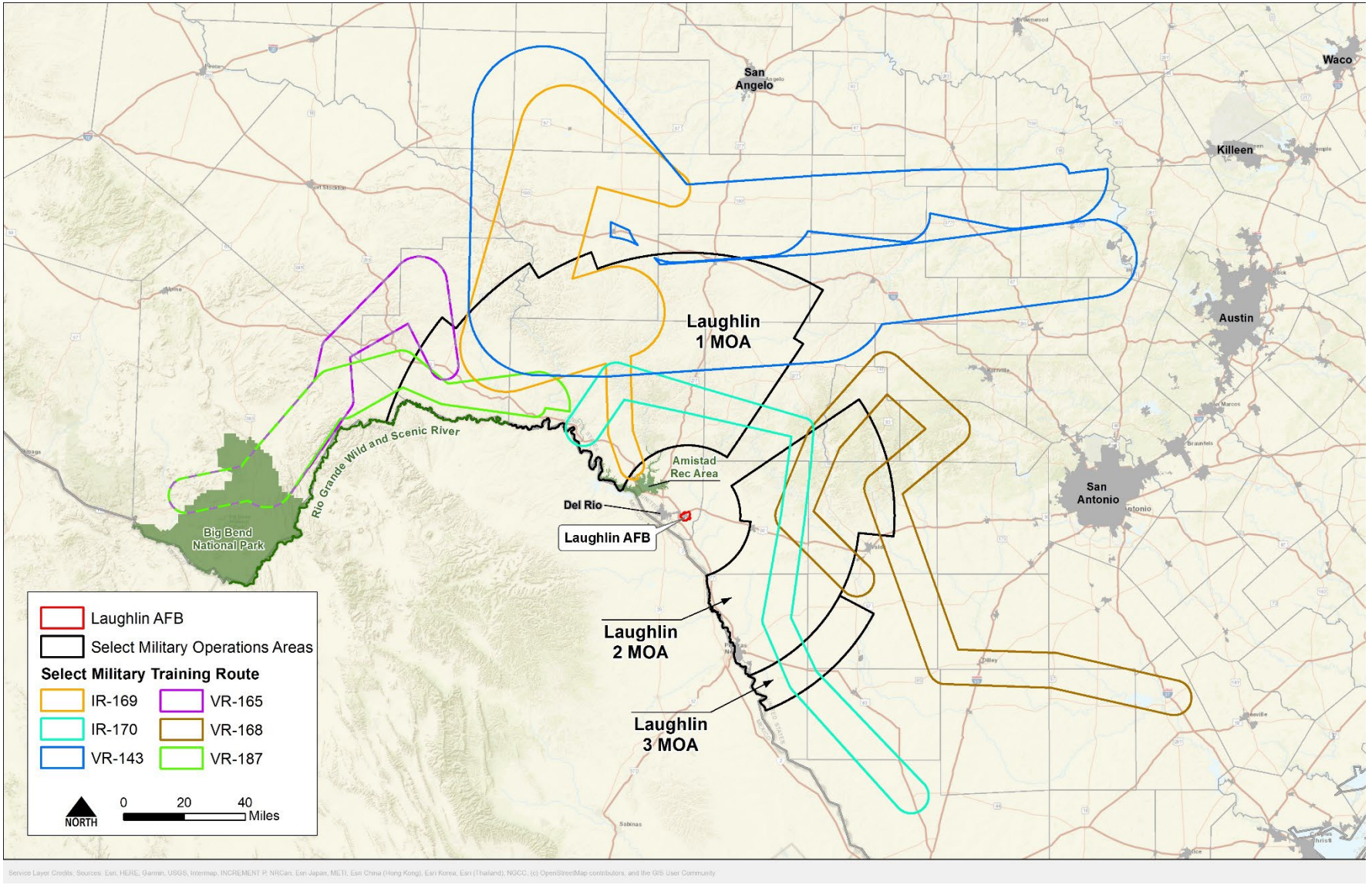

Figure 1-3. Laughlin AFB T-38C and T-7A Training SUA

1.3 Purpose of and Need for the Proposed Action

1.3.1 Purpose of the Proposed Action

As noted in the Secretary of the Air Force's strategic basing decisions from February 16, 2018, and January 29, 2021, DAF plans to recapitalize AETC's T-38C aircraft fleet with T-7A aircraft at the five pilot training installations to provide a training environment suitable for modern aircraft. The purpose of the Proposed Action addressed in this EIS is to continue the T-7A recapitalization program by recapitalizing Laughlin AFB to prepare pilots to operate modern fourth and fifth generation aircraft.

1.3.2 Need for the Proposed Action

The Proposed Action is needed because current training practices with older T-38C aircraft do not prepare pilots adequately for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern, capable training platform with capabilities beyond those available with the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Laughlin AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence, ensuring DAF pilot training requirements are met.

1.4 Intergovernmental and Stakeholder Coordination

NEPA requirements help ensure that environmental information is made available to the public during the decision-making process and prior to actions being taken. CEQ NEPA regulations state, "Agencies shall use an early and open process to determine the scope of issues for analysis in an environmental impact statement, including identifying the significant issues and eliminating from further study non-significant issues." Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, *Intergovernmental Review of Federal Programs*, requires federal agencies to provide opportunities for input from elected officials of state and local governments that would be directly affected by a federal proposal.

The lead agency for this EIS is DAF. AETC is the DAF major command developing this EIS on behalf of DAF and as the proponent for this proposal. No cooperating agencies have been identified for this EIS.

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2. Description of the Proposed Action and Alternatives

2.1 Proposed Action

The Proposed Action is recapitalization of the T-38C flight training program at Laughlin AFB with T-7A aircraft. This is the third location of the T-7A recapitalization program, described in **Section 1.1.1**. Recapitalization entails the following elements:

- Replacement of all T-38C aircraft assigned to Laughlin AFB with T-7A aircraft.
- Transition of aircraft operations at Laughlin AFB and associated SUA from the T-38C to the T-7A.
- Changes to the number of personnel and dependents in the Laughlin AFB region.
- Construction of and upgrades to operations, support, and maintenance facilities through 13 projects—six military construction (MILCON)/unspecified minor military construction (UMMC) projects and seven facilities sustainment, restoration, and modernization (FSRM) projects—to support pilot training and aircraft operation and maintenance.

2.2 Alternatives

Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to achieve the stated purpose. CEQ requires use of the NEPA process to identify and assess reasonable alternatives to proposed actions that would avoid or minimize the adverse effects of the actions upon the quality of the human environment. CEQ NEPA guidance identifies reasonable alternatives as those that are economically and technically practical or feasible and that show evidence of common sense (CEQ 1986).

2.2.1 Alternatives to Laughlin AFB

As discussed in **Section 1.1.1**, the Acting Secretary of the Air Force expressed preference for Laughlin AFB to be the third of five pilot training installations to undergo possible T-7A recapitalization (i.e., behind JBSA-Randolph and Columbus AFB and ahead of Vance and Sheppard AFBs). The Secretary's preference was based on several factors, such as minimizing impact on continued pilot production during the transition of aircraft types, providing the most cost-efficient student production and management plan, and aligning with AETC's student pipeline flow for the UPT, IFF, and the soon to be developed FBF curricula. For these reasons, the Proposed Action identified and evaluated within this EIS focuses on the Laughlin AFB recapitalization effort, and no alternatives to Laughlin AFB are addressed in this EIS.

2.2.2 Alternative Ways to Implement the Proposed Action

DAF considered three alternative ways to implement T-7A recapitalization at Laughlin AFB (i.e., Alternatives 1, 2, and 3). These alternatives consider different numbers of T-7A aircraft stationed at Laughlin AFB and different numbers of T-7A operations at Laughlin AFB and associated SUA. **Sections 2.2.2.1**, **2.2.2.2**, and **2.2.2.3** describe the three alternatives, and **Section 2.2.2.4** evaluates the alternatives against selection standards to determine the alternatives carried forward for analysis in this EIS.

2.2.2.1 Alternative 1

For Alternative 1, Laughlin AFB would receive up to 63 T-7A aircraft and phase in T-7A operations at a level sustaining pilot training while simultaneously phasing out the T-38C. The aircraft, aircraft operations, personnel and dependents, and facility requirements of Alternative 1 are described in the following subsections.

2.2.2.1.1 Aircraft

T-7A aircraft would be delivered to Laughlin AFB from the manufacturer (Boeing) beginning in 2030 and continuing through 2033. When all T-7A deliveries are complete at the end of 2033, up to 63 T-7A aircraft would be assigned to Laughlin AFB. As T-7A aircraft are delivered and placed into service, T-38C aircraft would be withdrawn from service. The first T-38Cs would be withdrawn in 2030 and the last in 2031. In total, all 63 T-38C aircraft assigned to Laughlin AFB would be withdrawn from service and considered for retirement or repurposed for use at other locations. The potential reuse of T-38C aircraft at other locations is a separate DAF action and subject to separate environmental analysis not addressed by this EIS. **Table 2-1** provides Laughlin AFB's proposed T-7A delivery and T-38C withdrawal schedule for Alternative 1.

Table 2-1. T-38C and T-7A Aircraft Changes for Alternatives 1 and 2

Aircraft Type	2022 Baseline	2030	2031	2032	2033	2034 and Thereafter
Annual Aircraft Withdrawn from/ Delivered to Laughlin AFB						
T-38C (withdrawn)	N/A	32	31	0	0	0
T-7A (delivered)	N/A	27	34	0	2	0
Total T-38C/T-7A Aircraft at Laughlin AFB						
T-38C	63	31	0	0	0	0
T-7A	0	27	61	61	63	63
Total Aircraft	**63**	**58**	**61**	**61**	**63**	**63**

Source: AETC 2022a
Key: N/A = not applicable

2.2.2.1.2 Aircraft Operations

Aircraft operations at Laughlin AFB and its associated SUA (i.e., MOAs and MTRs) would transition from the T-38C to the T-7A over the 4-year aircraft delivery and withdrawal period. T-7A operations would begin in 2030 and increase to steady state in 2033. T-38C operations would begin to decrease in 2030 and conclude by the end of that year. No further T-38C operations would occur in 2031 or thereafter. **Table 2-2** provides the approximate number of annual aircraft operations for the T-38C and T-7A for Alternative 1.

What is an Aircraft Operation?

In **Table 2-2** for Alternative 1 and the corresponding table for Alternatives 2 and 3, the number of projected aircraft operations is provided as a means to analyze both the air quality and noise impacts from aircraft flights. For the purposes of these tables, an aircraft operation is defined as (1) a single takeoff, (2) a single landing, (3) the approach phase of a closed pattern, or (4) the takeoff phase of a closed pattern. A closed pattern is a "touch-and-go" where an aircraft approaches the airfield, momentarily touches its wheels or flies close to the runway, and departs the airfield for additional flight maneuvers.

Aircraft operations are often discussed using the term "sorties." A single aircraft sortie includes one takeoff and one landing and may include closed patterns during flight. Aircraft operating from pilot training installations, such as Laughlin AFB, typically perform multiple closed patterns with each sortie. In the case of the operations at Laughlin AFB, approximately 2.2 closed patterns (totaling 4.4 closed pattern operations) are conducted during each sortie. Actual sorties flown may include fewer closed patterns, and some will include more than the average number used to calculate the total number of operations.

An example of how sortie information was used to calculate the number of operations presented for the Proposed Action and alternatives follows: If 10,000 sorties were flown in any single year, the table would show a total of 64,000 aircraft operations for that year (10,000 of the operations would be takeoffs, 10,000 would be landings, and the remaining 44,000 operations would be closed pattern operations [22,000 approach phase of a closed pattern and 22,000 takeoff phase of a closed pattern]).

Table 2-2. T-38C and T-7A Aircraft Operations for Alternative 1

Aircraft Type	2021 Baseline	2030	2031 and 2032	2033 and Thereafter
Operations at Laughlin AFB				
Annual Aircraft Operations (Daytime)				
T-38C	53,268	26,211	0	0
T-7A	0	41,781	94,396	97,491
Total	**53,268**	**67,992**	**94,396**	**97,491**
Annual Aircraft Operations (Nighttime)[1]				
T-38C	2,181	1,073	0	0
T-7A	0	211	477	493
Total	**2,181**	**1,284**	**477**	**493**
Operations within SUA (MOAs and MTRs)				
Annual Aircraft Operations within SUA[2]				
Laughlin 1	11,448 with T-38C	11,448 with T-38C and T-7A	11,448 with T-7A	11,448 with T-7A
Laughlin 2	Seldom and irregular usage. Not quantifiable.			
Laughlin 3	Seldom and irregular usage. Not quantifiable.			
IR-169	216 with T-38C	216 with T-38C and T-7A	216 with T-7A	216 with T-7A
IR-170	72 with T-38C	72 with T-38C and T-7A	72 with T-7A	72 with T-7A
VR-143	Seldom and irregular usage. Not quantifiable.			
VR-165	216 with T-38C	216 with T-38C and T-7A	216 with T-7A	216 with T-7A
VR-168	Seldom and irregular usage. Not quantifiable.			
VR-187	216 with T-38C	216 with T-38C and T-7A	216 with T-7A	216 with T-7A
Annual Aircraft Operations Below 3,000 feet AGL within the SUA[3]				
IR-169	108 with T-38C	108 with T-38C and T-7A	108 with T-7A	108 with T-7A
IR-170	36 with T-38C	36 with T-38C and T-7A	36 with T-7A	36 with T-7A
VR-165	108 with T-38C	108 with T-38C and T-7A	108 with T-7A	108 with T-7A
VR-187	216 with T-38C	216 with T-38C and T-7A	216 with T-7A	216 with T-7A

Sources: Extrapolated from HMMH 2023, AETC 2021, AETC 2022a, and 14 FTW 2021

Key: AGL = above ground level

[1] Annual aircraft operations (nighttime) is the number of operations at Laughlin AFB between 10 p.m. and 7 a.m. provided for noise modeling purposes.

[2] Annual aircraft operations within the SUA is the busiest month extrapolated conservatively over 1 year (i.e., busiest month multiplied by 12).

[3] Annual aircraft operations below 3,000 feet AGL within the SUA is provided for air quality modeling purposes. No operations would occur below 3,000 feet AGL in the Laughlin 1 MOA. IR-169, IR-170, and VR-165 have ceilings greater than 3,000 feet AGL; therefore, it is assumed 50 percent of operations would occur below 3,000 feet AGL. The ceiling for VR-187 is less than 3,000 feet AGL; therefore, all operations would occur below this level.

AETC calculated the annual operations in **Table 2-2** as the baseline operations necessary for sustaining pilot training while simultaneously phasing out the T-38C aircraft. The T-7A would perform approximately 42,000 more end state operations than T-38C baseline levels. This increase is attributed to increased closed pattern operations rather than increased arrivals and departures. T-7A aircraft would perform similar numbers of arrivals and departures as existing T-38C levels.

No changes to Laughlin AFB's airfield traffic patterns would occur from T-7A recapitalization. All routine T-38C and T-7A traffic would use runway 13L/31R (the outside runway), while all routine T-6 traffic would continue to use runway 13R/31L (the inside runway). Runway 13C/31C would continue to serve transient aircraft and student instrument approach instruction.

Consistent with T-38C practices, no auxiliary airfields—such as Spofford Auxiliary Field—and no nearby airports—such as Del Rio International Airport—currently are proposed for Laughlin AFB T-7A aircraft operations. Should the Proposed Action be implemented, DAF might explore the feasibility of using Del Rio International Airport as a diversion airfield for T-7A aircraft when Laughlin AFB's airfield is closed. At the current stage of project development, DAF has performed only preliminary feasibility planning for this scenario and does not plan to advance any proposal for T-7A diversions to Del Rio International Airport before T-7A aircraft are operational at Laughlin AFB. DAF also recognizes the international airport's infrastructure limitations—such as its short runway length—might preclude such diversions. If DAF implements the Proposed Action, determines Del Rio International Airport is suitable for T-7A diversions, and elects to advance such a proposal, it would work with the city of Del Rio to determine what actions and infrastructure would be required to support potential T-7A diversions. Separate NEPA analysis would be performed when the scope of that effort is better understood. Therefore, the use of Del Rio International Airport for T-7A diversions is not included in the Proposed Action address by this EIS but is included as a reasonably foreseeable action and analyzed for cumulative effects. **Section 3.1** provides detail on all reasonably foreseeable actions.

The Proposed Action includes evening and nighttime T-7A operations. Evening operations are those performed from dusk until 10 p.m., and nighttime operations, as defined for aircraft noise modeling, occur between 10 p.m. and 7 a.m. T-38C already perform operations during both periods at Laughlin AFB. It is likely that, as times of sunrise and sunset change throughout the seasons, the daily and hourly distribution of flight operations may vary to accommodate training curriculum requirements. At full implementation, up to 493 annual nighttime T-7A operations would occur at Laughlin AFB for Alternative 1, which is approximately 0.5 percent of annual T-7A operations and a decrease of approximately 77 percent from baseline levels. Like the T-38C, nighttime T-7A operations would be conducted in the vicinity of the Laughlin AFB airfield and would not enter the SUA (i.e., MOAs and MTRs).

T-7A pilot training would use the same SUA used currently by the T-38C. This SUA is MOAs Laughlin 1, Laughlin 2, and Laughlin 3 and Military Training Routes IR-169, IR-170, VR-143, VR-165, VR-168, and VR-187, as shown in **Figure 1-3**. No changes to SUA configurations (i.e., size, shape, or location) are required for T-7A recapitalization. Should DAF desire to change the configurations of these SUA following T-7A recapitalization or as a result of new training practices with other aircraft, separate NEPA analysis would be performed in conjunction

with the FAA when the scope of that effort is better understood. T-7A aircraft would be limited to sub-sonic speeds in all phases of pilot training (AFCEC/CZN 2021).

2.2.2.1.3 Personnel and Dependents

The T-38C flight training program employs approximately 285 positions at Laughlin AFB. During the aircraft transition period (i.e., 2030 and 2031), an increase of approximately 190 personnel is projected at Laughlin AFB. This increase would occur during the transition period because DAF would be training pilots with and maintaining two types of aircraft, resulting in a temporary increase in workforce requirements for operations, civilian simulator instructors, and maintenance. The initial increase in workforce would subside as T-38C aircraft are removed from service. The steady state personnel requirement at Laughlin AFB is projected to be approximately 60 positions fewer than the current baseline staffing level. As such, the T-7A flight training program would employ approximately 225 positions at Laughlin AFB in 2032 and thereafter (AETC 2022b).

Associated with the workforce change is a corresponding change in the number of dependents (e.g., spouses, children, other family members) who would accompany the personnel. DAF estimates that 1.9 dependents accompanied active-duty personnel in 2020 (DAF 2021b). Therefore, 361 dependents would accompany the 190 additional personnel during the aircraft transition period, for a total of 551 additional people in the Laughlin AFB vicinity during 2030 and 2031, as compared to current baseline staffing levels. After the aircraft transition period, the loss of 60 personnel from Laughlin AFB would remove 114 dependents and 174 total people from the Laughlin AFB vicinity, as compared to current baseline staffing levels.

2.2.2.1.4 Facility Requirements

Thirteen facility construction or renovation projects would potentially occur at Laughlin AFB to provide modern facilities and infrastructure to support T-7A aircraft maintenance, training, and operational requirements. These projects are categorized by funding mechanism into six MILCON/UMMC projects and seven FSRM projects. The proposed MILCON/UMMC projects are described in **Section 2.2.2.1.4.1**, and the proposed FSRM projects are described in **Section 2.2.2.1.4.2**. The final facilities implementation (construction or renovation) will depend on the funding level and priorities in the overall T-7A program.

2.2.2.1.4.1 MILCON/UMMC Projects

The six MILCON/UMMC projects are described in the following subsections. **Figure 2-1** shows the proposed locations of the five MILCON/UMMC projects that are currently sited.

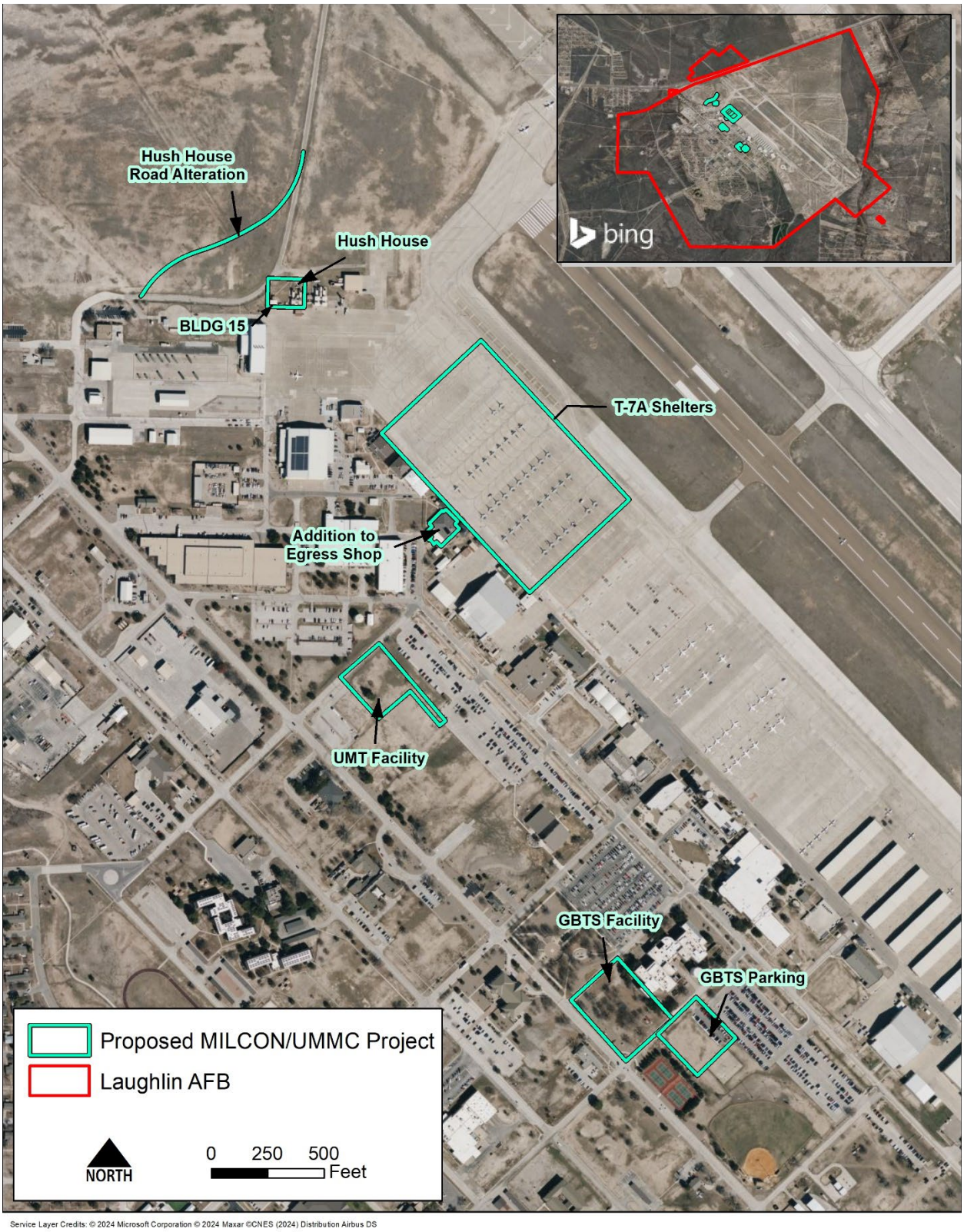
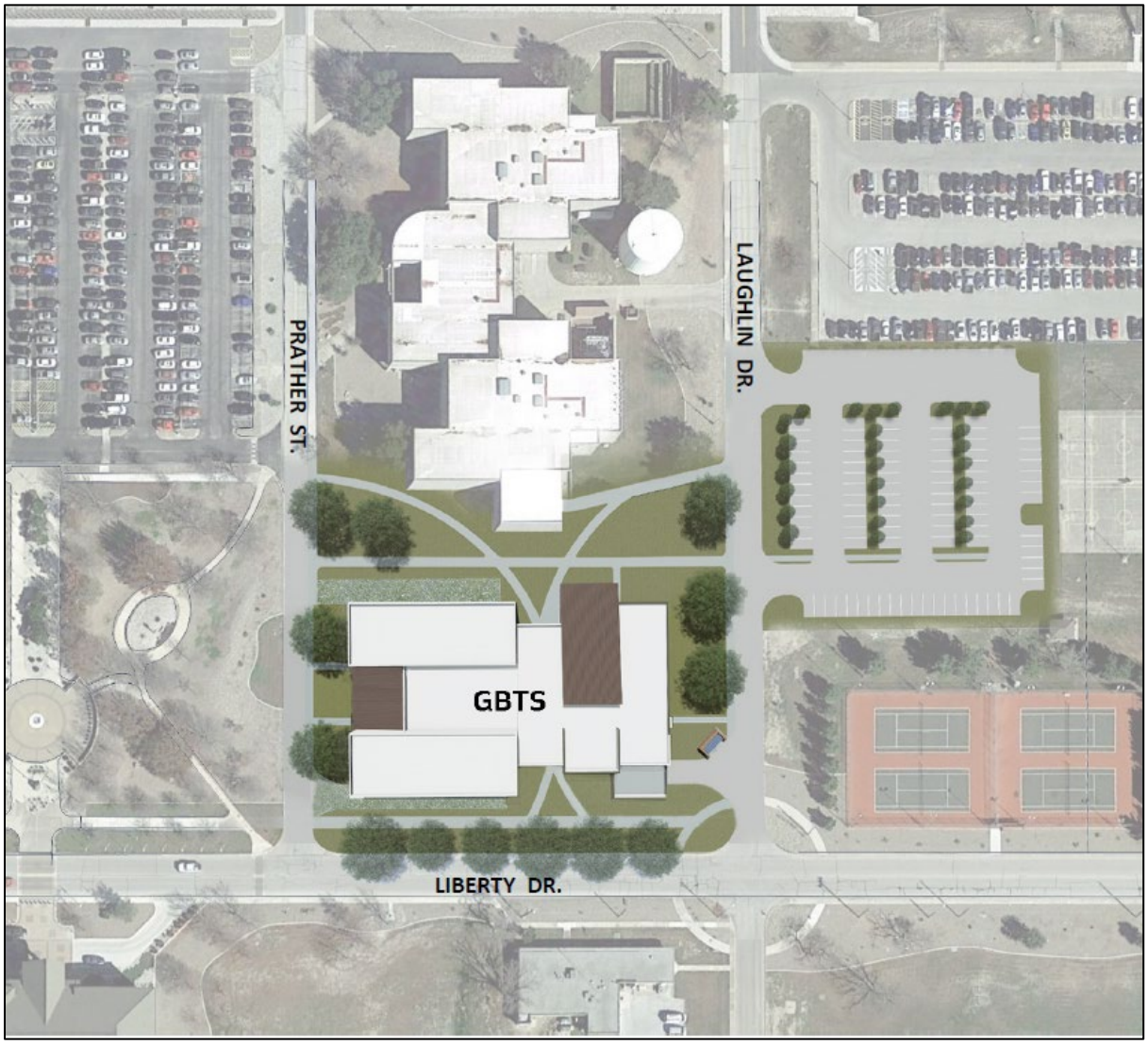


Figure 2-1. MILCON/UMMC Project Locations

Ground Based Training System Facility. This MILCON project would construct an approximately 34,000-square foot (ft^2) ground-based training system (GBTS) facility. The proposed facility would provide flight simulation instruction to students and include classroom and equipment storage space. The proposed, one-story facility would be sited on an undeveloped grass area between Building 328 and Liberty Drive. It would be constructed with a reinforced concrete foundation and concrete floor slab, a structural steel frame, and a standing seam metal roof and exterior. The facility would include fire suppression systems, all utilities, pavements, communications, site improvements, and associated supporting facilities to provide a complete and usable facility. A parking lot would be constructed across Laughlin Drive for approximately 106 vehicles (USACE 2022a). The precise site layout plan for the proposed GBTS facility is still being developed but would be similar to that shown in **Figure 2-2**.



Source: USACE 2022a

Figure 2-2. GBTS Facility Site Plan

Unit Maintenance Training Facility. This MILCON project would construct an approximately 11,500 ft^2 aircraft unit maintenance training (UMT) facility. The proposed facility would house administrative space, classroom space, a tool crib, a communications room, and maintenance simulators. The proposed, one-story facility would be sited on an undeveloped field along Colorado Avenue. It would be constructed with a reinforced concrete foundation, concrete floor slab, structural steel frame, and brick and metal panel exterior walls. The facility would include fire suppression systems, all utilities, pavements, communications, site improvements, and associated supporting facilities to provide a complete and usable facility. No additional parking would be required because an adjacent parking lot already provides sufficient parking capacity for the proposed facility (USACE 2022b). The precise site layout plan for the proposed UMT facility is still being developed but would be similar to that shown in **Figure 2-3**.

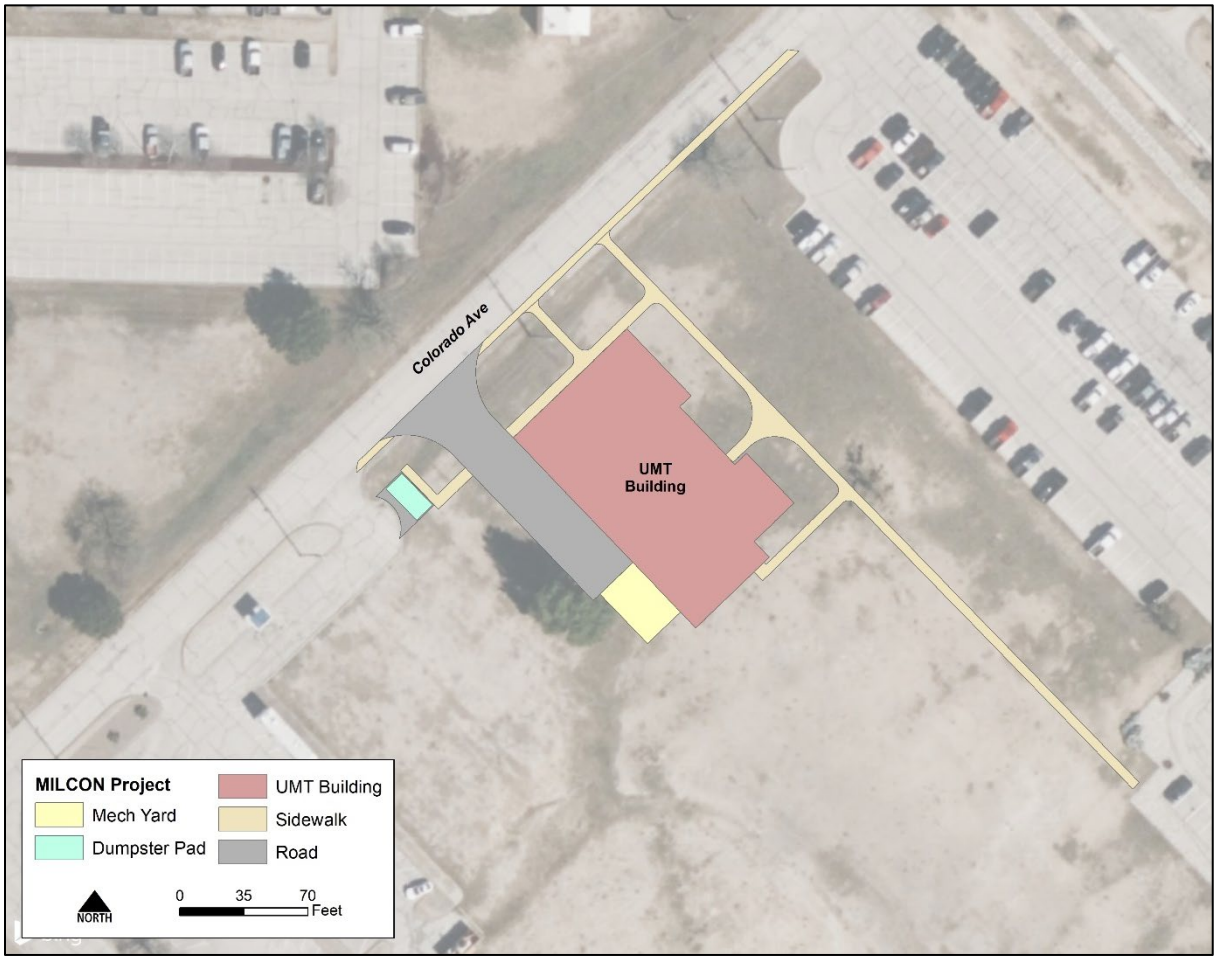


Figure 2-3. UMT Facility Site Plan

Hush House. A hush house is an enclosed unit that contains noise suppressing equipment to accommodate in-frame or out-of-frame aircraft engine testing. Laughlin AFB's existing hush house is Building 19, which is on the northwest corner of the aircraft parking ramp. This UMMC project would construct a new hush house, also on the northwest corner of the aircraft parking ramp but at the Building 15 site. Construction would include a reinforced concrete pad with thick edges and paved shoulders for the hush house enclosure. The concrete pad would have an anchor block in the center to keep the aircraft stationary while performing full-power aircraft engine diagnostics testing and would provide the appropriate base for hush house placement. Approach pavements and supporting utilities would be extended (AETC 2022c). Building 15 (a breakroom) would be demolished to make space for the proposed hush house. Additionally, the airfield service road north of the site would be realigned to the northwest to provide sufficient buffer space around the proposed hush house. **Figure 2-1** shows the locations of the proposed hush house, Building 15, and the proposed road alteration. Laughlin AFB's existing hush house (Building 19) would not be altered or demolished as part of this project.

T-7A Shelters. This UMMC project would construct up to 48 shelters (sunshades) on the existing T-38C aircraft parking apron to protect T-7A aircraft from adverse weather. Only up to 48 shelters (rather than a shelter for all up to 63 aircraft) would be constructed because one-quarter (25 percent) of the T-7A fleet would be parked inside of hangars for shelter (e.g., 63 aircraft × 75 percent = 47.25 shelters, rounded up to 48). Additionally, some existing T-1 shelters might be reused for T-7A aircraft, potentially reducing the number of new shelters needed to less than 48. Existing T-38C shelters would be removed, and T-7A shelters would be spaced appropriately to accommodate the planned T-7A parking requirements on a schedule determined to best support the aircraft transition. Taxi lines would be removed and repainted. Electrical utilities, proper lighting, and tie-downs and grounding points would be installed for each shelter (AETC 2022c). **Figure 2-1** shows the proposed T-7A shelters' locations.

Addition to Egress Shop. This UMMC project would construct an approximately 3,400-ft^2 addition onto Building 201 to support T-7A aircraft egress requirements. The addition would be constructed with a reinforced concrete foundation, concrete floor slab, structural steel frame, and standing seam metal roof and exterior (AETC 2022c). **Figure 2-1** shows Building 201.

Jet Blast Deflectors. This UMMC project would install jet blast deflectors on the airfield to protect parked aircraft, pedestrians, facilities, and pavements from jet blasts from taxiing aircraft. The jet blast deflectors' locations have not yet been determined but would likely be between aircraft parking rows on the apron. Final placement would be decided during ramp layout design (AETC 2022c).

2.2.2.1.4.2 FSRM Projects

Table 2-3 summarizes the seven FSRM projects that would occur at Laughlin AFB to support T-7A recapitalization. **Figure 2-4** shows the proposed FSRM projects locations.

Table 2-3. FSRM Projects Descriptions

Project Name	Project Description
Modify Hangars	Modify Buildings 50 and 210 to meet Unified Facilities Criteria (UFC) and facility safety requirements.
Antenna Farm	Incorporate an antenna farm into the GBTS facility design.
Squadron Operations Buildings Renovations	Renovate the interior of the Squadron Operations Buildings (Buildings 307, 320, and 328).
Airfield Improvements	Reconfigure the airfield to meet T-7A specifications rather than T-38C. These improvements include remarking the T-38C parking ramp to the width of the T-7A, installing new moorings and anchor rods for T-7A aircraft, replacing the aircraft arresting system, and removing aboveground Centralized Aircraft Support System service modules.
Trim Pad	Rebuild the existing trim pad. Install proper concrete and a T-7A anchor block. Relocate the compass rose at the site to another magnetically quiet site.
T-7A Explosive Component Storage Facility	Construct an approximately 7,200-ft^2 concrete pad and provide utilities for a storage container to store T-7A ejection system explosive components.
Addition to Building 905	Construct an approximately 1,000-ft^2 addition onto Building 905, which is used for ammunition storage and maintenance. Add perimeter fences and gates and construct a 10-vehicle parking lot.

Source: AETC 2022c

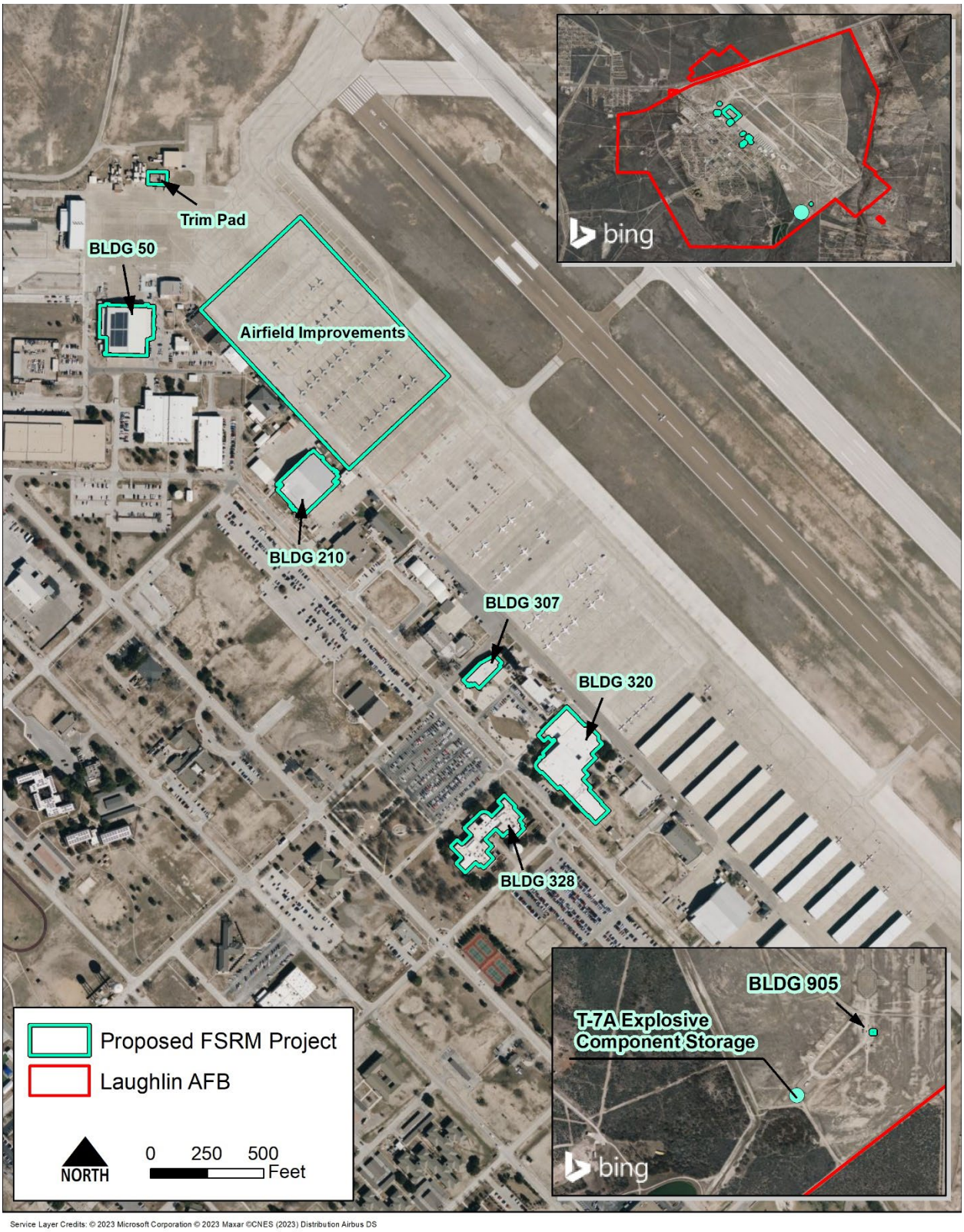


Figure 2-4. FSRM Project Locations

2.2.2.1.4.3 New Impervious Surfaces

Table 2-4 summarizes the estimated amount of new impervious surfaces resulting from the MILCON/UMMC and FSRM projects. MILCON/UMMC and FSRM projects not listed in the table (e.g., interior renovations) would entail no ground disturbance and would add no new impervious surfaces.

Table 2-4. Estimated New Impervious Surfaces from the MILCON/UMMC and FSRM Projects

Project	Construction Element (ft^2)	Current Site Condition	New Impervious Surfaces (ft^2)
GBTS Facility	Building – 34,000 Paved Parking Lot – 35,000	Grass Area Grass Area	34,000 (0.78 acre) 35,000 (0.80 acre)
UMT Facility	Building – 11,500	Grass Area	11,500
Hush House	Pad – 25,000 Road Alteration – 25,000 to remove; 25,000 to add	Grass Area, Building 15, and a Storage Tank Paved Roadway; Grass Area	12,500 (0.29 acre) 0
T-7A Shelters/ Airfield Improvements	Aircraft Pavement	Paved Aircraft Parking Ramp	0
Addition to Egress Shop	Building Addition – 3,400	Grass Area	3,400 (0.08 acre)
T-7A Explosive Component Storage Facility	Building – 7,200	Grass Area	7,200 (0.17 acre)
Addition to Building 905	Building – 1,000 Paved Parking Lot – 5,000	Grass Area Grass Area	1,000 (0.02 acre) 5,000 (0.11 acre)
Total New Impervious Surfaces			**109,600 (2.52 acres)**

2.2.2.2 Alternative 2

For Alternative 2, Laughlin AFB would receive up to 63 T-7A aircraft and perform T-7A operations at a level that is approximately 25 percent greater than Alternative 1. Alternative 2 is intended to cover a scenario in which, for either broad strategic or tactical operational reasons, DAF requires a surge or increase in pilot training operations above current plan. Like Alternative 1, Laughlin AFB would receive up to 63 T-7A aircraft from the manufacturer with all aircraft arriving no later than 2033, T-7A operations would reach full capacity in 2033, and T-38C operations would conclude by the end of 2030. For Alternative 2, beginning in 2030, T-7A aircraft would perform annual operations at Laughlin AFB and associated SUA at an intensity that is approximately 25 percent greater than Alternative 1 to meet potential surge requirements. T-7A nighttime operations would occur with up to 614 annual nighttime operations at Laughlin AFB, which is a decrease of approximately 72 percent from baseline levels. Nighttime T-7A operations would not enter the SUA. The approximate annual aircraft operations for Alternative 2 are defined in **Table 2-5**. All other aspects of Alternative 2, including the number of personnel and dependents and the MILCON/UMMC and FSRM projects, would be identical to those described for Alternative 1 in **Section 2.2.2.1**.

Table 2-5. T-38C and T-7A Aircraft Operations for Alternatives 2 and 3

Aircraft Type	2021 Baseline	2030	2031 and 2032	2033 and Thereafter
Operations at Laughlin AFB				
Annual Aircraft Operations (Daytime)				
T-38C	53,268	26,211	0	0
T-7A	0	52,227	117,993	121,862
Total	**53,268**	**78,438**	**117,993**	**121,862**
Annual Aircraft Operations (Nighttime)[1]				
T-38C	2,181	1,073	0	0
T-7A	0	263	595	614
Total	**2,181**	**1,336**	**595**	**614**
Operations within SUA (MOAs and MTRs)				
Annual Aircraft Operations within the SUA[2]				
Laughlin 1	11,448 with T-38C	14,304 with T-38C and T-7A	14,304 with T-7A	14,304 with T-7A
Laughlin 2	Seldom and irregular usage. Not quantifiable.			
Laughlin 3	Seldom and irregular usage. Not quantifiable.			
IR-169	216 with T-38C	264 with T-38C and T-7A	264 with T-7A	264 with T-7A
IR-170	72 with T-38C	84 with T-38C and T-7A	84 with T-7A	84 with T-7A
VR-143	Seldom and irregular usage. Not quantifiable.			
VR-165	216 with T-38C	264 with T-38C and T-7A	264 with T-7A	264 with T-7A
VR-168	Seldom and irregular usage. Not quantifiable.			
VR-187	216 with T-38C	264 with T-38C and T-7A	264 with T-7A	264 with T-7A
Annual Aircraft Operations Below 3,000 feet AGL within the SUA[3]				
IR-169	108 with T-38C	132 with T-38C and T-7A	132 with T-7A	132 with T-7A
IR-170	36 with T-38C	42 with T-38C and T-7A	42 with T-7A	42 with T-7A
VR-165	108 with T-38C	132 with T-38C and T-7A	132 with T-7A	132 with T-7A
VR-187	216 with T-38C	264 with T-38C and T-7A	264 with T-7A	264 with T-7A

Sources: Extrapolated from HMMH 2023, AETC 2021, AETC 2022a, and 14 FTW 2021

[1] Annual aircraft operations (nighttime) is the number of operations at Laughlin AFB between 10 p.m. and 7 a.m. provided for noise modeling purposes.

[2] Annual aircraft operations within the SUA is the busiest month extrapolated conservatively over 1 year (i.e., busiest month multiplied by 12).

[3] Annual aircraft operations below 3,000 feet AGL within the SUA is provided for air quality modeling purposes. No operations would occur below 3,000 feet AGL in the Laughlin 1 MOA. IR-169, IR-170, and VR-165 have ceilings greater than 3,000 feet AGL; therefore, it is assumed 50 percent of operations would occur below 3,000 feet AGL. The ceiling for VR-187 is less than 3,000 feet AGL; therefore, all operations would occur below this level.

2.2.2.3 Alternative 3

Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in this EIS provides analysis to evaluate future capacity needs. For Alternative 3, Laughlin AFB would receive up to 79 T-7A aircraft. The T-7A operational tempo would be the same as Alternative 1, but due to the 25 percent increase in the number of aircraft over Alternatives 1 and 2, the total annual T-7A operations would occur at a level that is 25 percent greater than Alternative 1 and equal to the annual operations proposed for Alternative 2 in **Table 2-5**. **Table 2-6** provides Laughlin AFB's proposed T-7A delivery and T-38C withdrawal schedule for Alternative 3. If Alternative 3 were selected for implementation, the Secretary of the Air Force would issue another strategic basing decision memorandum for record to authorize the additional T-7A aircraft.

Table 2-6. T-38C and T-7A Aircraft Changes for Alternative 3

Aircraft Type	2022 Baseline	2030	2031	2032	2033	2034 and Thereafter
Annual Aircraft Withdrawn from/ Delivered to Laughlin AFB						
T-38C (withdrawn)	N/A	32	31	0	0	0
T-7A (delivered)	N/A	43	34	0	2	0
Total T-38C/T-7A Aircraft at Laughlin AFB						
T-38C	63	31	0	0	0	0
T-7A	0	43	77	77	79	79
Total Aircraft	**63**	**74**	**77**	**77**	**79**	**79**

Source: Extrapolated from AETC 2022a and DAF 2022
Key: N/A = not applicable

Laughlin AFB would receive up to 79 T-7A aircraft from the manufacturer with all aircraft arriving no later than 2033, T-7A operations would reach full capacity in 2033, and T-38C operations would conclude by the end of 2030. Identical to Alternative 2, Alternative 3 includes annual T-7A operations at Laughlin AFB and associated SUA at an intensity that is approximately 25 percent greater than Alternative 1. T-7A nighttime operations would occur with up to 614 annual nighttime operations at Laughlin AFB. Nighttime T-7A operations would not enter the SUA. The annual aircraft operations for Alternative 3 are defined in **Table 2-5**. Alternative 3 also incorporates a UMMC project alternative to install up to 60 T-7A shelters (rather than up to 48) to accommodate the additional T-7A aircraft (see **Section 2.2.3.2**). All other aspects of Alternative 3 would be identical to those described for Alternative 1 in **Section 2.2.2.1**.

For both Alternatives 2 and 3, the T-7A would perform the same types of operations within the training SUA as described for Alternative 1. Like Alternative 1, no changes to the configuration (i.e., size, shape, or location) of that SUA would be required to support Alternatives 2 or 3. No changes to Laughlin AFB's airfield traffic patterns would occur.

2.2.2.4 Selection Standards for the Proposed Action

The three alternatives described in **Sections 2.2.2.1**, **2.2.2.2**, and **2.2.2.3** were evaluated against selection standards to determine reasonability. Reasonable alternatives are carried forward for analysis in this EIS, while unreasonable alternatives are dismissed from further analysis. These alternatives were evaluated against the following selection standards, which are determined as necessary to execute the T-7A mission at this location:

1. An alternative must not result in major operational constraints to existing missions. Operational constraints would occur if a currently ongoing operation, activity, or mission were limited by proposed activities.
2. An alternative must be adaptable and compatible with current infrastructure capabilities.
3. An alternative should minimize the need for new construction and land disturbance versus renovation or reuse of existing facilities.

Table 2-7 summarizes the evaluation of the three action alternatives against the selection standards.

Table 2-7. Evaluation of Alternatives for the Proposed Action

Alternative	Selection Standard		
	1	2	3
Alternative 1. Up to 63 T-7A aircraft and T-7A operations at a level sustaining pilot training while simultaneously phasing out the T-38C and phasing in the T-7A.	✓	✓	✓
Alternative 2. Up to 63 T-7A aircraft and T-7A operations at 25 percent greater than Alternative 1.	✓	✓	✓
Alternative 3. Up to 79 T-7A aircraft and T-7A operations at 25 percent greater than Alternative 1.	✓	✓	✓

Key: ✓ = Meets selection standard.

2.2.3 Alternatives to the MILCON/UMMC Projects

Section 2.2.2.1.4 describes the six MILCON/UMMC and seven FSRM projects that would occur at Laughlin AFB to provide modern facilities and infrastructure to support the T-7A aircrafts' maintenance, training, and operational requirements. DAF considered different designs and locations for five of the six MILCON/UMMC projects and evaluated each of these alternatives against MILCON/UMMC project selection standards to determine the alternatives that would be carried forward for analysis in this EIS. **Section 2.2.3.1** describes the MILCON/UMMC project selection standards, and **Section 2.2.3.2** describes the MILCON/UMMC project alternatives and evaluation against the MILCON/UMMC project selection standards. No alternatives were developed for the FSRM projects given their limited scope.

2.2.3.1 Selection Standards for the MILCON/UMMC Projects

Alternatives to the MILCON/UMMC projects were evaluated against the following selection standards:

1. A MILCON/UMMC project alternative must not result in operational constraints. Operational constraints would occur if a currently ongoing operation, activity, or mission were limited by proposed facility construction or renovation activities.
2. The facility construction must agree with installation land use patterns and be compatible with surrounding uses. Facilities requiring flightline access must be sited accordingly. The facility construction or renovation must provide an efficient solution to support the intended use.
3. Facilities must accommodate the updated capabilities of the T-7A aircraft and the associated changes in training operations parameters.
4. New facility construction must have minimal environmental impact.

2.2.3.2 MILCON/UMMC Project Alternatives

The MILCON/UMMC project alternatives and evaluation are presented in the following subsections.

GBTS Facility. AETC considered five action alternatives for the GBTS facility, in addition to that proposed in **Section 2.2.2.1.4.1** (USACE 2022a). The alternatives were as follows:

1. Construct the GBTS facility at another site on Laughlin AFB.
2. Renovate the existing flight simulator building on Laughlin AFB (i.e., Building 328) for the GBTS.
3. Renovate Building 328 and perform new construction for the GBTS facility.
4. Lease space for the GBTS facility.
5. Contract out GBTS services.

All five alternatives were determined to fail at least one of the MILCON/UMMC project selection standards outlined in **Section 2.2.3.1**. To avoid operational constraints and provide an efficient solution to support the intended use, the proposed GBTS facility must be sited in close proximity to the existing flight simulator building on Laughlin AFB (i.e., Building 328). Therefore, constructing the GBTS facility at another site on Laughlin AFB or leasing space for the GBTS facility would not meet all of the MILCON/UMMC project selection standards. Additionally, Building 328 lacks sufficient space to be renovated to house the GBTS. Therefore, the alternatives that include renovating Building 328 do not meet MILCON/UMMC project selection standards. Finally, contracting out GBTS services does not meet MILCON/UMMC project selection standards because contracting such services would not meet an inherent mission of Laughlin AFB. Therefore, all five alternatives for the GBTS facility have been dismissed from further analysis in this EIS. Only the GBTS facility proposal described in **Section 2.2.2.1.4.1** meets all MILCON/UMMC project selection standards and is carried forward for analysis in this

EIS. **Table 2-8** presents the GBTS facility alternatives considered and evaluated against the MILCON/UMMC project selection standards.

Table 2-8. Evaluation of Alternatives for the MILCON/UMMC Projects

Alternative	Selection Standard			
	1	2	3	4
GBTS Facility				
Construct the GBTS facility as described in **Section 2.2.2.1.4.1**.	✓	✓	✓	✓
Alternative 1. Construct the GBTS facility at another site on Laughlin AFB.	✗	✗	✓	✓
Alternative 2. Renovate the existing flight simulator building on Laughlin AFB (i.e., Building 328) for the GBTS.	✗	✗	✗	✓
Alternative 3. Renovate Building 328 and perform new construction for the GBTS facility.	✗	✗	✗	✓
Alternative 4. Lease space for the GBTS facility.	✗	✗	✗	✓
Alternative 5. Contract out GBTS services.	✗	✗	✗	✓
UMT Facility				
Construct the UMT facility as described in **Section 2.2.2.1.4.1**.	✓	✓	✓	✓
Alternative 1. Construct the UMT facility at another site on Laughlin AFB.	✗	✗	✗	✓
Alternative 2. Renovate existing maintenance training buildings on Laughlin AFB for the UMT facility.	✗	✗	✗	✓
Alternative 3. Renovate existing maintenance training buildings on Laughlin AFB and perform new construction for the UMT facility.	✗	✗	✗	✓
Alternative 4. Lease space for the UMT facility.	✗	✗	✗	✓
Alternative 5. Contract out UMT services.	✗	✗	✗	✓
Hush House				
Construct the hush house as described in **Section 2.2.2.1.4.1**.	✓	✓	✓	✓
Alternative 1. Renovate the existing hush house.	✗	✓	✓	✓
Alternative 2. Construct a new hush house on a different part of Laughlin AFB.	✗	✗	✓	✗
T-7A Shelters				
Install up to 48 T-7A shelters as described in **Section 2.2.2.1.4.1**.	✓	✓	✓	✓
Alternative 1. Install up to 60 T-7A shelters.	✓	✓	✓	✓
Addition to Egress Shop				
Construct addition onto the Egress Shop as described in **Section 2.2.2.1.4.1**.	✓	✓	✓	✓
Alternative 1. Replace Building 201 (rather than expand).	✓	✓	✓	✗

Sources: USACE 2022a, USACE 2022b, AETC 2022c

Key: ✓ = Meets selection standard; ✗ = Does not meet selection standard

UMT Facility. Five action alternatives for the UMT facility, in addition to that proposed in **Section 2.2.2.1.4.1**, were considered by AETC (USACE 2022b). These alternatives were as follows:

1. Construct the UMT facility at another site on Laughlin AFB.
2. Renovate existing maintenance training buildings on Laughlin AFB for the UMT facility.
3. Renovate existing maintenance training buildings on Laughlin AFB and perform new construction for the UMT facility.
4. Lease space for the UMT facility.
5. Contract out UMT services.

All five alternatives were determined to fail the first three MILCON/UMMC project selection standards outlined in **Section 2.2.3.1**. The proposed UMT facility must be sited close to the installation's existing maintenance campus to avoid operational constraints, provide an efficient solution to support the intended use, and accommodate T-7A training operations. Therefore, constructing the UMT facility at another site on Laughlin AFB or leasing space for the UMT facility would not meet the MILCON/UMMC project selection standards. Additionally, there are no existing maintenance training buildings on Laughlin AFB with sufficient space to be renovated to house the UMT facility. Therefore, the alternatives that include renovating existing maintenance training buildings do not meet the MILCON/UMMC project selection standards. Finally, contracting out UMT services does not meet the MILCON/UMMC project selection standards because contracting such services would not meet an inherent mission of Laughlin AFB. Therefore, all five alternatives for the UMT facility have been dismissed from further analysis in this EIS. Only the UMT facility proposal described in **Section 2.2.2.1.4.1** meets all MILCON/UMMC project selection standards and is carried forward for analysis in this EIS. **Table 2-8** presents the UMT facility alternatives considered and evaluated against the MILCON/UMMC project selection standards.

Hush House. Renovation of the existing hush house (i.e., Building 19) was considered as an alternative to constructing a new hush house. AETC determined that the existing hush house would be unusable during renovation, and Laughlin AFB would be without a hush house for several months. The loss of the hush house for this period would result in an operational constraint that causes this alternative to fail MILCON/UMMC Project Selection Standard 1. Therefore, renovation of the existing hush house is not carried forward for analysis in this EIS.

AETC also investigated constructing the proposed hush house elsewhere on Laughlin AFB (as opposed to constructing it on the northwest corner of the aircraft parking ramp, as described in **Section 2.2.2.1.4.1**). AETC determined that the northwest corner of the aircraft parking ramp, which is where the existing hush house is located, has proven to be a good location for access and for minimizing noise to neighboring areas from hush house engine run-ups. Locating the hush house in a different part of the airfield would likely require new airfield traffic patterns, maintenance procedures, and potentially varying controls—such as hours of operations—to ensure noise is contained properly. As such, there are no alternative locations for the hush house that meet MILCON/UMMC project selection standards 1 and 2 (see **Table 2-8**). As such, no alternative locations for the hush house are carried forward for analysis in this EIS.

Constructing the hush house in the northwest corner of the aircraft parking ramp, as described in **Section 2.2.2.1.4.1**, is the only alternative that meets all MILCON/UMMC project selection standards and is carried forward for analysis in this EIS.

T-7A Shelters. One alternative, in addition to that proposed in **Section 2.2.2.1.4.1**, was considered for the T-7A shelters. This alternative would only be needed if Alternative 3 (see **Section 2.2.2.3**) is selected for implementation. For this alternative, up to 60 T-7A shelters would be installed rather than the up to 48 proposed in Alternatives 1 and 2. The up to 12 additional shelters would accommodate three-quarters (75 percent) of the up to 16 additional T-7A aircraft that could be assigned to Laughlin AFB (e.g., 79 total aircraft × 75 percent = 59.25 shelters, rounded up to 60). The remaining one-quarter (25 percent) of the T-7A fleet would be parked inside hangars for shelter (see **Section 2.2.2.1.4.1** for further information on this calculation). Some existing T-1 shelters might be reused for T-7A aircraft, potentially reducing the number of new shelters needed to less than 60. This alternative meets all MILCON/UMMC project selection standards (see **Table 2-8**) and is carried forward for analysis in this EIS as part of Alternative 3. Installing up to 48 T-7A shelters, as described in **Section 2.2.2.1.4.1**, also meets all MILCON/UMMC project selection standards and is carried forward for analysis in this EIS as part of Alternatives 1 and 2.

Addition to Egress Shop. One alternative, in addition to that proposed in **Section 2.2.2.1.4.1**, was considered for the addition to the egress shop (i.e., Building 201). For this alternative, Building 201 would be demolished and replaced instead of expanded. The new facility would be constructed in its place. AETC determined that replacement of Building 201 is not necessary, and expansion can achieve the project's purpose at a lower cost and with fewer environmental impacts than demolition and replacement. For these reasons, replacement of Building 201 does not meet MILCON/UMMC project selection standard 4 (see **Table 2-8**) and has been dismissed from further analysis in this EIS. Construction of an addition onto the Egress Shop, as described in **Section 2.2.2.1.4.1**, meets all MILCON/UMMC project selection standards and is carried forward for analysis in this EIS.

Jet Blast Deflectors. No alternatives have been devised for the UMMC project to install jet blast deflectors on the airfield to protect parked aircraft, pedestrians, facilities, and pavements from jet blasts from taxiing aircraft. The final placement of the deflectors would be decided during ramp layout design (AETC 2022c).

2.2.4 Alternatives Carried Forward for Analysis

Alternatives 1, 2, and 3 meet all the selection standards listed in **Section 2.2.2.4**. Therefore, these three alternatives have been carried forward for analysis in this EIS.

Alternatives 1 and 2 include installation of up to 48 T-7A shelters. The UMMC project alternative to install up to 60 T-7A shelters has been carried forward for analysis as part of Alternative 3. No other MILCON/UMMC project alternatives have been carried forward for analysis in this EIS because each failed to meet one or more of the MILCON/UMMC project selection standards identified in **Section 2.2.3.1**.

2.3 No Action Alternative

CEQ and DAF NEPA regulations require consideration of the No Action Alternative to assess any environmental consequences that may occur if the Proposed Action is not implemented. The T-7A recapitalization program will be implemented regardless of whether the No Action Alternative is selected. If the No Action Alternative is selected, DAF would re-evaluate their T-7A strategic basing decisions. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be evaluated.

For the No Action Alternative, DAF would not implement T-7A recapitalization at Laughlin AFB. T-7A aircraft manufacturing has been contracted; therefore, if the No Action Alternative were implemented, the T-7A aircraft disposition would be determined separately. Laughlin AFB's existing fleet of T-38C aircraft would continue to be used in their current capacity even though they will reach the end of their service lives within the next decade. Maintenance requirements for these aircraft would continue to increase. No changes to current flight operations would likely occur until the end of the T-38Cs' service life. The retention and continued use of the T-38C aircraft would not change the number of personnel on Laughlin AFB. The number and types of T-38C aircraft operations would remain the same, consistent with the current training curriculum and operations shown in **Table 2-2** for the 2021 baseline. The SUA (MOAs and MTRs) for T-38C operations, identified in **Section 1.2**, would continue to be used at the same tempo and in a similar manner. No MILCON/UMMC or FSRM projects would be undertaken to support the T-7A program at Laughlin AFB.

2.4 Identification of the Preferred Alternative

As noted in **Section 1.1.1**, the Acting Secretary of the Air Force expressed preference for Laughlin AFB to be the third installation (behind JBSA-Randolph and Columbus AFB) to undergo possible T-7A recapitalization in the strategic basing memorandum, dated January 29, 2021. Recapitalizing Laughlin AFB third would have the least impact on continued pilot production during the transition of aircraft types, provide the most cost-efficient student production and management plan, and align with AETC's student pipeline flow for the UPT, IFF, and the soon to be developed FBF curricula. Vance and Sheppard AFBs would follow as the fourth and fifth installations to be recapitalized, respectively.

DAF identified Alternative 1 (i.e., addressing recapitalization at Laughlin AFB with up to 63 T-7A aircraft and performing sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft) as its preferred alternative in the Draft EIS. Following the Draft EIS public comment period, DAF switched its preferred alternative to Alternative 3 (i.e., addressing recapitalization at Laughlin AFB with up to 79 T-7A aircraft and performing T-7A operations at a level that is approximately 25 percent greater than Alternative 1) because of anticipated changes in the pilot training curriculums and syllabuses. Alternative 3 is preferred because DAF plans to develop a FBF curriculum for integration into the T-7A syllabus, and the addition of FBF training to Laughlin AFB necessitates additional T-7A aircraft beyond that provided by Alternative 1. Alternative 3 provides sufficient T-7A aircraft to facilitate Laughlin AFB's projected pilot training requirements and, therefore, has become DAF's preferred alternative. As noted in **Section 2.2.2.3**, if Alternative 3 were selected for implementation, the

Secretary of the Air Force would issue another strategic basing decision memorandum for record to authorize the additional T-7A aircraft.

2.5 Environmental Comparison of the Alternatives

Table 2-9 provides a summary of the environmental impacts associated with each alternative.

Table 2-9. Summary of Environmental Impacts

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
Brief Description of the Alternatives			
T-7A recapitalization at Laughlin AFB would not occur. T-38C training would continue to occur in its current capacity.	T-7A recapitalization at Laughlin AFB would occur with up to 63 T-7A aircraft and T-7A operations at a level sustaining pilot training while simultaneously phasing out the T-38C and phasing in the T-7A.	T-7A recapitalization at Laughlin AFB would occur with up to 63 T-7A aircraft and T-7A operations at a level 25 percent greater than Alternative 1.	T-7A recapitalization at Laughlin AFB would occur with up to 79 T-7A aircraft and T-7A operations at a level 25 percent greater than Alternative 1. Compared to Alternatives 1 and 2, up to 12 additional T-7A shelters would be constructed.
Air Quality and Climate Change			
No impacts would occur.	Short- and long-term, less than significant, adverse and beneficial impacts would occur. The short-term impacts would occur from the use of heavy equipment during construction. The long-term impacts would occur from operation and heating of new facilities and flight operations. The proposed flight operations would result in annual net increases and decreases in criteria pollutants and greenhouse gases (GHG) depending on the location, year, and pollutant in question. Increases in criteria pollutant emissions would not exceed the insignificance indicators. GHG emissions would not contribute meaningfully to the potential effects of global climate change. Alternative 1 would emit the least amount of GHGs, with the least potential to contribute to ongoing climate change, when compared to the other two action alternatives. No future climate scenario or potential climate stressor would have significant effects on any element of Alternative 1.	The short-term impacts from construction and the long-term impacts from operation and heating of the new facilities would be similar to those described for Alternative 1. While greater air emissions would occur from the proposed flight operations compared to Alternative 1, these emissions would result in annual net increases and decreases in criteria pollutants and GHGs depending on the location, year, and pollutant in question. Increases in criteria pollutant emissions would not exceed the insignificance indicators. GHG emissions from construction would be identical to those for Alternative 1. While GHG emissions from flight operations would be greater than those for Alternative 1, such emissions would not contribute meaningfully to the potential effects of global climate change. No future climate scenario or potential climate stressor would have significant effects on any element of Alternative 2.	The short- and long-term impacts would be similar to those described for Alternatives 1 and 2. While greater air emissions would occur compared to Alternatives 1 and 2, these emissions would result in annual net increases and decreases in criteria pollutants and GHGs depending on the location, year, and pollutant in question. Increases in criteria pollutant emissions would not exceed the insignificance indicators. GHG emissions would be greater than those for Alternatives 1 and 2, but such emissions would not contribute meaningfully to the potential effects of global climate change. No future climate scenario or potential climate stressor would have significant effects on any element of Alternative 3.

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
Noise			
No impacts would occur.	Short- and long-term, less than significant, adverse impacts on the noise environment would occur. Short-term impacts would be due to noise generated by heavy equipment during construction. Long-term impacts would be due to the introduction of the T-7A aircraft and the increased operations. Long-term changes in operational noise would increase areas of incompatible land use on and adjacent to Laughlin AFB. Land acreage within the 65-A-weighted decibels (dBA) day-night average sound level (DNL) or greater area would increase on-installation by 634 acres and off-installation by 3,367 acres. The estimated population within the 65-dBA DNL or greater would increase by 178 on-installation and 129 off-installation.	Short-term impacts from construction would be the same as those described for Alternative 1. Compared to Alternative 1, long-term noise impacts would be slightly greater due to the greater number of aircraft operations. Land acreage within the 65-dBA DNL or greater area would increase on-installation by 765 acres and off-installation by 4,072 acres. The estimated population within the 65-dBA DNL or greater area would increase by 272 on-installation and 160 off-installation.	Short- and long-term impacts from construction and aircraft operations would be the same as those described for Alternative 2.
Biological Resources			
No impacts would occur.	Short- and long-term, less than significant, adverse impacts on vegetation and wildlife would occur at Laughlin AFB from the MILCON/UMMC and FSRM projects. Long-term, less than significant, adverse impacts on wildlife may occur from aircraft strikes and noise from the proposed aircraft operations. Alternative 1 would have no effect on the 11 federally listed, proposed, or candidate species with potential to occur on Laughlin AFB or the 32 additional special status species with potential to occur in the SUA. No appreciable effects on state-listed or sensitive species would occur.	The short-term impacts would be the same as those described for Alternative 1. The long-term impacts would be slightly greater than those described for Alternative 1 because the additional aircraft operations would increase the risk of bird and bat strikes compared to Alternative 1. No effect on federally listed, proposed, or candidate species would occur.	Short- and long-term impacts would be the same as those described for Alternative 2.

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
Cultural Resources			
No impacts would occur.	The only aspects of the Proposed Action with potential to effect historic properties are the MILCON/UMMC and FSRM projects. DAF determined that these projects would have no effect on historic properties and consulted with the Texas State Historic Preservation Officer (SHPO). The SHPO concurred with this determination on June 5, 2023.	Impacts would be the same as those described for Alternative 1.	Impacts would be the same as those described for Alternative 1.
Land Use			
No impacts would occur.	The proposed MILCON/UMMC and FSRM projects would be sited, designed, and constructed consistent with the Installation Development Plan (IDP) and would be largely compatible and consistent with applicable land use plans and regulations. Alternative 1 would meet FAA regulations specific to minimum altitude and avoidance distances. The clear zones (CZs) and accident potential zones (APZs) for Laughlin AFB would remain unchanged. As noted in Noise, additional land area and population would fall within the Alternative 1 noise contours as compared to the baseline noise contours, resulting in a potential increase in incompatible land uses. Residential land use would represent less than 0.2 percent of the total off-installation area within the baseline and Alternative 1 noise contours; therefore, impacts would be less than significant.	Impacts would be largely similar to those described for Alternative 1. As noted in Noise, additional land area and population would fall within the Alternative 2 noise contours as compared to the Alternative 1 noise contours, resulting in a potential increase in incompatible land uses. Residential land use would represent less than 0.3 percent of the total off-installation area within the Alternative 2 noise contours; therefore, impacts would be less than significant.	Impacts would be the same as those described for Alternative 2.

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
Hazardous Materials and Wastes			
No impacts would occur.	Short-term, less than significant, adverse impacts would occur from the use of hazardous materials and petroleum products and the generation of hazardous wastes during construction for the MILCON/UMMC and FSRM projects and from aircraft maintenance during the aircraft transition period. No long-term impacts would occur from aircraft maintenance because the use of hazardous materials and petroleum products and the generation of hazardous wastes is expected to return to similar levels as the 2022 baseline by 2033. Short-term, less than significant, adverse impacts could occur from the renovation of Buildings 15, 50, 210, 320, 328, and 905 because these buildings potentially contain toxic substances in building materials. Long-term, less than significant, beneficial impacts would occur from renovation of these buildings by reducing the potential for future human exposure to toxic substances. No impacts on or from environmental contamination or radon would occur.	Impacts would be slightly greater than those described for Alternative 1, because the 25 percent increase in aircraft operations would require additional quantities of hazardous materials, hazardous wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Laughlin AFB.	Impacts would be slightly greater than those described for Alternative 2, because the 25 percent increase in aircraft operations, relative to Alternatives 1, and the up to 16 additional aircraft to maintain would require additional quantities of hazardous materials, hazardous wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Laughlin AFB.

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
Infrastructure and Transportation			
No impacts would occur.	Long-term, less than significant, beneficial impacts on airfield infrastructure would occur from the addition of up to 48 T-7A shelters and the FSRM project to improve the airfield. Short-term, less than significant, adverse and long-term, less than significant, adverse and beneficial impacts on utility services (i.e., liquid fuel, electrical system, natural gas system, water supply system, wastewater system, stormwater system, communications system, and solid waste management) would occur. Temporary utility service disruptions could occur when buildings are disconnected from or connected to the applicable utility services during construction, and construction would temporarily increase the demand for these utility services. Long-term reductions in personnel compared to the baseline would reduce demand for utility services slightly. Increased annual aircraft operations likely would increase the amount of aviation fuel consumed at the installation. Short-term, less than significant, adverse impacts on the transportation system would occur from construction traffic. Long-term, less than significant, adverse and beneficial impacts on the transportation system would occur from the personnel changes and additional parking spaces.	Compared to Alternative 1, the 25 percent increase in T-7A operations would slightly increase wear on the airfield pavement and the amount of jet fuel consumed at the installation. Impacts on the remaining infrastructure components—namely utility services and transportation—would be identical to Alternative 1.	Impacts would be similar to those described for Alternative 2. The addition of up to 60 T-7A shelters would increase the aircraft parking capacity and provide sufficient shelter for the additional aircraft.

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
	Safety		
No impacts would occur.	Short-term, less than significant, adverse impacts on contractor health and safety would occur during construction for the MILCON/UMMC and FSRM projects. Long-term, less than significant, adverse impacts on flight safety would occur from increased aircraft operations compared to baseline levels, which would result in an increased potential for Bird/Wildlife Aircraft Strike Hazard (BASH) incidents and other mishaps. The CZs and APZs would remain unchanged.	The impacts on contractor health and safety would be the same as those described for Alternative 1. The impacts on flight safety from 25 percent greater aircraft operations would be slightly greater than those described for Alternative 1.	Impacts would be the same as those described for Alternative 2.
	Water Resources		
No impacts would occur.	Short- and long-term, less than significant, indirect, adverse impacts on groundwater and surface water would occur. The MILCON/UMMC and FSRM projects would increase impervious surface area and decrease area for groundwater infiltration by approximately 109,600 ft^2 (2.52 acres), potentially decreasing groundwater recharge and increasing stormwater runoff into nearby surface water bodies. Temporary increases in hazardous materials and petroleum product use would negligibly increase the potential for an accidental release to occur and for the contamination to reach nearby groundwater aquifers and surface water features. No direct impacts on wetlands would occur. The MILCON/UMMC and FSRM projects would not occur within wetlands or the 100- or 500-year floodplains.	Impacts would be similar to those described for Alternative 1. Increased aircraft operations would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface waters.	Impacts would be similar to those described for Alternative 2. Compared to Alternative 2, the additional aircraft to maintain would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface waters.

No Action Alternative	Proposed Action		
	Alternative 1	**Alternative 2**	**Alternative 3 – Preferred Alternative**
Environmental Justice			
No impacts would occur.	Alternative 1 would have an unavoidable, disproportionately high, and adverse impact on environmental justice and sensitive receptor populations within three of the six Census Block Groups that coincide with the 65 dBA noise contour for Alternative 1. These three Census Block Groups contain environmental justice populations at levels either above 50 percent of the total population or greater than 10 percent of the community of comparison for minority, low-income, youth, or elderly populations. In addition, it is expected that there would be an increase in air emissions from some pollutants in the areas around the installation that include environmental justice populations. Compared to baseline conditions, aircraft noise would result in a higher number of classroom learning interference events and an increase in the time above metric at the four schools analyzed in this EIS; therefore, Alternative 1 would have a disproportionate, adverse impact on children.	Impacts would be slightly greater than those described for Alternative 1 because noise and air emissions would be greater. Like Alternative 1, Alternative 2 would have an unavoidable, disproportionately high, and adverse impact on environmental justice and sensitive receptor populations and children.	Impacts would be similar to those described for Alternative 2. Noise impacts would be the same as Alternative 2, and air emissions would be slightly greater. Like Alternatives 1 and 2, Alternative 3 would have an unavoidable, disproportionately high, and adverse impact on environmental justice and sensitive receptor populations and children.

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3. Affected Environment and Environmental Consequences

This section describes the environmental resources and baseline conditions that the Proposed Action could affect. It also presents an analysis of the potential environmental consequences from the three action alternatives and the No Action Alternative. The three action alternatives and No Action Alternative were evaluated for their potential environmental consequences on environmental resources in accordance with CEQ NEPA regulations at 40 CFR § 1508.8.

This section also addresses mitigation measures, best management practices (BMP), and environmental protection measures necessary to implement the Proposed Action. Mitigation measures are actions that would serve to avoid, minimize, or compensate for effects caused by a proposed action. Mitigation measures differ from BMPs and environmental protection measures in that BMPs are actions that reduce potential impacts and are required by statutes, regulations, or to fulfill permitting or consultation requirements and environmental protection measures are actions used to minimize impacts and are not required as 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. No mitigation measures are required for the Proposed Action. BMPs and environmental protection measures are discussed for each resource area in Chapter 3 to describe how a project's level of impact could be minimized. None of the BMPs or environmental protection measures described herein are needed to bring an impact below the threshold of significance.

In compliance with NEPA, CEQ, and DAF EIAP regulations and guidelines, this EIS focuses on only those environmental resources considered potentially subject to significant impacts from the Proposed Action. DAF used the scoping process to identify environmental issues to be carried forward for analysis and deemphasize insignificant issues. The environmental resources analyzed in detail in this EIS are air quality and climate change, noise, biological resources, cultural resources, land use, hazardous materials and wastes, infrastructure and transportation, safety, water resources, and environmental justice. The environmental resources not analyzed in detail in this EIS, because they were clearly insignificant or no impacts would occur, include airspace, geological resources, and socioeconomics. The rationale explaining why those three resources were dismissed from detailed analysis in this EIS is provided below.

Airspace. SUA consists of defined-dimension airspace wherein activities must be confined because of their nature, limitations are imposed upon aircraft operations that are not a part of those activities, or both. SUA is also defined in terms of floor and ceiling altitudes as well as times for which the airspace is active. SUA for this action includes three MOAs and six MTRs.

MOAs are SUA established to separate certain nonhazardous military activities from Instrument Flight Rules traffic and to identify where those activities are performed for Visual Flight Rules traffic. Flight corridors, referred to as MTRs, are used to connect MOAs. MTRs are established for use by the military for the purpose of performing low-altitude, high-speed training. Routes above 1,500 feet AGL are developed to be flown, to the maximum extent possible, using Instrument Flight Rules. Routes at 1,500 feet AGL and below are generally developed to be

flown using Visual Flight Rules. **Table 3-1** provides a list and description of the SUA used for T-38C and proposed for T-7A training at Laughlin AFB. These SUA are shown in **Figure 1-3.**

The Proposed Action would have no impacts on existing SUA configurations (e.g., shape, size, altitudes) or their active times. T-7A pilot training would occur within the same SUA used for such training with the T-38C (i.e., Laughlin 1, Laughlin 2, and Laughlin 3 MOAs and MTRs IR-169, IR-170, VR-143, VR-165, VR-168, and VR-187). No changes to SUA configurations would be required for T-7A recapitalization. Should DAF desire to change the configurations of these SUA following T-7A recapitalization or as a result of new training practices with other aircraft, separate NEPA analysis would be performed in conjunction with the FAA when the scope of that effort is better understood. As such, further SUA configuration impacts analysis is unnecessary for this EIS. Impacts on environmental resources within the SUA are analyzed, as appropriate, in those discussions (e.g., air quality, noise, biological resources, environmental justice).

Geological Resources. The Proposed Action would have no significant impacts on geological resources. No impacts on regional geology and local topography would occur. Construction for the MILCON/UMMC and FSRM projects would be small enough in scope that they would not alter geological structures or features. The projects would occur on mostly flat land, and no appreciable changes to local topography would occur. Val Verde County, Texas, has a low potential for damaging earthquakes, with less than 2 damaging earthquakes expected per 10,000 years (USGS 2023). Therefore, seismic hazards would have no impact on new construction.

The U.S. Department of Agriculture has identified the soils within the footprint of the MILCON/UMMC and FSRM projects as Zapata-Vinegarroon complex, 1 to 5 percent slopes, and Acuna silty clay, 0 to 3 percent slopes (USDA NRCS 2023). The projects would occur within highly urbanized areas on Laughlin AFB where it is likely that these soil complexes have been disturbed from previous construction and landscaping and little natural soil structure remains. Appropriate geotechnical surveys would be completed during project design to ensure that soil limitations are identified and addressed, as necessary. Neither the Zapata-Vinegarroon complex nor Acuna silty clay have the physical properties necessary for classification as prime farmland soils; however, Acuna silty clay is considered a farmland of statewide importance, if irrigated. Because Laughlin AFB is not available for irrigated farming, construction of the MILCON/UMMC and FSRM projects within the Acuna silty clay would result in no loss of farmable land. Therefore, the Farmland Protection Policy Act is not applicable to the Proposed Action.

Construction for the MILCON/UMMC and FSRM projects would disturb soil, potentially resulting in the loss of structure, compaction, and erosion of soil as well as changes to local water infiltration and drainage patterns. Soil erosion and sediment control measures would be implemented, as appropriate, and could include installing silt fencing and sediment traps, applying water to disturbed soil to prevent wind erosion, and vegetating disturbed areas as soon as possible. Erosion and Sediment Control Plans would be prepared and implemented, as necessary, to reduce soil erosion and sedimentation. Stormwater control measures that favor infiltration would be implemented to minimize the potential for erosion and sediment production from storm events (see **Section 3.10.2** for water resources impacts).

Table 3-1. SUA for T-38C and T-7A Training at Laughlin AFB

SUA Designation	Type of SUA	Short Description[1]
Laughlin 1	MOA	Located over portions of Brewster, Crockett, Edwards, Kimble, Sutton, Terrell, and Val Verde Counties in Texas. Altitudes are from 9,000 feet above mean sea level (MSL) up to but not including 18,000 feet above MSL. Time of use is from 6 a.m. to 8 p.m. local, Monday through Friday, and other times by Notice to Air Missions (NOTAM).
Laughlin 2	MOA	Located over portions of Edwards, Kinney, Maverick, Real, Uvalde, and Zavala Counties in Texas. Altitudes are from 7,000 feet above MSL up to but not including 18,000 feet above MSL. Time of use is from 6 a.m. through 8 p.m., Monday through Friday, and other times by NOTAM.
Laughlin 3	MOA	Located over portions of Dimmit, Maverick, and Zavala Counties in Texas. Altitudes are from 7,000 feet above MSL up to but not including 18,000 feet above MSL. Time of use is from 6 a.m. to 8 p.m., Monday through Friday, and other times by NOTAM.
IR-169	MTR	Located over portions of Crockett, Irion, Pecos, Reagan, Schleicher, Terrell, and Val Verde Counties in Texas. Altitudes are from 100 feet AGL to 4,000 feet above MSL. Time of use is from sunrise to sunset daily.
IR-170	MTR	Located over portions of Dimmit, Edwards, Kinney, Maverick, Uvalde, Val Verde, Webb, and Zavala Counties in Texas. Altitudes are from 100 feet AGL to 4,000 feet above MSL. Time of use is from sunrise to sunset daily.
VR-143	MTR	Located over portions of Blanco, Crockett, Edwards, Gillespie, Irion, Kerr, Kimble, Llano, McCulloch, Mason, Menard, Pecos, Reagan, San Saba, Schleicher, Sutton, Terrell, Tom Green, Upton, and Val Verde Counties in Texas. Altitudes are from 100 feet AGL to 6,000 feet above MSL. Time of use is from 7 a.m. to 10 p.m. daily and by NOTAM.
VR-165	MTR	Located over portions of Brewster, Pecos, and Terrell Counties. Altitudes are from the surface to 4,000 feet above MSL. Time of use is continuous.
VR-168	MTR	Located over portions of Atascosa, Bandera, Dimmit, Edwards, Frio, Kerr, Kinney, La Salle, Live Oak, McMullen, Medina, Real, Uvalde, and Zavala Counties in Texas. Altitudes are from the surface to 4,000 feet above MSL. Time of use is from 6 a.m. to midnight daily.
VR-187	MTR	Located over portions of Brewster, Terrell, and Val Verde Counties in Texas. Altitudes are from 500 feet to 1,500 feet AGL. Time of use is from sunrise to sunset daily.

Sources: FAA 2021, DoD 2022

[1] The MTRs include several parts or "legs" that are designated by specific coordinates. Some legs within the same MTR have differing properties, such as minimum/maximum altitudes, times of operation, speeds, etc. The short description provided in this table is a general overview of the MTR. A complete description of the MTRs and their respective legs is available in the Department of Defense (DoD) Flight Information Publication AP/1B, Area Planning Military Training Routes, North and South America.

Socioeconomics. The Proposed Action would have insignificant socioeconomic impacts. As described in **Section 2.2.2.1.3**, an increase of approximately 190 personnel at Laughlin AFB would occur during the aircraft transition period (i.e., 2030 and 2031), but the initial increase in personnel would subside as T-38C aircraft are removed from service, and the steady state personnel requirement is projected to be approximately 60 persons fewer than the current baseline staffing levels (AETC 2022b). Associated with the personnel change is a corresponding change in the number of dependents. DAF estimates that 361 dependents would accompany the 190 additional personnel during the aircraft transition period, for a total of 551 additional people in the vicinity of Laughlin AFB during 2030 and 2031, as compared to current baseline staffing levels. After the aircraft transition period, the loss of 60 personnel from Laughlin AFB would remove 114 dependents and 174 total people from the Laughlin AFB vicinity, as compared to current baseline staffing levels.

As of July 2021, Val Verde County, Texas, is home to 47,564 people and experienced an approximately 2.9 percent negative population change between 2010 and 2021 (USAFACTS 2023). The demand for housing, schools, health care, and other public services in Val Verde County would slightly increase in 2030 and 2031 during the aircraft transition period from the addition of the estimated 190 personnel and their 361 dependents. However, this temporary and slight increase would not be noticeable given the slight reduction in the population of Val Verde County over the past 10 years and the overall size of the county's population relative to the number of new personnel and dependents. The temporary and slight increase in demand for housing, schools, health care, and other public services would be followed by a permanent and slight decrease in the demand for these services in the years after 2031 when the aircraft transition period is over. Therefore, the temporary addition of approximately 551 new residents followed by the long-term subtraction of approximately 174 residents (compared to baseline levels) would have insignificant socioeconomic impacts.

Beneficial impacts on the local economy would occur from the sale of construction materials and employment of local construction workers to construct the MILCON/UMMC and FSRM projects. However, the increase in tax revenue and regional availability of building materials and labor would not be affected noticeably because of the limited scope and temporary duration of each project.

3.1 Cumulative Effects

As stated in **Section 1.1**, the EIAP for this EIS began on January 17, 2023, when the NOI to prepare this EIS was published in the *Federal Register*. The NOI was published after the promulgation of CEQ's final rule updating the regulations implementing NEPA's procedural provisions on April 20, 2022. Therefore, this EIS includes a cumulative effects assessment.

Cumulative effects are defined under 40 CFR § 1508.1(g)(3) as the effects on the environment that result from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Past actions are those actions and their associated impacts that have shaped a project area's current environmental conditions. Therefore, the impacts of past actions are now part of the existing environment and are included in the affected environment described in **Sections 3.2** through **3.11**. Reasonably foreseeable actions that could contribute to cumulative effects on the human environment are described in **Table 3-2**. The impacts of these actions, combined with the impacts of the three action alternatives analyzed in this EIS, are described for each resource area in **Sections 3.2** through **3.11** in the Cumulative Effects subsections.

A review of planned development projects within the city of Del Rio and Val Verde County did not identify any upcoming projects within the vicinity of Laughlin AFB. Therefore, the reasonably foreseeable actions considered in the cumulative effects discussion are limited to those proposed by DAF.

Table 3-2. Reasonably Foreseeable Actions at Laughlin AFB and Associated Region

Action Name	Location	Timeframe	Description
Community and Services District Area Development Projects	Laughlin AFB	Future (2024 to 2029)	Implement construction, renovation, and demolition projects in the Community and Services District. Construction projects could include a community event complex, modular officer dormitories, expansion of the family camp for recreational vehicle parking, a new elementary school, and a self-service gasoline station. Renovation projects would include four existing buildings—an officer dormitory, an event center, a youth center, and the exchange. Club XL and the child development center are proposed for improvement through renovation or reconstruction and expansion (Laughlin AFB 2023a).
Training District Area Development Projects	Laughlin AFB	Future (2024 to 2029)	Implement construction and demolition projects in the Training District. Construction projects (approximately 12,200 ft^2 of new facilities and 200,000 ft^2 of impervious surfaces) would include expansion of campus parking areas; expansion of outdoor student areas for pilot trainees; improvements to streets, sidewalks, and bike lanes; a new communications facility; and an outdoor event field for special activities. Building 348 is proposed for demolition (approximately 10,870 ft^2) (Laughlin AFB 2023a).
Construct Human Performance Training Center	Laughlin AFB	Future (2024)	Construct an approximately 10,000-ft^2 Human Performance Training Center. The facility would include consultation rooms, offices, a classroom, a strength and conditioning room, locker rooms, a storage room, and a hammer run (TMPC 2022).
Construct Aircraft Fuel Systems Maintenance Facility	Laughlin AFB	Future (2024)	Construct an approximately 27,200-ft^2 Aircraft Fuel Systems Maintenance Facility. Facility areas would include aircraft maintenance bays, fuel systems maintenance shops, fuel tool crib and storage areas, administrative and personnel support areas, and buildings support areas. Construction would require demolition of Buildings 51, 54, and 57 (approximately 7,340 ft^2) (Laughlin AFB 2022a).

Action Name	Location	Timeframe	Description
T-1 Aircraft Divestment	Laughlin AFB	Ongoing and Future (2023 to 2024)	In 2023, DAF began divesting the fleet of 177 T-1 aircraft by decommissioning the first 50 of its oldest and least-capable aircraft at three pilot training locations: Vance, Laughlin, and Columbus AFBs. To date, DAF has decommissioned three T-1 aircraft from Laughlin AFB with eight more planned for later this year. The remaining T-1 aircraft at Laughlin AFB are scheduled to be decommissioned by 2024 (Flying Magazine 2022, 47 FTW 2023). The T-1 aircraft would be replaced with ground-based training devices (i.e., simulators) rather than new aircraft (AETC 2023).
Use Del Rio International Airport for T-7A Diversions	Del Rio International Airport	Future (year not determined)	If the Proposed Action were to be implemented, DAF could potentially use Del Rio International Airport as a diversion airfield for T-7A aircraft when Laughlin AFB's airfield is closed. No aircraft maintenance would occur at Del Rio International Airport. A small number of T-7A aircraft could be parked overnight at the international airport while awaiting Laughlin AFB's airfield to reopen. DAF would work with the city of Del Rio to determine what actions and infrastructure would be required to potentially implement this scenario (47 FTW 2023).

3.2 Air Quality and Climate Change

Air quality is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Most air pollutants originate from human-made sources, including mobile sources (e.g., aircraft, cars, trucks, buses) and stationary sources (e.g., factories, refineries power plants, materials handling, use of cleaning solvents). Air pollutants are also released from natural sources such as forest fires. Air pollution occurs when one or more pollutants (e.g., dust, fumes, gas, mist, odor, smoke, vapor) are present in the outdoor atmosphere in quantities great enough to cause harm to the natural environment, including human, plant, and animal life.

Criteria Pollutants, National Ambient Air Quality Standards, and the General Conformity Rule. The six pollutants that are the main indicators of air quality, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide, nitrogen dioxide, ozone (O_3), suspended particulate matter (measured less than or equal to 10 microns in diameter [PM_{10}] and less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), and lead. CO, sulfur oxides (SO_X), nitrogen oxides (NO_X), lead, and some particulates are emitted directly into the atmosphere from emissions sources. NO_X, O_3, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic

compounds (VOC) and NO_X emissions are precursors of O_3 and used to represent O_3 generation.

Under the Clean Air Act (CAA) (42 United States Code [USC] Chapter 85), the U.S. Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for the criteria pollutants. The NAAQS were established to protect against acute and chronic adverse health and welfare effects from poor air quality. Each state has the authority to adopt air quality standards stricter than those established under the federal NAAQS. The state of Texas accepts the federal NAAQS (30 Texas Administrative Code § 101.21).

Areas that are and have historically been in compliance with the NAAQS, or have not been evaluated for NAAQS compliance, are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan to reach attainment or ensure continued attainment.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas. A general conformity determination is required when the total emissions of nonattainment and maintenance pollutants (or their precursors) exceed specified thresholds. The General Conformity Rule does not apply to federal actions occurring in attainment areas.

Climate Change and GHGs. Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate system. GHGs are gas emissions that trap heat in the atmosphere and include water vapor, carbon dioxide (CO_2), methane, nitrous oxide, tropospheric O_3, and several fluorinated and chlorinated gaseous compounds. To estimate global warming potential, all GHGs are expressed relative to a reference gas, CO_2, which is assigned a global warming potential equal to one (1). All GHGs are multiplied by their global warming potential, and the results are added to calculate the total equivalent emissions of CO_2 (CO_2e). The dominant GHG emitted is CO_2, accounting for 79 percent of all GHG emissions as of 2020, the most recent year for which data are available (USEPA 2022a).

Most GHGs occur in the atmosphere naturally, but increases in concentrations result from human activities such as burning fossil fuels. Scientific evidence indicates a trend of increasing global temperature over the past century because of an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, signed January 20, 2021, reinstated the *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*, issued on August 5, 2016, by CEQ that required federal agencies to consider GHG emissions and the effects of climate change in NEPA reviews (CEQ 2016). The CEQ *National Environmental Policy Act Interim Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*, issued on January 9, 2023,

recommends quantifying a proposed action's GHG emissions in appropriate context. In accordance with the 2016 final guidance and the 2023 interim guidance, estimated CO_2e emissions associated with the Proposed Action are provided in this EIS for informative purposes. CEQ guidance does not identify a particular quantity of GHG emissions that would "significantly" affect the quality of the human environment and NEPA does not require a monetary cost-benefit analysis of GHGs (CEQ 2016, CEQ 2023).

Per CEQ's 2023 interim guidance, "Agencies should exercise judgment when considering whether to apply this guidance to the extent practicable to an on-going NEPA process." DAF guidance on applying and conducting a social cost of GHG analysis is under development. Therefore, no social cost of GHG analysis has been prepared for this EIS, which was ongoing when the CEQ's interim guidance was issued.

EO 14008, *Tackling the Climate Crisis at Home and Abroad*, further strengthens EO 13990 by implementing objectives to reduce GHG emissions and bolster resilience to the impacts of climate change and requiring federal agencies to develop and implement climate action plans. DAF's *Climate Action Plan* recognizes the department's role in contributing to climate change and aims to address the challenges and risks posed by climate change through the implementation of climate priorities, including making climate-informed decisions, optimizing energy use, and pursuing alternative energy sources. DAF also follows the DoD *Climate Adaptation Plan* and considers the DoD *Climate Risk Analysis* for climate change planning (DAF SAF/IE 2022). *The Long-term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050* sets target benchmarks to achieve net-zero GHG emissions by no later than 2050 through emission-reducing investments, such as carbon-free power generation, zero-emission vehicles, energy-efficient buildings, and expansion and protection of forest areas (DOS and EOP 2021).

USEPA implements the GHG Reporting Program, requiring certain facilities to report GHG emissions from stationary sources if such emissions exceed 25,000 metric tons of CO_2e per year (40 CFR Part 98). Major source permitting requirements for GHGs are triggered when a facility exceeds the major threshold of 100,000 tons per year (tpy) for stationary source CO_2e emissions.

3.2.1 Affected Environment

The air quality Region of Influence (ROI) is a three-dimensional, vertical column of air up to 3,000 feet AGL (or the mixing zone) where pollutant emissions associated with the Proposed Action would occur. The Proposed Action potentially impacts a large spatial area that has been broken into two separate ROI based on the physical and spatial distribution of the emissions sources associated with the action. The two ROI include the Laughlin AFB ROI, within which all Laughlin AFB airfield operations (i.e., takeoffs, landings, and closed patterns) and construction actions would occur, and the MTR ROI. An air quality assessment was conducted for each individual ROI. Because aircraft operations below 3,000 feet AGL would not occur within Laughlin 1, Laughlin 2, or Laughlin 3 MOAs, these areas were not considered part of the air quality ROI. In addition, VR-143 and VR-168 would be used seldomly and irregularly; therefore, these MTRs were not considered a part of the air quality ROI.

USEPA Region 6 and the Texas Commission on Environmental Quality (TCEQ) regulate air quality in Texas. Laughlin AFB is in Val Verde County, which is within the Metropolitan San Antonio Intrastate Air Quality Control Region (40 CFR § 81.40). **Table 3-3** includes the most recent annual emissions inventory available (calendar year [CY] 2020) for Val Verde County. In addition to Val Verde County, aircraft approaches and departures below 3,000 feet AGL for Laughlin AFB occur in Kinney County. USEPA has designated Val Verde and Kinney Counties as in attainment for all criteria pollutants (USEPA 2022b). The MTR ROI covers 17 counties in Texas. USEPA has designated all counties underlying the MTR ROI as in attainment for all criteria pollutants (USEPA 2022b). As such, the General Conformity Rule is not applicable to criteria pollutant emissions in the ROI.

Table 3-3. Annual Emission Inventory for Val Verde County (CY 2020)

VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e[1] (tpy)
15,170.6	1,668.9	11,735.6	52.2	2,981.6	763.4	0.034	312,316

Source: USEPA 2023a

[1] To calculate the total CO_2e, all GHGs are multiplied by their global warming potential and the results are added together. The global warming potentials used to calculate CO_2e are as follows: CO_2 = 1; methane = 25; nitrous oxide = 298.

Climate Change and GHGs. Laughlin AFB has an average high temperature of 96 degrees Fahrenheit (°F) in the hottest month of July, an average low temperature of 40°F in the coldest month of January, and an average annual temperature of 81°F. The average annual precipitation of the region is 18.2 inches. The wettest month of the year is June with an average rainfall of 2.34 inches (Laughlin AFB 2014, Idcide 2023).

Ongoing climate change in Southern Texas, including Val Verde County, has contributed to rising temperatures, increased storm intensity, increased flooding and drought severity, disruption of natural ecosystems, and human health effects. Despite increases in storms and flooding, warmer temperatures increase evaporation and water use by plants, which causes soils to become drier and increases the need for irrigation. In turn, ground and surface water supplies are being consumed at faster rates, which leads to declines in recharge rates and the future availability of water supplies. Higher temperatures in Texas have also led to increased severity, frequency, and extent of wildfires, which expand deserts and change landscapes. High air temperatures can cause adverse health effects, such as heat stroke and dehydration, especially in vulnerable populations (i.e., children, elderly, sick, and low-income populations), which can affect cardiovascular and nervous systems (USEPA 2016).

Climate change effects linked to Laughlin AFB include increased temperature, wind velocity, and drought potential. These effects could cause increased dust generation, infrastructure damages, loss of training areas, and decreased mission capability (AFCEC 2019).

Warmer air can increase the formation of ground-level O_3, which has a variety of health effects including aggravation of lung diseases and increased risk of death from heart of lung disease (USEPA 2016). In 2020, Val Verde County produced 312,316 tons of CO_2e (USEPA 2023a), and Texas produced 624 million metric tons of CO_2 emissions and was ranked the highest state producer of CO_2 in the United States (USEIA 2022).

3.2.2 Environmental Consequences

This air quality analysis estimates the effects on air quality and climate change that would result from the Proposed Action. Effects on air quality are evaluated by comparing the annual net change in emissions for each criteria pollutant against the DAF emissions insignificance indicators for attainment areas. Per the EIAP Guide, DAF applies insignificance indicators to actions occurring in an area that is in attainment or unclassified for the NAAQS to provide an indication of the significance of potential impacts on air quality. The insignificance indicator used by DAF is the 250 tpy Prevention of Significant Deterioration (PSD) threshold, as defined by USEPA, and is applied to the emissions for all criteria pollutants, besides lead, occurring in attainment areas. The insignificance indicator for lead is 25 tpy. The insignificance indicators do not denote a significant impact; however, they do provide a threshold to identify actions that have insignificant impacts on air quality. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action would not cause or contribute to an exceedance of one or more NAAQS (AFCEC 2020).

Air quality impacts from T-7A recapitalization at Laughlin AFB were reviewed for significance. Based on compliance with NAAQS, the General Conformity Rule is not applicable to emissions from the Proposed Action. For emissions in the ROI, the PSD threshold (i.e., 250 tpy for all criteria pollutants, besides lead, and 25 tpy for lead) was used as an insignificance indicator to determine air quality impact significance.

Separate assessments were performed for each ROI. The DAF Air Conformity Applicability Model (ACAM), version 5.0.18a, was used to estimate potential air emissions from the Proposed Action and to assess the potential air quality impacts in accordance with Air Force Manual (AFMAN) 32-7002 and the EIAP Guide (32 CFR Part 989). Construction, demolition, and renovation emissions were estimated for fugitive dust, on- and off-road diesel equipment and vehicles, worker trips, architectural coatings, and paving off-gases. Operational emissions were estimated for changes in flight operations, trim-tests, test cell operations, aerospace ground equipment, personnel, and heating the new facilities. The aircraft operations below the mixing height of 3,000 feet AGL were included in the assessment for each ROI. **Appendix A** contains the ACAM record of air analysis reports for each ROI under all action alternatives. Additional air quality analysis supporting documentation, including the detailed ACAM reports containing the air emission calculations, can be downloaded from the project website at https://laughlin.t-7anepadocuments.com/documents and paper copies are available upon request.

Consistent with EO 14008 and the 2016 CEQ final guidance, this EIS examines GHGs as a category of air emissions. It also examines potential future climate scenarios to determine whether elements of the Proposed Action would be affected by climate change. This EIS does not attempt to measure the actual incremental impacts of GHG emissions from the Proposed Action, as there is a lack of consensus on how to measure such impacts. Global and regional climate models have substantial variation in output and do not have the ability to measure the actual incremental impacts of a project on the environment.

3.2.2.1 Alternative 1

Alternative 1 would result in short- and long-term, less than significant, adverse and beneficial impacts on air quality. The short-term (i.e., 2026 and 2027), adverse impacts would occur from construction in the Laughlin AFB ROI. The long-term (i.e., 2028 and later years), adverse and beneficial impacts would occur from annual net changes of criteria pollutants and GHGs in the Laughlin AFB and MTR ROI. The rate at which the T-38C and T-7A aircrafts' engines emit each air pollutant is different. As such, some pollutants—such as VOC, NO_X, SO_X, and CO_2e—would experience net increases while other pollutants—such as CO, PM_{10}, and $PM_{2.5}$—would experience net reductions.

Table 3-4 provides the estimated total net change in emissions for the Laughlin AFB ROI, which includes all construction activities (in 2026 and 2027), facility operations (during 2028 and later years), personnel changes (during 2030 and later years), and aircraft maintenance and airfield operations (during 2030 and later years). The total net change in annual emissions in the Laughlin AFB ROI from Alternative 1 would not exceed the insignificance indicator of 250 tpy for all criteria pollutants (25 tpy for lead).

Table 3-4. Estimated Annual Net Change in Emissions in the Laughlin AFB ROI for Alternative 1

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2026 (construction)	5.466	14.318	21.951	0.049	14.076	0.539	<0.001	4,799.0
2027 (construction)	1.962	6.294	9.645	0.021	0.219	0.218	<0.001	2,060.2
2028 and 2029 (operations)	<0.001	-0.006	-0.005	<0.001	<0.001	<0.001	<0.001	-6.8
2030 (operations)	23.501	83.174	-144.684	3.868	-4.365	-3.928	<0.001	12,627.2
2031 (operations)	58.152	189.418	-264.041	9.447	-8.081	-7.264	<0.001	29,603.8
2032 (operations)	57.791	189.205	-269.142	9.443	-8.088	-7.270	<0.001	29,082.8
2033 and later (operations)	60.891	195.857	-262.829	9.911	-7.951	-7.144	<0.001	30,473.3
Annual Maximum	60.891	195.857	21.951	9.911	14.076	0.539	<0.001	30,473.3
Insignificance indicator[1]	250	250	250	250	250	250	25	N/A
Exceeds insignificance indicator?	No	No	No	No	No	No	No	N/A

[1] The counties within the Laughlin AFB ROI (i.e., Val Verde and Kinney Counties) are in attainment for all NAAQS. Therefore, the PSD threshold of 250 tpy (25 tpy for lead) was used as an insignificance indicator.

Key: N/A = not applicable

Air emissions from MILCON/UMMC and FSRM project construction during the construction period (i.e., 2026 and 2027) would result in short-term, less than significant, adverse impacts on air quality. Criteria pollutant and GHG emissions would be produced directly from operation of heavy construction equipment, heavy duty diesel vehicles hauling demolition debris and construction materials to and from the project areas, workers commuting daily to and from the project areas, and ground disturbance. All such emissions would be temporary in nature and

produced only when construction is occurring (during 2026 and 2027). The net annual emissions from construction would not exceed the insignificance indicator of 250 tpy (25 tpy for lead).

The air pollutants of greatest concern during the construction period are NO_X, CO, and particulate matter, such as fugitive dust. CO and NO_X are produced from internal combustion engines, such as those found in gasoline-powered equipment and generators. Fugitive dust is produced from earth moving activities and vehicle/equipment travel over paved and unpaved roads. Emissions from construction would be temporary and would cease once construction is complete. In addition, the estimated emissions provided in **Table 3-4** do not account for BMPs and environmental control measures, which are likely to reduce uncontrolled emissions. Construction contractors would employ BMPs and environmental control measures, to the greatest extent practicable, as follows:

1. Electricity from the installation would be used preferentially over the use of generators. All generator use would be pre-approved by the installation air quality manager and adhere to applicable operating procedures.
2. All non-road diesel equipment would comply with the Federal Clean Air Non-road Diesel Rule, which regulates emissions from non-road diesel engines and sulfur content in non-road diesel fuel.
3. All stockpiles of excavated materials located within construction areas would be covered completely with tarping and weighed down sufficiently to prevent uncontrolled dust and material from entering the atmosphere.
4. Dust suppression techniques would be used during construction to reduce air pollution. Recommended methods include application of water, soil stabilizers, or vegetation; use of wind break enclosures; use of covers on soil stockpiles and dump truck loads; use of silt fences; and suspension of earth-movement activities during high-wind conditions (gusts exceeding 25 miles per hour).
5. Measures to reduce diesel emissions would be implemented to the greatest extent feasible. These measures could include switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, repowering older equipment with modern engines, replacing older vehicles, and reducing idling through operator training and contracting policies.
6. Vegetation surrounding new construction would be restored, to the maximum extent possible, as part of landscaping efforts following construction. Restoration of vegetation would help to control fugitive dust emissions from exposed soil areas. In addition, vegetation can improve air quality through uptake and filtering of airborne molecules of criteria pollutants and GHGs, thus reducing adverse impacts on air quality.

Long-term, less than significant, adverse impacts on air quality would occur for Alternative 1 from criteria pollutants. New air emissions within the Laughlin AFB ROI would be produced directly from operation and heating of new facilities starting in 2028, from airfield operations starting in 2030, and from changes in personnel throughout the aircraft transition period. Operational emissions within the Laughlin AFB ROI are shown in **Table 3-4**. Such emissions

would continue indefinitely. **Table 3-5** provides the estimated total net change in emissions for the MTR ROI for Alternative 1. The annual net change of criteria pollutant emissions from operations would not exceed the insignificance indicator of 250 tpy for all criteria pollutants (25 tpy for lead) in either the Laughlin AFB ROI or MTR ROI. Therefore, adverse air quality impacts from operational air emissions of these pollutants would not be significant.

Table 3-5. Estimated Annual Net Change in Operational Emissions in the MTR ROI for Alternative 1

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2030 (operations)	0.356	3.971	-4.242	0.185	-0.097	-0.089	<0.001	559.5
2031 and later (operations)	0.712	7.943	-8.483	0.370	-0.195	-0.179	<0.001	1,119.0
Annual Maximum	0.712	7.943	-4.242	0.370	-0.097	-0.089	<0.001	1,119.0
Insignificance indicator[1]	250	250	250	250	250	250	25	N/A
Exceeds insignificance indicator?	No	No	No	No	No	No	No	N/A

[1] The counties underlying the MTRs are in attainment for all NAAQS. Therefore, the PSD threshold of 250 tpy (25 tpy for lead) was used as an insignificance indicator.
Key: N/A = not applicable

The pollutant of greatest concern from aircraft operations is NO_X, which is emitted when fuel is burned at high temperatures. Although the annual net change of NO_X emissions in the Laughlin AFB ROI starting in 2033 would not exceed the 250 tpy insignificance indicator, annual emissions of NOx within the ROI would be within 22 percent of exceeding 250 tpy. Projected NO_X emissions resulting from Alternative 1 were compared to the most recent comprehensive emissions inventory for Val Verde County (i.e., CY 2020) to determine the relative magnitude of these emissions. The estimated increase of NO_X emissions in the Laughlin AFB ROI would represent approximately 12 percent of the total NO_X emissions generated in Val Verde County in 2020 (195.857 ÷ 1,668.9 x 100 = 11.74 percent). The majority of operational NO_X emissions would result from aircraft operations to an altitude of 3,000 feet AGL and across several square miles that compose airspace overlying Laughlin AFB. At or higher than this altitude, the projected NO_X emissions would be dispersed through the atmosphere to the point where they would not result in substantial ground-level impacts on a localized area. Because Val Verde County is in attainment for all criteria pollutants and the approximate 12 percent increase in annual NO_X emissions of 195.9 tpy would be less than the 250 tpy insignificance indicator, the operational NO_X emissions from Alternative 1 would not be substantial enough to contribute to an exceedance of the NO_X NAAQS for the county.

Table 3-4 and **Table 3-5** show that Alternative 1 would result in an annual net decrease of CO, PM_{10}, and $PM_{2.5}$ for both the Laughlin AFB ROI and MTR ROI. Any reduction of air emissions from operations would result in long-term, less than significant, beneficial impacts on air quality.

Climate Change and GHGs. Construction would produce a net estimated annual maximum of 4,799 tons of direct CO_2e in 2026, representing approximately 2 percent of annual CO_2e

emissions in Val Verde County and less than 0.0007 percent of annual CO_2e emissions in Texas. By comparison, 4,799 tons of CO_2e is approximately the GHG footprint of 969 passenger vehicles driven for 1 year or 549 homes' energy use for 1 year (USEPA 2022c). As such, GHG emissions produced during construction would not contribute meaningfully to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by Val Verde County. Therefore, construction would result in short-term, less than significant, adverse impacts from GHGs. Over the construction and aircraft transition periods, between 2026 and 2032, Alternative 1 would generate an estimated net total of 80,957 tons (73,443 metric tons) of CO_2e in all ROI.

Long-term operational CO_2e emissions for Alternative 1 would start in 2033 and continue indefinitely, with 30,473 tons of CO_2e produced in the Laughlin AFB ROI and 1,119 tons of CO_2e produced in the MTR ROI, for a total of 31,592 tons annually. By comparison, 31,592 tons of CO_2e is approximately the GHG footprint of 6,378 passenger vehicles driven for 1 year or 3,612 homes' energy use for 1 year (USEPA 2022c). Total annual operational CO_2e emissions would represent less than 0.005 percent of the total CO_2e emissions in Texas. As such, air emissions produced during operations would not contribute meaningfully to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced in the state. Therefore, operations for Alternative 1 would result in long-term, less than significant, adverse impacts from GHGs. Annual emissions from stationary sources (i.e., heating and cooling systems) for Alternative 1 would not exceed USEPA's annual 25,000 metric tpy reporting threshold; therefore, Laughlin AFB would not be required to report annual GHG emissions.

Table 3-6 compares each alternative's estimated annual net GHG emissions to the other alternatives and to the statewide, nationwide, and global annual GHG emissions. When compared to the three action alternatives, Alternative 1 would result in the least amount of GHG emissions, with the least potential to contribute to ongoing climate change. In alignment with the DAF *Climate Action Plan*, climate priorities would be considered during the design phase for new buildings. Enhanced energy efficiency, lower GHG emitting technology, reduced embodied carbon in construction materials, sustainable building practices, and carbon-free power generation could offset the predicted increases in operational CO_2e emissions.

Table 3-6. Estimated Annual Net Change in GHG Emissions

Scale	CO_2e Emissions (MMT per year)	Compared to Alternative 1
Global	33,621.5	117,311,371%
U.S.	4,592.4	16,023,697%
Texas	624.0	2,177,247%
Alternative 1	0.028660052	100%
Alternative 2	0.038824241	135%
Alternative 3	0.038907248	136%
No Action Alternative	0.000000000	0%

Source: USEIA 2022
Key: MMT = million metric tons

Ongoing changes to climate patterns in Texas are described in **Section 3.2.1**. These climate changes are unlikely to affect DAF's ability to implement the Proposed Action. **Table 3-7** outlines potential climate stressors and their effects on the Proposed Action, including Alternative 1. All elements of the Proposed Action in-and-of-themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). No future climate scenario or potential climate stressor would have significant effects on any element of the Proposed Action. The climate stressor with the greatest potential to affect the Proposed Action is increased temperature, wind velocity, and drought potential, which can cause aircraft to operate less efficiently and lead to greater fuel burn requirements.

Table 3-7. Effects of Potential Climate Stressors

Potential Climate Stressor	Effects on the Proposed Action
Increased temperature with more frequent and intense heat waves	Minor
Changes in precipitation patterns, including increased storm intensity and drought potential	Minor
Harm to water resources, agriculture, wildlife, and ecosystems	Negligible

Sources: USEPA 2016, AFCEC 2019

3.2.2.2 Alternative 2

Alternative 2 would entail scaling up to approximately 25 percent greater T-7A flight operations than Alternative 1 starting in 2030. Alternative 2 would result in short- and long-term, less than significant, adverse and beneficial impacts on air quality. Short-term (i.e., 2026 and 2027), less than significant, adverse impacts would occur from construction in the Laughlin AFB ROI and long-term (i.e., 2028 and later years), less than significant, adverse and beneficial impacts would occur from annual net changes of criteria pollutants and GHGs in the Laughlin AFB and MTR ROI. Some pollutants—such as VOC, NO_X, SO_X, and CO_2e—would experience net increases while other pollutants—such as CO, PM_{10}, and $PM_{2.5}$—would experience net reductions. The total net change in annual emissions from Alternative 2 would not exceed the insignificance indicator for any criteria pollutant.

Table 3-8 provides the estimated total net change in emissions for the Laughlin AFB ROI, which includes all construction activities, facility operations, personnel changes, and aircraft maintenance and airfield operations. As with Alternative 1, air emissions from construction of the MILCON/UMMC and FSRM projects during the construction period (i.e., 2026 and 2027) would result in short-term, less than significant, adverse impacts on air quality. All such emissions would be temporary in nature and produced only when construction is occurring. Construction contractors would employ BMPs and environmental control measures to reduce criteria pollutant emissions from construction activities to the greatest extent practicable, as identified in **Section 3.2.2.1**.

Table 3-8. Estimated Annual Net Change in Emissions in the Laughlin AFB ROI for Alternative 2

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2026 (construction)	5.466	14.318	21.951	0.049	14.076	0.539	<0.001	4,799.0
2027 (construction)	1.962	6.294	9.645	0.021	0.219	0.218	<0.001	2,060.2
2028 and 2029 (operations)	<0.001	-0.006	-0.005	<0.001	<0.001	<0.001	<0.001	-6.8
2030 (operations)	33.929	105.415	-123.987	5.435	-3.917	-3.516	<0.001	17,282.5
2031 (operations)	81.704	239.660	-217.296	12.987	-7.070	-6.336	<0.001	40,119.8
2032 (operations)	81.343	239.447	-222.397	12.984	-7.076	-6.341	<0.001	39,598.7
2033 and later (operations)	85.213	247.747	-214.556	13.568	-6.906	-6.185	<0.001	41,334.2
Annual Maximum	85.213	247.747	21.951	13.568	14.076	0.539	<0.001	41,334.2
Insignificance indicator[1]	250	250	250	250	250	250	25	N/A
Exceeds insignificance indicator?	No	No	No	No	No	No	No	N/A

[1] The counties within the Laughlin AFB ROI (i.e., Val Verde and Kinney Counties) are in attainment for all NAAQS. Therefore, the PSD threshold of 250 tpy (25 tpy for lead) was used as an insignificance indicator.

Key: N/A = not applicable

As with Alternative 1, long-term, less than significant, adverse impacts on air quality from criteria pollutants would occur from operational air emissions produced during operation and heating of new facilities starting in 2028, from aircraft operations starting in 2030, and from changes in personnel throughout the aircraft transition period. Such emissions would continue indefinitely. The annual operational air emissions from Alternative 2 for the Laughlin AFB ROI are summarized in **Table 3-8** and the MTR ROI are summarized in **Table 3-9**. The annual net change of criteria pollutant emissions from operations would not exceed the insignificance indicator of 250 tpy for all criteria pollutants (25 tpy for lead) in either the Laughlin AFB ROI or MTR ROI. Therefore, adverse air quality impacts from operational air emissions of these pollutants would not be significant.

Although the annual net change of NO_X emissions in the Laughlin AFB ROI starting in 2033 would not exceed the 250 tpy insignificance indicator, annual emissions of NO_X would be within 0.9 percent of exceeding 250 tpy. When compared to the most recent comprehensive emissions inventory for Val Verde County (i.e., CY 2020), the estimated NO_X emissions increase in the Laughlin AFB ROI would represent approximately 15 percent of the total NO_X emissions generated in the county (247.7 ÷ 1,668.9 x 100 = 14.84 percent). At or higher than 3,000 feet AGL, the projected NO_X emissions would be dispersed through the atmosphere to the point where they would not result in substantial ground-level impacts on a localized area. Because Val Verde County is in attainment for all criteria pollutants and the approximate 15 percent increase in annual NO_X emissions of 247.7 tpy would be less than the 250 tpy insignificance indicator, the operational NO_X emissions from Alternative 2 would not be substantial enough to contribute to an exceedance of the NO_X NAAQS for the county.

Table 3-9. Estimated Annual Net Change in Operational Emissions in the MTR ROI for Alternative 2

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2030 (operations)	0.520	4.852	-3.125	0.259	-0.063	-0.058	<0.001	781.6
2031 and later (operations)	0.953	9.683	-8.285	0.484	-0.181	-0.167	<0.001	1,462.2
Annual Maximum	0.953	9.683	-3.125	0.484	-0.063	-0.058	<0.001	1,462.2
Insignificance indicator[1]	250	250	250	250	250	250	25	N/A
Exceeds insignificance indicator?	No	No	No	No	No	No	No	N/A

[1] The counties underlying the MTRs are in attainment for all NAAQS. Therefore, the PSD threshold of 250 tpy (25 tpy for lead) was used as an insignificance indicator.

Key: N/A = not applicable

As with Alternative 1, Alternative 2 would result in an annual net decrease of CO, PM_{10}, and $PM_{2.5}$ for both the Laughlin AFB ROI and MTR ROI (see **Table 3-8** and **Table 3-9**), resulting in long-term, less than significant, beneficial impacts on air quality.

Climate Change and GHGs. Identical to Alternative 1, construction for Alternative 2 would produce a net estimated annual maximum of 4,799 tons of direct CO_2e in 2026, which is approximately the GHG footprint of 969 passenger vehicles driven for 1 year or 549 homes' energy use for 1 year (USEPA 2022c). GHG emissions during construction would represent approximately 2 percent of the annual CO_2e emissions in Val Verde County and less than 0.0007 percent of annual CO_2e emissions in Texas. As such, GHG emissions produced during construction for Alternative 2 would not contribute meaningfully to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by Val Verde County. Therefore, construction would result in short-term, less than significant, adverse impacts from GHGs. Alternative 2 would generate an estimated net total of 107,553 tons (97,570 metric tons) of CO_2e in all ROI over the construction and aircraft transition periods between 2026 and 2032.

Long-term operational CO_2e emissions for Alternative 2 would start in 2033 and continue indefinitely, with 41,334 tons of CO_2e produced in the Laughlin AFB ROI and 1,462 tons of CO_2e produced in the MTR ROI per year, for a total of 42,796 tons annually, an increase of 35 percent from Alternative 1 (see **Table 3-6**). By comparison, 42,796 tons of CO_2e is approximately the GHG footprint of 8,639 passenger vehicles driven for 1 year or 4,893 homes' energy use for 1 year (USEPA 2022c). Total annual operational CO_2e emissions would represent less than 0.006 percent of the total CO_2e emissions in Texas. As such, air emissions produced during operations would not contribute meaningfully to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by the state. Therefore, operations for Alternative 2 would result in long-term, less than significant, adverse impacts from GHGs. Annual emissions from stationary sources (i.e., heating and cooling systems) for Alternative 2 would not exceed the USEPA's annual 25,000 metric tpy

reporting threshold; therefore, Laughlin AFB would not be required to report annual GHG emissions. As with Alternative 1, climate priorities would be considered during the design phase of new buildings in alignment with the DAF *Climate Action Plan*.

The ongoing changes to climate patterns in Texas are unlikely to affect DAF's ability to implement Alternative 2. All elements of Alternative 2 in-and-of-themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). As outlined in **Table 3-7**, no future climate scenario or potential climate stressor would have appreciable effects on any element of Alternative 2.

3.2.2.3 Alternative 3

Alternative 3 would entail both scaling up to approximately 25 percent greater T-7A flight operations than Alternative 1 and increasing the number of T-7A aircraft delivered to Laughlin AFB starting in 2030. To accommodate the additional aircraft, Alternative 3 also includes construction of up to 12 more aircraft shelters than what was analyzed for Alternatives 1 and 2. As a result, Alternative 3 would have the highest construction and operations emissions of all the alternatives.

Alternative 3 would result in short- and long-term, less than significant, adverse and beneficial impacts on air quality. As with Alternatives 1 and 2, short-term (i.e., 2026 and 2027), less than significant, adverse impacts would occur from construction in the Laughlin AFB ROI and long-term (i.e., 2028 and later years), less than significant, adverse and beneficial impacts would occur from annual net changes of criteria pollutants and GHGs in the Laughlin AFB and MTR ROI. Some pollutants—such as VOC, NO_X, SO_X, and CO_2e—would experience net increases while other pollutants—such as CO, PM_{10}, and $PM_{2.5}$—would experience net reductions. For Alternative 3, the total net change in annual emissions would not exceed the insignificance indicator for any criteria pollutant.

Table 3-10 provides the estimated total net change in emissions for the Laughlin AFB ROI, which includes all construction activities, facility operations, personnel changes, and aircraft maintenance and airfield operations. As with Alternatives 1 and 2, air emissions from construction for the MILCON/UMMC and FSRM projects during the construction period (i.e., 2026 and 2027) for Alternative 3 would result in short-term, less than significant, adverse impacts on air quality. All such emissions would be temporary in nature and produced only when construction is occurring. Construction contractors would employ BMPs and environmental control measures, to the greatest extent practicable, as identified in **Section 3.2.2.1**, to reduce criteria pollutant emissions from construction activities. Construction and operational emissions in the Laughlin AFB ROI for Alternative 3 would be slightly higher than those for Alternative 2 because of the construction for the up to 12 additional aircraft shelters and aircraft maintenance and engine testing for the up to 16 additional T-7A aircraft.

Table 3-10. Estimated Annual Net Change in Emissions in the Laughlin AFB ROI for Alternative 3

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2026 (construction)	5.466	14.318	21.951	0.049	14.076	0.539	<0.001	4,799.0
2027 (construction)	1.963	6.317	9.660	0.021	0.219	0.219	<0.001	2,072.4
2028 and 2029 (operations)	<0.001	-0.006	-0.005	<0.001	<0.001	<0.001	<0.001	-6.8
2030 (operations)	34.021	105.918	-122.523	5.465	-3.883	-3.486	<0.001	17,374.0
2031 (operations)	81.796	240.163	-215.833	13.018	-7.036	-6.305	<0.001	40,211.3
2032 (operations)	81.435	239.950	-220.933	13.014	-7.042	-6.311	<0.001	39,690.2
2033 and later (operations)	85.305	248.250	-213.092	13.598	-6.873	-6.155	<0.001	41,425.7
Annual Maximum	85.305	248.250	21.951	13.598	14.076	0.539	<0.001	41,425.7
Insignificance indicator[1]	250	250	250	250	250	250	25	N/A
Exceeds insignificance indicator?	No	No	No	No	No	No	No	N/A

[1] The counties within the Laughlin AFB ROI (i.e., Val Verde and Kinney Counties) are in attainment for all NAAQS. Therefore, the PSD threshold of 250 tpy (25 tpy for lead) was used as an insignificance indicator.
Key: N/A = not applicable

As with Alternatives 1 and 2, long-term, less than significant, adverse impacts on air quality from criteria pollutants would occur from operational air emissions produced from operating and heating the new facilities starting in 2028, from aircraft operations starting in 2030, and from changes in personnel throughout the aircraft transition period. Such emissions would continue indefinitely. The annual operational air emissions for the Laughlin AFB ROI under Alternative 3 are summarized in **Table 3-10** and for the MTR ROI in **Table 3-11**. The annual net change of criteria pollutant emissions from operations would not exceed the insignificance indicator of 250 tpy for all criteria pollutants (25 tpy for lead) in either the Laughlin AFB ROI or MTR ROI. Therefore, adverse air quality impacts from operational air emissions of these pollutants would not be significant.

For Alternative 3, annual emissions of NO_X starting in 2033 would be within 0.7 percent of exceeding 250 tpy in the Laughlin AFB ROI. When compared to the most recent comprehensive emissions inventory for Val Verde County (i.e., CY 2020), the estimated increase of NO_X emissions in the Laughlin AFB ROI would represent approximately 15 percent of the total NO_X emissions generated in the county (248.3 ÷ 1,668.9 x 100 = 14.88 percent). At or higher than 3,000 feet AGL, the projected NO_X emissions would be dispersed through the atmosphere to the point where they would not result in substantial ground-level impacts on a localized area. As with Alternative 2, because Val Verde County is in attainment for all criteria pollutants and the approximate 15 percent increase in annual NO_X emissions of 248.3 tpy would be less than the 250 tpy insignificance indicator, the operational NO_X emissions from Alternative 3 would not be substantial enough to contribute to an exceedance of the county's NO_X NAAQS.

Table 3-11. Estimated Annual Net Change in Operational Emissions in the MTR ROI for Alternative 3

Year	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	Lead (tpy)	CO_2e (tpy)
2030 (operations)	0.520	4.852	-3.125	0.259	-0.063	-0.058	<0.001	781.6
2031 and later (operations)	0.953	9.683	-8.285	0.484	-0.181	-0.167	<0.001	2,072.4
Annual Maximum	0.953	9.683	-3.125	0.484	-0.063	-0.058	<0.001	2,072.4
Insignificance indicator[1]	250	250	250	250	250	250	25	N/A
Exceeds insignificance indicator?	No	No	No	No	No	No	No	N/A

[1] The counties underlying the MTRs are in attainment for all NAAQS. Therefore, the PSD threshold of 250 tpy (25 tpy for lead) was used as an insignificance indicator.
Key: N/A = not applicable

As with Alternatives 1 and 2, Alternative 3 would result in an annual net decrease of CO, PM_{10}, and $PM_{2.5}$ for both the Laughlin AFB ROI and MTR ROI (see **Table 3-10** and **Table 3-11**), resulting in long-term, less than significant, beneficial impacts on air quality.

Climate Change and GHGs. CO_2e emissions for Alternative 3 in the second construction year (i.e., 2027) would be approximately 0.59 percent higher than those for Alternatives 1 and 2 due to the construction of up to 12 additional aircraft shelters. Identical to Alternatives 1 and 2, construction for Alternative 3 would produce a net estimated annual maximum of 4,799 tons of direct CO_2e in 2026, which is approximately the GHG footprint of 969 passenger vehicles driven for 1 year or 549 homes' energy use for 1 year (USEPA 2022c). These GHG emissions would represent approximately 2 percent of annual CO_2e emissions in Val Verde County and less than 0.0007 percent of annual CO_2e emissions in Texas. As such, GHG emissions produced during construction for Alternative 3 would not contribute meaningfully to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by Val Verde County. Therefore, construction would result in short-term, less than significant, adverse impacts from GHGs. Alternative 3 would generate an estimated net total of 107,839 tons (97,830 metric tons) of CO_2e in all ROI over the construction and aircraft transition periods between 2026 and 2032, an increase of approximately 0.3 percent from Alternative 2.

Long-term operational CO_2e emissions for Alternative 3 would start in 2033 and continue indefinitely, with 41,426 tons of CO_2e produced in the Laughlin AFB ROI and 1,462 tons of CO_2e produced in the MTR ROI per year, for a total of 42,888 tons annually, an increase of 36 percent from Alternative 1 (see **Table 3-6**). By comparison, 42,888 tons of CO_2e is approximately the GHG footprint of 8,658 passenger vehicles driven for 1 year or 4,904 homes' energy use for 1 year (USEPA 2022c). As with Alternative 2, total annual operational CO_2e emissions for Alternative 3 would represent less than 0.007 percent of the total CO_2e emissions in Texas. As such, air emissions produced during operations would not contribute meaningfully to the potential effects of global climate change and would not considerably increase the total CO_2e emissions produced by the state. Therefore, operations for Alternative 3 would result in long-term, less than significant, adverse impacts from GHGs. Annual emissions from stationary

sources (i.e., heating and cooling systems) for Alternative 3 would not exceed the USEPA's annual 25,000 metric tpy reporting threshold; therefore, Laughlin AFB would not be required to report annual GHG emissions. As with Alternatives 1 and 2, climate priorities would be considered during the design phase for new buildings, in alignment with the DAF *Climate Action Plan*.

The ongoing changes to climate patterns in Texas are unlikely to affect DAF's ability to implement Alternative 3. All elements of Alternative 3 in-and-of-themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). As outlined in **Table 3-7**, no future climate scenario or potential climate stressor would have appreciable effects on any element of Alternative 3.

3.2.2.4 No Action Alternative

For the No Action Alternative, the affected environment at Laughlin AFB would remain as described in **Section 3.2.1**. The No Action Alternative would not impact air quality. No construction would occur, and there would be no changes in aircraft operations. Air quality conditions, including ongoing GHG emissions, would remain unchanged.

3.2.3 Cumulative Effects

Short- and long-term, less than significant, adverse and beneficial, cumulative effects on air quality would occur from T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**). Criteria pollutants would be emitted directly from building construction, renovation, and demolition; aircraft operations; and heating new building space. Cumulatively, construction associated with T-7A recapitalization and the reasonably foreseeable actions, would result in short-term, intermittent increases in air pollutant emissions on and near the installation during phases of construction that may overlap. Air emissions from construction activities would be temporary in nature and produced only when such activities are occurring. The BMPs and environmental control measures outlined in **Section 3.2.2.1**, including dust suppression, would minimize air quality impacts from construction for T-7A recapitalization and the reasonably foreseeable actions. Operating and heating new facilities from the reasonably foreseeable actions would produce new air emissions, but these air emissions, when combined with similar emissions from T-7A recapitalization, would not degrade air quality appreciably within Val Verde County. The action to divest T-1 aircraft may result in lesser total air emissions at Laughlin AFB and the SUA where both aircraft fly.

3.3 Noise

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as aircraft operations, construction, or vehicular traffic.

Sound varies by intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighting" of dBs, measured in dBA, approximates a frequency response expressing humans' perception of sound. This EIS uses only A-weighted decibels, thus, for brevity, only "dB" is cited. Sounds encountered in daily life and their A-weighted sound levels are shown in **Table 3-12.**

Table 3-12. Common Sounds and Their Levels

Common Outdoor Sounds	Sound Level (dBA)	Common Indoor Sounds
Car horn at 3 feet	100	Rock band
Gas lawnmower at 3 feet	90	Food blender at 3 feet
Noisy urban environment	80	Garbage disposal
Busy highway at 50 feet	70	Vacuum cleaner at 10 feet
Commercial area	60	Normal speech at 3 feet
Quiet urban environment	50	Dishwasher in next room
Quiet rural environment	40	Theater, large conference room

Source: FAA 2022a

Aircraft noise events are seldom steady; therefore, noise metrics have been developed to describe exposure from single events and cumulative exposure from multiple events. Single-event metrics include:

- Maximum Sound Level (L_{max}) – L_{max} is the maximum sound level of the event in dBA.
- Sound Exposure Level (SEL) – SEL is a measure of the total energy of an acoustic event. It represents the level of a 1-second-long constant sound that would generate the same energy as the actual time-varying noise event, such as an aircraft overflight. SEL provides a measure of the net effect of a single acoustic event, but it does not directly represent the sound level at any given time. SEL is presented typically in dBA.

The sound from multiple aircraft events must also be described, giving rise to the following metrics to describe a cumulative noise environment:

- Equivalent Sound Level (L_{eq}) – L_{eq} describes the constant sound level having the same acoustic energy as the time-varying sound over the same period. The period of interest is usually 24-hours ($L_{eq(24h)}$), or an 8-hour school-day ($L_{eq(8h)}$). $L_{eq(24h)}$ is used to assess the potential for long-term hearing loss for individuals living on and around airfields. An outdoor $L_{eq(8h)}$ of 60 dB is used to screen for potential classroom learning interference.
- DNL – DNL is the average sound energy in a 24-hour period with an adjustment added to the nighttime levels. DNL is equal to $L_{eq(24h)}$ for the same period if there are no nighttime activities. Due to their potential to be particularly intrusive, noise events occurring between 10 p.m. and 7 a.m. are assessed a 10 dB adjustment when calculating DNL. DNL is a useful descriptor for aircraft noise because (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour

period. DNL provides a measure of the overall acoustical environment, but, as with SEL, it does not directly represent the sound level at any given time. For well-distributed sound, $L_{eq(24h)}$ is approximately 6.4 dB lower than DNL.

- Onset-Rate Adjusted Monthly Day-Night Average Sound Level (L_{dnmr}) for SUA operations – L_{dnmr} is identical to DNL but includes an onset-rate adjustment for high-speed, low-altitude aircraft events causing startle and assesses SUA operations over the average flying day during the busiest month to account for the sporadic nature of SUA events.
- Number of events (at or) above a specified threshold (NA). As its name implies, the NA metric describes the number of events that meet or exceed a user-specified decibel threshold in the period of interest. L_{max} or SEL thresholds can be used with NA.
    - $NA75L_{max}$ is the total number of events that meet or exceed 75 dB L_{max}. $NA75L_{max}$ is used to assess the potential for outdoor daytime speech interference or school-day classroom learning interference.
    - NA90SEL is the total number of events that exceed 90 dB SEL. NA90SEL is used in assessing the potential for nighttime sleep disturbance.
- Time (at or) above a specified threshold (TA). As its name implies, the TA metric describes the time (in minutes) the specified threshold is met or exceeded in the period of interest. Only an L_{max} threshold can be used with TA.
    - $TA75L_{max}$ is the total time that meets or exceeds 75 dB. $TA75L_{max}$ is typically used in assessing the potential for classroom learning interference, along with $NA75L_{max}$ and $L_{eq(8)}$.

For DAF NEPA documents, DNL is the primary aircraft noise metric. The DoD's guidelines for the use of supplemental metrics (DNWG 2009) were used to identify relevant supplemental metrics, other than SEL, L_{max}, and L_{eq}, used in this EIS. These metrics are provided in **Table 3-13** and are explained further in the following paragraphs.

Speech Interference. The threshold at which aircraft noise begins to interfere with speech intelligibility is 50 dB indoors, and speech interference is often described in terms of $NA75L_{max}$ to account for 25 dB of noise attenuation provided by buildings, such as houses and schools (DNWG 2009).

Sleep Disturbance. The potential for sleep disturbance was assessed for residential areas only and used the NA90SEL metric.

Classroom Learning Interference. The classroom learning interference analysis assumed school day hours from 8 a.m. to 4 p.m., occurring entirely within the DNL daytime period. It was also assumed that schools are operational year-round.

Table 3-13. Guideline Values (Outdoor Values) for Supplemental Noise Metrics

Application	Metric	Unit	Time Period	Recommended Outdoor Thresholds for Reporting Purposes
Speech Interference	NA	Number of Events	15-hour day (DNL daytime; 7 a.m. to 10 p.m.)	75 dB L_{max}
Sleep Disturbance	NA	Number of Events	9-hour night (DNL nighttime; 10 p.m. to 7 a.m.)	90 dB SEL
Classroom Speech Interference	L_{eq}	Decibel	School hours (typically 8-hours)	60 dB (for screening)
Classroom Speech Interference	NA	Number of Events	School hours (typically 8-hours)	75 dB L_{max}
Classroom Speech Interference	TA	Time (minutes)	School hours (typically 8-hours)	75 dB L_{max}
Potential for Hearing Loss	PHL	Decibel	Yearly DNL (Average Annual Day)	80 dB (for screening)
Potential for Hearing Loss	PHL	Decibel	Yearly $L_{eq(24)}$ (Average Annual Day)	80 dB $L_{eq(24h)}$
Wildlife Impacts	L_{max}	Decibel	Overall	(Species specific)

Source: DNWG 2009
PHL = Potential for Hearing Loss

Classroom Speech Interference. Classroom speech interference is assessed only for the hours of instruction. Depending on the institution, 8 hours is typical but that number could vary. First, a screening analysis with the L_{eq} metric is applied to identify schools that may have an interference issue. Schools with outdoor L_{eq} less than 60 dB are screened out and would not likely be affected. For schools with L_{eq} greater than or equal to 60 dB, NA and TA metrics are computed with an L_{max} threshold of 60 dB. All classroom speech interference analyses herein assume evenly distributed flight and runup operations throughout the day for whole hour increments. The school's operating hours were the surrogate for the hours of classroom instruction.

Potential for Hearing Loss (PHL). PHL applies to people living long-term (40 years) in high noise environments. The initial screening criterion for assessing PHL is people exposed to DNL greater than or equal to 80 dB. The threshold for assessing PHL is people exposed to an $L_{eq(24h)}$ of at least 80 dB. PHL is quantified by reporting the number of people exposed to $L_{eq(24h)}$ within 1-dB increments above 80 dB (i.e., 80 to 81 dB, etc.). Those 1-dB increments in $L_{eq(24h)}$ are associated with average Noise Induced Permanent Threshold Shifts (NIPTS) and tenth percentile NIPTS, which describe a person's permanent change in hearing threshold or level. The tenth percentile NIPTS is the NIPTS exceeded by 10 percent of the population, and it is reserved for the most sensitive individuals (DNWG 2013). In addition, the Occupational Safety

and Health Administration (OSHA) and DAF have adopted a 140-dB instantaneous noise level threshold as the threshold for short-term exposure that may induce hearing loss.

Wildlife Impacts. **Section 3.4** provides information on noise impacts to wildlife.

Damage to Structures. Noise from low-level aircraft overflights can cause buildings under their flight path to vibrate, which the occupants experience as the structure shaking and windows rattling. However, based on experimental data and models, noise and vibrations from subsonic aircraft overflights do not cause structural damage to buildings. An impulsive-type noise (i.e., blast noise or sonic boom) above 140 dB is required to generate sufficient energy to damage structures (Siskind et al. 1980 and Siskind et al. 1989).

Regulatory Review and Land Use Planning. The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Noise Control Act specifically exempts aircraft operations and military training activities from state and local noise ordinances. There are no federal, state, or local noise regulations applicable directly to the Proposed Action. Air Force Handbook (AFH) 32-7084, *AICUZ Program Manager's Guide*, denotes that land use guidelines for noise exposure at military airfields are provided in DoD Instruction 4165.57, *Air Installations Compatible Use Zones* (AICUZ), Appendix 3C. **Table 3-14** provides a general overview of recommended aircraft operations noise limits for land use planning purposes.

Table 3-14. Recommended Noise Limits for Land Use Planning

General Level of Noise	Aircraft Noise (DNL)	General Recommended Uses
Low	<65 dB	Noise sensitive land uses acceptable
Moderate	65 to 75 dB	Noise sensitive land uses normally not recommended
High	>75 dB	Noise sensitive land uses not recommended

Source: DAF 2017

Noise exposure from aircraft operations were calculated using the NOISEMAP[3] suite of computer programs, which was developed and is used by DAF for this purpose. The legacy core program within the suite, NMAP Version 7.3, was used to calculate the noise exposure in terms of DNL for existing and proposed average annual daily aircraft flight and ground run-up operations at Laughlin AFB. MOA Range NOISEMAP (MRNMAP) Version 3.0, also part of the NOISEMAP suite, was used to calculate the noise exposure in terms of L_{dnmr} from average day aircraft operations during the busiest month for applicable SUA, such as MOAs and MTRs.

A component of NOISEMAP is NOISEFILE. NOISEFILE is a comprehensive database of measured military and civil aircraft noise data. The NOISEFILE version used for this EIS

[3] The Department of the Navy submitted a report to Congress in November 2021 that addresses the accuracy of the NOISEMAP modeling results versus real-time aircraft sound monitoring. The report concluded that the DoD approved noise models operate as intended and provide an accurate prediction of noise exposure levels from aircraft operations for use in impact assessments and long-term land use planning (DON 2021). This report is available to view on the project website at https://laughlin.t-7anepadocuments.com/documents.

contained flight and ground run-up noise measurements that were recorded in August 2019 from a T-7A prototype.

Acreage and population within bands of cumulative noise exposure (typically DNL) were calculated for Laughlin AFB. In order to estimate the number of people residing within the noise contours, existing parcel boundary land use maps were overlaid on 2020 US Census Blocks that depict the smallest Census enumeration unit. "Populated Area" data polygons were then created by combining Census blocks with the residential land use concentrating population and housing unit values into the residential portion of the census block where people live. For example, the population in some areas is concentrated along a road rather than over several square miles of open or undeveloped land.

Using Geographic Information System (GIS) tools, the noise contours were intersected with these "Residential/Census" data for each DNL contour interval. The resultant wholly or partially encompassed Residential/Census areas were identified, and the proportion of total area within the contour interval was calculated to determine the estimated residential population and housing unit counts ascribed to that interval.

3.3.1 Affected Environment

This section outlines background noise, baseline aircraft noise, and noise abatement procedures at Laughlin AFB and the associated SUA.

3.3.1.1 Laughlin AFB

3.3.1.1.1 Aircraft Noise

The baseline condition is for CY 2021. The baseline condition includes approximately 389,000 annual flight operations (i.e., single take-offs, landings, and patterns combined) performed at Laughlin AFB, or 1,066 average annual daily flight operations. Most of Laughlin AFB's annual flight operations (82 percent) use based[4] T-6 Texan II (single-engine turboprop) aircraft. Based T-38C aircraft (twin-engine afterburning jet trainer, capable of supersonic flight) compose 14 percent of the annual flight operations and are described in detail in **Section 2.2.2.1.2**. The rest of the annual flight operations are based T-1 Jayhawk (twin-engine jet aircraft based on the Beechjet 400 business jet) and various transient aircraft types.

All but two of the nighttime flight operations at Laughlin AFB are performed by based aircraft, and nighttime operations represent approximately 3 percent of the overall annual flight operations at the installation. Approximately 2,200 T-38C operations occur during the DNL nighttime period (10 p.m. to 7 a.m.). All T-38C departures use afterburners until reaching approximately 600 feet AGL, which occurs approximately 1 nautical mile from brake release. See the Noise Model Operational Data Documentation (NMODD) for more detail on modeled flight and runup operations (HMMH 2023).

[4] In this context, "based" refers to aircraft assigned to Laughlin AFB. The antonym of based is transient. Transient aircraft are not assigned to Laughlin AFB and are visiting from other installations. Based and transient operations are modeled and counted separately to account for differences in runway use, flight tracks, and flight profiles.

Figure 3-1 shows the DNL contours for the existing conditions, which are plotted in 5-dB increments, ranging from 65 to 80 dB DNL at Laughlin AFB. The existing 65 dB DNL contour at Laughlin AFB extends just over 1.5 miles from Runway 13C/31C in the northwest direction and almost 3 miles from the centerline of Runway 13C/31C in the southeastern direction. The contour extends slightly more than 1 mile directly south of the airfield fence. Aircraft DNL less than 65 dB is generally compatible with all land uses. The noise exposure conditions also include modeling of CY 2021 maintenance run-up activity by the three based aircraft types, including activity in the existing hush house.

These noise levels, which are often shown graphically as contours on maps, are not discrete lines that sharply divide louder areas from land largely unaffected by noise. Instead, they are part of a planning tool that depicts the general noise environment around the installation based on typical aviation activities. Areas with DNL less than 65 dB can also experience levels of appreciable (single-event) noise, depending upon training intensity or weather conditions. In addition, DNL contours may vary from year to year due to fluctuations in operational tempo due to unit deployments, funding levels, and other factors.

Table 3-15 and **Table 3-16** provide the existing land acreage and estimated population exposed to noise levels 65 dB DNL or greater, respectively. There are approximately 2,818 acres and 96 residents off-installation and 1,920 acres and five residents on-installation exposed to DNL of at least 65 dB.

Table 3-15. Acreage within DNL Contour Bands for Existing Conditions at Laughlin AFB

DNL Contour Band (dB)	On-Installation	Off-Installation	Total
65 to 70	486	1,929	2,415
70 to 75	383	707	1,090
75 to 80	374	174	548
80 to 85	312	8	320
≥85	365	0	365
Total	**1,920**	**2,818**	**4,738**

Source: HMMH analysis
Note: DNL bands are exclusive of upper bounds.

Table 3-16. Estimated Population within DNL Contour Bands for Existing Conditions at Laughlin AFB

DNL Contour Band (dB)	On-Installation	Off-Installation	Total
65 to 70	5	83	88
70 to 75	0	12	12
75 to 80	0	1	1
80 to 85	0	0	0
≥85	0	0	0
Total	**5**	**96**	**101**

Sources: HMMH analysis, U.S. Census Bureau 2020
Notes: 1. Estimated population based on area within individual census blocks.
2. DNL bands are exclusive of upper bounds

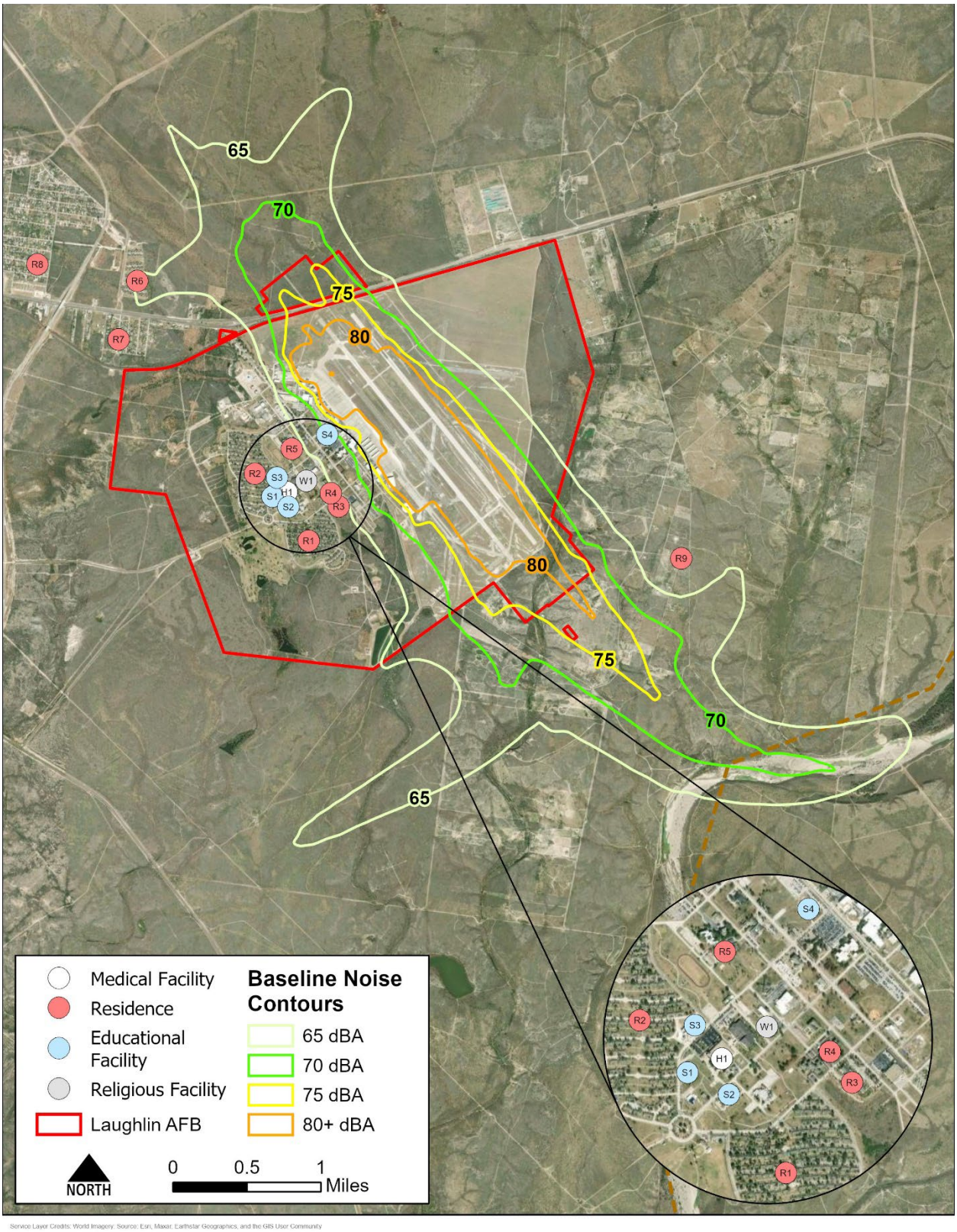

Figure 3-1. Aircraft DNL Contours for Existing Conditions at Laughlin AFB

The population exposed to a DNL of at least 80 dB have a potential for hearing loss. The population estimation method yields no people on-installation or off-installation exposed to DNL of at least 80 dB. See **Section 3.3.1.1.2** for further analysis.

Noise-sensitive locations typically include residential areas, schools, places of worship, and hospitals. Based on data collected from Laughlin AFB personnel and a review of GIS shapefiles for school data in the area affected by the 60 dB DNL contour, 15 representative noise sensitive locations, also known as Points of Interest (POI), were identified and shown in **Figure 3-1**. POI consist of one hospital (the clinic), one place of worship (Laughlin AFB chapel), nine residential areas, and four schools. Centralized locations were identified within residential areas to represent adjacent residences and neighborhoods and are identified as Residential Areas 1 through 9 (POI ID R1 through R9).

All four schools are on-base: the Youth Center (S1), Child Development Center (S2), Roberto Berrerra Elementary School (S3) and the Library/Education Center (S4). As shown in **Table 3-17**, S1 is open from 6:30 a.m. to 6:00 p.m. (i.e., a half hour of the DNL nighttime period and 11 hours of the DNL daytime period [Laughlin FSS 2024a]); S2 is open from 6:30 a.m. to 5:30 p.m. (i.e., a half hour in the DNL nighttime period [Laughlin FSS 2024b]); S3 is open from 7:30 a.m. to 3:00 p.m. (SFDR CISD 2024); and S4 is open from 10:00 a.m. to 6:00 p.m. (Laughlin FSS 2024c). There are no open DNL nighttime hours for S3 and S4.

Table 3-17. Hours of Operation and Time Open for Each School on Laughlin AFB

ID	Representative Location	Typical Times Open	Time Open (hours)
S1	Youth Center	6:30 a.m. to 6:00 p.m.	11.5
S2	Child Development Center	6:30 a.m. to 5:30 p.m.	11.0
S3	Berrerra Elementary School	7:30 a.m. to 3:00 p.m.	7.5
S4	Library/Education Center	10:00 a.m. to 6:00 p.m.	8.0

Sources: S1. Laughlin FSS 2024a
S2. Laughlin FSS 2024b
S3. SFDR CISD 2024
S4. Laughlin FSS 2024c

Table 3-18 provides the existing DNL for the 15 POI. One of the nine residential areas, Gateway Apartments (R6), and one school (the Library/Education Center, S4) are exposed to DNL greater than (or equal to) 65 dB and are considered incompatible existing land uses. The other 13 POI are exposed to DNL less than 65 dB.

Table 3-18. Overall DNL at Representative Locations for Existing Conditions at Laughlin AFB

ID	On or Off Laughlin AFB?	Representative Location	Type	DNL (dB)
H1	On	Clinic	Hospital	59.8
R1	On	Base Housing	Residential	59.3
R2	On	Base Housing	Residential	57.8
R3	On	Lodging	Residential	64.9
R4	On	Officer Dorms	Residential	64.9
R5	On	Enlisted Dorms	Residential	63.0
R6	Off	Gateway Apartments	Residential	**66.1**
R7	Off	Payne Village	Residential	61.9
R8	Off	Val Verde Park Estates	Residential	53.5
R9	Off	Escondido Estates	Residential	60.4
S1	On	Youth Center	School	58.3
S2	On	Child Development Center	School	59.4
S3	On	Berrerra Elementary School	School	59.5
S4	On	Library/Education Center	School	**70.9**
W1	On	Laughlin AFB Chapel	Worship	63.1

Source: HMMH 2023

3.3.1.1.2 Supplemental Metrics Analyses

Supplemental metrics exhibit noise exposure related to potential noise effects, including sleep disturbance, hearing loss, classroom learning interference, and speech interference. These analyses focus on specific POI in the vicinity of Laughlin AFB described in **Section 3.3.1.1**.

Individual Aircraft Overflights. **Table 3-19** provides single-event noise metrics for the T-38C under typical conditions at the airfield and in the SUA. During takeoffs, the T-38C aircraft keeps the afterburner on until it reaches approximately 600 feet AGL. T-38C pilots then disengage the afterburner and maintain military power to continue their climb. At the reference altitude of 1,000 feet AGL, the T-38C generates an SEL of 108 dB. For the other types of airfield operations listed in the table, the T-38C generates SEL between 81 and 88 dB at the altitudes and configurations. For the listed SUA conditions, the T-38C generates SEL between 96 dB and 66 dB.

Table 3-19. Single-Event Sound Levels for T-38C

Operation	Slant Distance to Receptor (feet)	SEL (dBA)	L_{max} (dBA)	Power (%RPM)	Speed (kts)
Afterburner or Military Power Takeoff (1,000 feet AGL)	1,000	108	104	100	250
Arrival (straight-in, 1,000 feet AGL, gear down)	1,000	88	78	88	165
Overhead Break/Visual Flight Rules/Instrument Flight Rules Pattern Downwind Legs (Downwind leg, 2,600 feet above MSL, gear up)	Approximately 1,500	81	72	88	230
Low Level MTR (500 feet AGL)	500	96	92	95	350
High-Altitude MOA Training (8,000 feet AGL)	8,000	66	54	95	350

Source: HMMH 2023

Notes: 1. All numbers are rounded
2. Laughlin AFB nominal elevation: 1,082 feet above MSL.
3. Modeled weather: 73°F, relative humidity is 53 percent, and station pressure is 28.7 inches of mercury.
4. Engine powers given in percent revolutions per minute (% RPM). Speed is given in knots (Nautical miles per hour; kts)
5. All T-38C departures use afterburner for takeoff roll; afterburner secured and power set to military power (100 percent RPM) upon reaching 600 feet AGL.
6. Noise levels are only valid for elevation angles near 90 degrees, i.e., over the receptor.

Speech Interference. **Table 3-20** provides the number of aircraft events greater than (or equal to) 75 dB L_{max} outdoors for relevant POI near Laughlin AFB that occur from 7 a.m. to 10 p.m. ($NA75L_{max,day}$). On average, fewer than 0.05 speech-interfering events per daytime hour are estimated for Val Verde Park Estates (R8). The speech interference for residential areas besides R8 ranges from 2.6 to nearly 20 events per daytime hour. No run-up events are estimated to cause speech interference.

Table 3-20. Potential for Outdoor Speech Interference for Existing Conditions at Laughlin AFB

ID	Representative Location	Events Per Daytime Hour
H1	Clinic	3.1
R1	Base Housing	2.6
R2	Base Housing	2.6
R3	Lodging	5.0
R4	Officer Dorms	5.0
R5	Enlisted Dorms	3.5
R6	Gateway Apartments	5.0
R7	Payne Village	19.7
R8	Val Verde Park Estates	<0.05
R9	Escondido Estates	4.5
W1	Laughlin AFB Chapel	3.1

Source: HMMH 2023

Notes:

1.) NA75L_{max}; POI assessed for DNL daytime (7 a.m. to 10 p.m.)

2.) Payne Village experiences a relatively high number of events because it is directly underneath the T-6 overhead break flight track for Runway 13L.

Classroom Learning Interference. **Table 3-21** provides the L_{eq} for the school POI. For the on-installation Youth Center (S1), $L_{eq(12h)}$ was calculated by scaling the DNL nighttime operations by 0.01 (i.e., 0.25×0.5÷9) and by scaling the DNL daytime operations by 0.19 (i.e., 0.25×11.5÷15). The operations were scaled by 0.25 because the Youth Center only operates from 6:30 a.m. to 6:00 p.m. for a quarter of the year during the summer. For the Child Development Center (S2), $L_{eq(11)}$ was calculated by scaling the DNL nighttime operations by 0.06 (i.e., 0.5÷9) and by scaling the DNL daytime operations by 0.7 (i.e., 10.5÷15). For the Berrerra Elementary School (S3) and the Library/Education Center (S4), $L_{eq(8h)}$ was calculated by scaling the DNL daytime operations by 0.5 (i.e., 8÷15).

Table 3-21. Screening for Potential Classroom Speech Interference for Existing Conditions at Laughlin AFB

ID	Representative School	Type of L_{eq}	School-Day $L_{eq(8h)}$ (dB)
S1	Youth Center	$L_{eq(12h)}$	53.6
S2	Child Development Center	$L_{eq(11h)}$	60.6
S3	Berrerra Elementary School	$L_{eq(8h)}$	60.8
S4	Library/Education Center	$L_{eq(8h)}$	72.2

Source: HMMH 2023

The Child Development Center, Berrerra Elementary School, and Library/Education Center have an L_{eq} greater than 60 dB, necessitating discussion of NA and TA. The NA and TA metrics for the representative schools are provided in **Table 3-22**, with the Child Development Center (S2) experiencing 2.5 events per hour and approximately 6 minutes per day (at or) above 75 dB L_{max}. Berrerra Elementary School (S3) experiences 2.7 events per hour and approximately 5 minutes per day at or above 75 dB L_{max}. The Library/Education Center (S4) experiences 6.3 events per hour and approximately 10 minutes per day (at or) above 75 dB L_{max}.

Table 3-22. Potential for Classroom Speech Interference for Existing Conditions at Laughlin AFB

ID	Representative School	NA75L_{max} (events/hour)	TA75L_{max} (minutes/day)
S2	Child Development Center	2.5	5.7
S3	Berrerra Elementary School	2.7	4.7
S4	Library/Education Center	6.3	10.2

Source: HMMH 2023

Sleep Disturbance. The sleep disturbance analysis only includes the residential POI during nighttime hours (10 p.m. to 7 a.m.). All nine residential POI experience no sleep disturbing events per night, on average. Although 3 percent of all flight operations are during those hours, none rise to 90 dB SEL at the residential POI.

Potential for Hearing Loss. The 80 dB DNL contour extends beyond the boundaries of the installation but includes no residences or individuals (see **Table 3-16**); thus, an $L_{eq(24h)}$ analysis is not required for PHL, and there is no PHL for the existing conditions. **Figure 3-2** shows the 80 dB $L_{eq(24h)}$ contour for existing conditions at Laughlin AFB.

Individual aircraft events at Laughlin AFB do not generate instantaneous noise levels above 140 dB for the off-installation population; thus, hearing damage is not anticipated from existing conditions.

Damage to Structures. Individual aircraft events at Laughlin AFB do not generate impulsive-style noise levels above 140 dB; therefore, there is no potential damage to structures from aircraft noise.

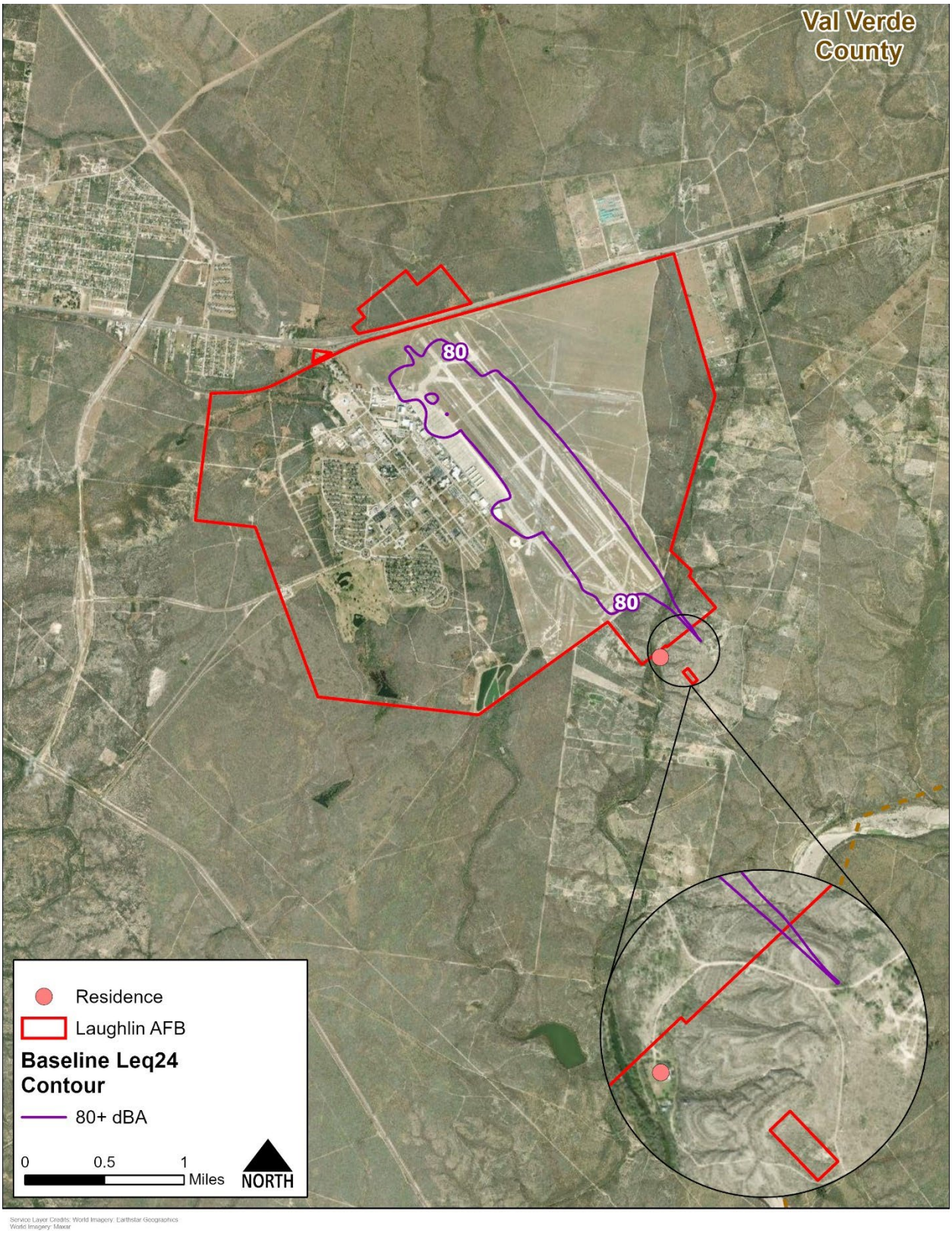

Figure 3-2. 24-Hour Equivalent Sound Level Contour of 80 dB for Existing Conditions at Laughlin AFB

3.3.1.1.3 Existing Noise Abatement Procedures for Laughlin AFB

This section provides an overview of the existing noise abatement procedures and strategies that have been developed primarily through the installation's AICUZ program and the communities' Joint Land Use Study (JLUS).

3.3.1.1.3.1 AICUZ

Laughlin AFB has an active AICUZ program that informs the public about its aircraft noise environment and recommends specific actions for local jurisdictions with planning and zoning authority that can enhance the health, safety, and welfare of those living near the installation. To implement the AICUZ program, the installation is required to take the following actions:

- Prepare periodic AICUZ updates to quantify aircraft noise zone areas and provide compatible land use recommendations to local municipalities.
- Coordinate with federal, state, and local agencies and community leaders to maintain public awareness of the AICUZ program.
- Promote encroachment partnering projects to achieve long-term encroachment protection.
- Use Hush House and Test Cell buildings to suppress noise from high power maintenance engine runs.
- Minimize flight and maintenance operations during nighttime periods.

The current AICUZ plan for Laughlin AFB was published in 2008 (Laughlin AFB 2008), and it is considered a current noise-management measure that describes the DAF's planning perspective for compatible land use (DAF 2017).

As outlined in the AICUZ plan, DAF strives to be a good neighbor and actively pursues operational measures to control aircraft noise effectively. Noise abatement procedures apply to flight operations, as well as to engine run-up and maintenance operations conducted on the installation. To the greatest extent possible, flights are routed over sparsely populated areas to reduce the exposure to noise. As part of DAF regulations, commanders are required to periodically review existing traffic patterns, instrument approaches, weather constrictions, and operating practices in relation to populated areas and other local situations.

3.3.1.1.3.2 Del Rio JLUS

Whereas the AICUZ plan represents DAF's compatible land use recommendations to the community, a JLUS is a community-developed document. The community-led JLUS encourages collaborative planning and communication while encouraging compatible development near military installations as those communities adjoining military installations experience growth. In 2008, the city of Del Rio completed a JLUS in collaboration with DAF and the communities surrounding Laughlin AFB (City of Del Rio 2008). An update to the JLUS, referred to as the Laughlin AFB Compatible Use Study, currently is in development and is anticipated to be complete in late 2023.

3.3.1.2 Special Use Airspace

Airspaces assessed in this analysis include the flight areas within the SUA listed in **Table 3-1** (i.e., the Laughlin 1, Laughlin 2, and Laughlin 3 MOAs and MTRs IR-169, IR-170, VR-143, VR-165, VR-168, and VR-187). Modeling was performed for Laughlin 1 and IR-169, IR-170, VR-165, and VR-187, while Laughlin 2, Laughlin 3, VR-143, and IR-168 were not modeled due to seldom and irregular usage by aircraft from Laughlin AFB. Primarily, only Laughlin AFB-based aircraft use the modeled SUA, but that does not preclude the possibility of occasional use by other DoD aviation assets in the region.

The Laughlin 1 MOA has a floor of 9,000 feet above MSL, while the other modeled MTRs extend to 500 feet AGL or 1,000 feet AGL. **Table 3-23** provides the CY 2021 SUA usage by each based aircraft at Laughlin AFB. None of the existing condition sorties using SUA occur during the L_{dnmr} nighttime (10 p.m. to 7 a.m.).

Table 3-23. Modeled SUA and Sorties for Existing Conditions

SUA	Altitudes	Busiest Month (CY 2021)	T-38C Busiest Month Sorties	T-1 Busiest Month Sorties	Total Busiest Month Sorties
Laughlin 1 MOA	9,000 feet to 17,999 feet above MSL	June	954	222	1,176
IR-169	100 feet AGL to 4,000 feet above MSL	March	18	8	26
IR-170	100 feet AGL to 4,000 feet above MSL	January	6	-	6
VR-165	Surface to 4,000 feet above MSL	January	18	-	18
VR-187	500 feet to 1,500 feet AGL	June	18	56	74

Source: HMMH 2023

The specific flight areas within the SUA analyzed for this project are provided in **Table 3-23**. For the MOAs, the modeled flight areas consist primarily of sectors within each MOA. The entire lengths of the MTRs were modeled with their established route widths.

Noise levels from the SUA are below the reported limit of the noise model due to high altitude operations in the Laughlin 1 MOA and limited operations in the MTRs. The existing L_{dnmr} for all areas are less than 65 dB and compatible with all land uses.

3.3.2 Environmental Consequences

This section discusses noise from construction, noise from aircraft, potential changes to land use compatibility, and potential noise effects to humans due to implementing Alternative 1 (**Section 3.3.2.1**), Alternatives 2 and 3 (**Section 3.3.2.2**), and the No Action Alternative (**Section 3.3.2.3**).

The noise section differs from the other environmental resources sections analyzed in this EIS because it combines Alternatives 2 and 3 in the same section (i.e., **Section 3.3.2.2**). The analysis for these two alternatives was combined into the same section for simplicity because both alternatives entail aircraft operations that are 25 percent greater than Alternative 1, and the impacts on noise result from aircraft operations. The delivery of up to 16 additional T-7A aircraft to Laughlin AFB and the construction of up to 12 additional T-7A shelters on the Laughlin AFB aircraft parking ramp for Alternative 3 (as compared to Alternative 2) would have no additional impacts on noise, except construction-related noise would last slightly longer.

Because the T-7A is a new aircraft and not yet accepted into the DAF inventory or flown for DAF training, the exact T-7A flight parameters, such as flight tracks and altitudes, are unavailable until DAF introduces the T-7A and begins flying it for pilot training. T-7A flight tracks and altitudes were assumed to be the same as the T-38C operations. Unlike the T-38C, the T-7A would use the afterburner for only 5 percent of its departures, compared to the T-38C's 100 percent of departures. The T-7A would shut off its afterburners at approximately the same altitude and distance as the T-38C (i.e., 600 feet AGL at approximately one nautical mile from brake release).

The T-7A aircraft has distinctly different operating characteristics than the T-38C, and, if the T-7A is introduced, DAF would determine the safest, most efficient, and least intrusive flight operations for T-7A training at Laughlin AFB. Once the T-7A aircraft begin to arrive at Laughlin AFB, DAF would (1) analyze T-7A flying patterns and operational settings, (2) update the installation's AICUZ plan, and (3) support the community in developing a JLUS for the installation and surrounding community. These actions would allow DAF to continue its active AICUZ program at Laughlin AFB, which strives to pursue operational measures to effectively control aircraft noise and recommend specific actions for local jurisdictions to enhance the health, safety, and welfare of those living near the installation.

3.3.2.1 Alternative 1

Alternative 1 would result in short- and long-term, less than significant, adverse impacts on the noise environment. Short-term impacts would be due to noise generated by heavy equipment during construction. Long-term impacts would be due to the introduction of the T-7A aircraft and the increased operations. Long-term changes in operational noise would increase in areas of incompatible land use on and adjacent to Laughlin AFB.

3.3.2.1.1 Laughlin AFB

3.3.2.1.1.1 Construction Noise

Construction associated with this project would require the use of heavy equipment that would generate short-term increases in noise near the project areas. Maximum noise levels

associated with common construction equipment at 50 feet generally range from 73 dB for a power generator to 101 dB for a pile driver.[5] With multiple types of equipment operating concurrently, noise levels can be higher within several hundred feet of active construction and demolition areas.

DoD Instruction 4715.13, *DoD Operational Noise Program*, does not indicate a threshold of significance for construction noise impacts (DoD 2020). This instruction does not reference other construction noise guidance; therefore, this analysis refers to Federal Highway Administration guidance for evaluating construction noise. Federal Highway Administration policy considers an hourly Equivalent Sound Level ($L_{eq(h)}$) of 67 dB an exterior impact for residential and recreational uses (23 CFR Part 772, Table 1).

Construction activities would include the laydown area for modular construction and general requirements for equipment access and material delivery; the storage of materials, equipment, and tools; employee access and vehicle parking; utility impairment requirements; and safety requirements. Nighttime and weekend work is not planned as a part of the construction schedule.

All construction in support of the Proposed Action would be within the Laughlin AFB boundary, be collocated with other existing noise-compatible activities, and end with the facility construction and modification phase.

Figure 3-3 shows the locations of the MILCON/UMMC and FSRM project areas relative to the POI. Based on the minimum 4,000-foot distance between the construction areas and the nearest off-installation noise sensitive land uses (i.e., POI R6 and R7), there would be no anticipated noise impacts to off-installation residents from construction activities.

POI S4—the Library/Education center—is the nearest POI (i.e., at 860 feet) to a construction area, and there are five noise-sensitive residential receptors within 2,000 feet of the construction areas. POI R1 and R2 are 1,900 feet from the nearest construction area. POI R3 is approximately 1,300 feet, and POI R4 and R5 are approximately 1,000 feet from the nearest construction area. Based on estimated equipment usage percentages, noise levels were calculated at 860, 1,000, and 1,300 feet from on-site construction and staging of construction vehicles, as shown in **Table 3-24**. Temporary construction noise is not expected to result in significant impacts on any noise-sensitive site. Project construction is anticipated to produce L_{max} of approximately 58 dB at 2,000 feet from the site. At these distances, the on-installation POI would still experience L_{max} below the 67 dB criterion.

In addition, various facilities within the Laughlin AFB operations area, including flightline activity where routine daily activities contribute to a higher-than-normal ambient noise level, are within 2,000 feet of the construction areas. The $L_{eq(h)}$ would remain below the 67 dB criterion for a significant noise impact at residential or recreational facilities. Operation of the new facilities at Laughlin AFB is not expected to generate any additional noise levels.

[5] 50 feet is the standard reference distance used in U.S. Department of Transportation, Federal Highway Administration guidance, including guidance for the evaluation of construction equipment noise (USDOT 2006).

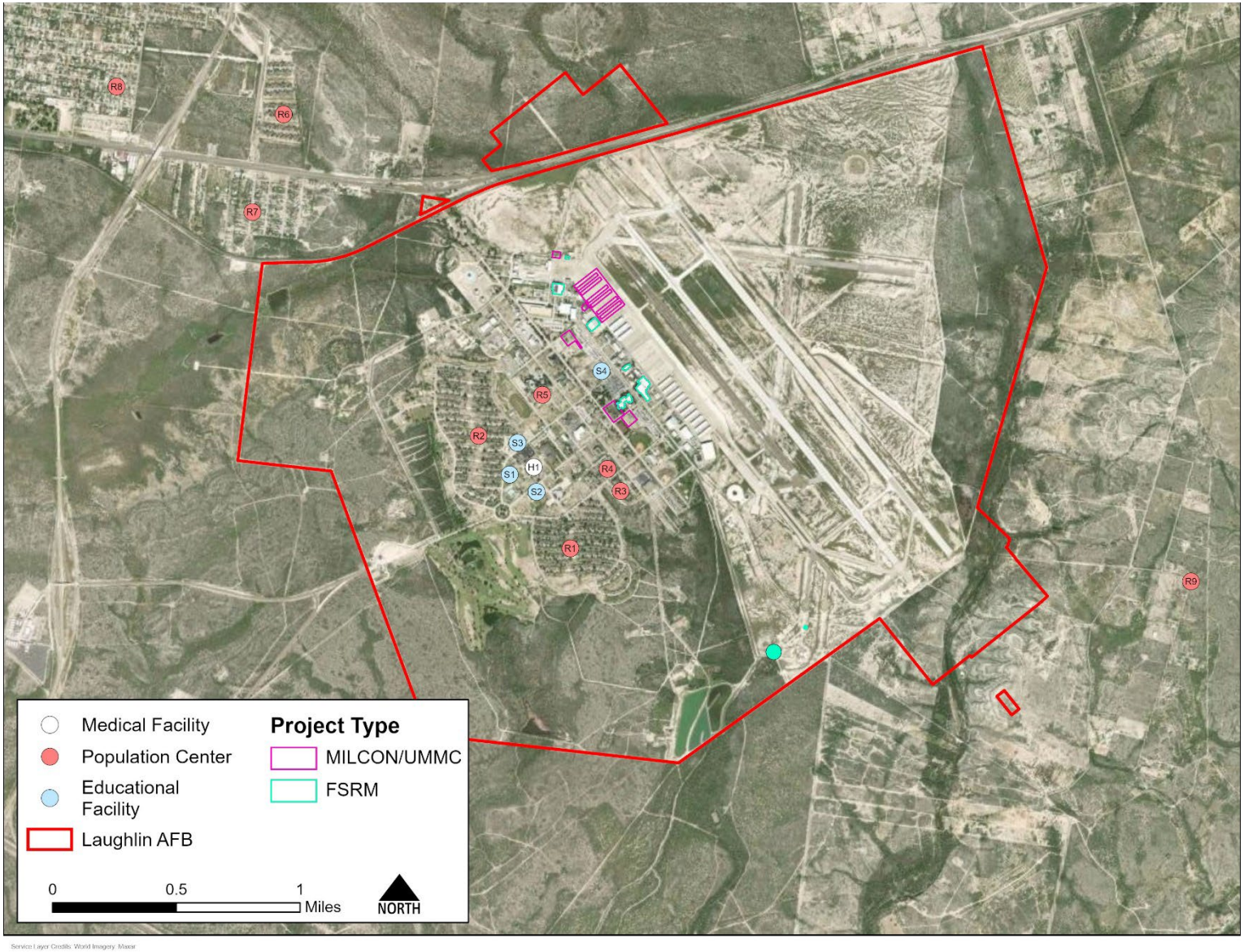

Figure 3-3. Proposed Construction Activities at Laughlin AFB

Table 3-24. Estimated Noise Levels for Proposed Construction Equipment at Nearby Properties

Equipment Description	Equipment Usage (percent)[1]	Noise Level at 50 feet, L_{max} (dB)[2]	L_{max} at 1,300 feet from Construction Site (dB)	Hourly L_{eq} at 1,300 feet from Construction Site (dB)	L_{max} at 1,000 feet from Construction Site (dB)	Hourly L_{eq} at 1,000 feet from Construction Site (dB)	L_{max} at 860 feet from Construction Site (dB)	Hourly L_{eq} at 860 feet from Construction Site (dB)
Paver	50	77	51	46	51	48	53	50
Dump Truck	40	77	50	44	50	47	52	48
Pickup Truck	40	75	49	43	49	45	50	46
Roller	20	80	54	45	54	47	55	48
Dozer	40	82	56	49	56	52	57	53
Excavator	40	81	55	48	55	51	56	52
Chain Saw	20	84	58	48	58	51	59	52
Compactor (ground)	20	83	57	48	57	50	59	52
Concrete Saw	20	90	64	54	64	57	65	58
Crane	16	81	55	44	55	47	56	48
		Total	**61[3]**	**58[4]**	**64[3]**	**61[4]**	**65[3]**	**62[4]**

Source: HMMH analysis

[1] Usage percentage is the amount of time that a piece of equipment is anticipated to be in operation during each hour of a 24-hour day.

[2] Construction Noise Handbook (USDOT 2017)

[3] Total L_{max} is the value for the loudest piece of equipment at 2,000 feet (i.e., concrete saw).

[4] Total L_{eq} is the combined average of all equipment at 2,000 feet.

An hourly L_{eq} of at least 67 dB would result in a noise impact.

3.3.2.1.1.2 Aircraft Noise

For Alternative 1, approximately 432,000 total flight operations (i.e., single take-offs, landings, and patterns combined) would be performed at Laughlin AFB each year, which is an average of 1,183 flight operations per day. Most of Laughlin AFB's annual flight operations (74 percent) would be performed by based T-6 Texan II aircraft. Based T-7A aircraft (single-engine jet trainer; capable of supersonic flight) would represent 23 percent of the annual flight operations. The rest of the annual flight operations would be performed by based T-1 aircraft and various transient aircraft types. No based T-38C operations would remain after the full complement of T-7A aircraft is received and operational. The current operational levels for T-1, T-6, and transient aircraft were used for the Alternative 1 noise analysis. **Section 3.3.3** provides the noise impacts from Alternative 1 in concert with the reasonably foreseeable actions, including the action to divest T-1 aircraft from Laughlin AFB.

All but two of the 10,301 nighttime flight operations at Laughlin AFB would be performed by the based T-7A, T-1, and T-6 aircraft, and the nighttime flight operations would represent approximately 2 percent of total annual flight operations at the installation. With 493 nighttime flight operations, T-7A aircraft would account for 5 percent of the DNL nighttime operations.

The T-7A aircraft are proposed for arrival and immediate use beginning in 2030. The increase in T-7A aircraft and associated training operations would be incremental through 2032. In 2032, the full complement of T-7A aircraft would arrive at Laughlin AFB and the number of T-7A aircraft operations would stabilize to the full rate of Alternative 1 implementation. During the period from 2030 to 2032, the rate of increased area and population within the 65 dB DNL contour would increase incrementally.

T-7A aircraft would perform similar numbers of arrivals and departures as existing T-38C levels, but closed pattern operations would increase by a factor of nearly 2.5 (approximately 40,000 annual operations).

Noise exposure for Alternative 1 also includes modeling proposed maintenance run-up activity by the existing based aircraft types and the proposed T-7A, including activity in the proposed hush house. Alternative 1 would replace the existing hush house facility, which is located at the north end of the airfield's aircraft parking area, adjacent to the taxiway near the northern end of Runway 13R/31L. The proposed hush house would be moved directly west to the end of the apron (less than 0.1 mile). The jet engine orientation while in the proposed hush house would change from a true heading of 90 degrees in the existing case to 180 degrees for Alternative 1. See the NMODD for further information about modeled flight and run-up activity (HMMH 2023).

Noise levels on and adjacent to Laughlin AFB with the proposed T-7A aircraft were calculated based on full implementation of Alternative 1 in 2032. **Figure 3-4** shows the modeled DNL contours for Alternative 1. With full implementation of Alternative 1 in 2032, the 65 dB DNL contour at Laughlin AFB would extend approximately 3.2 miles from the south end and 2.2 miles from the north end of Runway 13C/31C, 3 miles east from the end of Runway 13L/31R, and almost 1.5 miles west of Runway 13R/31L. The Alternative 1, 65 dB contour would extend 0.5 mile farther than the baseline 65 dB contour to the west of the airfield, almost to State Highway Loop 79. The southeast part of the 65 dB contour following Sycamore Creek would expand from the baseline by 0.5 mile in all directions. Aircraft DNL less than 65 dB is generally compatible with all land uses.

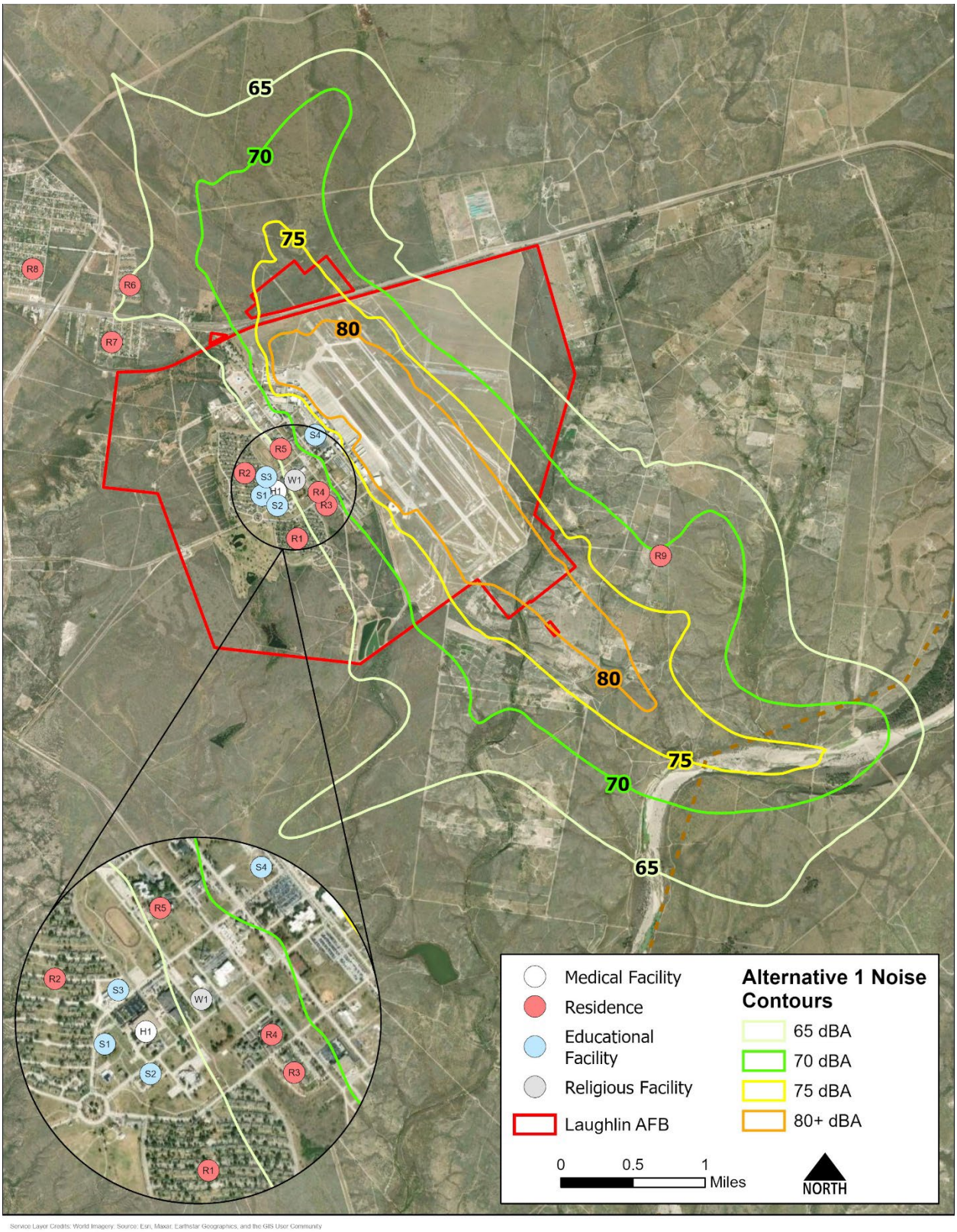

Figure 3-4. Aircraft DNL Contours for Alternative 1 at Laughlin AFB

Table 3-25 and **Table 3-26** provide the land acreage and population exposed to DNL of at least 65 dB for Alternative 1 at Laughlin AFB, respectively. Off- and on-installation acreage contained within the 65 dB DNL contour would be approximately 6,185 and 2,554 acres, respectively. Alternative 1 would expose 225 people off-installation to DNL of at least 65 dB.

Table 3-25. Acreage within DNL Contour Bands for Alternative 1 and Change in Acreage from Existing Conditions at Laughlin AFB

DNL Contour Band (dB)	On-Installation Acreage	Off-Installation Acreage	Total Acreage	Change in On-Installation Acreage	Change in Off-Installation Acreage	Change in Total Acreage
65 to 70	705	3,289	3,994	219	1,360	1,579
70 to 75	516	1,988	2,504	133	1,281	1,414
75 to 80	458	736	1,194	84	562	646
80 to 85	394	170	564	82	162	244
≥85	481	2	483	116	2	118
Total	**2,554**	**6,185**	**8,739**	**634**	**3,367**	**4,001**

Source: HMMH analysis

Note: DNL bands are exclusive of upper bounds.

Table 3-26. Estimated Population within DNL Contour Bands for Alternative 1 and Change in Population from Existing Conditions at Laughlin AFB

DNL Contour Band (dB)	On-Installation Population	Off-Installation Population	Total Population	Change in On-Installation Population	Change in Off-Installation Population	Change in Total Population
65 to 70	183	181	364	178	98	276
70 to 75	0	30	30	0	18	18
75 to 80	0	12	12	0	11	11
80 to 85	0	2	2	0	2	2
≥85	0	0	0	0	0	0
Total	**183**	**225**	**408**	**178**	**129**	**307**

Sources: HMMH analysis, U.S. Census Bureau 2020

Notes: 1. Estimated population based on area within individual census blocks at full implementation of Alternative 1 with the full complement of T-7A aircraft.

2. DNL bands are exclusive of upper bounds.

Population exposed to DNL of at least 80 dB would have a PHL. The population estimation method, described in **Section 3.3,** yields two people off-installation who would be exposed to DNL of at least 80 dB, no residential structures can be identified within the 80 dB DNL contour using currently available aerial photographs of the area. See **Section 3.3.2.1.1.3** for further analysis on PHL.

Figure 3-5 shows a comparison of the 65 dB DNL contours for the existing condition and Alternative 1. Alternative 1 would result in a general expansion of the 65 dB DNL contour to the north and south along runway headings and to the northeast. Along the centerline of Runway 13C/31C, the 65 dB DNL contour for Alternative 1 would extend approximately 3,200 feet to the north and 1 mile to the south, past the extents of the existing 65 dB DNL contour. The 65 dB DNL contour on the east side of the installation would be extended approximately 1,500 feet, and the 65 dB DNL lobe south of Laughlin AFB would be extended approximately 1,500 feet past the existing 65 dB DNL contour.

Table 3-25 and **Table 3-26** provide the change in acreage and population within the DNL contour bands for Alternative 1, respectively, relative to existing conditions. Compared to existing conditions, the acreage within the off-installation 65 dB DNL contour for Alternative 1 would increase by 120 percent (to 6,185 acres) while the population would increase by 134 percent (to 225 people).

The additional 3,367 acres and 129 people off-installation would constitute an expansion primarily on the east and south sides of the airfield, expanding beyond the border of Val Verde and Kinney Counties. These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural.

Expansion of the DNL contours would be due to the introduction of the T-7A aircraft and increased closed pattern operations. The expansion to the southeast of the airfield would be due primarily to daytime and T-7A closed pattern operations. The expansion of the DNL contours to the south of the airfield would be due primarily to the departure phase of T-7A departures and patterns, particularly outside and inside downwind patterns. The contour expansion off the northern runway end would be for similar reasons as for the southern end.

Table 3-27 provides the DNL for the 15 POI under Alternative 1. Four of the nine residential areas would be newly exposed to DNL greater than (or equal to) 65 dB and would be considered incompatible land uses. The Library/Education Center (S4) and the Escondido Estates (R9) would be exposed to DNL greater than or equal to 70 dB. The Laughlin AFB chapel (W1) would be newly exposed to DNL greater than 65 dB. The other eight POI would be exposed to DNL less than 65 dB.

The nine residential areas would be exposed to DNL increases between approximately 1 and 9 dB. The four schools would be exposed to DNL increases between approximately 2 and 4 dB. The increases would be due to the introduction of the T-7A and its associated increases in departure and pattern training operations.

Four of the modeled residential areas would be newly exposed to DNL of at least 65 dB. Neither the clinic nor any of the schools would be newly exposed to DNL of at least 65 dB due to T-7A operations, compared to existing conditions.

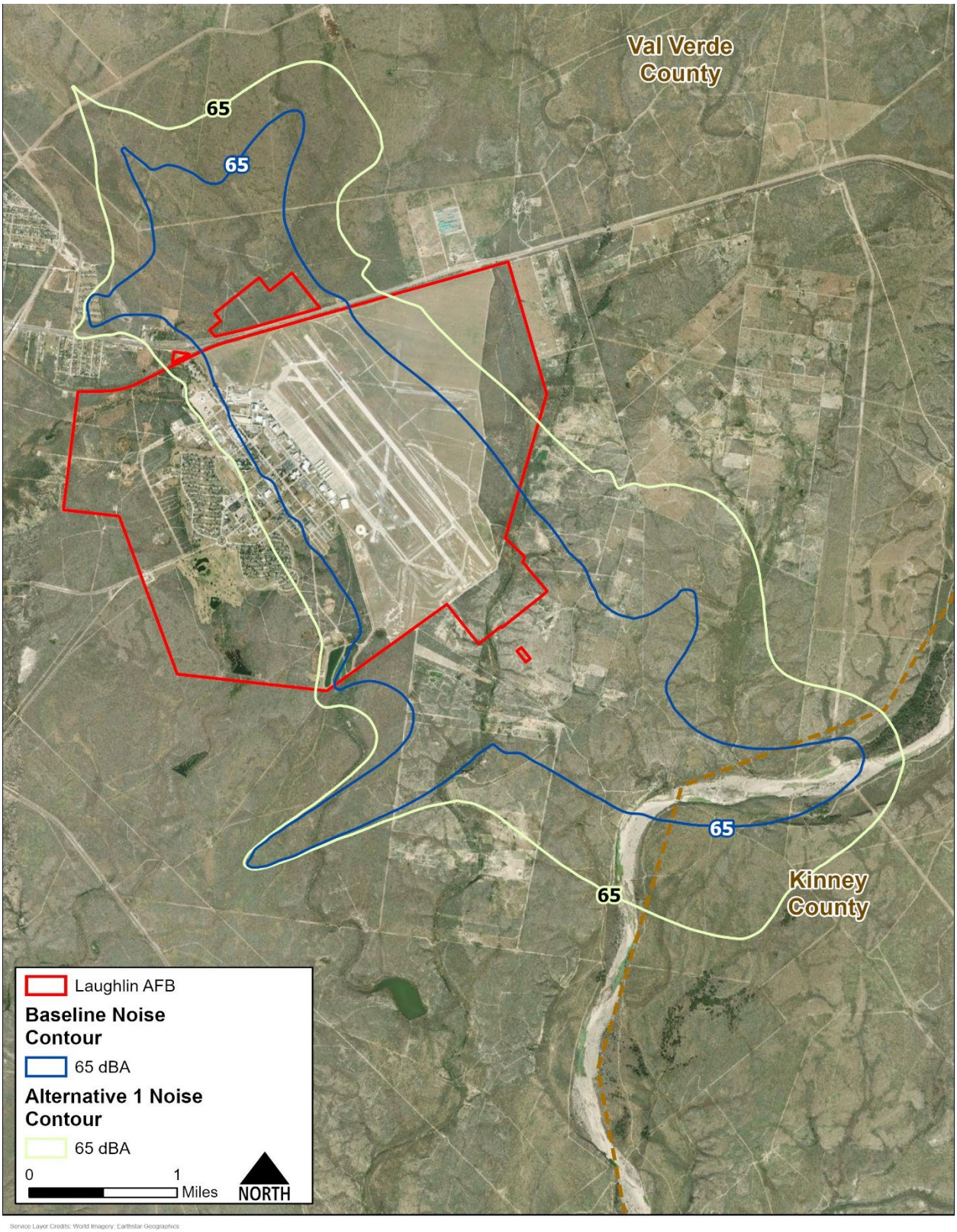

Figure 3-5. Comparison of the 65 dB DNL Contours for Alternative 1 and Existing Conditions at Laughlin AFB

Table 3-27. Overall DNL at Representative Locations for Alternative 1 at Laughlin AFB

ID	On or Off Laughlin AFB?	Representative Location	Existing Conditions DNL (dB)	Alternative 1 DNL (dB)	Change in DNL (dB)
H1	On	Clinic	59.8	63.8	4.0
R1	On	Base Housing	59.3	63.4	4.1
R2	On	Base Housing	57.4	61.5	4.1
R3	On	Lodging	64.9	**68.7**	3.8
R4	On	Officer Dorms	64.9	**68.7**	3.8
R5	On	Enlisted Dorms	63.0	**67.0**	4.0
R6	Off	Gateway Apartments	**66.1**	**66.8**	0.7
R7	Off	Payne Village	61.9	63.1	1.2
R8	Off	Val Verde Park Estates	53.5	56.0	2.5
R9	Off	Escondido Estates	61.7	**70.4**	8.7
S1	On	Youth Center	58.3	62.3	4.0
S2	On	Child Development Center	59.4	63.3	3.9
S3	On	Berrerra Elementary School	59.5	63.5	4.0
S4	On	Library/Education Center	**70.9**	**73.1**	2.2
W1	On	Laughlin AFB Chapel	63.1	**66.9**	3.8

Source: HMMH 2023
Note: **Bold** data values indicate DNL greater than or equal to 65 dB.

3.3.2.1.1.3 Supplemental Metrics Analyses

Individual Aircraft Overflights. The supplemental metrics required analyses of noise exposure relating to potential noise effects, including sleep disturbance, hearing loss, classroom learning interference, and speech interference. These analyses focus on specific POI in the vicinity of Laughlin AFB and are described in **Section 3.3.1.1.1**.

Table 3-28 compares the SEL and L_{max} of the based T-38C and the proposed based T-7A for typical conditions at the airfield and in the SUA. T-7A departure flight profiles would be identical to the T-38C in terms of securing afterburner, altitudes, and speeds. However, as mentioned in **Section 3.3.2**, only 5 percent of T-7A departures would use afterburner, compared to 100 percent of the T-38C departures. For the three airfield conditions shown (first three rows of **Table 3-28**), the T-7A's SELs would be no more than 2 dB greater than the T-38C's SELs. The T-7A would have L_{max} values between 1 and 5 dB greater than the T-38C. For the two airspace conditions shown (last two rows of **Table 3-28**), the T-7A SEL would be 1 to 2 dB less than the T-38C's SELs.

Table 3-28. Comparison of Single-Event Sound Levels for T-38C and T-7A

Operation	Slant Distance to Receptor (feet)	T-38C SEL (dB)	T-38C L_{max} (dB)	T-38C Power and Speed	T-7A SEL (dB)	T-7A L_{max} (dB)	T-7A Power and Speed
Afterburner or Military Power Takeoff (1,000 feet AGL)	1,000	108	104	100% RPM 250 kts	110	104	93%N2 250 kts
Arrival (Straight-in, 1,000 feet AGL, gear down)	1,000	88	78	88%RPM 165 kts	88	82	81%N2 165 kts
Overhead Break/Visual Flight Rules/Instrument Flight Rules Pattern Downwind Legs (downwind leg, 2,600 feet above MSL, gear up)	Approx. 1,500	81	72	88%RPM 230 kts	81	73	79%N2 230 kts
Low Level MTR (500 feet AGL)	500	96	92	95%RPM 350 kts	94	92	84%N2 350 kts
High-Altitude MOA Training (8,000 feet AGL)	8,000	66	54	95%RPM 350 kts	65	59	84%N2 350 kts

Source: HMMH 2023

Notes: 1. All numbers are rounded.
2. Laughlin AFB nominal elevation: 1,082 feet above MSL.
3. Modeled weather: 73°F, relative humidity is 53 percent, and station pressure is 28.7 in inches of mercury.
4. Engine powers given in percent revolutions per minute (% RPM) and percent high pressure compressor revolutions per minute (%N2). Speed is given in knots (nautical miles per hour; kts).
5. All T-38C departures use afterburner for takeoff roll; afterburner secured and power set to military power (100% RPM) upon reaching 600 feet AGL.
6. Five percent of T-7A departures would use afterburner for takeoff roll; afterburner would be secured and power would be reduced to 93%N2 upon reaching 600 feet AGL.
7. Noise levels are only valid for elevation angles near 90 degrees, i.e., over the receptor.

Speech Interference. **Table 3-29** provides the $NA75L_{max,day}$ for Alternative 1. The speech interference for the nine residential areas would range from approximately 1 to 21 events per daytime hour. Run-up activity would not contribute meaningfully to the potential for speech interference for any of the applicable POI.

Alternative 1 would cause up to approximately 5 additional speech-interfering events per hour across the relevant POI, because the T-7A would have higher single-event noise levels for climbs to pattern altitude than the T-38C (see **Table 3-28**) and would be perform more closed pattern operations.

Table 3-29. Potential for Speech Interference for Alternative 1 at Laughlin AFB

ID	Representative Location	Existing Events per Daytime Hour	Alternative 1 Events per Daytime Hour	Change in Events per Daytime Hour
H1	Clinic	3.1	7.3	4.2
R1	Base Housing	2.6	7.0	4.7
R2	Base Housing	2.6	7.3	4.7
R3	Lodging	5.0	7.0	2.0
R4	Officer Dorms	5.0	7.3	2.3
R5	Enlisted Dorms	3.5	7.3	3.8
R6	Gateway Apartments	5.0	6.2	1.2
R7	Payne Village	19.7	21.1	1.4
R8	Val Verde Park Estates	<0.05	1.2	1.2
R9	Escondido Estates	4.5	8.5	3.7
W1	Laughlin AFB Chapel	3.1	7.3	4.2

Source: HMMH 2023
Notes:
1.) NA75L_{max}; POI assessed for daytime (7 a.m. to 10 p.m.)
2.) Payne Village experiences a relatively high number of events because it is directly underneath the T-6 overhead break flight track for Runway 13L.

Classroom Learning Interference. **Table 3-30** shows that the Child Development Center (S2), Berrerra Elementary School (S3), and Library/Education Center (S4) would have L_{eq} greater than (or equal to) 60 dB and would require further analysis for NA and TA metrics.

Table 3-30. Screening for Potential Classroom Speech Interference for Alternative 1 at Laughlin AFB

ID	Representative School	School-Day L_{eq} (dB)
S1	Youth Center	57.8 dB $L_{eq(12h)}$
S2	Child Development Center	64.8 dB $L_{eq(11h)}$
S3	Berrerra Elementary School	65.1 dB $L_{eq(8h)}$
S4	Library/Education Center	74.7 dB $L_{eq(8h)}$

Source: HMMH 2023

The NA and TA metrics for the affected schools are provided in **Table 3-31** and **Table 3-32**, respectively. These three schools would experience an increase of approximately 4 to 5 events per hour and an increase between 7 and 12 minutes per day (at or) above 75 dB L_{max}. The increases would be due to T-7A operations, particularly closed pattern operations.

Table 3-31. Potential for Classroom Speech Interference for Alternative 1 at Laughlin AFB ($NA75L_{max}$)

ID	Representative School	Existing Conditions $NA75L_{max}$ (events/hour)	Alternative 1 $NA75L_{max}$ (events/hour)	Change in $NA75L_{max}$ (events/hour)
S2	Child Development Center	2.5	7.0	4.5
S3	Berrerra Elementary School	2.7	7.3	4.6
S4	Library/Education Center	6.3	10.2	3.9

Source: HMMH 2023

Table 3-32. Potential for Classroom Speech Interference for Alternative 1 at Laughlin AFB (TA75 L_{max})

ID	Representative School	Existing Conditions $TA75L_{max}$ (minutes/day)	Alternative 1 $TA75L_{max}$ (minutes/day)	Change in $TA75L_{max}$ (minutes/day)
S2	Child Development Center	5.7	17.9	12.2
S3	Berrerra Elementary School	4.7	12.8	8.1
S4	Library/Education Center	10.2	17.1	6.9

Source: HMMH 2023

Sleep Disturbance. **Table 3-33** provides the number of average annual hourly nighttime events that would meet or exceed 90 dB SEL at the nine residential POI for Alternative 1. Alternative 1 would cause an increase of less than 0.05 potentially sleep disturbing events per hour, on average, across all nine residential POI, relative to existing conditions. This increase would be due to nighttime T-7A afterburner departures. While T-38C aircraft currently perform more nighttime operations than the T-7A would, the T-38C nighttime operations are arrivals and closed patterns, having a SEL less than the SEL of T-7A afterburner departures.

Table 3-33. Potential for Sleep Disturbance for Alternative 1 at Laughlin AFB

ID	Name	Existing Conditions Average Hourly Nighttime Events (NA90SEL)	Alternative 1 Average Hourly Nighttime Events (NA90SEL)	Change in Average Hourly Nighttime Events (NA90SEL)
R1	Base Housing	-	<0.05	<0.05
R2	Base Housing	-	<0.05	<0.05
R3	Lodging	-	<0.05	<0.05
R4	Officer Dorms	-	<0.05	<0.05
R5	Enlisted Dorms	-	<0.05	<0.05
R6	Gateway Apartments	-	-	-
R7	Payne Village	-	-	-
R8	Val Verde Park Estates	-	-	-
R9	Escondido Estates	-	<0.05	<0.05

Source: HMMH 2023

The specified average number of events noted would not likely occur in evenly spaced increments throughout the night, nor would they likely occur every night. Nighttime flights would occur as the training syllabus directs and would likely occur in "grouped" sessions, meaning that several overflights may occur during a short period of time on one specific night, and there may be nights where no nighttime flying occurs. It is not possible to forecast when nighttime events would occur due to scheduling changes, aircraft maintenance, weather, and other unpredictable events; therefore, this analysis portrays the impact with operations averaged throughout the night, for each night. Laughlin AFB would operate night flights in a manner to minimize nighttime aircraft noise to the community, to the maximum extent practicable.

Potential for Hearing Loss. As shown in **Figure 3-4**, the 80 dB DNL contour would extend beyond the boundaries of the installation, and **Table 3-26** shows that an estimated two people would be exposed to DNL of at least 80 dB, thus requiring an analysis of $L_{eq(24h)}$ for PHL. This estimate is derived from the method described in **Section 3.3**. The 80 dB $L_{eq(24h)}$ contour shown in **Figure 3-6** for Alternative 1 would extend approximately 1.4 miles southeast of the installation, crossing Cocobolo Street and Vista Loma Street. Review of satellite imagery revealed no residences that would be exposed to $L_{eq(24h)}$ of at least 80 dB; thus, there would not be any on- or off-installation residences or individuals at Laughlin AFB predicted to be exposed to 80 dB $L_{eq(24h)}$ or greater. Therefore, no PHL would be anticipated for Alternative 1.

Damage to Structures. Individual aircraft events at Laughlin AFB would not generate impulsive-style aircraft noise levels above 140 dB; therefore, damage to structures from Alternative 1 would not likely occur.

3.3.2.1.2 Special Use Airspace

With Alternative 1, sorties within the modeled MOAs and MTRs would not change from the existing conditions, aside from the replacement of T-38C aircraft with T-7A. T-6 and T-1 sorties would remain the same as the existing conditions. Due to current operational hours of the SUA, night operations would stay around the airfield and not enter the MOAs and MTRs.

None of the modeled SUA would have L_{dnmr} greater than 65 dB, or even greater than the 35 dB lower limit of the noise model, due to a combination of infrequent operations for the MTRs and the high altitudes of the Laughlin 1 MOA operations.

Because the levels would be lower than what can be reported from the noise model, the increases due to the replacement of T-38C aircraft with T-7A aircraft are not known. However, none of the increases would cause any of the modeled SUA to be newly introduced to cumulative exposure of 65 dB L_{dnmr} or greater.

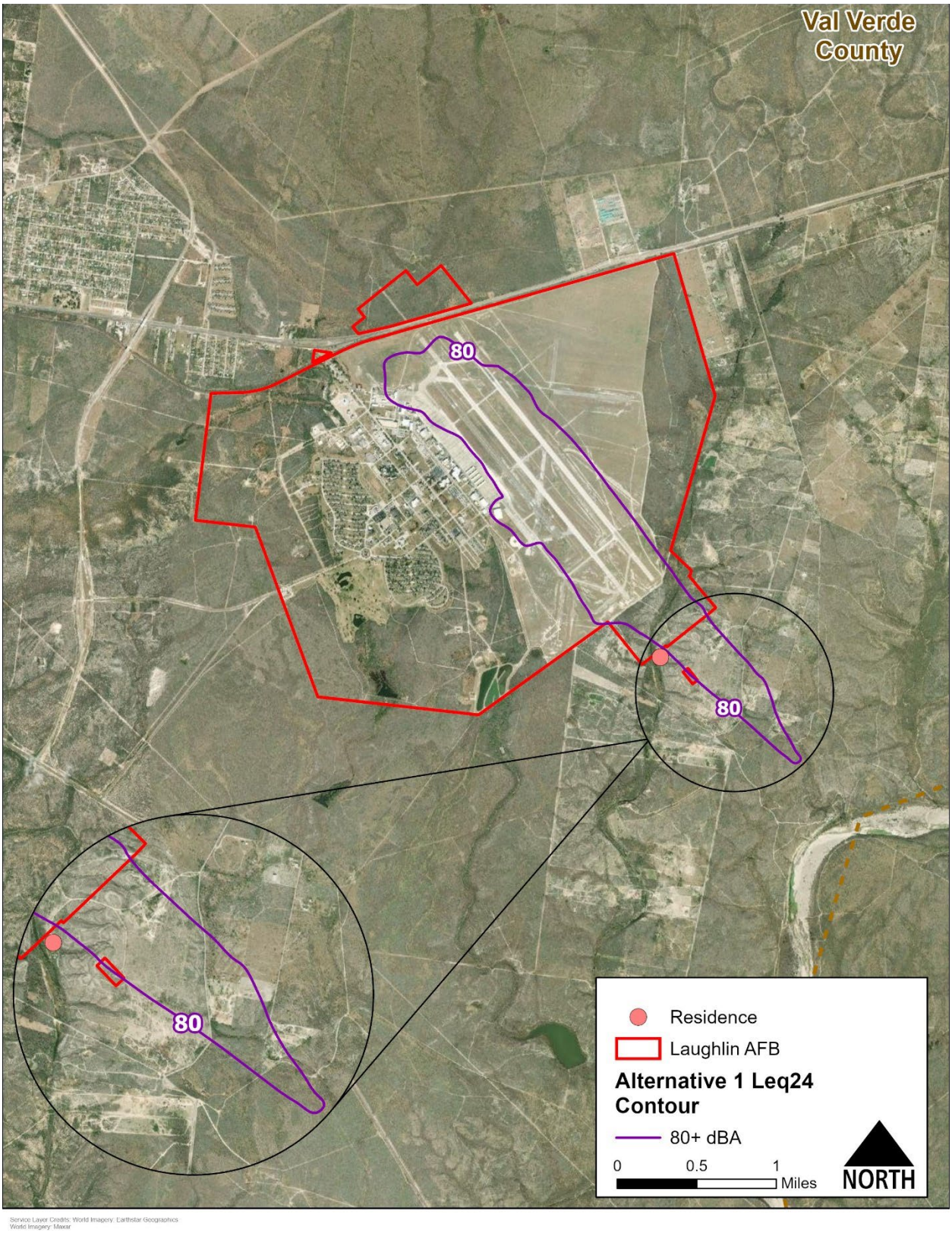

Figure 3-6. 24-Hour Equivalent Sound Level Contour of 80 dB for Alternative 1 at Laughlin AFB

3.3.2.2 Alternatives 2 and 3

As noted in **Section 3.3.2**, the noise discussion combines the analyses for Alternatives 2 and 3 into the same section because both alternatives would entail aircraft operations that are 25 percent greater than Alternative 1. The delivery of up to 16 additional T-7A aircraft to Laughlin AFB and the construction of up to 12 additional T-7A shelters on the Laughlin AFB aircraft parking ramp for Alternative 3 (as compared to Alternative 2) would have no additional impacts on noise, except construction-related noise would last slightly longer.

Implementation of Alternatives 2 and 3 would result in short- and long-term, less than significant, adverse impacts on the noise environment. Short-term impacts would be due to noise generated by heavy equipment during construction, and the nature and overall level of the short-term impacts would be identical to those described for Alternative 1.

As with Alternative 1, long-term impacts would be due to the introduction of T-7A aircraft operations, including nighttime operations (i.e., those between 10 p.m. and 7 a.m.). Long-term changes in operational noise would increase in areas of incompatible land use on and adjacent to Laughlin AFB. Like Alternative 1, the introduction of T-7A aircraft would be incremental, beginning in 2030 and reaching full implementation in 2032. Compared to Alternative 1, the nature and overall level of these long-term impacts would be greater than Alternative 1 but still less than significant.

3.3.2.2.1 Laughlin AFB

3.3.2.2.1.1 Construction Noise

Construction noise levels and impacts for Alternatives 2 and 3 would be the same as those described for Alternative 1 in **Section 3.3.2.1.1.1**. However, construction-related noise for Alternative 3 would last slightly longer than Alternatives 1 and 2 because of the construction of up to 12 additional T-7A shelters on the Laughlin AFB aircraft parking ramp.

3.3.2.2.1.2 Aircraft Noise

With Alternatives 2 and 3, approximately 456,000 flight operations (i.e., single take-offs, landings, and patterns combined) would be performed at Laughlin AFB each year, which is an average of 1,250 flight operations per day. Most of Laughlin AFB's annual flight operations (70 percent) would be performed by based T-6 Texan II aircraft. Based T-7A aircraft would represent 27 percent of the annual flight operations. The rest of the annual flight operations would be based T-1 aircraft and various transient aircraft types. No based T-38C operations would remain after the full complement of T-7A aircraft is received and operational. The current operational levels for T-1, T-6, and transient aircraft were used for the Alternatives 2 and 3 noise analysis. **Section 3.3.3** provides the noise impacts from Alternatives 2 and 3 in concert with reasonably foreseeable actions, including the action to divest T-1 aircraft from Laughlin AFB.

All but two of the 10,422 nighttime flight operations at Laughlin AFB would be performed by the T-7A, T-1, and T-6 aircraft, and the nighttime flight operations would represent approximately 2 percent of the total annual flight operations at the installation. With approximately 615 T-7A nighttime flight operations, T-7A aircraft would account for 6 percent of the DNL nighttime operations.

The T-7A aircraft are proposed to arrive and be used immediately beginning in 2030. The increase in T-7A aircraft and associated training operations would be incremental through 2032. In 2032, the full complement of T-7A aircraft would arrive at Laughlin AFB, and the number of T-7A aircraft operations would stabilize to the full rate of Alternatives 2 and 3 in 2032. During the period between 2030 to 2032, the area and population within the 65-dB DNL contour would increase incrementally.

T-7A aircraft would perform similar numbers of arrivals and departures to existing T-38C levels, but closed pattern operations would increase by a factor of 3 (approximately 57,000 annual operations).

Noise exposure for Alternatives 2 and 3 also includes modeling proposed maintenance run-up activity by the existing based aircraft types and the proposed T-7A, including activity in the proposed hush house. Identical to Alternative 1, Alternatives 2 and 3 would include replacement of the existing hush house facility, which is located at the north end of the airfield's aircraft parking area and adjacent to the taxiway near the northern end of Runway 13R/31L. The proposed hush house would be moved directly west by less than 0.1 mile, to the end of the apron. The orientation of the jet engine while in the proposed hush house would change from a true heading of 90 degrees in the existing case to 180 degrees in Alternatives 2 and 3. See the NMODD for further information about modeled flight and run-up activity (HMMH 2023).

The proposed T-7A aircraft's noise levels on and adjacent to Laughlin AFB were calculated based on full implementation of Alternatives 2 and 3 in 2032. **Figure 3-7** shows the modeled DNL contours for the two alternatives. With full implementation of Alternatives 2 and 3 in 2032, the 65 dB DNL contour at Laughlin AFB would extend approximately 3.5 miles from the south end and 2.5 miles from the north end of Runway 13C/31C, 3.1 miles east from the end of Runway 13L/31R, and almost 1.7 miles west of Runway 13R/31L. The 65 dB DNL contour for Alternatives 2 and 3 would extend 0.5 mile farther than the baseline 65 dB contour to the west of the airfield, almost to State Highway Loop 79. The southeast part of the 65 dB DNL contour following Sycamore Creek would expand from the baseline by approximately 0.5 mile in all directions. Aircraft DNL less than 65 dB is generally compatible with all land uses.

Table 3-34 and **Table 3-35** provide the land acreage and population exposed to DNL of at least 65 dB for Alternatives 2 and 3 at Laughlin AFB, respectively. Off- and on-installation acreage contained in the 65 dB DNL contour would be 6,890 and 2,685 acres, respectively. Alternatives 2 and 3 would expose 256 off-installation people to DNL of at least 65 dB.

The population exposed to DNL of at least 80 dB would have a PHL. The population estimation method, described in **Section 3.3**, yields five off-installation people who would be exposed to DNL of at least 80 dB. See **Section 3.3.2.2.1.3** for further analysis on PHL.

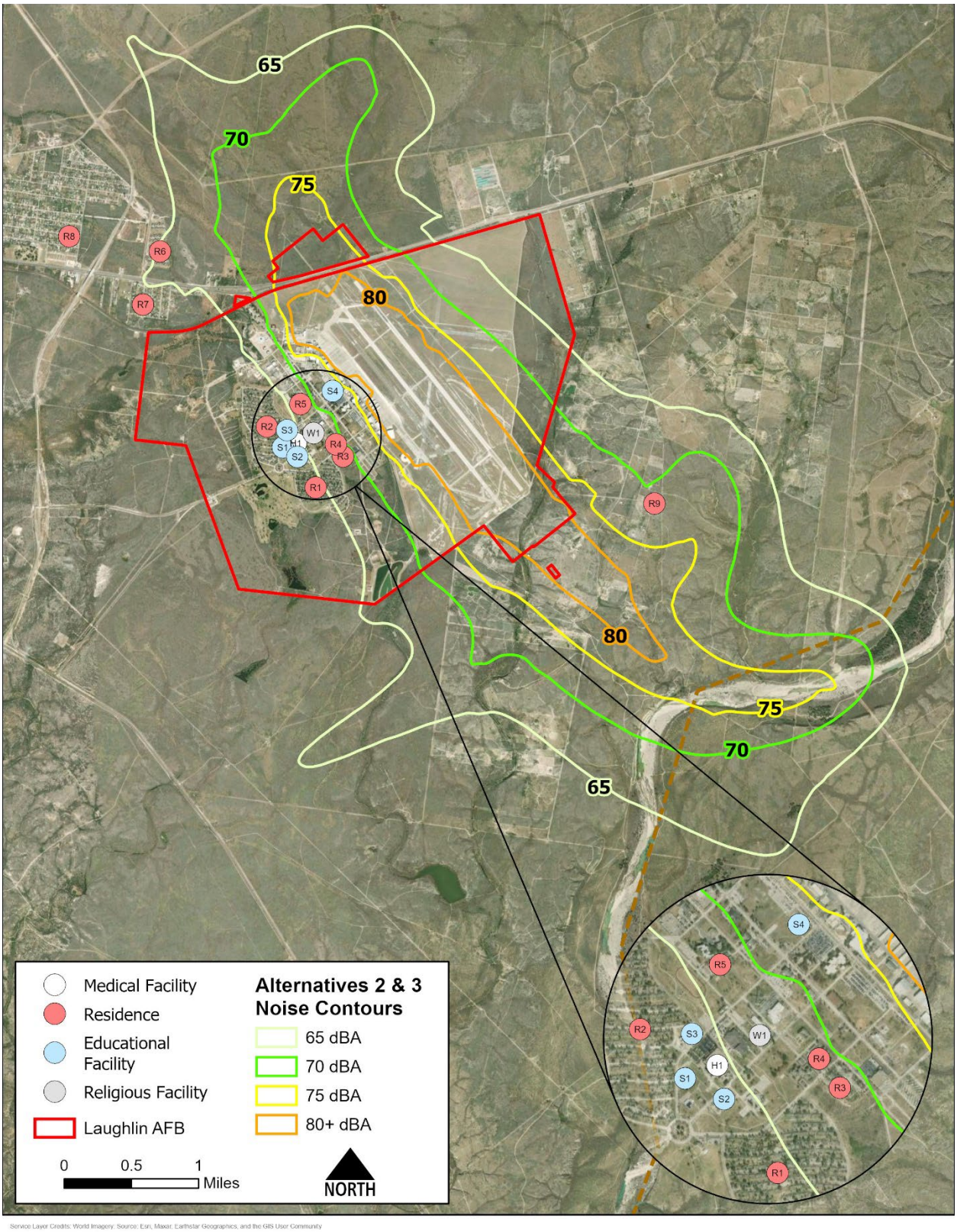

Figure 3-7. Aircraft DNL Contours for the Alternatives 2 and 3 at Laughlin AFB

Table 3-34. Acreage within DNL Contour Bands for Alternatives 2 and 3 and Change in Acreage from Existing Conditions at Laughlin AFB

DNL Contour Band (dB)	On-Installation Acreage	Off-Installation Acreage	Total Acreage	Change in On-Installation Acreage	Change in Off-Installation Acreage	Change in Total Acreage
65 to 70	730	3,557	4,287	244	1,628	1,872
70 to 75	552	2,146	2,698	169	1,439	1,608
75 to 80	460	947	1,407	86	773	859
80 to 85	402	222	624	90	214	304
≥85	541	18	559	176	18	194
Total	**2,685**	**6,890**	**9,575**	**765**	**4,072**	**4,837**

Source: HMMH analysis

Note: DNL bands are exclusive of upper bounds

Table 3-35. Estimated Population within DNL Contour Bands for Alternatives 2 and 3 and Change in Population from Existing Conditions at Laughlin AFB

DNL Contour Band (dB)	On-Installation Population	Off-Installation Population	Total Population	Change in On-Installation Population	Change in Off-Installation Population	Change in Total Population
65 to 70	277	206	483	272	123	395
70 to 75	0	30	30	0	18	18
75 to 80	0	15	15	0	14	14
80 to 85	0	5	5	0	5	5
≥85	0	0	0	0	0	0
Total	**277**	**256**	**533**	**272**	**160**	**432**

Sources: HMMH analysis, U.S. Census Bureau 2020

Notes: 1. Estimated population based on areas within individual census blocks at full implementation of Alternatives 2 or 3 with the full complement of T-7A aircraft.

2. DNL bands are exclusive of upper bounds.

Figure 3-8 provides a comparison of the 65 dB DNL contours for the existing conditions and Alternatives 2 and 3. Alternatives 2 and 3 would cause a general expansion of the 65 dB DNL contour to the north and south along runway headings and to the northeast. Along the centerline of Runway 13C/31C, the 65 dB DNL contour for Alternatives 2 and 3 would extend slightly more than 0.75 mile in the north and 1.2 miles in the south, past the extents of the existing 65 dB DNL contour. The 65 dB DNL contour on the east side of the installation would be extended approximately 0.5 mile, and the 65 dB DNL lobe south of Laughlin AFB would be extended approximately 2,100 feet. For Alternatives 2 and 3, the 65 dB DNL contour along the runway centerline (Runway 13C/31C) would extend slightly more than 0.5 mile past the extents of the existing 65 dB DNL contour. The 65 dB DNL contour on the east side of the installation would be extended approximately 2,500 feet, and the 65 dB DNL lobe south of Laughlin AFB would be extended approximately 1,900 feet past the existing 65 dB DNL contour.

Figure 3-8. Comparison of the 65 dB DNL Contours for Alternatives 2 and 3 and Existing Conditions at Laughlin AFB

Table 3-34 and **Table 3-35** provide the change in acreage and population within DNL contour bands for Alternatives 2 and 3, respectively, relative to the existing conditions. Compared to existing conditions, the acreage within the off-installation 65 dB DNL contour for Alternatives 2 and 3 would increase by 144 percent (to 6,890 acres) while the population would increase by 167 percent (to 256 people). The additional 4,072 off-installation acres and 160 off-installation people would constitute an expansion, primarily on the east and south sides of the airfield, beyond the border of Val Verde and Kinney Counties. These newly exposed areas encompass numerous land uses, including residential, commercial, undeveloped, and agricultural.

The expansion of the DNL contours would be due to the introduction of the T-7A aircraft and increased closed pattern operations. The expansion to the southeast of the airfield would be due primarily to daytime and T-7A closed patterns. The expansion of the DNL contours to the south of the airfield would be due primarily to the T-7A departure phase and patterns, particularly outside and inside downwind patterns. The contour expansion off the northern runway end would be for similar reasons as the southern end.

Table 3-36 provides the DNL for the 15 POI under Alternatives 2 and 3. Four of the nine residential areas would be newly exposed to DNL greater than (or equal to) 65 dB and would be considered incompatible land uses. The Library/Education Center (S4) and Escondido Estates (R9) would be exposed to DNL greater than or equal to 70 dB. The Laughlin AFB chapel (W1) would be newly exposed to DNL greater than 65 dB. The other nine POI would be exposed to DNL less than 65 dB.

Table 3-36. Overall DNL at Representative Locations for Alternatives 2 and 3 at Laughlin AFB

ID	On or Off Laughlin AFB?	Representative Location	Existing Conditions DNL (dB)	Alternatives 2 and 3 DNL (dB)	Change in DNL (dB)
H1	On	Clinic	59.8	64.5	4.7
R1	On	Base Housing	59.3	64.2	4.9
R2	On	Base Housing	57.4	62.2	4.8
R3	On	Lodging	64.9	**69.5**	4.6
R4	On	Officer Dorms	64.9	**69.5**	4.6
R5	On	Enlisted Dorms	63.0	**67.8**	4.8
R6	Off	Gateway Apartments	**66.1**	**67.0**	0.9
R7	Off	Payne Village	61.9	63.4	1.5
R8	Off	Val Verde Park Estates	53.5	56.5	3.0
R9	Off	Escondido Estates	61.7	**71.4**	9.7
S1	On	Youth Center	58.3	63.1	4.8
S2	On	Child Development Center	59.4	64.0	4.6
S3	On	Berrerra Elementary School	59.5	64.2	4.7
S4	On	Library/Education Center	**70.9**	**73.9**	3.0
W1	On	Laughlin AFB Chapel	63.1	**67.6**	4.5

Source: HMMH 2023
Note: Bold data values indicate DNL greater than or equal to 65 dB.

The nine residential areas would be exposed to DNL increases between approximately 1 and 9 dB. The four schools would be exposed to DNL increases between approximately 2 and 4 dB. The increases would be due to the introduction of the T-7A and its associated increases in departure and pattern training operations.

Four of the modeled residential areas would be newly exposed to DNL of at least 65 dB. Neither the clinic nor any of the schools would be newly exposed to DNL of at least 65 dB, compared to existing conditions, due to T-7A operations.

3.3.2.2.1.3 Supplemental Metrics Analyses

The supplemental metrics required analyses of noise exposure related to potential noise effects, including sleep disturbance, classroom learning interference, and speech interference. These analyses focus on specific POI in the vicinity of Laughlin AFB and are described in **Section 3.3.1.1.1**.

Individual Aircraft Overflights. The single-event noise metrics described for Alternative 1 in **Section 3.3.2.1.1.3** are also applicable to Alternatives 2 and 3. See **Table 3-28** for a comparison of the SEL and L_{max} for the based T-38C and the proposed based T-7A aircraft.

Speech Interference. **Table 3-37** provides the $NA75L_{max,day}$ for Alternatives 2 and 3. The speech interference for the nine residential areas would range from approximately 1 to 22 events per daytime hour. Run-up activity would not contribute meaningfully to the potential for speech interference for any of the applicable POI.

Table 3-37. Potential for Speech Interference for Alternatives 2 and 3 at Laughlin AFB

ID	Representative Location	Existing Events per Daytime Hour	Alternatives 2 and 3 Events per Daytime Hour	Change in Events per Daytime Hour
H1	Clinic	3.1	9.2	6.1
R1	Base Housing	2.6	8.7	6.1
R2	Base Housing	2.6	9.2	6.6
R3	Lodging	5.0	8.7	3.7
R4	Officer Dorms	5.0	9.2	4.2
R5	Enlisted Dorms	3.5	9.2	5.7
R6	Gateway Apartments	5.0	6.7	1.7
R7	Payne Village	19.7	21.5	1.8
R8	Val Verde Park Estates	<0.05	1.5	1.5
R9	Escondido Estates	4.0	9.6	5.6
W1	Laughlin AFB Chapel	3.1	9.2	6.1

Source: HMMH 2023
Notes:
1.) $NA75L_{max}$; POI assessed for daytime (7 a.m. to 10 p.m.).
2.) Payne Village experiences a relatively high number of events because it is directly underneath the T-6 overhead break flight track for Runway 13L.

Alternatives 2 and 3 would cause up to approximately 7 additional speech-interfering events per hour across the relevant POI, because the T-7A would have higher single-event noise levels for climbs to pattern altitude than the T-38C (see **Table 3-28**) and would be performing more closed pattern operations.

Classroom Learning Interference. **Table 3-38** shows that the Child Development Center (S2), Berrerra Elementary School (S3), and Library/Education Center (S4) would have L_{eq} greater than (or equal to) 60 dB and would require further analysis for NA and TA metrics.

Table 3-38. Screening for Potential Classroom Speech Interference for Alternatives 2 and 3 at Laughlin AFB

ID	Representative School	School-Day $L_{eq(8h)}$ (dB)
S1	Youth Center	58.6 dB Leq(12h)
S2	Child Development Center	65.5 dB Leq(11h)
S3	Berrerra Elementary School	65.9 dB Leq(8h)
S4	Library/Education Center	75.5 dB Leq(8h)

Source: HMMH 2023

The NA and TA metrics for the affected schools are provided in **Table 3-39** and **Table 3-40**, respectively. These three schools would experience an increase of approximately 6 to 7 events per hour and between 10 and 17 minutes per day at or above 75 dB L_{max}. The increases would be due to T-7A operations, particularly closed pattern operations.

Table 3-39. Potential for Classroom Speech Interference for Alternatives 2 and 3 at Laughlin AFB ($NA75L_{max}$)

ID	Representative School	Existing Conditions $NA75L_{max}$ (events per hour)	Alternatives 2 and 3 $NA75L_{max}$ (events per hour)	Change (events per hour)
S2	Child Development Center	2.5	8.8	6.3
S3	Berrerra Elementary School	2.7	9.2	6.5
S4	Library/Education Center	6.3	12.5	6.2

Source: HMMH 2023

Table 3-40. Potential for Classroom Speech Interference for Alternatives 2 and 3 at Laughlin AFB ($TA75L_{max}$)

ID	Representative School	Existing Conditions $TA75L_{max}$ (minutes per day)	Alternatives 2 and 3 $TA75L_{max}$ (minutes per day)	Change (minutes per day)
S2	Child Development Center	5.7	22.3	16.6
S3	Berrerra Elementary School	4.7	16.1	11.4
S4	Library/Education Center	10.2	21.0	10.8

Source: HMMH 2023

Sleep Disturbance. **Table 3-41** provides the number of average annual hourly nighttime events that would meet or exceed 90 dB SEL at the nine residential POI for Alternatives 2 and 3. Alternatives 2 and 3 would cause an increase of less than 0.05 potentially sleep disturbing events per hour, on average, across all nine residential POI, relative to existing conditions. This increase would be due to nighttime T-7A afterburner departures. While T-38C aircraft currently perform more nighttime operations than the T-7A would, the T-38C nighttime operations are arrivals and closed patterns, having a SEL less than the SEL of T-7A afterburner departures.

Table 3-41. Potential for Sleep Disturbance for Alternatives 2 and 3 at Laughlin AFB

ID	Name	Existing Conditions Average Hourly Nighttime Events (NA90SEL)	Alternatives 2 and 3 Average Hourly Nighttime Events (NA90SEL)	Change in Average Hourly Nighttime Events (NA90SEL)
R1	Base Housing	-	<0.05	<0.05
R2	Base Housing	-	<0.05	<0.05
R3	Lodging	-	<0.05	<0.05
R4	Officer Dorms	-	<0.05	<0.05
R5	Enlisted Dorms	-	<0.05	<0.05
R6	Gateway Apartments	-	-	-
R7	Payne Village	-	-	-
R8	Val Verde Park Estates	-	-	-
R9	Escondido Estates	-	<0.05	<0.05

Source: HMMH 2023

The specified average number of events would not likely occur in evenly spaced increments throughout the night, nor would they likely occur every night. Nighttime flights would occur as the training syllabus directs and would likely occur in “grouped” sessions, meaning that several overflights may occur during a short period of time on one specific night, and there may be nights where no nighttime flying occurs. Due to scheduling changes, aircraft maintenance, weather, and other unpredictable events, it is not possible to forecast when nighttime events would occur; therefore, this analysis portrays the impact with operations averaged throughout the night, for each night. Laughlin AFB would operate night flights in a manner to minimize nighttime aircraft noise to the community, to the maximum extent practicable.

Potential for Hearing Loss. As shown in **Figure 3-7**, the 80 dB DNL contour would extend beyond the boundaries of the installation, and **Table 3-35** shows an estimated five people may be exposed to DNL of at least 80 dB requiring an $L_{eq(24h)}$ analysis for PHL. The 80 dB $L_{eq(24h)}$ contour shown in **Figure 3-9** for Alternatives 2 and 3 would extend approximately 1.5 miles southeast of the installation, crossing Cocobolo Street and Vista Loma Street. A review of satellite imagery revealed only one residence would be exposed to $L_{eq(24h)}$ of at least 80 dB. This residence (denoted on **Figure 3-9**) is off-installation on Jack Hill Road and would be exposed to an $L_{eq(24h)}$ between 80 and 81 dB. Based on U.S. Census Bureau data for Val Verde County, three people may reside at this location. According to the DoD Technical Bulletin *Noise-Induced Hearing Impairment* (DNWG 2013), persons located within the 80 to 81 dB contour may experience an average NIPTS of approximately 3 dB. The corresponding 10th percentile NIPTS (i.e., the NIPTS for the most susceptible people) would be approximately 7 dB. The DoD bulletin also indicates that "an NIPTS of 5 dB or less is not considered noticeable or significant and the variability of audiometric testing is generally assumed to be ±5 dB" (DNWG 2013). The results of this assessment conservatively assume that the three residents of this location would be exposed to these noise levels for a full 24-hours a day for 40 years. This exposure level would be lessened by the time spent inside the home, with an expected minimum attenuation of 15 dB, and time spent away from the residence at work, school, or other activities outside the area of risk. Time inside the residence and time out of the area of risk make actual exposure levels of the residents difficult, if not impossible, to quantify.

Damage to Structures. Individual aircraft events at Laughlin AFB would not generate impulsive-style aircraft noise levels above 140 dB; therefore, damage to structures from Alternatives 2 and 3 would not likely occur.

3.3.2.2.2 Special Use Airspace

With Alternatives 2 and 3, sorties within the modeled MOA and MTRs would not change from the existing conditions, aside from the replacement of T-38C aircraft with T-7A and the increase of T-7A sorties by 25 percent. T-6 and T-1 sorties would remain the same as the existing conditions. Due to SUA's current operational hours, night operations would stay around the airfield and not enter the MOAs and MTRs.

None of the modeled SUA would have L_{dnmr} greater than 65 dB, or even greater than the 35 dB lower limit of the noise model, due to a combination of infrequent operations for the MTRs and the high altitudes of the Laughlin 1 MOA operations.

Because the levels would be lower than what can be reported from the noise model, the increases due to the replacement of T-38C aircraft with T-7A aircraft are not known. However, none of the increases would cause any of the modeled SUA to be newly introduced to cumulative exposure of 65 dB L_{dnmr} or greater.

3.3.2.3 No Action Alternative

The No Action Alternative would not result in impacts on the noise environment. No facility construction would occur, and there would be no changes in aircraft operations. Noise exposure would remain unchanged compared to the existing conditions described in **Section 3.3.1**.

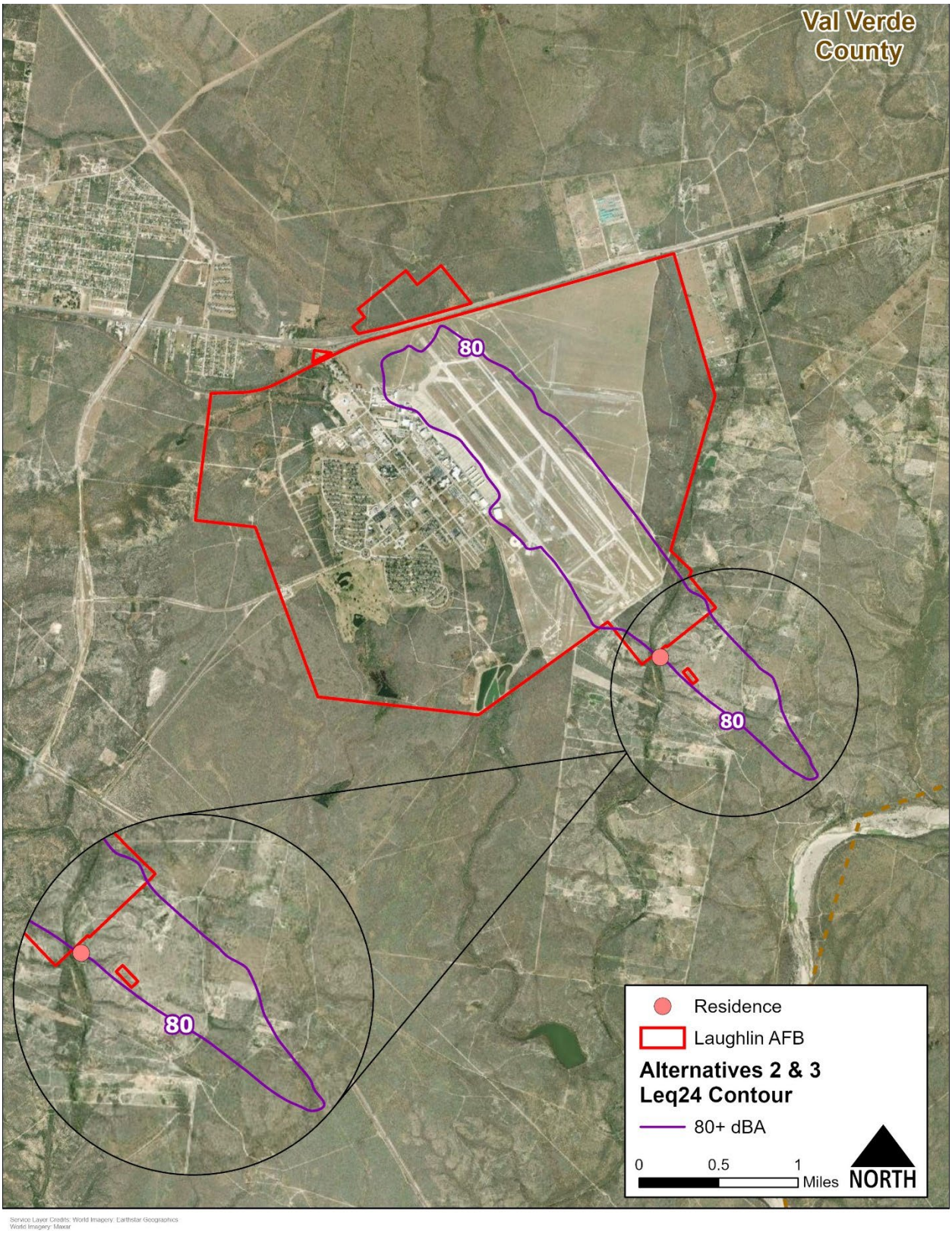

Figure 3-9. 24-Hour Equivalent Sound Level Contour of 80 dB for Alternatives 2 and 3 at Laughlin AFB

3.3.3 Cumulative Effects

Construction of the proposed MILCON/UMMC and FSRM projects for T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**) would produce noise from heavy equipment operation. Noise generated from construction would be short-term, intermittent, and temporary in nature. Given the proposed construction activities' distance to nearby noise-sensitive areas and the existing noise environment, the cumulative effects from construction noise on sensitive receptors from the reasonably foreseeable actions would be less than significant. The Proposed Action and reasonably foreseeable actions would adhere to all applicable federal, state, and local noise regulations, when appropriate. Additionally, by adhering to standard construction BMPs, such as maintaining heavy equipment mufflers and limiting heavy equipment use to normal weekday business hours, the cumulative noise produced during construction for the Proposed Action and reasonably foreseeable actions would result in temporary and less than significant increases in ambient noise levels.

While aircraft operations from the Proposed Action would result in long-term, less than significant, adverse impacts on the noise environment at Laughlin AFB and within the surrounding area, none of the reasonably foreseeable actions are anticipated to have a long-term, adverse impact on the noise environment, and the action to divest T-1 aircraft may slightly reduce noise levels, possibly contributing to a smaller 65 dBA DNL noise zone. Additionally, construction for each reasonably foreseeable action is anticipated to be complete before T-7A operations begin in 2030, resulting in no overlap of construction and T-7A operational noises. Therefore, no long-term, cumulative effects on noise would occur.

3.4 Biological Resources

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, wetlands) in which they exist. Protected and sensitive biological resources include Endangered Species Act (ESA) listed species (threatened or endangered) as well as those that are proposed or candidates for ESA-listing, as designated by the U.S. Fish and Wildlife Service (USFWS) (terrestrial and freshwater organisms), and migratory birds. Migratory birds are protected species under the Migratory Bird Treaty Act (MBTA). Sensitive habitats include areas designated or proposed by USFWS as critical habitat protected by the ESA and as sensitive ecological areas designated by State or other federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or limited in distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, and crucial summer and winter habitats).

Endangered Species Act. The ESA (16 USC § 1531 *et seq*.) established a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Under the ESA, "jeopardy" occurs when an action is reasonably expected, directly or indirectly, to diminish numbers, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. The ESA defines an "endangered species" as any species in danger of extinction throughout all or a significant portion of its range. The ESA

defines a "threatened species" as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed animal. "Take" is defined as, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land.

Critical habitat is designated if USFWS determines that the habitat is essential to the conservation of a threatened or endangered species. Federal agencies must ensure that their activities do not adversely modify designated critical habitat to the point that it would no longer aid in the species' recovery.

Migratory Bird Treaty Act. The MBTA of 1918 (16 USC §§ 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to minimize or avoid impacts on migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to (or attempt to) pursue, hunt, take, capture, or kill any migratory bird, nest, or egg. Federal agencies with activities that could have measurable negative impacts on migratory birds are directed by EO 13186 to develop and implement a Memorandum of Understanding with USFWS to promote the conservation of migratory bird populations.

Bald and Golden Eagle Protection Act. Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act (16 USC §§ 668–668c), which prohibits the "take" of Bald or Golden Eagles in the United States without a 50 CFR § 22.80 permit. The Bald and Golden Eagle Protection Act defines "take" as to, "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." For the purposes of these guidelines, "disturb" means "to agitate or bother a Bald or Golden Eagle to a degree that causes or is likely to cause: (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits and causes injury, death, or nest abandonment.

3.4.1 Affected Environment

The affected environment for biological resources consists of the area within Laughlin AFB and the SUA (i.e., MOAs Laughlin 1, Laughlin 2, and Laughlin 3 and MTRs IR-169, IR-170, VR-143, VR-165, VR-168, and VR-187) where the T-7A would perform aircraft operations (see **Table 3-1** and **Figure 1-3**).

Vegetation. Laughlin AFB is located on the western edge of the Balcones Escarpment within the Edwards Plateau physiographic province. Historically, the area surrounding Laughlin AFB is described as a rolling to moderately dissected plain that was once covered with grassland and savanna vegetation that varied during wet and dry cycles (Laughlin AFB 2022b). The interior portions of Laughlin AFB, where the MILCON/UMMC and FSRM projects are proposed, have been developed with buildings, streets, and runways to support the installation's missions.

Approximately 21 percent of the installation—almost entirely in its northeastern and northwestern portions, away from the proposed areas of construction—remains undeveloped (Laughlin AFB 2014). Most vegetative cover in the areas of proposed construction consists of regularly maintained, nonnative grass species including bermudagrass (*Cynodon dactylon*), St. Augustine (*Stenotaphrum secundatum*), Lehmann lovegrass (*Eragrostis lehmanniana*), and King Ranch bluestem (*Bothriochloa ischaemum*) (Laughlin AFB 2022b). An urban forestry survey conducted in 2001 determined that 70 percent of the tree population on Laughlin AFB consisted of Arizona ash (*Fraxinus velutina*), live oak (*Quercus virginiana*), red oak (*Quercus shumardii*), honey mesquite (*Prosopis glandulosa*), crepe myrtle (*Lagerstroemia indica*), cedar elm (*Ulmus crassifolia*), and Afghan pine (*Pinus brutia* var. *eldarica*) (Laughlin AFB 2022b). There are a few trees within the GBTS facility and UMT facility project locations.

Potential wetlands on Laughlin AFB are limited to the golf course, wastewater treatment ponds, and along the tributaries that lead to Sacatosa and Zorro creeks. No potential wetlands are within the MILCON/UMMC and FSRM project locations. The nearest potential wetland to a MILCON/UMMC or FSRM project is approximately 250 feet to the southwest of the proposed T-7A explosive component storage facility (Laughlin AFB 2022b). **Section 3.10** contains further details on wetlands.

Wildlife. The highly developed nature of the MILCON/UMMC and FSRM project locations results in limited habitat to support wildlife species. There are a few trees within the GBTS facility and UMT facility project locations that could provide habitat to various birds and small mammal species. Scattered large trees within the vicinity of these project locations also provide such habitat. Several surveys conducted on Laughlin AFB between 1993 and 2022 identified numerous mammal, avian, and reptilian species occurring at Laughlin AFB, and examples of these species are described in the following paragraphs. Due to the general lack of suitable aquatic habitat, Laughlin AFB does not have any natural fish populations and amphibians are rare (Laughlin AFB 2022b).

Seven bat species—including the big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), cave myotis (*Myotis velifer*), canyon bat (*Parastrellus hesperus*), tricolored bat (*Perimyotis subflavus*), and the Brazilian free-tailed bat (*Tadarida brasiliensis*)—have been confirmed to occur at Laughlin AFB (Laughlin AFB 2022b).

Surveys have documented 149 bird species on the installation, which is on the western edge of the Central Migratory Bird Flyway (Laughlin AFB 2022b, Laughlin AFB 2014). Common avian species found throughout the Laughlin AFB region—many of which are protected by the MBTA—include the Lark Bunting (*Calamospiza melanocorys*), Lark Sparrow (*Chondestes grammacus*), American Crow (*Corvus brachyrhynchos*), Chihuahuan Raven (*Corvus cryptoleucus*), Barn Swallow (*Hirundo rustica*), Cliff Swallow (*Petrochelidon pyrrhonota*), Purple Martin (*Progne subis*), Great-tailed Grackle (*Quiscalus mexicanus*), White-winged Dove (*Zenaida asiatica*), and Mourning Dove (*Zenaida macroura*) (Laughlin AFB 2014).

Numerous herpetofaunal species have been identified on the installation during surveys. These include 14 species of snakes (i.e., western diamondback rattlesnake [*Crotalus atrox*], Texas indigo snake [*Drymarchon melanurus erebennus*], Chihuahuan night snake [*Hypsiglena jani*], western coachwhip [*Masticophis flagellum testaceus*], Schott's whipsnake [*Masticophis schotti*],

diamondback water snake [*Nerodia rhombifer rhombifer*], gopher snake [*Pituophis catenifer*], Texas blind snake [*Rena dulcis*], long-nosed snake [*Rhinocheilus lecontei*], Texas patch-nosed snake [*Salvadoa grahamiae lineata*], ground snake [*Sonora semiannulata*], plains black-headed snake [*Tantilla nigriceps*], checkered garter snake [*Thamnophis marcianus*], and redstriped ribbon snake [*Thamnophis proximus rubrilineatus*]); 5 species of frogs and toads (i.e., Blanchard's cricket frog [*Acris blanchardi*], green toad [*Anaxyrus debilis*], Great Plains narrowmouth toad [*Gastrophryne olivacea*], Gulf Coast toad [*Incilius nebulifer*], and Rio Grande leopard frog [*Lithobates berlandieri*]); 8 species of lizards and skinks (i.e., common spotted whiptail [*Aspidoscelis gularis gularis*], six-lined racerunner [*Aspidoscelis sexlineata*], Texas banded gecko [*Coleonyx brevis*], Texas earless lizard [*Holbrookia lacerata*], Tamaulipan spot-tailed earless lizard [*Holbrookia subcaudalis*], Texas horned lizard [*Phrynosoma cornutum*], Texas spiny lizard [*Sceloporus olivaceus*], and little brown skink [*Scincella lateralis*]); and 5 turtles and tortoises (i.e., Texas spiny softshell [*Apalone spiniferus emoryi*], Texas tortoise [*Gopherus berlandieri*], yellow mud turtle [*Kinosternon flavescens flavescens*], Rio Grande cooter [*Pseudemys gorzugi*], and red-eared slider [*Trachemys scripta elegans*]) (Laughlin AFB 2022b).

Game species at Laughlin AFB include white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), collared peccary (*Tayassu tajacu*), northern bobwhite (*Colinus virginianus*), scaled quail (*Callipepla squamata*), and eastern cottontail rabbit (*Sylvilagus floridanus*) (Laughlin AFB 2022b).

Special Status Species. The Laughlin AFB Integrated Natural Resources Management Plan (INRMP) (Laughlin AFB 2022b) and USFWS Information for Planning and Consultation (IPaC) report for Laughlin AFB (USFWS 2023a) were reviewed to determine if any federally listed, proposed, or candidate species, or their habitats, could occur in the vicinity of the Proposed Action. The INRMP and IPaC report indicated that seven federally listed species (i.e., Golden-cheeked Warbler [*Setophaga chrysoparia*], Piping Plover [*Charadrius melodus*], Red Knot [*Calidris canutus rufa*], Devil's River minnow [*Dionda diaboli*], Mexican blindcat [*Prietella phreatophila*], Texas hornshell [*Popenaias popeii*], and Tobusch fishhook cactus [*Sclerocactus brevihamatus spp. Tobuschii*]); one proposed endangered species (i.e., the tricolored bat); one species with an experimental population (non-essential) (i.e., Rio Grande silvery minnow [*Hybognathus amarus*]); one species that is petitioned to be listed as threatened or endangered (i.e., Tamaulipan spot-tailed earless lizard); and one candidate species (i.e., monarch butterfly [*Danaus plexippus*]) that could be listed within the timeframe of the Proposed Action have the potential to occur on Laughlin AFB. According to the INRMP, two of these species—the tricolored bat and the Tamaulipan spot-tailed earless lizard—have been documented during routine rare species surveys. During herpetofaunal surveys conducted between 2015 and 2021, 103 Tamaulipan spot-tailed earless lizard observations were recorded within Laughlin AFB with observances of this species occurring every year the surveys were conducted. During acoustic bat monitoring surveys from April 18 to July 30, 2017, the tricolored bat was detected each night of surveys at Laughlin AFB. No other listed species or critical habitats have been recorded at the installation. No Bald Eagles, Golden Eagles, or their nest sites have been found on the installation (Laughlin AFB 2022b).

The USFWS IPaC report for the SUA where T-7A flight operations would occur (USFWS 2023b) also was reviewed to determine if any federally listed, proposed, or candidate species, or their habitats, could coincide with SUA flight operations, and an additional 32 species were identified as having the potential to occur in these areas. Of the 32 species with potential to occur in the SUA, six are capable of flight: the Mexican long-nosed bat (*Leptonycteris nivalis*), Mexican Spotted Owl (*Strix occidentalis lucida*), Northern Aplomado Falcon (*Falco femoralis septentrionalis*), Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Whooping Crane (*Grus americana*), and Yellow-billed Cuckoo (*Coccyzus americanus*) (USFWS 2023b). DAF reviewed T-38C strike data for Laughlin AFB from October 2017 through September 2022, and there were no records of T-38C aircraft striking a special status species (Laughlin AFB 2023b).

Texas Parks and Wildlife Department (TPWD) manages state-listed threatened, endangered, and species of greatest conservation need. According to TPWD's Rare, Threatened, and Endangered Species of Texas for Val Verde County, there are 132 state sensitive species in Val Verde County (TPWD 2022a). Three of these species have been documented at Laughlin AFB: the Texas horned lizard, Texas indigo snake, and the Texas tortoise (Laughlin AFB 2022b). Additionally, a TPWD Texas Natural Diversity Database (TxNDD) search conducted in October 2022 identified records of three species occurring within Laughlin AFB: the Texas horned lizard, longstalk heimia (*Ammannia grayi*), and Texas trumpets (*Acleisanthes crassifolia*) (TPWD 2022b). The Texas horned lizard and Texas tortoise are state threatened species, and the remaining species are considered species of greatest conservation need. Relevant information on these five species is as follows:

- *Texas horned lizard.* The Texas horned lizard is a terrestrial species that prefers open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush, or scrubby trees. Preferred soils vary in texture from sandy to rocky. This species either burrows into the soil, enters rodent burrows, or hides under rocks when they are inactive (TPWD 2022a). According to TxNDD records, a Texas horned lizard was observed in the northern portion of Laughlin AFB in an undeveloped area in 1993. Open habitats with sparse vegetation do not occur within the areas where the proposed MILCON/UMMC and FSRM projects are planned or near where aircraft operations would be performed.
- *Texas indigo snake.* The Texas indigo snake is a terrestrial species that prefers thornbush-chaparral woodlands and particularly dense riparian corridors. This species can do well in suburban and irrigated croplands and requires moist microhabitats, such as rodent burrows, for shelter (TPWD 2022a). Thornbush-chaparral woodlands do not occur within the areas where the proposed MILCON/UMMC and FSRM projects are planned or near where aircraft operations would be performed.

- *Texas tortoise.* The Texas tortoise is a terrestrial species that prefers open scrub woods, arid brush, lomas, and grass-cactus associations. This species occurs in sandy, well-drained soils. When inactive, it occupies shallow depressions dug at the base of bushes or cacti. Sometimes the Texas tortoise occupies underground burrows or areas under objects. This species lays its eggs in nests dug into the soil near or under bushes (TPWD 2022a). Open scrub woods and other suitable habitat does not occur within the areas where the proposed MILCON/UMMC and FSRM projects are planned or near where aircraft operations would be performed.
- *Longstalk heimia.* Longstalk heimia is a plant species that prefers moist or sub-irrigated alkaline or gypsiferous clayey soils along unshaded margins of ciénegas and other wetlands. This species also occurs sparingly on an alkaline, somewhat saline silt loam on terraces of spring-fed streams in grasslands. The longstalk heimia is also known to occur in moderately alkaline clay along perennial streams and in sub-irrigated wetlands atop poorly defined spring systems and in wetland areas along highway rights-of-way. This species flowers from May to September (TPWD 2022a). TxNDD records indicate this species was located downstream of a pond at the installation's southern boundary and numerous observations were recorded in 1997 along Sacatosa Creek near the eastern boundary. Hydrological features do not occur within the areas where the proposed MILCON/UMMC and FSRM projects are planned or near where aircraft operations would be performed.
- *Texas trumpets.* The Texas trumpets is a plant species that occurs on shallow, well-drained, calcareous, gravelly loams over caliche on gentle to moderate slopes. This species is often found in sparsely vegetated openings in cenizo shrublands. Known geologic formations where this species has been found include Austin Chalk (Cretaceous age) or Uvalde Gravel (Pleistocene age). The Texas trumpets is a perennial species and flowers from March to November and fruits from April to December (TPWD 2022a). According to TxNDD records, this species was located on a rise in topography at the installation's western boundary in 1997. Suitable soils and habitat do not occur within the areas where the proposed MILCON/UMMC and FSRM projects are planned or near where aircraft operations would be performed.

3.4.2 Environmental Consequences

The biological resources analysis discusses impacts on vegetation, wildlife, and protected and sensitive species from the Proposed Action's construction and aircraft operations. The evaluation of impacts on biological resources considers whether the action would result in a direct injury or mortality of an individual, particularly a protected or sensitive species. Each species has unique, fundamental needs for food, shelter, water, and space and can be sustained only where their specific combination of habitat requirements is available. Removing sustaining elements of a species' habitat impacts its ability to exist. Therefore, evaluation of impacts on biological resources is also based on whether the action would cause habitat displacement resulting in reduced feeding or reproduction, removal of critical habitat for sensitive species, and/or behavioral avoidance of available habitat as a result of noise or human disturbance. The level of impacts is based on (1) the importance (i.e., legal, commercial,

recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. Impacts on biological resources would be considered significant if species or special habitats would be adversely affected over large areas, or disturbances would cause reductions in population size or distribution of a species of special concern.

3.4.2.1 Alternative 1

Vegetation. Some of the MILCON/UMMC and FSRM projects would require the temporary or permanent removal of vegetation, which would result in short- and long-term, less than significant, adverse impacts on vegetation at Laughlin AFB. A few trees would be removed during site preparation for the GBTS and UMT facilities. Most of the MILCON/UMMC and FSRM projects would be situated within highly urban areas or on already impervious surfaces, resulting in minimal loss of vegetation and less than significant impacts on vegetation. Removal of trees would be coordinated with the installation and conducted in accordance with applicable DAF regulations. To avoid effects on migratory birds, trees would be removed outside of the migratory bird nesting season (i.e., from March to September) and a qualified biologist would conduct a nest survey prior to tree removal. Trees would only be removed if no active nests were found. If an active nest is found, an appropriate buffer would be established around the tree and work would not be conducted in that area until the nestlings have fledged (i.e., left the nest) or the nest is abandoned. Vegetation within the footprint of new construction would be permanently lost. Vegetation surrounding new construction would be restored with native vegetation, to the maximum extent possible, as part of landscaping efforts following construction. Replacement vegetation would be planted as soon as possible following construction using seed mixtures suitable for the local climate and in accordance with the installation's INRMP.

No impacts on vegetation beneath the SUA would occur. The phased delivery of T-7A aircraft and removal of T-38C aircraft, operations from these aircraft, and the personnel changes associated with Alternative 1 would have no impacts on vegetation.

Wildlife. Short- and long-term, less than significant, adverse impacts on wildlife at Laughlin AFB would occur from construction of the MILCON/UMMC and FSRM projects. Wildlife that could occur near the project areas would avoid the areas temporarily during construction due to intermittent increases in noise from heavy equipment. As a result, direct injury to individuals would be unlikely. Many of the wildlife species on Laughlin AFB are urban-adapted and would likely return to normal behavior once construction is complete and the proposed facilities and infrastructure are operational. Although a few trees would be removed for construction of the GBTS and UMT facilities, scattered large trees provide wildlife habitat within the vicinity of these project locations. The proposed GBTS facility and associated parking, UMT facility, hush house, and hush house road alteration would be sited on managed grasslands and would require the permanent removal and modification of the existing nonnative grassland. Wildlife species, such as small mammals and grassland birds, may use these areas for foraging and possibly nesting. These areas would be altered permanently and experience more frequent, year-round maintenance resulting in avoidance of the areas by individual wildlife that may move to adjacent available habitat. Because the proposed facilities would not affect large populations

of wildlife and many of the species are urban-adapted and would return to normal behavior shortly after construction is complete, the impacts would be less than significant.

The proposed MILCON/UMMC and FSRM projects would occur on either impervious cover, existing structures, or maintained, nonnative grasslands and lawns. No activities are proposed in aquatic or semi-aquatic environments where such species, including amphibians, are common. Therefore, no impacts on amphibians would occur, and the designation of protected amphibian habitat areas for the Proposed Action is unnecessary.

During construction, measures would be implemented to protect wildlife and avoid or minimize habitat reduction, deterrence, or depredation. After construction is complete, reclamation or landscaping designs would be implemented as a BMP in accordance with the installation's INRMP (Laughlin AFB 2022b). Post-construction erosion control measures to avoid or minimize effects on wildlife, nesting habitat, or foraging habitat would be stipulated in the erosion and sedimentation control plan required as part of the construction effort.

Long-term, less than significant, adverse impacts on wildlife from aircraft strikes and noise may occur from aircraft operations. To minimize the potential for bird and bat strikes, DAF would update the installation's BASH Plan to include the proposed aircraft operations at Laughlin AFB. Measures would be followed, as described in the installation's BASH Plan, to reduce the potential for bird and bat strikes.

Nighttime operations occur at Laughlin AFB with the T-38C and with other types of aircraft. As shown in **Table 2-2**, approximately 77 percent fewer nighttime operations are proposed with the T-7A compared to the T-38C's current nighttime operations, which would reduce the potential for a bat strikes. To further minimize impacts on bats leaving and entering roosting sites at dusk and dawn, DAF would follow the installation's BASH Plan (Laughlin AFB 2020a) and FAA Order JO 7110.65, *Air Traffic Control*. DAF would also monitor bat activity in the area and, if possible, use alternative runways during peak hours and months for bat activity (i.e., the hours of dusk between April and early October).

Appendix 1 to Annex C of the BASH Plan documents current wildlife hazards at Laughlin AFB. It states that concerns are mostly centered around birds such as raptors, cranes, gulls, pigeons, dove, blackbirds, grackles, cattle egrets, waterfowl, and other bird species. Raptors can be particularly hazardous to aircraft because of their size and widespread distribution over bases and low-level areas. Raptors, particularly vultures, use thermals to their advantage to search for prey. Vultures are probably the greatest concern, as they tend to soar at altitudes from the surface to 2,000 feet and loiter for long periods. Early morning and evening roosts are typically on transmission and communication towers. They take flight early to mid-morning from their roost in search of food (carrion, i.e., dead animals). During their "social soaring" behavior that normally occurs in the mid-afternoon, a large number (kettle) of vultures will congregate at altitudes coinciding with normal aircraft operating altitudes. Raptors can be controlled by removing dead animals from the airfield, proper management of landfills, rodent control, removal of dead trees and other perching sites on the airfield, and the use of pyrotechnics. As previously stated, gulls, doves, blackbirds, grackles, and other species can also cause bird strikes. These birds stay in open grassy areas and are evident in the areas along the airfield at Laughlin AFB. Deterrent measures mentioned in the BASH Plan include, but are not limited to,

pyrotechnics, bioacoustics, poisoning, bird scare cannons, live ammunition, and trapping. Grass control along the runways is also used to reduce these species' numbers. According to the BASH Plan, mammals such as deer, coyotes, foxes, rabbits, hares, bats, and rodents pose threats to flight operations. Although less of a hazard compared to birds, hunting, vegetation management, fence management, pyrotechnics, poisoning, rodenticides, and insecticides have been effective control measures for these species (Laughlin AFB 2020a).

Annex C in the BASH Plan provides ways to combat bird and wildlife hazards to flight operations through a variety of procedures and techniques. Although not specifically identified as current hazards in the BASH Plan, broad categories of birds and mammals identified at the installation and measures that could be employed to reduce the likelihood of strikes, include the following:

- Eliminate bird roosting sites by vegetation management.
- Bird-proof buildings and hangars on and near the flightline to reduce bird-nesting.
- Maintain airfield grass to the recommended height of 4 to 11 inches from March 1 to August 1 and between 7 to 14 inches from August 1 to March 1. Other grass maintenance practices include broad-leaved weed control, fertilizing, sodding and/or hydroseeding, and erosion control vegetation.
- Use pest control methods, such as insecticides and rodenticides, to manage the invertebrates and rodents that provide important food sources for many birds and animals.
- Use bird scare cannons whenever birds are identified on or near the airfield and present a threat to continued safe flight.

Annex D of the BASH Plan delineates tasks and responsibilities for organizations to execute the installation's BASH Plan. Implementation of these tasks and responsibilities would continue to reduce the potential for strikes around the installation's airfield and vicinity, although the potential cannot be eliminated entirely.

The phased delivery of T-7A aircraft and removal of T-38C aircraft and the personnel changes associated with Alternative 1 would have no impacts on wildlife.

Special Status Species. Alternative 1 would have no effect on the 11 federally listed, proposed, or candidate species that have the potential to occur on Laughlin AFB (i.e., the Golden-cheeked Warbler, Piping Plover, Red Knot, tricolored bat, monarch butterfly, Tamaulipan spot-tailed earless lizard, Devil's River minnow, Mexican blindcat, Rio Grande silvery minnow, Texas hornshell, and Tobusch fishhook cactus). While the Piping Plover and Red Knot were identified in the IPaC report as having potential to occur within Laughlin AFB, these species are only considered for wind energy projects and, therefore, are omitted from further consideration in this EIS.

The Golden-cheeked Warbler prefers Ashe juniper and oak woodlands and edges of cedar brakes. No suitable habitat for the Golden-cheeked Warbler occurs at the MILCON/UMMC and FSRM project areas or at the Laughlin AFB airfield. Additionally, no observations of Golden-

cheeked Warblers at Laughlin AFB have occurred during annual bird monitoring between 1993 and 2022. The nearest observations recorded in the eBird database have been in Brackettville, Texas, which is approximately 20 miles from Laughlin AFB. Therefore, it is unlikely this species would be on Laughlin AFB and be affected by construction, aircraft noise, or aircraft operations.

The tricolored bat prefers live and dead leaf clusters of live or recently dead deciduous hardwood trees. Tricolored bats have been observed roosting during the summer among pine needles, eastern red cedar (*Juniperus virginiana*), and within artificial roosts such as barns; beneath porch roofs, bridges, and concrete bunkers; and rarely within caves. While this species has been documented on Laughlin AFB during acoustic monitoring surveys, BASH data does not indicate the bat occupies any refugia on the base, and no impacts to suitable trees and other habitats are proposed to occur due to the Proposed Action. Additionally, there would be no increase in nighttime flights when this species is mobile and, therefore, would not expect to result in an increase in BASH incidents for the tricolored bat.

The monarch butterfly is found in fields, roadside areas, open areas, wet areas, and urban gardens, and milkweed and flowering plants are needed for monarch habitat. Milkweed plants are an obligate for the monarch butterfly species life cycle, and the Zizotes milkweed (*Asclepias oenotheroides*) has been observed near the airfield. Suitable habitat is not present at the MILCON/UMMC and FSRM project areas as these areas are either actively maintained or xeriscaped. No impacts to native vegetation are proposed to occur near the airfield and vegetation maintenance techniques, timing, and duration are not proposed to be changed due to the Proposed Action.

The Tamaulipan spot-tailed earless lizard inhabits moderately open prairie-brushland regions, particularly fairly flat areas free of vegetation or other obstructions along with mesquite-prickly pear associations. While this species has been observed annually on Laughlin AFB, current aircraft operations do not impact this species and, therefore, no impacts on this species from the proposed T-7A operations would occur. Additionally, this lizard is motile and would likely relocate to avoid construction and aircraft noise.

Incidental aircraft strikes with the Golden-cheeked Warbler, tricolored bat, monarch butterfly, and Tamaulipan spot-tailed earless lizard could occur during takeoffs, landings, and touch-and-goes at the Laughlin AFB airfield; however, it is unlikely that the Proposed Action would have an increase in incidental strikes compared to the current potential at Laughlin AFB. DAF reviewed T-38C strike data for Laughlin AFB from October 2017 through September 2022, and 68 strike incidents were recorded during this 5-year span. The species struck in most incidents were identified using visual or DNA methods, and none of these species were identified to be the Golden-cheeked Warbler, tricolored bat, monarch butterfly, or Tamaulipan spot-tailed earless lizard (Laughlin AFB 2023b). Continued adherence of the Laughlin AFB BASH Plan would help avoid and minimize the potential for strikes in the event of an incidental occurrence of a federally listed/candidate species. If determined to be necessary, new measures would be developed to reduce the potential for impacts to occur and the BASH Plan would be updated accordingly. Therefore, Alternative 1 will have no effect on the Golden-cheeked Warbler, monarch butterfly, tricolored bat, and Tamaulipan spot-tailed earless lizard.

The three fish species (i.e., Devil's River minnow, Mexican blindcat, and Rio Grande silvery minnow) and one freshwater mussel (i.e., Texas hornshell) are found exclusively in aquatic habitat, and no activities are proposed to affect aquatic resources. The Tobusch fishhook cactus typically inhabits shallow, moderately alkaline, stony clay and clay loams over massive, fractured limestone on level to slightly sloping hilltops. The proposed MILCON/UMMC and FSRM projects occur on either impervious cover, existing structures, or maintained, nonnative grasslands and lawns that do not provide suitable habitat for this species. Therefore, Alternative 1 will have no effect on these five species.

Current T-38C aircraft operations within the SUA do not affect any special status species; therefore, the proposed T-7A operations in the SUA also would not affect any special status species. This determination is supported by BASH data and wildlife surveys that have taken place between 1993 and 2022. Additionally, noise modeling performed as part of the EIS found that T-7A aircraft noise in the SUA would not exceed 65 decibels at any location on the ground due to a combination of infrequent and high-altitude (i.e., greater than 500 feet AGL) operations (see **Sections 3.3.2.1.2** and **3.3.2.2.2**). Therefore, no effect on any of the 32 species with potential to occur in the SUA would occur.

On June 6, 2023, DAF sent a letter regarding this determination of effect to the USFWS Austin Ecological Services Field Office for informal consultation under Section 7 of the ESA. USFWS is not required to concur or provide comments on a no effect determination. On August 16, 2023, USFWS informed DAF they have no comments on this determination. A copy of the USFWS consultation letter is included in **Appendix B**.

No appreciable effects on state sensitive species would result from Alternative 1. As previously noted, five state-listed threatened species or species of greatest conservation need (i.e., Texas horned lizard, Texas indigo snake, Texas tortoise, longstalk heimia, and Texas trumpets) have been documented within Laughlin AFB and therefore have the possibility to occur again. Suitable habitat for the Texas horned lizard, Texas indigo snake, Texas tortoise, longstalk heimia, and Texas trumpets does not occur in the MILCON/UMMC or FSRM project areas or near where aircraft operations would be performed; therefore, these five species would not be affected by construction or aircraft noise. If the Texas horned lizard, Texas indigo snake, or Texas tortoise were present, by chance, they could relocate.

3.4.2.2 Alternative 2

T-7A operations that are 25 percent greater than Alternative 1 would have no effect on any federally or state listed and sensitive species. Ground disturbance activities would be the same as Alternative 1 resulting in identical impacts on vegetation and wildlife. Compared to Alternative 1, the increase in operations would increase the potential for BASH incidents slightly but result in an identical overall impact. Measures and BMPs similar to those described for Alternative 1 would be implemented to minimize the potential for bird and bat strikes.

3.4.2.3 Alternative 3

The impacts on biological resources from T-7A operations that are 25 percent greater than Alternative 1 and the delivery of up to 16 additional T-7A aircraft would be identical to those described for Alternative 2. Although Alternative 3 would disturb more area by installing up to

60 T-7A shelters on the Laughlin AFB ramp (rather than up to 48 shelters for Alternatives 1 and 2), construction impacts on biological resources would be the same as those described for Alternative 1 because of the total lack of vegetation and wildlife habitat on the Laughlin AFB ramp.

3.4.2.4 No Action Alternative

The No Action Alternative would not contribute to new or additional impacts on biological resources. No facility construction would occur, and there would be no changes in aircraft operations. No vegetation removal would occur, and no impacts on wildlife, including protected and sensitive species, would occur. Biological resources conditions at Laughlin AFB would remain unchanged compared to the existing conditions described in **Section 3.4.1**.

3.4.3 Cumulative Effects

Short- and long-term, less than significant, adverse cumulative effects on vegetation would occur from construction related to T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**). Most of the areas proposed for construction are within highly urban areas or on already impervious surfaces, and vegetation permanently lost from construction would be minimal. Trees would only be removed if no active nests were found.

Short- and long-term, less than significant, adverse cumulative effects on wildlife would occur from ground disturbance from construction related to T-7A recapitalization and the reasonably foreseeable actions. Ground disturbance would remove habitat and displace wildlife species. Displaced wildlife could return soon after construction concludes and vegetation surrounding the new construction is restored, as practicable. Long-term, adverse, cumulative effects on wildlife would occur from the permanent loss of potential wildlife habitat. The added flight operations from the Proposed Action would contribute to ongoing flight operations at the installation and increase BASH potential, but this potential could be partially reduced from the divestment of T-1 aircraft. As flight profiles and syllabi for the T-7A aircraft are further developed, the proposed operational changes would be reviewed and analyzed to determine the potential impacts between flights and occurrences or encounters with bats and birds flying in the same airspace or altitudes. If necessary, BMPs and environmental protection measures would be developed to reduce the potential for impacts to occur.

3.5 Cultural Resources

Cultural resources are historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Depending on the retention of original characteristics and historic use, such resources might provide insight into the cultural practices of previous civilizations, or they might retain cultural and religious significance to modern groups. Cultural resources are typically subdivided into archaeological resources, architectural resources, and resources of traditional or religious significance. Archaeological resources are areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles) but standing structures do not remain. Architectural resources include standing buildings, structures, objects, and designed landscapes of historic significance. Resources of traditional, religious, or cultural significance can include archaeological resources, sacred sites, structures, districts, prominent topographic features, habitats, plants, animals, or minerals considered essential for the preservation of traditional culture.

Several federal laws and regulations govern the protection of cultural resources, including the National Historic Preservation Act (NHPA) (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). Laughlin AFB is required to comply with DAF regulations and instructions regarding cultural resources, including AFMAN 32-7003, *Environmental Conservation*. DAF consults with federally recognized tribes in accordance with the laws listed previously; DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*; and DAF Instruction 90-2002, *Interactions with Federally Recognized Tribes*.

NHPA authorized the Secretary of the Interior to expand and maintain the criteria for assessing the significance of cultural resources. Resources that are listed or eligible for listing in the National Register of Historic Places (NRHP) are termed “historic properties.” Cultural resources must be 50 years or older to warrant consideration for the NRHP. More recent resources might warrant listing if they are of exceptional importance and have attained significance within the past 50 years. Section 106 of the NHPA directs federal agencies to seek ways to avoid, minimize, or mitigate impacts to historic properties through consultation with the appropriate SHPO and federally recognized tribes.

Area of Potential Effect (APE). Federal agencies assess the potential impact of their undertakings on historic properties located within an APE. DAF has defined this undertaking as the Proposed Action and has defined the APE as the potential impact area from all activities, including all areas of potential direct and indirect effects. Direct effects include, but are not limited to, ground disturbance, vibration, building modification and new construction, and staging and equipment storage. Indirect effects include, but are not limited to, noise and aesthetic interference. For this undertaking, the APE is defined as the footprint of all buildings proposed for interior and exterior alteration, all areas of new construction and additions, all landscape features (such as airfield markings) that are proposed for alteration, all new roads and parking lots, and a 50-foot buffer around those areas to account for construction staging and temporary physical impacts from ground disturbing activity. The APE captures all anticipated direct and indirect effects as all new construction is anticipated to be one-story and not exceed 40 feet in total building height. There are no NRHP-listed or eligible historic districts, sites, buildings, structures, or objects that would be visually or audibly affected by the proposed undertaking. In addition, the only vertical incursions planned are the antennas that would be located atop the proposed GBTS facility, which would project approximately 15 to 20 feet above the one-story building. Thus, the total vertical projection of the proposed GBTS facility and antennas is approximately 55 to 60 feet combined. The APE totals approximately 58.5 acres and is shown in **Figure 3-10**.

The APE for this undertaking does not include the SUA where the T-7A aircraft would perform operations (see **Table 3-1**) because this SUA already is used for such operations with the T-38C aircraft, and this undertaking would not change the configuration (e.g., shape, size, altitudes) or active times of this SUA. As noted in **Sections 3.3.2.1.2** and **3.3.2.2.2**, noise modeling for the SUA using the proposed T-7A operations indicates that noise levels would not result in a L_{dnmr} greater than 65 dB in any SUA. Based on this information, T-7A flight training would have no potential to effect historic properties—including adobe structures and traditional cultural properties—beneath any SUA, and the SUA do not warrant inclusion in the APE for this undertaking.

The APE for this undertaking was approved by the Texas SHPO in a letter response received June 5, 2023, which also included the SHPO's concurrence with DAF's finding of no adverse effects on historic properties for this undertaking.

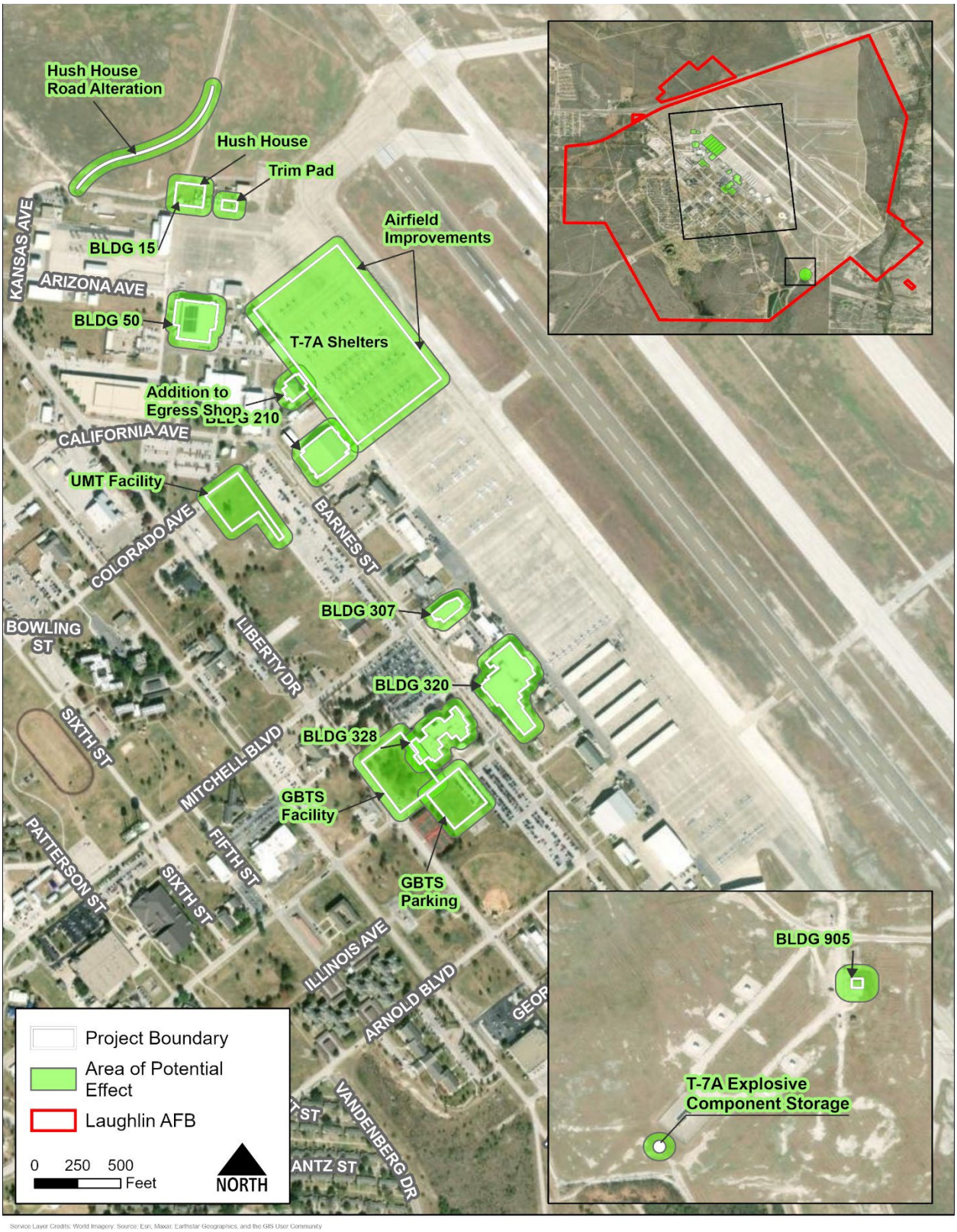

Figure 3-10. Cultural Resources Area of Potential Effect

3.5.1 Affected Environment

Installation History. Beginning in the early-twentieth century, prior to its establishment as a military airfield, the land occupied today by Laughlin AFB was used for agricultural husbandry and plant propagation. In 1942, the U.S. Army purchased 3,862 acres from Zacatosa Ranch, Inc., which included the ranch's headquarters, a family's residence, a lake, and four groundwater wells. The existing buildings were removed, and the Army established Laughlin Army Air Field (Laughlin AFB 2017).

Laughlin Army Air Field was used as a flight training school to support missions during World War II. The installation closed in 1945 but reopened in 1952 to train pilots for the Korean Conflict and was renamed Laughlin AFB. Between 1945 and 1952, land at the installation was leased to ranchers for grazing and existing buildings were removed. Many of the hangars that are still used today were constructed following the installation's reopening in 1952. In 1957, U-2 reconnaissance training and activities were moved to Laughlin AFB, which required changes to hangars, other buildings, and infrastructure. The installation's primary mission today is training air pilots (Laughlin AFB 2017).

Archaeological Resources. Archaeological investigations in 1992 and 1994 recorded 13 archaeological sites on Laughlin AFB. One additional, previously recorded site, 41VV1652, also was registered as a site in 1992 despite consisting of only two isolated finds, bringing the total to 14 sites. All 14 sites are described in **Table 3-42**. Testing of these sites in 1998 deemed only four of them were eligible for inclusion in the NRHP (Laughlin AFB 2017). None of the 14 sites are within the footprint of the proposed MILCON/UMMC and FSRM projects.

Architectural Resources. Two standing structures surveys have been performed at Laughlin AFB. The first survey was performed in 2002. It identified 163 Cold War-Era buildings dating from 1952 to 1991 and deemed none of the buildings were eligible for the NRHP (AETC 2002). SHPO concurred with the recommendations on January 14, 2003. The second historic building survey was performed in 2020 and identified 196 buildings and structures constructed between 1955 and 2017 and evaluated them for their Cold War-Era and post-Cold War significance. None of the buildings or structures were deemed eligible for the NRHP (ANLESD 2020). SHPO concurred with the recommendations on October 27, 2020 (ETRAC #202101311).

With respect to this Proposed Action, Buildings 15 (constructed in 1987), 201 (constructed in 1990), 307 (constructed in 2007), 320 (constructed in 1988), and 328 (constructed in 1979) were addressed by the previously mentioned standing structure surveys and determined not to be historic properties (AETC 2002, ANLESD 2020). Buildings 50 (constructed in 1954), 210 (constructed in 1955), and 905 (constructed in 1970) were also evaluated in the 2002 standing structure survey but were re-evaluated to support this EIS as they are now more than 50 years old. While all three buildings were constructed during and are associated broadly with the Cold War, DAF has determined that all three buildings lack the significance and integrity necessary for listing in the NRHP. SHPO concurred that all three buildings were not eligible for listing in the NRHP in a letter received on June 5, 2023.

Table 3-42. Previously Recorded Archaeological Sites on Laughlin AFB

Site Designation	Year Recorded	Site Age	Site Type	NRHP Eligibility
41VV1652	1992	Archaic, Historic	Two isolated finds: point frag and .45 caliber steel jacket bullet	Ineligible
41VV1653	1992, 1994	Prehistoric	Surface lithic scatter with three possible surface hearths	Ineligible
41VV1654	1992, 1994	Paleoindian, Archaic, Historic	Habitation with burned rock hearths, historic ranch with 19th to early 20th century features	Eligible
41VV1655	1992, 1994	Prehistoric	Sparse lithic scatter, lithic procurement locality	Ineligible
41VV1682	1994	Historic	Zacatosa Ranch Headquarters: multiple disturbed concrete and stone features, artifact scatters	Ineligible
41VV1683	1994	Paleoindian	Angostura point in lithic scatter, lithic procurement locality	Ineligible
41VV1684	1994	Prehistoric	Surface lithic scatter with fire-cracked rock	Ineligible
41VV1685	1994	Prehistoric	Extensive lithic scatter and procurement locality	Ineligible
41VV1686	1994	Prehistoric	Lithic surface scatter with three possible burned rock hearths	Ineligible
41VV1687	1994	Prehistoric	Small scatter of lithics and fire-cracked rock	Ineligible
41VV1688	1994	Middle to Late Archaic	Lithic scatter with two possible hearths, and a Kinney and an Ensor point	Eligible
41VV1689	1994	Early Archaic	Martindale point with a thin lithic scatter and one possible hearth	Eligible
41VV1690	1994	Middle Archaic	Pedernales point with three possible hearths	Eligible
41VV1691	1994	Prehistoric	Small lithic scatter	Ineligible

Source: Laughlin AFB 2017

Resources of Traditional or Religious Significance. Twenty federally recognized tribes and one state of Texas recognized tribe have an expressed or potential interest in cultural resources at Laughlin AFB and the SUA. These tribes are the Absentee-Shawnee Tribe of Indians of Oklahoma, Alabama-Coushatta Tribe of Texas, Coushatta Tribe of Louisiana, Delaware Nation (Oklahoma), Apache Tribe of Oklahoma, Blackfeet Tribe of the Blackfeet Indian Reservation of Montana, Comanche Nation (Oklahoma), Fort Sill Apache Tribe of Oklahoma, Jicarilla Apache Nation, Kickapoo Traditional Tribe of Texas, Kickapoo Tribe of Indians of the Kickapoo

Reservation in Kansas, Kickapoo Tribe of Oklahoma, Kiowa Indian Tribe of Oklahoma, Mescalero Apache Tribe, San Carlos Apache Tribe, Shoshone Tribe of the Wind River Reservation, Tonkawa Tribe of Indians of Oklahoma, White Mountain Apache Tribe, Wichita and Affiliated Tribes, Ysleta Del Sur Pueblo, and Lipan Apache Tribe of Texas[6]. DAF consults with tribes on issues related to cultural resource management, the unanticipated discovery of human remains and cultural items under the Native American Graves Protection and Repatriation Act, and on project specific effects under Section 106 of the NHPA. During prior consultations, these tribes have not identified any sacred sites or traditional cultural properties on the installation.

3.5.2 Environmental Consequences

Impacts on cultural resources result from actions that change culturally valued elements of a resource or restrict access to cultural resources. Impacts on cultural resources may be short- or long-term and direct or indirect. Direct impacts can result from physically altering, damaging, or destroying all or part of a resource. Indirect impacts can occur from alterations to characteristics of the surrounding environment that contribute to the importance of the resource. This includes introducing visual, atmospheric, or audible elements that are out of character with the property or that alter its setting or feeling. Under Section 106 of the NHPA, DAF must determine if the Proposed Action would result in an "adverse effect" on historic properties and must avoid, minimize, or mitigate such effects if they would occur. For the purposes of Section 106, an adverse effect is one that changes elements or characteristics of a historic property that make the property eligible for listing in the NRHP. This analysis focuses on cultural resources that are listed in or eligible for listing in the NRHP and incorporates DAF findings of effect under Section 106 of the NHPA.

3.5.2.1 Alternative 1

In and of itself, a change in the type of aircraft flown or the timing (e.g., daytime or nighttime) and frequency of flight operations would have no potential to impact historic properties. As noted in **Section 3.3.2.1.1.2**, T-7A operations at Laughlin AFB would increase noise levels at POI in the region between 1 and 9 dB. A similar magnitude increase would be anticipated at historic properties in the region, but such a magnitude increase would not be anticipated to impact any historic properties. A change to personnel numbers at Laughlin AFB would also have no potential to impact historic properties. The only aspects of Alternative 1 that have the *potential* to impact historic properties are the six MILCON/UMMC and seven FSRM projects proposed at the installation. **Table 3-43** lists the MILCON/UMMC and FSRM projects and summarizes their impact on historic properties.

[6] The Lipan Apache Tribe of Texas is state of Texas recognized only.

Table 3-43. Cultural Resources Components of the Proposed Action and Impact on Historic Properties

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
MILCON/UMMC Projects				
GBTS Facility	Construct a one-story building (approximately 34,000 ft^2 and 40 feet tall) and parking lot (106 spots) on undeveloped land adjacent to Building 328 (constructed in 1979).	N/A – New construction	N/A – Vacant land	No effect to historic properties
UMT Facility	Construct a one-story building (approximately 11,500 ft^2) on undeveloped land adjacent to Colorado Avenue. No parking lot is required.	N/A – New construction	N/A – Vacant land	No effect to historic properties
Hush House	Construct a new, one-story hush house on the site of Building 15 (breakroom, built 1987). Realign airfield service road to provide buffer space. Laughlin AFB's existing hush house (Building 19) would not be altered or demolished.	Building 15 is non-historic	1987	No effect to historic properties
T-7A Shelters	Construct up to 48 shelters (sunshades) on existing aircraft parking ramp and remove existing non-historic T-38C prefabricated shelters (installed from 2017 to 2021).	N/A – New construction Existing shelters are non-historic	Non-historic ramp Existing T-38C shelters installed from 2017 to 2021	No effect to historic properties
Addition to Egress Shop	Add 3,400 ft^2 addition to Building 201 (built 1990).	Building 201 is non-historic	1990	No effect to historic properties
Jet Blast Deflectors	Install jet blast deflectors on airfield. Final placement dependent on ramp layout design.	N/A – Attached to non-historic ramp	Non-historic ramp	No effect to historic properties
FSRM Projects				
Modify Buildings 50 and 210	Modify Buildings 50 (built 1954) and 210 (built 1955), including hangar doors.	Not eligible	1954 and 1955	No effect to historic properties

Building Name/Number	Project Component	NRHP Status	Date Constructed	Assessment of Effect
Antenna Farm	Incorporate an antenna farm into the design of the proposed GBTS facility. Antenna to be located atop the roof, projecting approximately 15 to 20 feet above the approximately 40-foot-tall building.	N/A – New construction	N/A – Proposed GBTS facility (new construction)	No effect to historic properties
Squadron Operations Buildings Renovations	Renovate interior of Squadron Operations Buildings 307 (built 2007), 320 (built 1988), and 328 (built 1979).	Buildings 307, 320, and 328 are non-historic	2007, 1988, and 1979	No effect to historic properties
Airfield Improvements	Remark the T-38C ramp to the width of the T-7A. Install new moorings and anchor rods for T-7A aircraft. Replace existing aircraft arresting system. Remove Centralized Aircraft Support System's aboveground service modules.	N/A – Attached to non-historic ramp	Non-historic ramp	No effect to historic properties
Trim Pad	Rebuild existing trim pad (built circa 1985) and install T-7A anchor block. Relocate the compass rose (painted 2020) to another magnetically quiet site.	N/A – Attached to non-historic ramp	Non-historic ramp Trim pad, circa 1985 compass rose, painted 2020	No effect to historic properties
T-7A Explosive Component Storage Facility	Construct an approximately 7,200 ft^2 concrete pad and provide utilities for a storage container.	N/A – New construction	N/A – Vacant land	No effect to historic properties
Addition to Building 905	Construct an approximately 1,000 ft^2 addition onto the east side of Building 905 (built 1970). Add perimeter fences and gates and construct a 10-vehicle parking lot.	Not eligible	1970	No effect to historic properties

Sources: Laughlin AFB 2017, AETC 2002, ANLESD 2020, and 47 CES 2022
Key: N/A = Not applicable

Archaeological Resources. Four MILCON/UMMC and three FSRM projects (GBTS facility, UMT facility, hush house, addition to the egress shop, trim pad, T-7A explosive component storage facility, and addition to Building 905) would involve ground disturbance. The potential for archaeological resources to occur within these construction areas varies. The hush house, addition to the egress shop, trim pad, and addition to Building 905 have low potential for archaeological resources because these areas and the land around them have been modified and developed previously through building or ramp construction. Additionally, the T-7A explosive component storage facility has low archaeological potential because it is located in an area that has been surveyed previously (archaeological survey report No. 239), and no archaeological materials were identified within the unit's APE. The GBTS facility and the UMT facility are set in locations that appear unmodified and have not been previously surveyed. As such, these two locations have moderate archaeological potential. The remaining MILCON/UMMC and FSRM projects would have no potential to impact archaeological resources as they would entail no ground disturbance.

Architectural Resources. Four MILCON/UMMC and four FSRM projects (i.e., GBTS facility, UMT facility, T-7A shelters, jet blast deflectors, antenna farm, airfield improvements, trim pad, and T-7A explosive component storage facility) would have no potential to impact standing resources as they entail no modification of historic-age resources. The proposed T-7A shelters, jet blast deflectors, airfield improvements, and trim pad would occur on the existing concrete of the aircraft parking ramp or apron, which is non-historic. The construction of the T-7A shelters would also require the removal of the existing, prefabricated T-38C shelters, which are non-historic and were installed between 2017 and 2021. The existing trim pad (1985) would be rebuilt, and the existing compass rose (last painted in 2020) would be relocated to a new magnetically quiet site. Neither of these features are historic. The proposed antenna farm would be located on the roof of the proposed GBTS facility, which has not yet been constructed, and the total vertical projection of the one-story building with antennas is not anticipated to exceed 60 feet. The GBTS facility, UMT facility, and T-7A explosive component storage facility are new construction located away from existing buildings.

The remaining two MILCON/UMMC and three FSRM projects involve alterations to existing buildings. For the hush house, Building 15, which is a breakroom constructed in 1987, would be demolished to make space for a new hush house. Laughlin AFB's existing hush house is Building 19 and would not be altered or demolished. For the addition to the egress shop, Building 201, which was constructed in 1990, would receive an approximately 3,400-ft^2 addition. Interior renovations are proposed for squadron operation Buildings 307, 320, and 328, which were constructed in 2007, 1988, and 1979, respectively. The aforementioned buildings (i.e., Buildings 15, 201, 307, 320, and 328) have each been evaluated previously and determined not to be historic properties.

Buildings 50 and 210 would receive alterations including to existing hangar doors. Buildings 50 and 210 were constructed in 1954 and 1955, respectively, and were not designed specifically for the U-2 mission. They were previously determined not eligible under Criterion Consideration G prior to turning 50 years of age (AETC 2002). DAF has re-evaluated both buildings and determined them both not eligible for listing in the NRHP due to a lack of significance (Criteria A, B, and D) and integrity (Criterion C). Building 905, which was

constructed in 1970, would receive an approximately 1,000 ft^2 addition. Building 905 was not designed specifically for the U-2 mission. It was previously determined not eligible under Criterion Consideration G prior to turning 50 years of age (AETC 2002). DAF has re-evaluated Building 905 and determined it not eligible for listing in the NRHP due to a lack of significance (Criteria A, B, C, and D).

An adverse effect is one that changes elements or characteristics of a historic property that make the property eligible for listing in the NRHP. DAF applied the Criteria of Adverse Effect and determined that the Proposed Action would have no effect on historic properties. DAF consulted with the Texas SHPO and received their concurrence with the no adverse effect on historic properties determination on June 5, 2023 (see **Appendix B**).

Resources of Traditional or Religious Significance. DAF also consulted with the 21 Native American Tribes with interest in Laughlin AFB and the SUA (see **Section 3.5.1** for a list of those tribes) to confirm no relevant sacred sites or traditional cultural properties are present. Each tribe was initially contacted in late January 2023 as part of the public scoping process. Only the San Carlos Apache Tribe responded to the scoping contact. The San Carlos Apache Tribe provided "concurrence with report findings" and determined no adverse effect would occur from this undertaking. They also deferred to the Fort Sill Apache Tribe of Oklahoma and Mescalero Apache Tribes for further evaluation. No further consultation with the San Carlos Apache Tribe is necessary for this undertaking.

A second government-to-government consultation letter was sent by DAF in early June 2023 to the 20 tribes (excluding the San Carlos Apache Tribe) requesting assistance in identifying any relevant historic properties of religious and cultural significance to tribal nations. No tribal nations responded to the June 2023 consultation letter. **Appendix B** contains copies of the consultation letters.

The same 20 tribes were notified in November 2023 of the availability of the Draft EIS. No tribal nations responded to this notification letter or provided comments on the Draft EIS.

3.5.2.2 Alternative 2

Impacts on cultural resources from T-7A operations that are 25 percent greater than Alternative 1 would be identical to those described for Alternative 1. The proposed increase in flight operations would have no potential to impact historic properties. Thus, like Alternative 1, no effect on historic properties would occur from Alternative 2.

3.5.2.3 Alternative 3

Impacts on cultural resources from T-7A operations that are 25 percent greater than Alternative 1 and the delivery of up to 16 additional T-7A aircraft would be identical to those described for Alternatives 1 and 2. Identical impacts on historic properties would occur from the installation of up to 60 T-7A shelters (rather than up to 48 shelters for Alternatives 1 and 2) because all shelters would be constructed on the existing, non-historic ramp. Thus, like Alternatives 1 and 2, no effect on historic properties would occur from Alternative 3.

3.5.2.4 No Action Alternative

The No Action Alternative would not impact historic properties. No facility construction would occur, and there would be no changes in aircraft operations. Cultural resources at Laughlin AFB would remain unchanged when compared to the existing conditions described in **Section 3.5.1**.

3.5.3 Cumulative Effects

Construction of the MILCON/UMMC and FSRM projects and the reasonably foreseeable actions (see **Table 3-2**) are not anticipated to result in cumulative effects on cultural resources. As stated in **Section 3.5.1**, there are no properties or structures eligible for inclusion in the NRHP and there are 14 known archaeological sites on Laughlin AFB, of which four have been determined eligible for the NRHP. Although most of the reasonably foreseeable actions would involve some level of ground disturbance, these projects are not anticipated to impact archaeological resources. Avoidance of known cultural resources sites would be taken into consideration when planning reasonably foreseeable actions within the surrounding area. However, if activities would be conducted adjacent to or could not be adjusted to avoid impacting an archaeological site, then consultation with the SHPO or tribal historic preservation officer would occur, and mitigation measures would be developed in accordance with Section 106 of the NHPA. No long-term, adverse cumulative effects on cultural resources would be expected from increased aircraft operations from T-7A recapitalization because aircraft operations do not have the potential to impact historic or cultural properties. Therefore, the Proposed Action, when combined with reasonably foreseeable actions (see **Table 3-2**), would not result in a significant cumulative effect on cultural resources.

3.6 Land Use

Land use refers to the human use or modification of lands for various purposes and the management of those uses. Land use classifications refer to real property descriptions that indicate either natural conditions or the types of human activity occurring on a land parcel.

Primary objectives of land use management and planning are to ensure orderly and appropriate growth and compatibility between uses among adjacent property parcels or areas. Various administrative tools (i.e., policy plans, zoning ordinances, easements, subdivision regulations, deed restrictions, and covenants) are typically used to manage the development of land and facilitate desired use patterns, including protection of specially designated or environmentally sensitive uses.

Land use classifications denote predominant uses and/or characteristics of real property to provide a basis for spatial analysis and comparisons. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. Descriptive classifications for human development and activity include residential, commercial, industrial, military, agricultural, institutional, transportation, communications and utilities, and recreational.

The regulatory setting for land use includes federal, state, and local statutes, regulations, plans, policies, and programs applicable to land use management on installations and adjacent areas.

The primary DAF directives and guidance applicable to the Proposed Action are discussed as follows.

Federal Interagency Committee on Urban Noise. In 1980, the Federal Interagency Committee on Urban Noise published guidelines (FICUN 1980) relating DNL to compatible land uses. This committee was comprised of representatives from DoD; Transportation, Housing, and Urban Development; USEPA; and the Veterans Administration. Since the issuance of these guidelines, federal agencies have generally adopted them for their noise analyses.

Following the lead of the committee, DoD and FAA adopted the concept of land-use compatibility as the accepted measure of aircraft noise effect. FAA included the committee's guidelines in the Federal Aviation Regulations. Although these guidelines are not mandatory, they provide the best means for determining noise impact in airport communities. In general, residential land uses are not normally compatible with outdoor DNL values above 65 dBA, and the extent of land areas and populations exposed to DNL of 65 dBA and higher provides the best means for assessing the noise impacts of alternative aircraft actions. In some cases, a change in noise level, rather than an absolute threshold, may be a more appropriate measure of impact.

Air Force Instruction (AFI) 32-1015, Integrated Installation Planning, and AFH 32-7084, AICUZ Program Manager's Guide. AFI 32-1015 establishes the AICUZ discretionary program to promote compatible land use surrounding military airfields. The goal of the AICUZ program is to protect the health, safety, and welfare of people living near an airfield, while preserving the operational integrity of the defense flying mission. Components of the AICUZ program, as defined in AFH 32-7084, include CZs, APZs, Hazards to Aircraft Flight Zones, and noise zones.

Installations use the AICUZ program to provide land use compatibility guidelines to areas exposed to increased safety risks and noise near airfields. Aircraft noise zones, APZs, and height restrictions for nearby structures are usually identified in installation specific AICUZ plans. These plans provide information on off-installation land uses and identify uses that are compatible, incompatible, or conditionally compatible (may require noise attenuation measures) with installation noise and accident zones. In accordance with AFI 32-1015, land use can be deemed incompatible with an installation if it adversely affects the utility of DAF training and readiness missions, thereby affecting the ability of an installation to fulfill its mission.

AFI 32-1015 also establishes the Comprehensive Planning Program, which is designed to establish a framework for land use decision making regarding development of DAF installations. The program incorporates operational, environmental, urban planning, and related considerations to identify and assess development alternatives and ensure compliance with applicable laws, regulations, and policies. Under AFI 32-1015, all major installations are required to develop an IDP to guide land use management and decisions.

3.6.1 Affected Environment

Installation Land Use. Laughlin AFB completed a comprehensive IDP in 2014 to promote the installation leadership's strategic vision. The IDP focused on the achievement of the goals and objectives for future development at Laughlin AFB. According to the IDP, Laughlin AFB has 12

existing and future land uses (not including water), and the proposed MILCON/UMMC and FSRM projects would span several of these land uses (Laughlin AFB 2014).

The MILCON/UMMC projects include construction within the Airfield (both Paved and Unpaved), Industrial, Aircraft Maintenance, Open Space, and Outdoor Recreation land uses. Construction of the proposed GBTS facility's parking lot would occur within the Outdoor Recreation land use adjacent to the existing tennis and basketball courts. The FSRM projects include construction within the Airfield (Paved), Industrial, Aircraft Maintenance, and Administrative land uses (Laughlin AFB 2014).

Del Rio JLUS. The Del Rio JLUS for the city of Del Rio and Laughlin AFB was completed in 2008. It included a policy committee and technical oversight committee with representatives from the city of Del Rio, Val Verde County, Kinney County, Laughlin AFB, federal and state representatives and agencies, local businesses, and the San Felipe Del Rio Independent School District. The stated goal of the Del Rio JLUS "is to protect the viability of current and future missions at Laughlin AFB while at the same time accommodating growth, sustaining the economic health of the region, and protecting public health and safety." To accomplish this, three guiding principles were identified in the JLUS: Understanding, Collaboration, and Actions (City of Del Rio 2008).

The JLUS provides a study area profile, which includes Laughlin AFB and the surrounding municipalities and growth areas; a compatibility section that discusses various natural, human-made, and other compatibility factors; existing plans and programs for the installation and surrounding areas; and an implementation plan that details recommendations and strategies for addressing compatibility concerns.

The JLUS implementation plan section presents 12 compatibility tools and 38 recommended JLUS strategies. The compatibility tools include:

- Military Influence Area
- Acquisition
- Air Installation Compatible Use Zone
- BASH Coordination
- Capital Improvement Plan
- Comprehensive Plan
- Communication/Coordination
- Deed Restrictions
- Legislative Tools
- Memorandum of Understanding
- Real Estate Disclosure
- Zoning/Subdivision/Building Code/Other Local Regulations.

These compatibility tools, along with the associated recommendations outlined in the JLUS, can be used and implemented by the various stakeholders, which include Laughlin AFB, the city of Del Rio, Val Verde County, and others to the benefit of both the communities surrounding Laughlin AFB and preserving the installation's mission and capabilities.

Laughlin AFB AICUZ Program. The most recent AICUZ plan for Laughlin AFB was completed in 2008 (Laughlin AFB 2008), which identified off-installation land uses within CZs, APZs, and within the 65 dB DNL noise contour. The vast majority of the noise contours and APZs associated with Laughlin AFB fall over the installation property or over sparsely populated open space outside the installation fence line. Therefore, there are limited compatibility concerns noted within the AICUZ plan. Those incompatibility concerns that are noted include 22 acres of residential property within the 65 to 69 dB DNL noise contour located to the northwest of the installation. In addition, there are 111 acres of CZs outside the installation property in an open/agriculture land use. These areas are adjacent to the installation property and do not appear to be populated; however, DoD prefers to have CZs within the fence line, and they are, therefore, noted as incompatible within the 2008 AICUZ plan.

As part of this EIS, new baseline noise contours were modeled for Laughlin AFB; therefore, impacts from the Proposed Action on land use and noise are compared with the new baseline noise contours rather than the noise contours identified in the 2008 AICUZ plan. In addition, because there are no proposed changes to the CZs or APZs associated with Laughlin AFB as part of the Proposed Action, those topics are not discussed further within this Land Use resource area. The CZs and APZs are further discussed as part of the safety analysis in **Section 3.9**.

Readiness and Environmental Protection Integration Program. The DoD's Readiness and Environmental Protection Integration Program strives to protect the military's ability to accomplish its training, testing, and operational mission by helping to avoid or remove land-use conflicts near installations and addressing regulatory restrictions that may inhibit military activities (DoD 2023). The program funds projects across three primary integrated components: encroachment management, landscape partnerships, and stakeholder engagement. Encroachment management projects encourage compatible land use and the preservation of natural lands through cost-sharing land acquisition or easement strategies with state and local governments and private conservation organizations. Landscape partnerships seek to address broader, large-scale landscape conservation initiatives with federal and state partners. The development of policy, regulatory, and planning solutions to incompatible development and sustainability issues are pursued collaboratively with stakeholder governments (federal, state, and local), often in concert with associated encroachment and landscape initiatives.

Although there are currently no Readiness and Environmental Protection Integration projects at Laughlin AFB, it continues to be a DoD program that could be used to help address compatibility concerns around the installation and preserve the overall mission. Leveraging DoD programs, such as Readiness and Environmental Protection Integration, was a strategy/recommendation listed in the Del Rio JLUS.

2022 Baseline Noise Contours. As part of the development of the noise contours associated with this EIS, new baseline noise contours were developed, which are slightly different than the

previous noise contours presented in the 2008 AICUZ plan. The 2022 baseline noise contours (presented in **Section 3.3.1**) are shown in **Figure 3-1**. The off-installation land areas covered by the 2022 baseline noise contours are provided in **Table 3-44**. Overall, the 2022 baseline noise contours are slightly larger than the 2008 AICUZ plan noise contours, covering larger off-installation land areas. Val Verde County does not have specific land use or zoning data. Therefore, to develop **Table 3-44**, land uses were digitized based on the 2008 AICUZ plan, aerial photography interpretation, and best professional judgement.

Table 3-44. Laughlin AFB Off-Installation Land Use within the Baseline Noise Contours

Category	Noise Zones (acres)			
	65 to 70 dB DNL	70 to 75 dB DNL	75 to 80 dB DNL	Greater than 80 dB DNL
Residential	10	0	0	0
Commercial	3	0	0	0
Open, Recreation, Agriculture, or Low-Density Residential	1,916	707	174	8
Total	**1,929**	**707**	**174**	**8**

Source for noise contours: HMMH 2023
Land uses were digitized based on Figure 4-1 of the 2008 AICUZ plan for Laughlin AFB (Laughlin AFB 2008) along with interpreting aerial photography from Google Earth imagery and best professional judgement.

3.6.2 Environmental Consequences

Land use impacts would be considered adverse if the effect was inconsistent or noncompliant with land use management plans or policies, precluded the viability of existing land use, precluded continued use or occupation of an area, was incompatible with adjacent land use to the extent public health or safety would be threatened, or conflicted with planning criteria established to ensure the safety and protection of human life. Although there is no quantitative threshold to denote a significant land use impact, actions with small increases in incompatible land use can generally be regarded as less than significant.

3.6.2.1 Alternative 1

Installation Land Use. Alternative 1 would involve on-installation construction at Laughlin AFB for the proposed MILCON/UMMC and FSRM projects. These projects would be largely compatible and consistent with applicable land use plans and regulations, and development would be compatible within the Airfield (both Paved and Unpaved), Industrial, and Aircraft Maintenance land uses. Based on the proposed location of the parking lot for the GBTS facility, a portion of the Outdoor Recreation land use could be impacted; however, the precise site layout for this facility is still being developed. As currently shown, it would not interfere with the tennis or basketball courts that are adjacent to this project (see **Figure 2-2**). Each MILCON/UMMC and FSRM project would be sited, designed, and constructed consistent with Laughlin AFB's IDP and would have no significant impacts on the land use.

Land Use and Airspace. No changes in SUA configurations or boundaries are proposed; therefore, Alternative 1 would meet FAA regulations specific to minimum altitude and avoidance distances. The CZs and APZs for Laughlin AFB would remain unchanged.

The primary impact of project implementation on land use would be associated with noise generated by T-7A aircraft operations, because T-7A aircraft feature louder operating characteristics compared to T-38C aircraft.

NOISEMAP was used to complete the noise analysis and develop estimated areas and population within the noise contours, providing a comparison between existing baseline conditions and each action alternative. DAF recommends land use compatibility for 5 dBA incremental DNL zones above 65 dBA DNL. Residential use is recommended as incompatible with any noise zone above 65 dB DNL. Although local conditions regarding the need for housing may require residential use in these zones, residential use is discouraged in DNL 65 to 70 dB and strongly discouraged in DNL 70 to 75 dB. Existing residential development is considered pre-existing, non-conforming land use. Analysis of aircraft noise in **Section 3.3** shows that an additional 276 people (178 on-installation and 98 off-installation) would live within the proposed 65 to 70 dB DNL noise zone, an additional 18 people (zero on-installation and 18 off-installation) would live within the 70 to 75 dB DNL noise zone, an additional 11 people (zero on-installation and 11 off-installation) would live within the 75 to 80 dB DNL noise zone, and an additional 2 people (zero on-installation and 2 off-installation) would live within the 80 to 85 dB DNL noise zone for Alternative 1.

Table 3-45 provides the estimated changes in off-installation acreage under the noise contours at Laughlin AFB for Alternative 1. Overall, there would be an increase of approximately 3,367 acres off-installation within the 65 dBA or greater DNL, which is an increase of approximately 120 percent over baseline conditions. However, most land uses surrounding Laughlin AFB are considered Open, Recreation, Agriculture, or Low-Density Residential (see **Table 3-44**), which would minimize the adverse impact on land use.

Table 3-45. Laughlin AFB Off-Installation Land Use within Alternative 1 Noise Contours

Noise Contour	Change in Areas Under Noise Contours (acres) – Alternative 1			
	On-Installation	Percent Change	Off-Installation	Percent Change
65 to 70 dB DNL	705	45.1	3,289	70.5
70 to 75 dB DNL	516	34.7	1,988	181.2
75 to 80 dB DNL	458	22.5	736	322.9
Greater than 80 dB DNL	875	29.2	172	2,050.0
Total	**2,554**	**33.0**	**6,185**	**119.5**

Source: HMMH 2023

Although residential land uses are discouraged in the 65 dBA DNL or higher noise zone, residential land use represents less than 0.2 percent of the total off-installation area within the 65 dBA DNL or higher noise zone for both the baseline conditions and Alternative 1. The

location of these residential land uses is at the Gateway Apartments, located northwest of Laughlin AFB along Space Boulevard. Although there would be an increase in potentially incompatible land uses within Alternative 1 noise zones, it would not be considered significant. This area already is exposed to aircraft noise under baseline conditions, and the increase in acreage within the 65 dB DNL noise contour would be approximately six acres more than baseline conditions. As such, this small increase in potentially incompatible land uses would not preclude the viability of existing land use, preclude continued use or occupation of the area, be incompatible with adjacent land use to the extent public health or safety would be threatened, or conflict with planning criteria established to ensure the safety and protection of human life.

DAF is committed to coordinating with Val Verde County and the city of Del Rio, as well as other local communities, to analyze compatible use surrounding Laughlin AFB. As part of that commitment, DAF would continue to partner with local governments to perform the following tasks:

- Prepare an AICUZ plan update to address any increases of land area within the greater than 65 dBA DNL noise contour for Laughlin AFB.
- Coordinate with state and local agencies on compatible land uses and potential encroachment concerns inside and outside of the DNL footprint, as applicable (i.e., large-scale developments, transportation projects that could encourage development, or tall structures such as cellular towers that could penetrate airfield imaginary surfaces).
- Encourage municipalities to promote the highest and best use of land by updating local zoning ordinances and building construction standards, especially for high-noise areas.
- Encourage municipalities to adopt legislative initiatives to acquire interest in developed properties to curb and mitigate encroachment near military installations and protect the public from noise exposure and accident potential.

DAF would also continue to pursue DoD Readiness and Environmental Protection funds to further implement strategic land use acquisitions, controls, and landscape improvements associated with incompatible use concerns.

3.6.2.2 Alternative 2

Additional impacts on land use from Alternative 2 would arise from T-7A operations that are 25 percent greater than Alternative 1, which would create noise contours that would cover more land area than those of Alternative 1 (see **Table 3-46**). The analysis of aircraft noise in **Section 3.3** shows that approximately 395 additional people (272 on-installation and 123 off-installation) would live within the 65 to 70 dB DNL noise zone, an additional 18 people (zero on-installation and 18 off-installation) would live within the 70 to 75 dB DNL noise zone, an additional 14 people (zero on-installation and 14 off-installation) would live within the 75 to 80 dB DNL noise zone, and an additional 5 people (zero on-installation and 5 off-installation) would live within the 80 to 85 dB DNL noise zone for Alternatives 2 and 3.

Table 3-46. Laughlin AFB Off-Installation Land Use within the Noise Contours for Alternatives 2 and 3

Noise Contour	Change in Areas Under Noise Contours (acres) – Alternatives 2 and 3			
	On-Installation	Percent Change	Off-Installation	Percent Change
65 to 70 dB DNL	730	50.2	3,557	84.4
70 to 75 dB DNL	552	44.1	2,146	203.5
75 to 80 dB DNL	460	23.0	947	444.3
Greater than 80 dB DNL	943	39.3	240	2,849.9
Total	**2,685**	**39.8**	**6,890**	**144.5**

Source: HMMH 2023

As noted for Alternative 1, residential land uses are discouraged in the 65 dB DNL or higher noise zones. As with Alternative 1, the areas within the Alternative 2 noise zones that are considered residential land uses represent less than 0.3 percent of the total off-installation area within the 65 dBA DNL or higher noise zone and are located within the Gateway Apartments area. While there would be an increase in potentially incompatible land uses within the Alternative 2 noise contours, it would not be considered significant. This area already is exposed to aircraft noise under baseline conditions, and the increase in acreage within the 65 dB DNL noise contour would be approximately 13 acres more than baseline conditions. As such, this small increase in potentially incompatible land uses would not preclude the viability of existing land use, preclude continued use or occupation of the area, be incompatible with adjacent land use to the extent public health or safety would be threatened, or conflict with planning criteria established to ensure the safety and protection of human life. As noted for Alternative 1, Laughlin AFB would work with local jurisdictions to continue to encourage compatible land uses within the noise contours.

3.6.2.3 Alternative 3

No new impacts on land use would occur from the delivery of up to 16 additional T-7A aircraft, and the impacts to on- and off-installation land uses would be identical to those described for Alternative 2. The up to 12 additional T-7A shelters would be constructed within the Airfield (Paved) land use and would be compatible. The areas within the Alternative 3 noise contours would be identical to the Alternative 2 noise contours (see **Table 3-46**).

3.6.2.4 No Action Alternative

The No Action Alternative would not result in any changes in land use, either on-installation or within the surrounding areas off Laughlin AFB. The proposed MILCON/UMMC and FSRM projects would not occur, and no changes in aircraft operations would occur. Land use on- and off-installation would remain unchanged compared with existing conditions. The off-installation land use within the noise contours would remain the same as those described in **Table 3-44**.

3.6.3 Cumulative Effects

T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**) would result in less than significant cumulative effects on land use. The proposed MILCON/UMMC and FSRM projects for T-7A recapitalization and the reasonably foreseeable actions on the installation would be sited, designed, and constructed consistent with the installation's IDP. Although an increase in potentially incompatible land uses would arise from the Proposed Action's larger noise contours, Laughlin AFB would work with local jurisdictions to continue to encourage compatible future development within the noise contours to minimize these less than significant, adverse impacts on land use compatibility.

3.7 Hazardous Materials and Wastes

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Hazardous materials are defined by 49 CFR § 171.8 as hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions in 49 CFR Part 173. Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) at 42 USC § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed, or otherwise managed." Petroleum products include crude oil or any derivative thereof, such as gasoline, diesel, or propane. They are considered hazardous materials because they present health hazards to users in the event of incidental releases or extended exposure to their vapors.

RCRA directs USEPA to implement regulations in order to protect human health and the environment. In Texas, TCEQ has been delegated authority by USEPA to implement the RCRA program. In addition to hazardous wastes, TCEQ also regulates the management and disposal of universal and non-hazardous wastes. The Federal Facilities Compliance Act of 1992 requires all DoD facilities to comply with all federal, state, and local environmental regulations in the same manner as private facilities. The Federal Facilities Compliance Act also allows federal and state agencies to assess DoD facilities with RCRA violation fines.

Evaluation of hazardous materials and wastes focuses on the storage, transportation, handling, and use of hazardous materials, as well as the generation, storage, transportation, handling, and disposal of hazardous wastes. In addition to being a threat to humans, the improper release or storage of hazardous materials, hazardous wastes, and petroleum products can threaten the health and well-being of wildlife species, habitats, soil systems, and water resources.

Toxic Substances. Toxic substances are substances that might pose a risk to human health and are addressed separately from hazardous materials and hazardous wastes. Toxic substances include asbestos-containing material (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCB), all of which are typically found in older buildings and utilities

infrastructure. USEPA has the authority to regulate these substances through the Toxic Substances Control Act (15 USC § 53).

Asbestos is regulated by USEPA under the CAA; Toxic Substances Control Act; and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM. USEPA has implemented several bans on various ACMs between 1973 and 1990, so ACMs are most likely to be found in older buildings (i.e., constructed before 1990). ACMs are generally found in building materials such as floor tiles, mastic, roofing materials, pipe wrap, and wall plaster. LBP was used commonly prior to its ban in 1978; therefore, any building constructed prior to 1978 may contain LBP. PCBs are human-made chemicals that persist in the environment and were widely used in building materials (e.g., caulk) and electrical products prior to 1979. Structures constructed prior to 1979 potentially include PCB-containing building materials.

Environmental Contamination. CERCLA governs the response or cleanup actions to address hazardous substance, pollutant, and contaminant releases into the environment and includes federal facilities such as Laughlin AFB. The Defense Environmental Restoration Program was established by Congress in 1986 to provide for the cleanup of DoD property at active installations, Base Realignment and Closure installations, and formerly used defense sites throughout the United States and its territories. The two restoration programs under the Defense Environmental Restoration Program are the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). IRP addresses contaminated sites, while MMRP addresses nonoperational military ranges and other sites suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituents. Each site is investigated, and appropriate remedial actions are taken under the supervision of applicable federal and state regulatory programs. When no further remedial action is granted for a given site, it is closed and it no longer represents a threat to human health.

Polyfluoroalkyl Substances. DAF is currently investigating potential effects related to chemicals known as per- and polyfluoroalkyl substances (PFAS). This family of chemicals was developed in the 1940s and includes perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Aqueous film forming foam (AFFF) containing PFAS was developed in the early 1960s and used at U.S. airports, municipal fire stations, petroleum facilities, and in other industries to extinguish hydrocarbon-based fires effectively. Fire fighters at military installations used AFFF regularly in emergencies or trained with AFFF in an unconfined manner.

Radon. Radon is a naturally occurring, odorless, and colorless radioactive gas found in soils and rocks that can lead to the development of lung cancer. Radon tends to accumulate in enclosed spaces, usually those that are below ground and poorly ventilated (e.g., basements). USEPA established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences, and radon levels above this amount are considered a health risk to occupants.

3.7.1 Affected Environment

Hazardous Materials, Hazardous Wastes, and Petroleum Products. DAF uses hazardous materials and petroleum products such as liquid fuels, pesticides, and solvents for everyday

operations at Laughlin AFB. The use of these hazardous materials and petroleum products results in the generation and storage of hazardous wastes and used petroleum products on the installation. Laughlin AFB is an RCRA Large Quantity Generator (USEPA identification number TX2571524105). In Texas, USEPA has delegated RCRA authority to the state (TCEQ registration number RN102686086). RCRA Large Quantity Generators produce more than 1,000 kilograms of non-acute hazardous waste or more than 1 kilogram of acute hazardous waste per calendar month (or state equivalent regulations). Hazardous waste generating activities on Laughlin AFB include aircraft, automotive, and building and grounds maintenance, as well as processes including metal fabrication, bead blasting, painting, parts washing, and parts cleanup. Hazardous wastes generated on the installation include bead blasting media, absorbents, paint-related material, paint, solvents, adhesives, sealants, and lead debris (Laughlin AFB 2020b).

Of the facilities subject to renovation or demolition, hazardous materials, hazardous wastes, and petroleum products are most likely to be used and generated at Buildings 50 and 210. Additionally, a 4,000-gallon, aboveground, jet fuel storage tank was proximate to Building 15. This storage tank has been removed; however, its fuel lines remain underground.

DAF installations manage hazardous materials through AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*. Laughlin AFB has implemented an installation-wide Spill Prevention, Control, and Countermeasure (SPCC) Plan; Facility Response Plan; Integrated Solid Waste Management (ISWM) Plan; and Hazardous Waste Management Plan (HWMP). These plans define roles and responsibilities, address record keeping requirements, and provide spill contingency and response requirements.

Toxic Substances. ACMs on Laughlin AFB are managed in accordance with the installation's Asbestos Management and Operation Plan. The plan establishes procedures for the asbestos management program at the installation. The primary objective of the plan is to maintain a permanent record of the current status and condition of all ACM on Laughlin AFB (Laughlin AFB 2019). Facilities constructed prior to 1990 have the greatest potential to contain ACMs. Of the facilities subject to renovation or demolition, Buildings 15, 50, 210, 320, 328, and 905 were constructed prior to 1990. Buildings 201 and 307 were constructed in 1990 and 2007, respectively, and are not expected to contain ACM (47 CES 2022).

The location of any LBP in facilities is communicated to appropriate personnel in order to identify potential hazards and avoid disturbance of affected building materials. Facilities constructed prior to 1978 have the greatest potential to contain LBPs. Of the facilities subject to renovation or demolition, Buildings 50, 210, and 905 were constructed prior to 1978 (47 CES 2022).

Facilities constructed prior to 1979 have the greatest potential to contain PCBs in building material. Older electrical infrastructure within these buildings, such as light fixtures and surge protectors, might also contain PCBs. Of the facilities subject to renovation or demolition, Buildings 50, 210, and 905 were constructed prior to 1979 (47 CES 2022).

Environmental Contamination. There are 20 IRP and 5 MMRP sites on Laughlin AFB, and each site is at a different stage of the site investigation and closeout process (Laughlin AFB

2014). This EIS focuses only on the open environmental contamination sites that have potential to impact or be impacted by the Proposed Action. Sites granted no further action, that do not coincide directly with MILCON/UMMC or FSRM projects, or that would not be impacted by the proposed work activities are not discussed further in this EIS. None of Laughlin AFB's open environmental contamination sites—IRP or MMRP—have the potential to impact or be impacted by the Proposed Action.

PFAS. Laughlin AFB formerly performed firefighter training with AFFF in an area on the southwest quadrant of the airfield. This area was designated IRP site FT005, Former Firefighter Training Area. IRP site FT005 is immediately east of the southern portion of another IRP site known as SS015, Storm Drainage Ditch, which is an unlined stormwater drainage ditch that receives surface water runoff from the flightline area. Water within the ditch flows toward the south and discharges into an unnamed tributary of Sacatosa Creek. IRP sites FT005 and SS015 were granted no further action in 2011 and 2009, respectively; however, DAF has subsequently identified the potential presence of PFAS within these sites and additional investigation is being performed. The PFAS at IRP site SS015 likely originated from AFFF usage at IRP site FT005 that migrated into the southern portion of IRP site SS015 via stormwater runoff and groundwater flow. The portion of IRP site SS015 to the north of IRP site FT005 is not expected to have been affected by PFAS (Laughlin AFB 2014, AFCEC 2018).

In 2018, Laughlin AFB performed a site inspection to determine whether a release of PFAS had occurred. The site inspection demarcated three potential AFFF release areas with AFFF Area 1 being IRP site FT005, AFFF Area 2 being IRP site SS015, and AFFF Area 3 being a former time and distance testing area east of AFFF Area 1. These three areas do not coincide with the proposed MILCON/UMMC and FSRM projects; however, the project to construct a T-7A explosive component storage facility would occur approximately 235 feet east of the southern portion of AFFF Area 2 (see **Figure 3-11**). During site inspection, one surface and two subsurface soil samples, one sediment sample, and one groundwater sample were collected from the portion of AFFF Area 2 downgradient of AFFF Area 1. PFOS was detected in groundwater, which was encountered approximately 25 feet below the ground surface; surface soil; subsurface soil; and sediment, and PFOA was detected in groundwater, surface soil, and sediment (AFCEC 2018). A PFAS remedial investigation is planned at the installation with results expected in the fall of 2024 (47 CES 2023).

Radon. USEPA rates Val Verde County, Texas, as radon zone 3. Counties in zone 3 have a predicted average indoor radon screening level less than 2 pCi/L (USEPA 2023b).

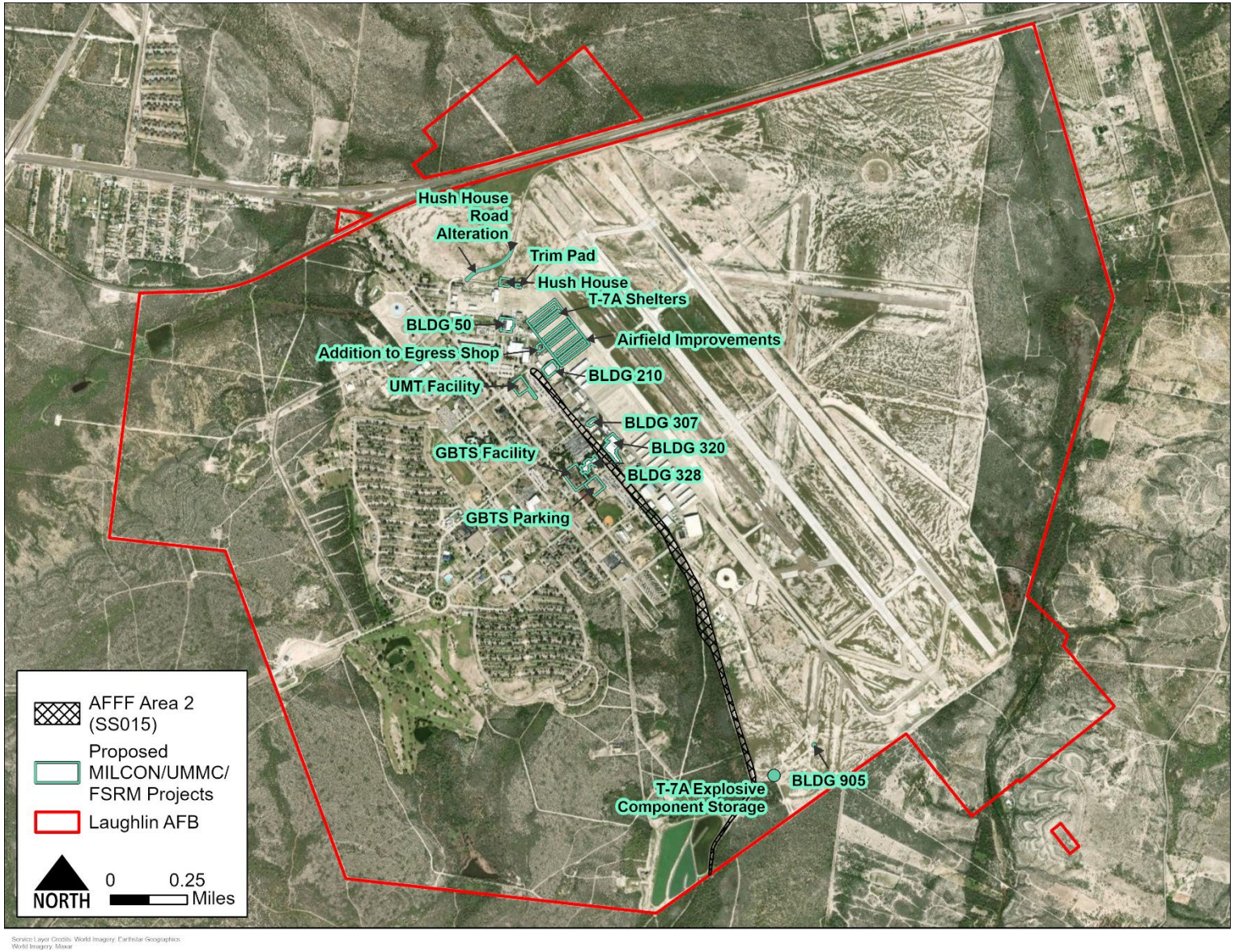

Figure 3-11. Location of AFFF Area 2

3.7.2 Environmental Consequences

Impacts on or from hazardous materials and wastes would be considered significant if a proposed action would result in noncompliance with applicable federal or state regulations or increase the amounts generated or procured beyond current management procedures, permits, and capacities. Impacts on contaminated sites would be considered significant if a proposed action would disturb or create contaminated sites resulting in negative impacts on human health or the environment, or if a proposed action would make it substantially more difficult or costly to remediate existing contaminated sites.

3.7.2.1 Alternative 1

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Short-term, less than significant, adverse impacts would occur from the use of hazardous materials and petroleum products and the generation of hazardous wastes during construction of the MILCON/UMMC and FSRM projects. Hazardous materials that could be used include paints, welding gases, solvents, preservatives, and sealants. Additionally, hydraulic fluids and petroleum products, such as diesel and gasoline, would be used in the vehicles and equipment supporting facility construction. Construction would generate minimal quantities of hazardous wastes. Contractors would be responsible for the disposal of hazardous wastes in accordance with BMPs outlined in the Laughlin AFB SPCC Plan and HWMP and federal and state laws. All hazardous materials, petroleum products, and hazardous wastes used or generated during construction would be contained, stored, and managed appropriately (e.g., secondary containment, inspections, spill kits) in accordance with applicable regulations to minimize the potential for releases. All construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment, as needed. Hazardous materials, hazardous wastes, and petroleum products currently within the affected portions of Buildings 50 and 210 would be relocated to similar facilities to accommodate the proposed renovation of these buildings. The underground fuel lines for the former 4,000-gallon, aboveground, jet fuel storage tank proximate to Building 15 would be removed.

New hazardous materials storage and hazardous waste collection points would be established, as necessary, based on anticipated building function. They would be sited most likely in the proposed UMT facility, Hush House, Building 50, and Building 210. The installation's SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would be amended, as needed, for any changes to hazardous material, hazardous waste, or petroleum product capabilities. These plans and federal and state laws and regulations would continue to be followed to lessen the potential for a release.

Short-term, less than significant, adverse impacts would occur from a temporary increase in the use of hazardous materials and petroleum products and hazardous wastes generated during the aircraft transition period. Although the total number of aircraft on Laughlin AFB would decrease slightly during the transition period, additional quantities of hazardous materials, petroleum products, and hazardous wastes may need to be delivered, stored, used, and disposed of appropriately at Laughlin AFB from the maintenance of two types of aircraft. However, Laughlin AFB is anticipated to have enough delivery, storage, and disposal capacity

to accommodate the increased hazardous material, petroleum product, and hazardous waste requirements. The quantities of hazardous materials, petroleum products, and hazardous wastes required for maintenance of individual T-7A aircraft would be similar and proportional to those required for T-38C aircraft. No long-term, adverse impacts would occur because by 2033 the use of hazardous materials and petroleum products and the generation of hazardous wastes from routine aircraft maintenance would return to similar levels as the 2022 baseline.

Annual flight operations with the T-7A would be greater than baseline levels with the T-38C. Therefore, additional quantities of jet fuel may need to be delivered, stored, and used at Laughlin AFB. However, Laughlin AFB is anticipated to have enough delivery and storage capacity to accommodate this increase. The installation's SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would continue to be followed to reduce the potential for a release.

Toxic Substances. Short-term, less than significant, adverse impacts from toxic substances could occur from the renovation or demolition of Buildings 15, 50, 210, 320, 328, and 905, which potentially contain ACMs, LBP, or PCBs. Surveys for these substances would be completed, as necessary, by a certified contractor prior to work activities to ensure that appropriate measures are taken to reduce the potential exposure to, and release of, these substances. Contractors would wear appropriate personal protective equipment (PPE) and would be required to adhere to all federal, state, and local regulations, as well as the installation's management plans for toxic substances. All ACM- and LBP-contaminated debris would be disposed of at a USEPA-approved landfill. New building construction is not likely to include the use of these substances because federal policies and laws limit their use in building construction applications. Long-term, less than significant, beneficial impacts would occur from renovation or demolition of these buildings by reducing the potential for future human exposure and reducing the number of ACMs, LBP, and PCBs to be maintained at Laughlin AFB.

Environmental Contamination. No impacts from Laughlin AFB's environmental contamination sites would occur. As stated in **Section 3.7.1**, none of the installation's environmental contamination sites represent impediments to the Proposed Action.

Contractors performing construction could encounter undocumented soil or groundwater contamination. If soil or groundwater that is believed to be contaminated were discovered, the contractor would be required to stop work immediately, report the discovery to the installation, and implement appropriate safety measures. The contractor would be responsible for management and disposal of all contaminated media. Contaminated media would be containerized, pending analysis, and disposed of according to the appropriate disposal facility's requirements. Work activities would resume when the issue is resolved.

PFAS. No impacts from PFAS are anticipated. If determined to be necessary, DAF would sample within any MILCON/UMMC or FSRM project site to identify potential PFAS contamination. If sampling were to identify PFAS impacted soils, then prior to initiating construction, DAF would perform characterizations and secure adequate funding for the transportation and disposal of the potentially impacted soils. Possible disposal methods include permitted carbon reactivation units, hazardous waste landfills, and solid waste landfills that have composite liners and gas leachate collection and treatment systems. The appropriate disposal method would be determined in coordination with USEPA and TCEQ. DAF would also prepare

a disposal plan to ensure ground disturbance does not cause impacted soils to come into contact with groundwater or stormwater.

None of the MILCON/UMMC or FSRM projects would be sited within the footprint of the three AFFF areas; therefore, no potentially PFAS-contaminated soil would be disturbed. The proposed FSRM project to construct the T-7A explosive component storage facility would occur relatively near (i.e., approximately 235 feet) the southern portion of AFFF Area 2. Although shallow (i.e., approximately 25 feet below the ground surface), potentially PFAS-contaminated groundwater flows to the southeast from AFFF Area 2 toward the T-7A explosive component storage facility, the proposed T-7A explosive component storage facility would only consist of a concrete pad, and construction would not require excavation to the depth of groundwater. No other MILCON/UMMC or FSRM projects have the potential to impact, or be impacted by, PFAS. While several other MILCON/UMMC and FSRM projects are in close proximity to the northern portion of AFFF Area 2, all of these projects would occur upgradient of the Former Firefighter Training Area where PFAS has not been found.

Radon. No impacts from radon would occur because buildings in Val Verde County, Texas, are typically found to have a predicted average indoor radon level less than 2 pCi/L. Therefore, radon levels above 4 pCi/L are unlikely to be encountered inside of the proposed or renovated buildings.

3.7.2.2 Alternative 2

Impacts on hazardous materials and wastes from T-7A operations that are 25 percent greater than Alternative 1 would be slightly greater than those described for Alternative 1. Compared to Alternative 1, the increase in aircraft operations would require additional quantities of hazardous materials, hazardous wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Laughlin AFB. However, Laughlin AFB is anticipated to have enough delivery, storage, and disposal capacity to accommodate the increased hazardous materials, petroleum products, and hazardous wastes requirements. The Laughlin AFB SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would continue to be followed to lessen the potential for a release to the environment.

3.7.2.3 Alternative 3

Impacts on hazardous materials and wastes from T-7A operations that are 25 percent greater than Alternative 1 and the delivery of up to 16 additional T-7A aircraft would be slightly greater than those described for Alternative 2. Compared to Alternative 2, the increase in aircraft operations and the additional aircraft to maintain would require additional quantities of hazardous materials, hazardous wastes, and petroleum products (most notably jet fuel) to be delivered, stored, used, and disposed of appropriately at Laughlin AFB. However, Laughlin AFB is anticipated to have enough delivery, storage, and disposal capacity to accommodate the increased hazardous materials, petroleum products, and hazardous wastes requirements. The installation's SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would continue to be followed to lessen the potential for a release to the environment. The installation of up to 60 T-7A shelters for Alternative 3, rather than up to 48 shelters for Alternatives 1 and 2, would have no additional impacts on hazardous materials and wastes.

3.7.2.4 No Action Alternative

The No Action Alternative would not impact hazardous materials and wastes. No facility construction would occur, and there would be no changes in aircraft operations. Additional quantities of hazardous materials, petroleum products, and hazardous wastes would not be used, stored, or generated, and the management of hazardous materials, petroleum products, and hazardous wastes would not change. Toxic substances would remain and continue to require maintenance by DAF personnel. No impacts on or from environmental contamination, PFAS, or radon would occur. Hazardous materials and wastes conditions at Laughlin AFB would remain unchanged compared to the existing conditions described in **Section 3.7.1**.

3.7.3 Cumulative Effects

Construction for T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**) would result in short-term, intermittent increases in the use of hazardous materials and petroleum products and the generation of hazardous wastes. Environmental control measures outlined in **Section 3.7.2.1**, including proper procurement, use, and disposal of hazardous materials in accordance with applicable regulations and approved plans, would minimize cumulative effects. No effects on the installation's environmental contamination sites would occur from the Proposed Action; however, short-term, less than significant, adverse effects could occur if any reasonably foreseeable actions coincide with active environmental contamination sites. If soil or groundwater that is believed to be contaminated is discovered, the contractor would stop work immediately, report the discovery to the appropriate personnel, and implement applicable safety measures. Construction activities would not occur until the issue was investigated and resolved. Therefore, the Proposed Action, when combined with the reasonably foreseeable actions, would not result in a significant cumulative effect on hazardous materials and wastes.

3.8 Infrastructure and Transportation

Infrastructure consists of the physical structures that enable a population in a specified area to function. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section are airfield pavement, liquid fuel, the electrical system, the natural gas system, the central climate control system, the water supply system, the wastewater system, the stormwater system, the communications system, and solid waste management. Transportation refers to the roadways and gates that feed into an installation and the roadways and parking areas on that installation.

3.8.1 Affected Environment

Infrastructure

Airfield Pavement. Airfield pavement condition is expressed in terms of Pavement Condition Index (PCI), which is a numerical rating of the pavement condition from 0 (worst) to 100 (best) based on the type and severity of distresses observed on the pavement surface. PCI is determined by visual inspection. Airfield pavement with a PCI of 70 or greater is considered satisfactory or in good condition, while airfield pavement with a PCI less than 55 is considered

poor or in serious condition (FAA 2015). Airfield pavements at Laughlin AFB are in very good condition, with an average PCI of 83. Only 6 percent of airfield pavement is below PCI 40 (Laughlin AFB 2014).

Liquid Fuel. Laughlin AFB manages three, aviation fuel aboveground storage tanks within the bulk fuel storage area. The fueling system is adequate for current aircraft and could supply additional aircraft with minimal investment. The leak detection and cathodic protection systems are in excellent condition (Laughlin AFB 2014). All fuel storage tanks are maintained in accordance with the installation's SPCC Plan and 40 CFR Part 112, *Oil Pollution Prevention*, to prevent unauthorized discharges. The installation's Facility Response Plan provides guidance for the response to accidental releases of liquid fuels (see **Section 3.7**).

Electrical System. Rio Grande Electric Cooperative supplies electricity to Laughlin AFB. Installation facilities are not equipped with individual meters, which makes it difficult to track energy consumption; however, the electrical system has sufficient capacity to meet current and future mission requirements. Electrical lines are in proximity to all MILCON/UMMC and FSRM project areas (Laughlin AFB 2014).

Natural Gas System. Natural gas is supplied to Laughlin AFB by the West Texas Gas Company and distributed via a 6-inch-diameter, high pressure, steel pipeline. Most facilities on the installation use natural gas for heating and hot water. Approximately 90 percent of the natural gas feeder pipes on the installation were replaced recently. Most facilities are not equipped with individual meters for natural gas consumption. Currently, only major facilities have meters, making it difficult to monitor usage for the entire installation. The natural gas system is sufficient to meet current and future mission requirements (Laughlin AFB 2014). Natural gas lines are in proximity to all MILCON/UMMC project areas, except for the proposed hush house and T-7A shelters and all FSRM project areas except for the proposed T-7A explosive component storage facility, Building 905, and the trim pad.

Central Climate Control System. Most buildings on Laughlin AFB are heated and cooled using boilers and chillers located within each building and are not connected to a central climate control system. The installation operates two climate control systems for the unaccompanied housing areas, but none of those buildings would be altered by the proposed MILCON/UMMC or FSRM projects (Laughlin AFB 2014). Therefore, no effects on the two climate control systems would occur, and these systems are not discussed further in this EIS.

Water Supply System. Potable water for Laughlin AFB is supplied by the city of Del Rio. The water is sourced from San Felipe Spring and pumped from the Del Rio Water Treatment Plant to the installation's pumping facility through a 16-inch-diameter, 6-mile-long transit pipe (Laughlin AFB 2014). Further information on regional groundwater conditions is provided in **Section 3.10.1**.

Water is stored on-installation in a 1-million-gallon aboveground tank and pumped to two elevated water storage tanks for distribution. The installation's average daily water use is normally approximately 2.6 million gallons per day, but it can increase to 4 million gallons per day during times of heavy irrigation. The installation has a contractually limited daily supply of

5 million gallons per day. Water supply lines are in proximity to all MILCON/UMMC and FSRM project areas (Laughlin AFB 2014).

Wastewater System. Laughlin AFB operates a wastewater treatment plant along the southern boundary of the installation. The wastewater treatment plant operates under a minor National Pollutant Discharge Elimination System (NPDES) permit (TX0022608) governed by the TCEQ (Laughlin AFB 2022b). The wastewater treatment plant has a permitted capacity for 490,000 gallons per day, which is sufficient to meet treatment needs during average conditions (i.e., approximately 77,000 gallons per day). During flood conditions, the capacity of the wastewater treatment plant's ponds may be exceeded. Wastewater mains are in proximity to all MILCON/UMMC and FSRM project areas (Laughlin AFB 2014).

Stormwater System. Laughlin AFB operates a stormwater management system that includes conveyance, detention, and retention. The most prominent stormwater management feature on Laughlin AFB is the unlined stormwater drainage ditch that runs along Barnes Street and receives stormwater runoff from the flightline area and discharges into Sacatosa Creek. The installation is divided into four stormwater drainage areas with outfalls that discharge into Sacatosa Creek and Zorro Creek before reaching the Rio Grande. Stormwater discharges at the installation are regulated under a Texas Pollution Discharge Elimination System Multi-Sector General Permit. Stormwater management infrastructure is in proximity to all MILCON/UMMC and FSRM project areas (Laughlin AFB 2014, Laughlin AFB 2021).

Communications System. Communications infrastructure at Laughlin AFB consists of distribution networks of underground fiber optic and copper cable. The communications infrastructure is sufficient to meet current and future mission requirements (Laughlin AFB 2014) and is in proximity to all MILCON/UMMC and FSRM project areas.

Solid Waste Management. Solid waste generated from Laughlin AFB is collected by a contractor and disposed of at the city of Del Rio landfill. There are no solid waste landfills in operation on the installation. Laughlin AFB aims to divert 50 percent of nonhazardous solid waste and 60 percent of construction and demolition debris (Laughlin AFB 2023c, Laughlin AFB 2014).

Transportation

All vehicular traffic enters and exits Laughlin AFB via Texas Spur 317 and the West Gate, which was recently upgraded and expanded. The North Gate (formerly the Main Gate) on U.S. Highway 90 has been closed and is used only for emergency situations. The most direct route between Laughlin AFB and the city of Del Rio is to take U.S. Highway 90 east or U.S. Highway 277 south to Texas Loop 79. An exit off Texas Loop 79 provides direct access to Texas Spur 317 and the West Gate.

The primary roads on Laughlin AFB are Laughlin Drive, Liberty Drive, Barnes Street, Fourth Street, Arkansas Street, and Mitchell Boulevard. All other installation roads are secondary roads leading to places of employment, recreation, commercial activities, and housing. The on-installation road system is adequate, and most installation facilities can be reached within 15

minutes of the West Gate. The existing road system has capacity for much more vehicular traffic (Laughlin AFB 2014).

Vehicle parking is provided throughout the installation by several off-street surface parking lots. The provided parking adequately meets the installation's parking demand (Laughlin AFB 2014).

3.8.2 Environmental Consequences

Impacts on infrastructure are evaluated based on the degree to which a proposed action would affect the ability to meet utility demand, or on their potential to disrupt or improve infrastructure service levels and create additional needs. An impact could be considered significant if a proposed action resulted in the exceedance of a utility capacity or created a long-term interruption in the operation of a utility.

Impacts analysis for transportation considers changes to roadway and intersection service levels, travel patterns, and accessibility (i.e., ease of drivers to reach a desired destination). An impact on transportation could be considered significant if a proposed action resulted in substantial decline in roadway service levels, substantial increase in queue times at gates, substantial reduction in traffic safety leading to increased risk of vehicular accidents, substantial degradation of existing transportation infrastructure, or substantial and permanent changes to roadway accessibility.

3.8.2.1 Alternative 1

Infrastructure

Airfield Pavement. No short-term impacts on airfield pavement would occur from Alternative 1. The airfield pavement at Laughlin AFB is in very good condition and would not require repairs to implement Alternative 1. Construction of the up to 48 T-7A shelters would be phased to maximize the availability of apron and ramp space so that airfield operations would not be interrupted, and sufficient aircraft parking would remain available.

Long-term, less than significant, beneficial impacts on the airfield pavement at Laughlin AFB would occur from the addition of T-7A shelters and the FSRM project to perform airfield improvements, which would include remarking the ramp, installing new moorings and anchor rods, and replacing the aircraft arresting system. Although aircraft operations at Laughlin AFB would increase by approximately 75 percent (see **Table 2-2**), T-7A aircraft would perform similar numbers of arrivals and departures as existing T-38C levels, which would result in a similar long-term rate of wear on the airfield pavement.

Liquid Fuel. Short-term, less than significant, adverse impacts on liquid fuel would occur from the consumption of gasoline and diesel fuels by construction contractors for the MILCON/UMMC and FSRM projects. Construction-related fuels would be supplied by the construction contractors from local commercial sources and would not increase the demand for liquid fuels by the installation.

Long-term, less than significant, adverse impacts on aviation fuel supply to Laughlin AFB would be expected. The T-38C to T-7A transition would increase annual aircraft operations by approximately 75 percent, which would likely increase the amount of aviation fuel consumed at

Laughlin AFB; however, the net change in fuel consumption would depend on the fuel burn rate of the aircraft and types of operations to be performed. These factors will not be known until after the T-7A aircraft are introduced into service and the training curriculum is implemented. Given the robust fuel storage and delivery infrastructure at Laughlin AFB, the installation is expected to have sufficient fuel storage and delivery capabilities to accommodate Alternative 1. Personnel would continue to follow the installation's SPCC Plan and 40 CFR Part 112 to prevent unauthorized discharges and the installation's Facility Response Plan for guidance in the response to accidental releases.

Electrical System. Short-term, less than significant, adverse impacts on the electrical system could occur. Temporary electrical disruptions could occur when buildings are disconnected from or connected to the Laughlin AFB electrical distribution system during construction or renovation. Electrical service interruptions could also occur if electrical lines need to be rerouted. However, any electrical disruptions would be coordinated with area users prior to disconnection. Electricity necessary for construction would be obtained from the installation's electrical system and would have a less than significant effect on the installation's overall demand. Construction contractors would locate and mark electrical lines prior to any ground-disturbing activities that could result in unintended utility disruptions.

Long-term, less than significant, adverse and beneficial impacts on electrical supply would be expected following the completion of the MILCON/UMMC and FSRM projects. Permanent new facilities, such as the proposed GBTS facility, UMT facility, hush house, and addition to the egress shop, would require new electrical service, which would increase the overall energy use at Laughlin AFB. Lack of energy consumption data makes it difficult to produce capacity predictions for additional personnel. However, staffing levels would be reduced by 60 persons after 2031 (relative to current baseline staffing levels), which would reduce the installation's overall electrical demand slightly in the long-term.

Natural Gas System. Short-term, less than significant, adverse impacts on the natural gas distribution system could occur. Temporary natural gas service interruptions could occur when new facilities are connected to the system or if existing facilities need to be disconnected. Additionally, natural gas service interruptions could also occur if natural gas lines need to be rerouted. Any potential disruptions would be coordinated with area users prior to interruption. No natural gas is anticipated to be needed for construction. Construction contractors would locate and mark natural gas lines prior to any ground-disturbing activities that could result in unintended utility disruptions.

Long-term, less than significant, adverse impacts on the natural gas system would occur following the completion of the MILCON/UMMC and FSRM projects. Permanent new facilities, such as the proposed GBTS facility, UMT facility, hush house, and addition to the egress shop, would require natural gas for building and hot water heating, which would increase the overall demand for natural gas at Laughlin AFB. Lack of consumption data for natural gas makes it difficult to produce capacity predictions for the new construction; however, it is anticipated the installation's natural gas system can meet the increased natural gas demand from the proposed facilities.

Water Supply System. Short-term, less than significant, adverse impacts on the water supply system could occur. Temporary water supply interruptions could occur when new facilities are connected to the system or if existing facilities need to be disconnected. Additionally, water service interruptions could also occur if water lines need to be rerouted. Any potential disruptions would be coordinated with area users prior to interruption. Water necessary for construction would be obtained from the installation's water supply system and would have a less than significant effect on the installation's overall water supply capacity. Construction contractors would locate and mark water lines prior to any ground-disturbing activities that could result in unintended utility disruptions.

Long-term, less than significant, adverse and beneficial impacts on the water supply system would occur following the completion of the MILCON/UMMC and FSRM projects. Permanent new facilities, such as the proposed GBTS facility, UMT facility, hush house, and addition to the egress shop, would require new water service for bathrooms and fire protection, which would increase the overall water use at Laughlin AFB. The installation's water system is operating between approximately 52 and 80 percent of capacity and, therefore, can meet the water demand from the proposed facilities and the temporary 190-person increase in personnel in 2030 and 2031. Staffing levels would be reduced by 60 persons after 2031 (relative to current baseline staffing levels), which would reduce the installation's overall water demand slightly in the long-term.

Wastewater System. Short-term, less than significant, adverse impacts on the wastewater system could occur. Temporary wastewater service interruptions could occur when new facilities are connected to the system or if existing facilities need to be disconnected. Additionally, wastewater service interruptions could also occur if wastewater lines need to be rerouted. Any potential disruptions would be coordinated with area users prior to interruption. Wastewater generated during construction would be discharged into the installation's wastewater system and would have a less than significant effect on the installation's overall wastewater capacity. Construction contractors would locate and mark wastewater lines prior to any ground-disturbing activities that could result in unintended utility disruptions.

Long-term, less than significant, adverse and beneficial impacts on the wastewater system would occur following the completion of the MILCON/UMMC and FSRM projects. Permanent new facilities, such as the proposed GBTS facility, UMT facility, hush house, and the addition to the egress shop, would generate new wastewater from bathrooms, which would increase the overall wastewater volume of Laughlin AFB. The installation's wastewater system is operating at approximately 16 percent of permitted capacity during average operations and, therefore, can meet the wastewater volume demands from the proposed facilities and the temporary 190-person increase in personnel in 2030 and 2031. Staffing levels would be reduced by 60 persons after 2031 (relative to current baseline staffing levels), which would reduce the installation's volume of wastewater generation slightly in the long-term.

Stormwater System. Short-term, less than significant, adverse impacts on the stormwater system at Laughlin AFB would occur from constructing the MILCON/UMMC and FSRM projects. Construction activities, and the associated construction laydown areas, could potentially inhibit stormwater from reaching existing inlets or streams or could create slicker surfaces for higher

velocity stormwater flows. Adverse effects would be minimized through the implementation of BMPs, which could include installing temporary stormwater controls (e.g., retention basins, silt fences, straw bales, and swales) to minimize the volume and velocity of stormwater flow. In accordance with the NPDES stormwater program, the installation would obtain a Construction General Permit from TCEQ for projects where 1 acre or more would be disturbed. Construction would be governed by Storm Water Pollution Prevention Plans (SWPPP), which would contain BMPs and environmental protection measures to manage stormwater. Standard erosion control measures to prevent stormwater pollution would be implemented during construction activities to minimize soil disturbance and prevent erosion and sedimentation at the work site. The requirements of Section 438 of the Energy Independence and Security Act (EISA) would be followed to maintain or restore, to the maximum extent practicable, the predevelopment hydrology of the collective project sites with respect to the flow rate, volume, and duration. In addition to applicable BMPs, guidance provided in the installation's SWPPP for maintaining and restoring areas of development would be followed to minimize or eliminate impacts. Impacts on surface water are further described in **Section 3.10.2.1**.

Long-term, less than significant, adverse impacts on the stormwater system at Laughlin AFB would occur following the completion of the MILCON/UMMC and FSRM projects, which would result in an increase of approximately 109,600 ft^2 (2.52 acres) of impervious surfaces at the installation. The increase in impervious surfaces would increase stormwater runoff near the proposed GBTS facility and UMT facility if BMPs and environmental protection measures are not implemented. To meet the EISA performance objectives, technically feasible stormwater control design features and practices that are effective in reducing the volume of stormwater runoff would be incorporated, to the extent practicable, into the design of these facilities as BMPs. Examples of such design features and practices are the use of green infrastructure and low impact development (e.g., use of porous pavements and bio-retention areas) to facilitate evapotranspiration and capture stormwater runoff. Low impact development and other long-term stormwater management features would require continued maintenance, which would be addressed in the installation's SWPPP. Federally required design principles, such as UFC 1-200-02, *High Performance and Sustainable Building Requirements*; UFC 3-210-10, *Low Impact Development*; and Section 438 of the EISA would be followed and require project sites to maintain or restore disturbed sites to pre-construction hydrologic conditions.

Communications System. Short-term, less than significant, adverse impacts on communication infrastructure could occur. Temporary communication service disruptions could occur when buildings are disconnected from or connected to the Laughlin AFB communication system during construction or renovation. Communication service interruptions could also be experienced if lines need to be rerouted. However, any disruptions would be coordinated with area users prior to disconnection. Construction contractors would locate and mark communication lines prior to any ground-disturbing activities that could result in unintended utility disruptions.

Long-term, less than significant, beneficial impacts would occur from the addition of new, upgraded communications infrastructure as part of the proposed MILCON/UMMC and FSRM projects, which would contribute to the overall communications system capacity at Laughlin

AFB. Additionally, the proposed antenna farm at the GBTS facility would improve long range communications for mission-related activities.

Solid Waste Management. Short-term, less than significant, adverse impacts on solid waste management would occur from the creation of solid waste during construction of the MILCON/UMMC and FSRM projects. Such waste would consist of building materials, such as solid pieces of concrete, metals (e.g., conduit, piping, and wiring), lumber, cement, and asphalt. To maximize landfill diversion rates, construction contractors would be required to recycle solid waste in accordance with applicable federal, state, and installation policies. The contractor would be responsible for disposing non-recyclable debris at a permitted waste facility (e.g., the Del Rio landfill), which would have a less than significant impact on solid waste management by reducing landfill capacity.

Long-term, less than significant, adverse and beneficial impacts on solid waste management would occur following the completion of the MILCON/UMMC and FSRM projects. Permanent new facilities, such as the proposed GBTS facility, UMT facility, hush house, and addition to the egress shop, would generate new quantities of solid waste from building upkeep and everyday building functions, which would increase the overall quantity of solid waste generated from Laughlin AFB.

USEPA estimates the average person generates 4.9 pounds of solid waste per day (USEPA 2018). Based on USEPA solid waste estimates and the anticipated increase of 190 personnel and 361 dependents during the aircraft transition period in 2030 and 2031, Alternative 1 would increase regional solid waste by approximately 2,700 pounds per day, or approximately 492.7 tpy in 2030 and 2031. However, staffing levels would be reduced by 60 persons (and their estimated 114 dependents) after 2031 (relative to current baseline staffing levels). This reduction in personnel equates to a decrease in solid waste of approximately 853 pounds per day, or approximately 155.6 tpy, beginning in 2032. Such a decrease would negligibly reduce the amount of solid waste being sent to landfills. Laughlin AFB would continue to divert waste from landfills through reuse and recycling.

Transportation

Short-term, less than significant, adverse impacts on transportation would occur during construction of the proposed MILCON/UMMC and FSRM projects. Construction would require approximately 50 construction workers to commute daily, the periodic delivery of construction materials and heavy equipment, and the periodic removal of construction wastes from the installation. These vehicle movements would increase traffic volumes slightly on roadways used to access the installation—such as U.S. Highway 90, U.S. Highway 277, Texas Loop 79, and Texas Spur 317—at the installation's West Gate, and on installation roadways. Construction traffic would be most noticeable between 6 a.m. and 8 a.m. and between 3 p.m. and 5 p.m. Construction equipment and truck deliveries would enter Laughlin AFB after undergoing commercial vehicle inspection.

The proposed MILCON/UMMC and FSRM projects would be staggered over a roughly 4-year period (i.e., 2024 to 2028), which would minimize construction traffic at any one time. Additionally, some heavy equipment, such as dozers, loaders, and graders, would be left at the

construction site or staging area for the duration of the construction period and would not contribute to the vehicles accessing the installation on a daily basis. Any potential increases in traffic volumes associated with construction would be temporary, and partial or full road closures, traffic pattern changes, and detours would be communicated to drivers in advance.

Construction traffic would compose a relatively small percentage of the installation's total traffic. The West Gate was recently upgraded and expanded and has ample capacity for the additional construction traffic. Likewise, the on-installation roads have sufficient capacity for the additional construction traffic. Therefore, construction traffic is anticipated to cause only a less than significant increase in roadway traffic and queuing time at the West Gate.

Long-term, less than significant, adverse and beneficial impacts on transportation would occur following the completion of the MILCON/UMMC and FSRM projects. During the aircraft transition period in 2030 and 2031, a temporary 190-person increase in personnel would occur. These additional personnel and their estimated 361 dependents would increase on- and off-installation traffic slightly through daily commutes and everyday vehicle movements. However, staffing levels would be reduced by 60 persons (and their estimated 114 dependents) after 2031 (relative to current baseline staffing levels). This reduction would decrease on- and off-installation traffic slightly.

The new and departing personnel and their dependents of driving age would represent a small percentage of the vehicles entering Laughlin AFB per day. Therefore, the addition of vehicles in 2030 and 2031 and subtraction of vehicles in 2032 and later years would cause a less than significant change in traffic on both on- and off-installation roadways and queuing time at the West Gate.

Long-term, less than significant, beneficial impacts on parking at Laughlin AFB would result from the addition of approximately 106 parking spaces for the GBTS facility. Sufficient parking already exists for the other MILCON/UMMC and FSRM projects. An adjacent parking lot at the UMT facility already provides sufficient parking capacity for that proposed facility and existing users.

3.8.2.2 Alternative 2

Impacts on airfield pavement and liquid fuels from T-7A operations that are 25 percent greater than Alternative 1 would be slightly greater than those described for Alternative 1. Compared to Alternative 1, the increase in aircraft operations would increase wear on the airfield pavement slightly, reduce its service life slightly, and increase the amount of jet fuel consumed at Laughlin AFB slightly. Impacts on the remaining infrastructure components—namely the electrical system, natural gas system, water supply system, wastewater system, stormwater system, communications system, and solid waste management—and transportation would be identical to Alternative 1 because the demand for these services would not change for Alternative 2.

3.8.2.3 Alternative 3

Impacts on infrastructure and transportation from T-7A operations that are 25 percent greater than Alternative 1 and the delivery of up to 16 additional T-7A aircraft would be virtually identical to those described for Alternative 2. The only exception would be that up to 12 additional T-7A

shelters would be constructed on the Laughlin AFB aircraft parking ramp. These additional shelters would increase the aircraft parking capacity at the installation and provide sufficient shelter for the additional aircraft. Therefore, additional long-term, less than significant, beneficial impacts on the airfield pavement at Laughlin AFB would occur from Alternative 3.

3.8.2.4 No Action Alternative

The No Action Alternative would not impact infrastructure and transportation. No facility construction would occur, and there would be no changes in aircraft operations. As such, no impacts on any infrastructure components would occur and traffic volumes would not change. Infrastructure and transportation conditions at Laughlin AFB would remain unchanged compared to the existing conditions described in **Section 3.8.1**.

3.8.3 Cumulative Effects

Short-term, less than significant, adverse cumulative effects would occur during construction for T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**). Construction would have the potential to interrupt utility services, should service lines need to be rerouted or when a proposed facility is connected to the utility systems. Upgrades and construction of new infrastructure would result in long-term, beneficial, cumulative effects from upgraded transportation systems, improved utility systems, improved stormwater handling, and increased energy efficiency. The Proposed Action, when combined with the reasonably foreseeable actions, would not result in a significant cumulative effect on infrastructure and transportation.

3.9 Safety

Safety addresses the well-being, safety, and health of members of the public, contractors, and DAF personnel during the various aspects of the Proposed Action. A safe environment is one in which there is no (or an optimally reduced) potential for serious bodily injury or illness, death, or property damage. Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the hazard's proximity to the population. Hazards relevant to this Proposed Action include construction, mission, and flight activities.

3.9.1 Affected Environment

Construction Safety. All contractors performing construction activities on DAF installations, including Laughlin AFB, are responsible for following federal OSHA regulations and are required to conduct these activities in a manner that does not increase risk to workers or the public. OSHA regulations address the health and safety of people at work and cover potential exposure to a range of chemical, physical, and biological hazards, and ergonomic stressors. The regulations are designed to control these hazards by eliminating exposure via administrative or engineering controls, substitution, use of PPE, and availability of Safety Data Sheets.

Construction contractors are responsible for reviewing potentially hazardous workplace conditions; monitoring worker exposure to workplace chemical (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological (e.g., infectious waste, wildlife, poisonous plants) agents, and ergonomic stressors; and recommending and evaluating

controls (e.g., prevention, administrative, engineering, PPE) to ensure exposure to personnel is eliminated or adequately controlled. Additionally, employers are responsible for providing occupational health physicals for workers using respiratory protection; engaged in work with hazardous waste, asbestos, or lead; or otherwise requiring medical monitoring.

Mission Safety. Mission safety on DAF installations is maintained through adherence to DoD and DAF safety policies and plans. DAF safety programs ensure the safety of personnel and the public on the installation by regulating mission activities. AFI 91-202, *The US Air Force Mishap Prevention Program*, implements Air Force Policy Directive 91-2, *Safety Programs*, and provides guidance for implementing the safety program for all activities that occur on DAF installations.

Laughlin AFB is a secure military installation and access is limited to military personnel, civilian employees, military dependents, and approved visitors. Aircraft operations and maintenance activities performed on Laughlin AFB, including those done currently for the T-38C, are accomplished in accordance with applicable DAF safety regulations, published DAF Technical Orders, and standards prescribed by DAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives ensures safe working conditions.

Explosive Safety Quantity Distance (ESQD) arcs are buffers around facilities that contain high-explosive munitions or flammable elements. The size and shape of an ESQD arc depends on the facility and the net explosive weight of the munitions being housed. Separations set by ESQD arcs establish the minimum distances necessary to prevent the exposure of DAF personnel and the public to potential explosive safety hazards. ESQD arcs cover a small portion of Laughlin AFB, primarily on the east side of the airfield and in the southern portion of the installation at the munitions storage area. Incompatible development is restricted within the ESQD arcs to reduce safety risks and protect the mission requirements at Laughlin AFB (Laughlin AFB 2014).

Flight Safety. The primary safety concern regarding military flights is the potential for aircraft mishaps (i.e., crashes or crash landings), including those caused by adverse weather events and wildlife strikes. Aircraft mishaps are classified as A, B, C, or D. Class A mishaps are the most severe, with total property damage of $2 million or more, a fatality, or permanent total disability. Wildlife strikes are a flight safety concern due to the potential damage that a strike might have on the aircraft or injury to aircrews. AFI 91-202 establishes mishap prevention program requirements (including those for BASH), assigns responsibilities for program elements, and contains program management information.

Land use restrictions are intended to protect the public from exposure to aircraft operation hazards. The AICUZ program is used to protect the public and DAF personnel health and safety, as it relates to aircraft noise, accident potential, and the intersection with land use. Each DAF installation's AICUZ plan identifies CZs and APZs to protect the public from aircraft mishaps and noise zones to protect from aircraft noise. DAF policy requires privately owned land located within CZs to be acquired by DAF via a fee simple easement or a restrictive land easement. APZs identify areas and restrict land use where the greatest potential for aircraft accidents exists.

The AICUZ program at Laughlin AFB includes three safety zones: the CZ, APZ I, and APZ II. Of the three safety zones, the CZ has the highest accident potential. Accident potential within a CZ is so high that land use restrictions prohibit almost all economic land use. The majority of Laughlin AFB's CZ is on installation property. There are no land use incompatibilities within the small portion of the CZ located off-installation (Laughlin AFB 2008).

APZ I is less critical than the CZ, but still possesses a significant risk factor. This area has land use compatibility guidelines that allow reasonable economic use of the land, such as industrial/manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agriculture. However, uses that concentrate people in small areas are not compatible. APZ II begins at the outer end of APZ I and is less critical than APZ I but still possesses potential for accidents. Acceptable uses include those of APZ I, as well as low-density, single family residential use; personal and business services; and commercial/retail trade uses of low intensity or scale of operation. High density functions, such as multi-story buildings, places of assembly (e.g., theaters, churches, schools, restaurants, etc.), and high-density office uses, are not compatible (Laughlin AFB 2008).

Each runway end at Laughlin AFB has a CZ and two APZs (see **Figure 3-12**). The CZs measure 3,000 feet wide (i.e., 1,500 feet on either side of the runway centerline) and 3,000 feet long. Because the centerlines for the runways are less than 1,500 feet apart, the CZs and APZs for the three runways overlap. APZ I extends 5,000 feet from the CZ and is 3,000 feet wide. APZ II extends an additional 7,000 feet from APZ I and is also 3,000 feet wide. The CZ and APZs at Laughlin AFB cover a total of 2,760 acres of off-installation land. All the off-installation land within APZs I and II is open, agricultural, or low density (Laughlin AFB 2008).

Most of the real estate underlying each CZ at Laughlin AFB is under government ownership or otherwise controlled through an avigation easement. Although certain CZ areas extend off-installation, land use control over these areas is through the *Laughlin Air Force Base Compatible Land Use and Hazard Zoning Ordinance.* This ordinance was prepared in accordance with the State of Texas Airport Zoning Act to address the area of influence derived from the 1994 AICUZ Plan and establishes a controlled area that extends 5 miles from the ends of the runway paved surfaces (along the extended runway centerline) and 1.5 miles outward from the centerline of each runway. Development is regulated within this area to ensure its compatibility with the accident potential and noise generated by aircraft operations at Laughlin AFB (Laughlin AFB 2008).

Twenty Class A aircraft mishaps resulting in ten fatalities have occurred on or near Laughlin AFB. Of these mishaps, only two involved the T-38C. In 2018, a T-38C suffered an engine compressor stall during a critical phase of flight, and the pilot's failure to apply necessary flight control inputs following the loss of thrust on takeoff resulted in one fatality. In 2021, one fatality occurred when two T-38C aircraft collided during the landing phase following a formation approach (ASN 2023).

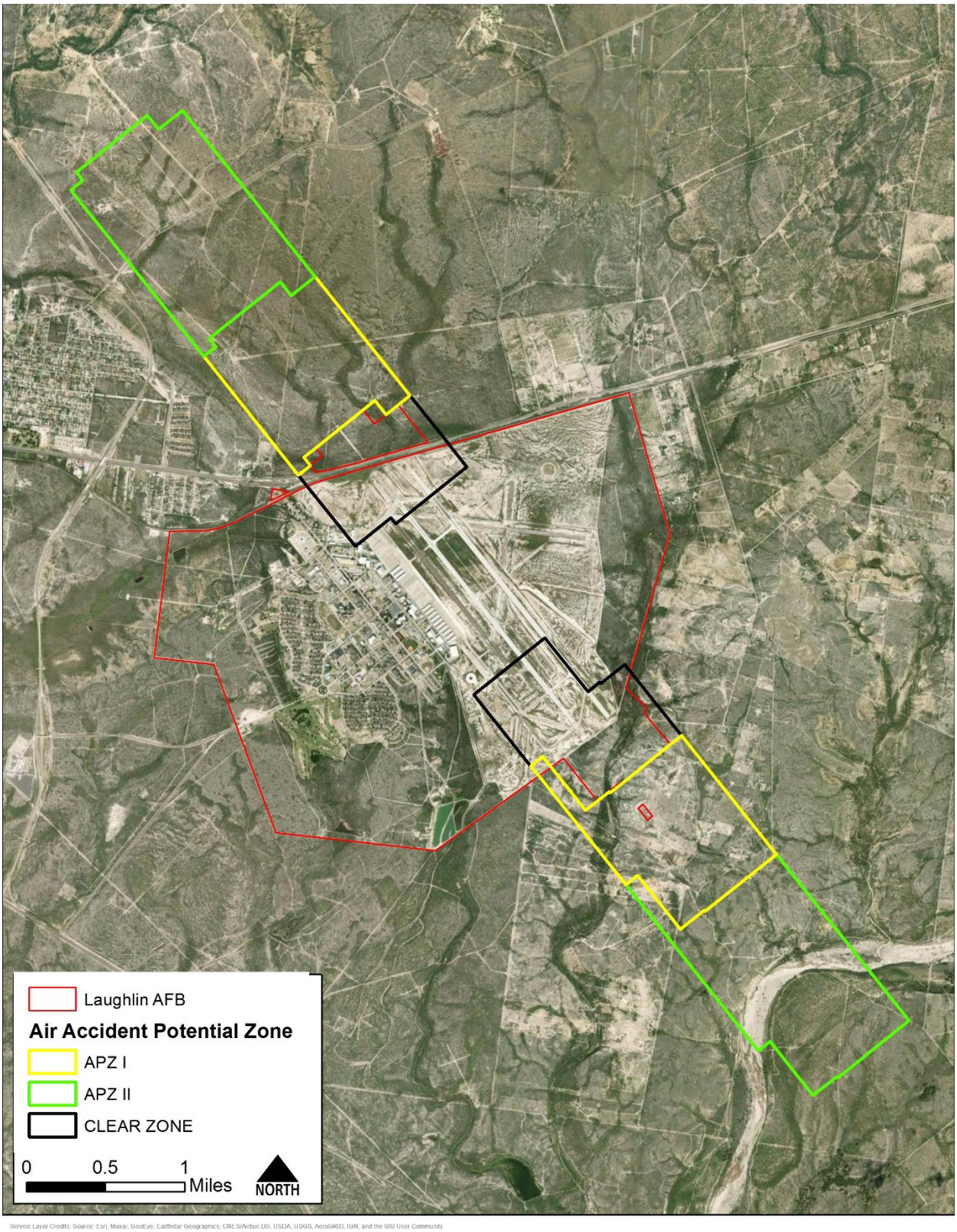

Figure 3-12. CZs and APZs at Laughlin AFB

3.9.2 Environmental Consequences

Any increase in safety risks is considered an adverse impact on safety. Significant impacts on safety would occur if a proposed action did either of the following:

- Substantially increased risks associated with the safety of DAF personnel or the general public
- Introduced a new safety risk for which DAF is not prepared or does not have adequate management and response plans in place.

3.9.2.1 Alternative 1

Construction Safety. Short-term, less than significant, adverse impacts on contractor health and safety would occur during construction of the MILCON/UMMC and FSRM projects. Construction activities are inherently hazardous because personnel are potentially exposed to health and safety hazards from heavy equipment operation; hazardous materials and chemical use; and working in confined, poorly ventilated, and noisy environments. Therefore, contractors performing construction work would be exposed to an environment containing slightly greater health and safety risks than a non-construction environment.

To minimize health and safety risks, construction contractors would be required to use appropriate PPE and establish and maintain site-specific health and safety programs for their employees. Contractor health and safety programs would follow all applicable, federal OSHA regulations and would be reviewed by Laughlin AFB personnel prior to work beginning to ensure that appropriate measures are taken to reduce the potential exposure of workers and installation personnel to health and safety risks. Safety Data Sheets for all hazardous materials and chemicals stored at the worksite would be kept on site and be available for immediate review. OSHA requirements for excavations, specified at 29 CFR 1926 Subpart P, would be followed for excavation and trenching activities.

Construction contractors would work within the existing ESQD arc of Laughlin AFB's munitions storage area to construct the proposed T-7A explosive component storage facility and the addition to Building 905. Depending on the type of ammunition stored at the time of construction, Laughlin AFB personnel would ensure that appropriate precautions are taken to prevent an inadvertent explosion caused by construction. Such precautions could include prohibiting the loading or transport of explosive material while contractors are present or temporarily storing explosive material at locations farther away from the construction sites.

Mission Safety. No adverse impacts on the health and safety of military personnel would occur. All mission-related activities associated with Alternative 1 would be carried out in accordance with DoD and DAF safety policies and plans. Aircraft maintenance activities would be accomplished similar to those already performed for the T-38C and in accordance with applicable DAF safety regulations, published DAF Technical Orders, and standards prescribed by DAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives would ensure safe working conditions.

The proposed T-7A explosive component storage facility and the addition to Building 905 would be sited within an existing ESQD arc covering Laughlin AFB's munitions storage area. Siting

the T-7A explosive component storage facility within an existing ESQD arc is necessary to ensure the safety of nearby populations from the explosive hazard. Building 905 is used for ammunition storage and maintenance and would be used for a similar function after the addition. Laughlin AFB would adjust the ESQD arc boundaries as necessary. None of the other MILCON/UMMC or FSRM projects would require siting or be sited within an ESQD arc.

Flight Safety. Long-term, less than significant, adverse impacts on flight safety would occur from increased T-7A operations at Laughlin AFB compared to baseline levels. The increased operations would result in an increased potential for BASH incidents and other mishaps. However, the overall potential for BASH incidents and other mishaps is not expected to be significantly greater than baseline because all flight safety guidelines and regulations currently in place, including the BASH program, would continue to be followed. The greatest potential for a BASH incident would occur during takeoff and landing operations. FAA estimates that approximately 97 percent of bird or wildlife aircraft strikes occur at that stage of flight. The remaining approximately 3 percent occur in the cruise phase of flight (FAA 2022b). All aircraft operations would continue to be performed in accordance with standard flight rules and local operating procedures and policies. Aircraft mishaps at Laughlin AFB are rare, and T-7A operations would be similar in nature to those performed with T-38C aircraft. Therefore, T-7A operations would not be expected to increase the potential occurrence of Class A mishaps. The CZs and APZs would remain unchanged.

3.9.2.2 Alternative 2

Impacts on safety from T-7A operations that are 25 percent greater than Alternative 1 would be slightly greater than those described for Alternative 1. Compared to Alternative 1, the 25 percent increase in operations would increase the potential for BASH incidents and other mishaps associated with greater airfield use. However, the overall potential for BASH incidents and other mishaps is not expected to be significantly greater than Alternative 1 because all safety programs in place for the existing aircraft operations, including the BASH program, would continue to be followed. As a result, the proposed increase in operations would not be expected to increase the potential occurrence of Class A mishaps. The CZs and APZs would also remain unchanged.

3.9.2.3 Alternative 3

Impacts on safety from T-7A operations for Alternative 3 would be the same as those described for Alternative 2. Although there would be up to 16 additional T-7A aircraft for Alternative 3, annual T-7A operations at Laughlin AFB and the associated SUA would occur at an intensity identical to Alternative 2 (i.e., approximately 25 percent greater than Alternative 1). All safety programs in place for the existing aircraft operations, including the BASH program, would continue to be followed, and there would be no increase in the potential occurrence of Class A mishaps. The CZs and APZs would also remain unchanged. Identical impacts on safety would occur from installation of up to 60 T-7A shelters rather than up to 48 shelters for Alternatives 1 and 2.

3.9.2.4 No Action Alternative

The No Action Alternative would not result in impacts on safety. No facility construction would occur, and there would be no changes in aircraft operations. Construction, mission, and flight safety conditions at Laughlin AFB would remain unchanged compared to the existing conditions described in **Section 3.9.1**.

3.9.3 Cumulative Effects

Construction for T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**) would result in short-term, less than significant, intermittent, adverse cumulative effects on safety (e.g., slips, falls, heat exposure, and exposure to mechanical, electrical, vision, and chemical hazards). Adherence to established procedures—including the use of PPE; fencing project areas and posting signs; and compliance with applicable federal, state, and DoD safety standards—would reduce or eliminate health and safety impacts on contractors, military personnel, and the public. These procedures are typical for construction projects on the installation. Therefore, T-7A recapitalization, when combined with the reasonably foreseeable actions, would not result in significant cumulative effects on health and safety.

3.10 Water Resources

Water resources are natural and human-made sources of water that are available for use by and for the benefit of humans and the environment. The water resources relevant to the Proposed Action are groundwater, surface water, wetlands, and floodplains at Laughlin AFB. No impacts on water resources beneath the SUA would occur; therefore, water resources in the SUA are not discussed further in this EIS.

Groundwater. Groundwater is water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. A deposit of subsurface water that is large enough to tap via a well is referred to as an aquifer. Groundwater originates from precipitation, percolates through the ground surface, and is often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater can typically be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water. Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flows. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds, lakes), and constructed drainage canals and ditches. Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, which is a condition known as runoff. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Stormwater flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to surface water management. Stormwater systems reduce sediments and other contaminants that would otherwise flow directly into surface waters.

The Clean Water Act (CWA) (33 USC §1251 et seq., as amended) establishes federal limits, through the NPDES, on the amount of specific pollutants that are discharged to surface waters to restore and maintain the water's chemical, physical, and biological integrity. An NPDES Construction General Permit would be required for any change in the quality or quantity of stormwater runoff and for some non-stormwater discharges from construction sites where 1 acre or more would be disturbed. The permit mandates use of BMPs to ensure that soil disturbed during construction does not pollute nearby water bodies.

The NPDES stormwater program requires construction site operators engaged in activities that disturb 1 acre or more to obtain coverage for their stormwater discharges under a General Permit for Stormwater Discharge from Large and Small Construction Activities. Construction or demolition that necessitates a permit requires preparation of a NOI to discharge stormwater and an SWPPP that is implemented during work activities. The issuance of stormwater NPDES permits is completed by either a USEPA regional office or a state regulatory office, depending on which organization has primacy. In the state of Texas, TCEQ has primacy over DAF installations. The construction contractor would apply for a Construction General Permit in the short-term, under which the construction activities would be covered. Upon completion of construction, a Texas Pollution Discharge Elimination System Phase II Municipal Separate Storm Sewer System (MS4) General Permit would govern the long-term control of pollutants in stormwater on the installation (TCEQ 2023, Laughlin AFB 2021).

Section 438 of the EISA (42 USC § 17094) establishes stormwater design requirements for federal construction projects that disturb a footprint greater than 5,000 ft^2. Additional guidance is provided in the USEPA's, *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the EISA*. DoD's UFC 3-210-10 also provides technical criteria, technical requirements, and references for the planning and design of applicable DoD projects to comply with stormwater requirements under EISA Section 438. Per these requirements, any increase in surface water runoff as a result of construction would be attenuated using temporary and/or permanent drainage management features. The integration of low impact development design concepts into site design and the use of stormwater management to maintain the site's pre-development runoff rates and volumes would minimize further potential adverse impacts associated with increases in impervious surface area.

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, and erosion protection.

Sections 404 and 401 of the CWA (through water quality certification) regulate the discharge of dredged or fill materials into the waters of the United States. The term "waters of the United States" has a broad meaning under the CWA and incorporates the territorial seas, tributaries, lakes and ponds, impoundments of jurisdictional waters, and adjacent wetlands. USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR § 328.3(c)(4)).

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse impacts and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands unless the agency finds there is no practicable alternative and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether to build in wetlands. EO 11990 directs each agency to provide plans for construction in wetlands for early public review.

Floodplains. Floodplains are low-level areas along rivers, stream channels, large wetlands, or coastal waters. Such lands might be subject to periodic or infrequent inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling.

The risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines 100- and 500-year floodplains. The 100-year floodplain is an area that has a 1 percent chance of inundation by a flood event in a given year, while 500-year floodplains have a 0.2 percent chance of inundation in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, as amended by EO 13690, *Establishing a Federal Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, requires federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves review of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. Federal agencies are directed to avoid floodplains unless the agency determines that no practicable alternative exists. Where the only practicable alternative is to site in a floodplain, the agency should develop measures to reduce and mitigate unavoidable impacts.

3.10.1 Affected Environment

Groundwater. Laughlin AFB is located above the Edwards-Trinity (Plateau) Aquifer, which is a major aquifer extending across much of southwest Texas. The aquifer's water-bearing units are comprised predominantly of limestone and dolomite of the Edwards Group and sands of the Trinity Group. The saturated thickness of this aquifer system increases from less than 100 feet in the north to greater than 800 feet down-dip to the south. Freshwater saturated thickness averages 433 feet (TWDB 2023).

There are no functional groundwater wells on Laughlin AFB. The installation purchases potable water from the city of Del Rio, which obtains water from San Felipe Spring located approximately 7 miles from Laughlin AFB (Laughlin AFB 2022b). **Section 3.8** provides further information on Laughlin AFB's drinking water infrastructure.

Surface Water. Surface waters on Laughlin AFB are limited because of the region's semi-arid climate. Sacatosa Creek runs along the installation's eastern boundary, and Zorro Creek runs through the installation's northwestern portion. Additionally, an unlined stormwater drainage ditch that receives stormwater runoff from the flightline area runs along Barnes Street through the middle portion of the installation before discharging into a tributary of Sacatosa Creek (see **Figure 3-13**) (Laughlin AFB 2022b).

Laughlin AFB is within two watersheds of the Rio Grande Basin. The Sacatosa Creek-Sycamore Creek watershed covers the eastern two-thirds of the installation and receives drainage from the airfield and flightline area. The San Filipe Creek-Rio Grande watershed covers the western third of the installation and receives drainage from Zorro Creek and the golf course (TPWD 2023). All stormwater runoff from the proposed MILCON/UMMC and FSRM project locations ultimately discharges to Sacatosa Creek (Laughlin AFB 2021).

Wetlands. Potential wetlands on Laughlin AFB are limited to the golf course, wastewater treatment ponds, and along the tributaries that lead to Sacatosa and Zorro creeks. No potential wetlands are within the MILCON/UMMC and FSRM project locations. The nearest potential wetland to a MILCON/UMMC or FSRM project is approximately 250 feet to the southwest of the proposed T-7A explosive component storage facility (see **Figure 3-13**) (Laughlin AFB 2022b).

Floodplains. Very little of Laughlin AFB lies within the FEMA-designated 100-year floodplain, and none of Laughlin AFB lies within the 500-year floodplain. The portions of the installation within the 100-year floodplain are in the northwest, south, and east. No MILCON/UMMC or FSRM project locations lie within or near the 100- or 500-year floodplains.

Figure 3-13 shows the 100-year floodplain. FEMA has not mapped the 500-year floodplain in the vicinity of Laughlin AFB; therefore, it cannot be shown on **Figure 3-13** (FEMA 2010).

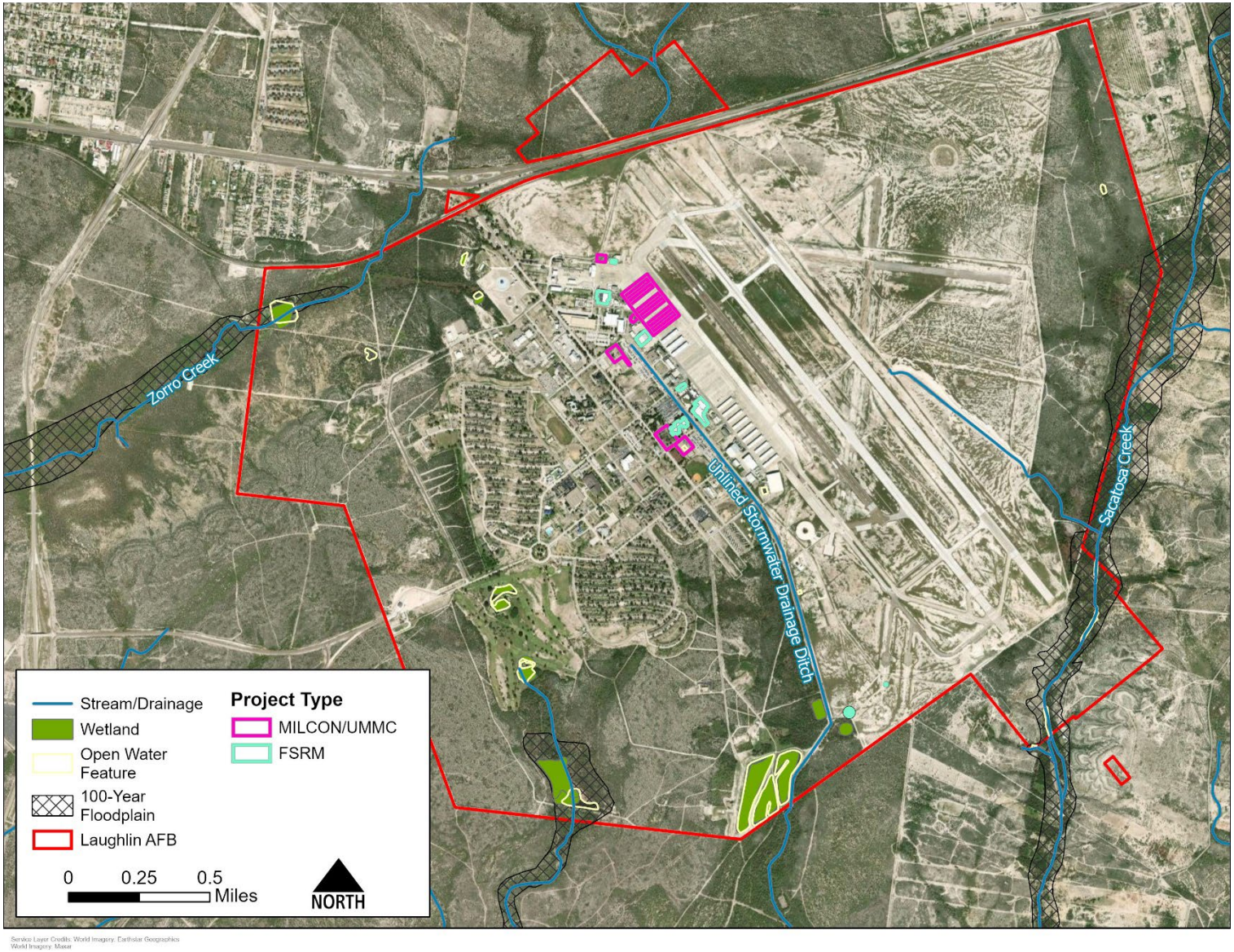

Figure 3-13. Water Resources, Wetlands, and 100-year Floodplain at Laughlin AFB

3.10.2 Environmental Consequences

A proposed action could have significant impacts with respect to water resources if any of the following were to occur:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially affect water quality
- Endanger public health or safety by creating or worsening health or flood hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources

Determining the significance of wetland impacts is based on (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high-value wetlands would be adversely affected.

3.10.2.1 Alternative 1

***Groundwater and Surface Water*.** No direct impacts on groundwater and surface water would occur. The water table at Laughlin AFB is no less than 25 feet below the ground surface, and it is not anticipated that any construction activities would occur at this depth. Additionally, no construction would occur within the footprint of any surface water areas.

Short- and long-term, less than significant, indirect, adverse impacts on groundwater and surface water would occur. As noted in the stormwater system discussion in **Section 3.8**, construction of the MILCON/UMMC and FSRM projects could potentially inhibit stormwater from reaching existing inlets or streams or could create slicker surfaces for higher velocity stormwater flows. However, these potential adverse impacts would be minimized through the implementation of BMPs, which could include installing temporary stormwater controls (e.g., retention basins, silt fences, straw bales, and swales) to minimize the volume and velocity of stormwater flow. Following construction of the MILCON/UMMC and FSRM projects, the amount of impervious surfaces would increase at the installation by approximately 109,600 ft^2 (2.52 acres), which could potentially decrease groundwater recharge and increase stormwater runoff into nearby surface water bodies. Federally required design principles (e.g., UFC 1-200-02, UFC 3-210-10, and Section 438 of the EISA) would be followed to maintain or restore, to the maximum extent practicable, the predevelopment hydrology of the collective project sites with respect to flow rate, volume, and duration. In accordance with the NPDES stormwater program, the installation would obtain a Construction General Permit from TCEQ for projects where 1 acre or more would be disturbed. Construction would be governed by SWPPPs, which would contain BMPs and environmental protection measures to manage stormwater. Standard erosion control measures to prevent stormwater pollution would be implemented during

construction activities to minimize soil disturbance and prevent erosion and sedimentation at the work site. Further information on stormwater management is provided in **Section 3.8**.

As noted in **Section 3.7.2.1**, the concurrent operation of two types of aircraft during the T-38C to T-7A transition period may require additional quantities of hazardous materials, hazardous wastes, and petroleum products to be delivered, stored, used, and disposed of at Laughlin AFB. This temporary increase in hazardous materials, hazardous wastes, and petroleum product management would negligibly increase the potential for an accidental release to occur and for the contamination to reach nearby groundwater aquifers and surface water features. The installation's SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would continue to be followed to lessen the potential for a release to contaminate water resources.

Wetlands. The MILCON/UMMC and FSRM projects would not occur within 250 feet of any potential wetland; therefore, no direct impacts on wetlands would occur. The construction BMPs described in the Groundwater and Surface Water subsection would be implemented to minimize the potential for indirect impacts on downstream wetlands.

Floodplains. The MILCON/UMMC and FSRM projects would not occur within or near the 100- or 500-year floodplains; therefore, no impacts on floodplains would occur.

DAF coordinated with FEMA and community floodplain administrators throughout the preparation of this EIS. DAF notified the FEMA Region 6 administrator of the public scoping process in late January 2023 and of the availability of the Draft EIS in November 2023. FEMA responded to both notification letters by requesting the community floodplain administrators be contacted for review of the EIS and possible permit requirements. DAF notified the Val Verde County and the city of Del Rio community floodplain administrators of the availability of the Draft EIS in November 2023. **Section 4** contains further information on the feedback received from various stakeholders including FEMA.

3.10.2.2 Alternative 2

Impacts on water resources from T-7A operations that are 25 percent greater than Alternative 1 would be slightly greater than those described for Alternative 1. Compared to Alternative 1, the 25 percent increase in operations would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface waters. However, the overall potential for a release and for contamination of water resources would not be significantly greater than Alternative 1. The Laughlin AFB SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would continue to be followed to lessen the potential for a release to contaminate water resources.

3.10.2.3 Alternative 3

Impacts on water resources from T-7A operations that are 25 percent greater than Alternative 1 and the delivery of up to 16 additional T-7A aircraft would be slightly greater than those described for Alternatives 1 and 2. Compared to Alternatives 1 and 2, the increase in operations and the additional aircraft to maintain would slightly increase the potential for an accidental release of hazardous materials or petroleum products to contaminate groundwater aquifers and surface waters. However, the overall potential for a release and contamination of

water resources would not be significantly greater than Alternatives 1 and 2. The Laughlin AFB SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP would continue to be followed to lessen the potential for a release to contaminate water resources.

Although Alternative 3 would include the installation of up to 60 T-7A shelters rather than up to 48 shelters proposed for Alternatives 1 and 2, the construction impacts on water resources would be identical to those described for Alternative 1. All shelters, including the up to 12 additional shelters, would be installed on an already impervious surface on the Laughlin AFB airfield. As such, there would be no difference in the area for groundwater infiltration, and the potential for increased stormwater runoff into nearby surface water bodies would be the same as Alternative 1.

3.10.2.4 No Action Alternative

The No Action Alternative would not impact water resources. No facility construction would occur, and there would be no changes in aircraft operations or maintenance. The amount of impervious surfaces on the installation would not change, and no impacts on groundwater recharge or surface water runoff would occur. The potential for groundwater or surface water contamination would not change. There would also be no impact on wetlands or floodplains. Water resources conditions at Laughlin AFB would remain unchanged compared to the existing conditions described in **Section 3.10.1**.

3.10.3 Cumulative Effects

T-7A recapitalization and the reasonably foreseeable actions (see **Table 3-2**) could result in short- and long-term, less than significant, adverse, cumulative effects on water resources from construction involving ground disturbance and increased impervious surfaces. Soil disturbances from construction on the installation could potentially inhibit stormwater from reaching existing inlets or streams or could create slicker surfaces for higher velocity stormwater flows. Implementation of BMPs would minimize these impacts by reducing the volume and velocity of stormwater flow. Cumulatively, the increase in impervious surfaces from T-7A recapitalization and the reasonably foreseeable actions would be considered a small contribution in the context of the whole watershed but could be noticeable on a local level. In accordance with federal and state stormwater regulations, the predevelopment hydrologic conditions of the project areas would be maintained through use of existing stormwater management systems and appropriate low-impact development strategies that would attenuate potential long-term, adverse, cumulative effects on water resources. Accidental spills or leaks of fuels, oils, and other lubricants could contaminate water resources; however, the potential for contamination to occur would be minimized using secondary containment and other BMPs to prevent or minimize spills or leaks. Therefore, T-7A recapitalization, when combined with the reasonably foreseeable actions, would not result in a significant cumulative effect on water resources.

3.11 Environmental Justice

On April 21, 2023, EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, was issued. This EO seeks to advance environmental justice for all by implementing and enforcing the nation's environmental and civil rights laws, preventing pollution, addressing climate change and its effects, and working to clean up legacy pollution that is harming human health and the environment. EO 14096 builds upon EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, which was issued on February 11, 1994.

EO 12898 requires each federal agency to identify and address whether their proposed action results in disproportionately high and adverse environmental and health impacts on low-income or minority populations. The EO is intended to ensure the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. This EO also requires that each federal agency perform its programs, policies, and activities that substantially affect human health and the environment in a manner that does not exclude persons from participating in, deny persons the benefits of, or subject persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, national origin, or income.

A 1994 presidential memorandum accompanying EO 12898 states that existing federal statutes should be used to evaluate environmental justice concerns. One of the referenced statutes is NEPA, and the memorandum highlights the importance of NEPA in addressing environmental hazards in minority and low-income communities. The memorandum states that, “[e]ach Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities,” when such analysis is required by NEPA.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each federal agency “(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately impact children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” Similarly, potential impacts on senior citizens should also be evaluated. Activities occurring near areas that could have higher concentrations of children or seniors during any given time, such as schools, childcare facilities, and assisted living facilities, might further intensify potential impacts on these groups. To the extent to which children or seniors might be impacted, disproportionate impacts are inherent due to their innate vulnerabilities.

Consideration of environmental justice concerns includes the race, ethnicity, poverty status, and age of populations in the area within which potential impacts from a proposed action could occur. Such information aids in evaluating whether a proposed action would render any of the populations targeted for protection vulnerable.

As defined by CEQ, minority or low-income populations should be identified if the percentage of persons characterized as being minority or low-income within the ROI is either greater than 50 percent or is meaningfully greater than the community of comparison. For the purposes of the environmental justice analysis for this EIS, "meaningfully greater" is 10 percent greater than the community of comparison. Ten percent greater than the community of comparison is a standard threshold used by many agencies in interpreting this guidance and for conducting these analyses. CEQ also states, "A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). The community of comparison is the smallest jurisdiction for which U.S. Census data are collected that encompasses the footprint of impacts for all resource areas.

For the purposes of this EIS, environmental justice populations are given the following definitions:

Minority Population. CEQ defines minority as "[i]ndividual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic." CEQ guidance recommends minority populations "be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). The U.S. Census Bureau considers race and Hispanic or Latino origin (ethnicity) as separate concepts, and these data are recorded separately.

Low-income Population. A low-income population is the percentage of a population where the household income is less than or equal to twice the federal "poverty level" (USEPA 2023c). For 2023, the federal poverty level, or threshold, for a two-person household under 65 years old was $19,720 (U.S. Department of Health and Human Services 2023).

In addition to environmental justice populations, DAF identifies sensitive receptors to be considered in environmental justice analyses. These populations are defined as follows:

Youth Population. The percentage of a population that is age 17 or younger (DAF 2014b).

Elderly Population. The percentage of a population that is age 65 or older (DAF 2014b).

Data from the American Community Survey 5-Year Census Estimates (2016 to 2020) and USEPA's EJSCREEN data and summary tables are used for this EIS to assess impacts on minority, low-income, youth, and elderly populations.

3.11.1 Affected Environment

The environmental justice ROI is the farthest extent of the largest 65 dBA DNL noise contour around the installation (i.e., the noise contour for Alternatives 2 and 3). This ROI was selected because it covers the largest discrete geographic area where adverse impacts would occur and where U.S. Census data can be acquired.

The environmental justice ROI consists of six Census Block Groups across two counties at or near Laughlin AFB. The communities of comparison are Val Verde County for the five Census Block Groups in that county and Kinney County for the one Census Block Group in that county. **Figure 3-14** shows the baseline noise contours overlaid on the Census Block Groups and counties within the environmental justice ROI. The 65 dBA DNL baseline noise contour touches all six of the Census Block Groups within the ROI.

The environmental justice ROI does not include any Census Block Groups beneath the SUA. Impacts that would potentially be realized in the SUA would include aircraft emissions and noise. The impacts associated with both are addressed in **Sections 3.2** and **3.3**, respectively. The source of the emissions and noise would be aircraft flying at training altitudes along established routes flown currently by T-38C and other DAF aircraft in the local area. The populations under the MOAs and MTRs are generally rural in nature and very low density. The effects of the emissions and noise would not be expected to be focused on any particular geographical area or population and would instead be spread across a broad area. DAF has therefore concluded that aircraft operations in the SUA for the Proposed Action would not cause disproportionately high and adverse health or environmental effects on minority or low-income populations. Likewise, DAF has determined that there are no environmental health and safety risks associated with the Proposed Action for aircraft operations in the training SUA that would disproportionately affect children. Therefore, environmental justice regarding the SUA is not analyzed further.

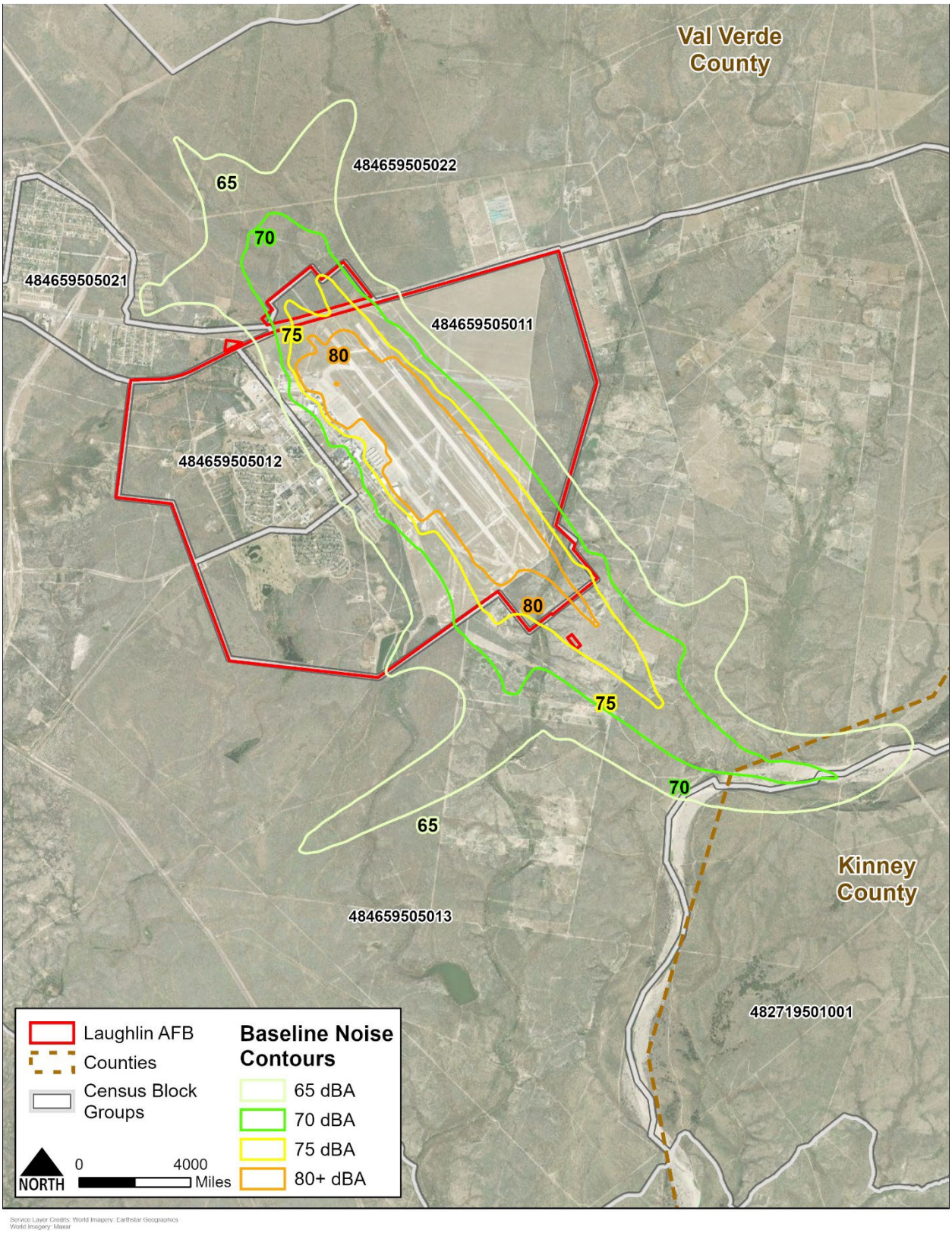

Figure 3-14. Baseline Noise Contours Overlaid with the Census Block Groups of the Environmental Justice ROI

Minority Populations. Minority populations greater than 50 percent of the total census block group population or meaningfully greater (at least 10 percent) than that of the community of comparison are found in three of the six Census Block Groups in the Laughlin AFB ROI, which are Block Groups 484659505013, 484659505021, and 484659505022—all in Val Verde County (see **Table 3-47**; USEPA 2023d).

Table 3-47. Environmental Justice Populations Proximal to the Project Area

Block Group	County	Total Population	Percent Minority Population	Percent Low-Income Population	Percent Youth Population	Percent Elderly Population
Val Verde County		**49,018**	**85**	**45**	**28**	**14**
484659505011	Val Verde	709	25	0	24	0
484659505012	Val Verde	1,266	39	23	12	0
484659505013	Val Verde	482	100	53	48	0
484659505021	Val Verde	3,306	99	42	35	3
484659505022	Val Verde	2,724	95	47	22	7
Kinney County		**3,674**	**61**	**44**	**13**	**29**
482719501001	Kinney	708	49	31	2	26

Source: USEPA 2023d

Notes: Colored shading represents places where the Census Block Group statistic exceeds either 50 percent or is "meaningfully greater" (which in this case is 10 percent higher) than the community of comparison. The community of comparison is the county in which each Census Block Group is located.

Low-Income Populations. Low-income populations greater than 50 percent of the total census block group population or meaningfully greater than that of the community of comparison are found in one of the six Census Block Groups in the Laughlin AFB ROI, which is Block Group 484659505013 in Val Verde County (see **Table 3-47**; USEPA 2023d).

Youth Population. Youth populations greater than 50 percent of the total census block group population or meaningfully greater than that of the community of comparison are found in one of the six Census Block Groups in the Laughlin AFB ROI, which is Block Group 484659505013 in Val Verde County (see **Table 3-47**; USEPA 2023d).

Elderly Population. No elderly populations greater than 50 percent of the total census block group population or meaningfully greater than that of the community of comparison are found in the six Census Block Groups in the Laughlin AFB ROI (see **Table 3-47**; USEPA 2023d).

Sensitive Receptors. On Laughlin AFB, features used commonly by sensitive receptors include family housing areas, a Child Development Center, a Youth Center, Roberto Berrerra Elementary School, the Library/Education Center, and a hospital/clinic. No places of worship were found in the vicinity of the installation. Immediately outside of the installation boundary are several residential communities. **Section 3.3.1.1.1** and **Figure 3-1** present 15 representative noise sensitive locations along with the baseline noise contours. **Table 3-20** and **Table 3-22** identify the number of events at these representative locations that would interfere with indoor or outdoor speech under baseline conditions. It is noted in **Section 3.3.1.1.2** that the nine representative residential locations do not experience any sleep disturbing events at night.

To provide the public—including these environmental justice communities—with early and meaningful involvement in this EIS's environmental review process, DAF published a NOI to prepare this EIS in the *Federal Register* on January 17, 2023, and published newspaper advertisements announcing a public scoping period in English and Spanish in *The 830 Times* on January 25 and February 1, 2023. In addition, DAF issued press releases to local media outlets and via Facebook posts and mailed letters to potentially affected federal, state, and local agencies, elected officials, and Native American tribes. These involvement efforts invited the public to attend a virtual public scoping meeting to inform the public and answer questions about the proposal.

A second opportunity for meaningful public involvement—including with these environmental justice communities—occurred when the Draft EIS was released for public comment. DAF held a 60-day Draft EIS public comment period that began with the publication of the Draft EIS Notice of Availability in the *Federal Register* on November 9, 2023. The public was notified of the Draft EIS public comment period through notices published in both English and Spanish in the *Del Rio & Eagle Pass News Leader* on November 12 and December 3, 2023, and *The 830 Times* on November 17 and 23, 2023; press releases to local media outlets and social media channels; and letters mailed to potentially affected federal, state, and local agencies, elected officials, and Native American tribes. In addition, DAF held an in-person and a virtual public hearing to foster greater community involvement. The in-person public hearing was held at the Grand Ballroom of the Ramada Hotel in Del Rio, Texas on December 5, and the virtual public hearing was held via Webex on December 11, 2023. DAF invited the public, interested parties, and stakeholders to learn about and provide comments on the Proposed Action, alternatives, or issues related to environmental concerns at these public hearings and through review of the Draft EIS and project website. The public comment period ended on January 8, 2024. Further information on public involvement is provided in **Section 4**.

3.11.2 Environmental Consequences

Environmental justice impacts were assessed to determine whether the Proposed Action would result in disproportionately high and adverse human health and environmental impacts on environmental justice populations (i.e., minority or low-income populations greater than 50 percent of the total population or meaningfully greater than that of the community of comparison) or sensitive receptors (i.e., youth or elderly populations greater than 50 percent of the total population or meaningfully greater than that of the community of comparison) within the environmental justice ROI. Impacts would be considered disproportionate if the percentages of environmental justice populations or sensitive receptors in the ROI are greater than or equal to the corresponding percentages in the communities of comparison.

3.11.2.1 Alternative 1

Unavoidable long-term, disproportionately high and adverse impacts would occur to environmental justice and sensitive receptor populations from the increased noise and air emissions from the T-7A aircraft beginning operations in 2030. The Census Block Groups within the 65 dBA noise contour for Alternative 1 are the same as those included within the baseline noise contour (i.e., existing conditions), although slightly larger land areas may be encompassed within the Alternative 1 noise contours (see **Figure 3-15**).

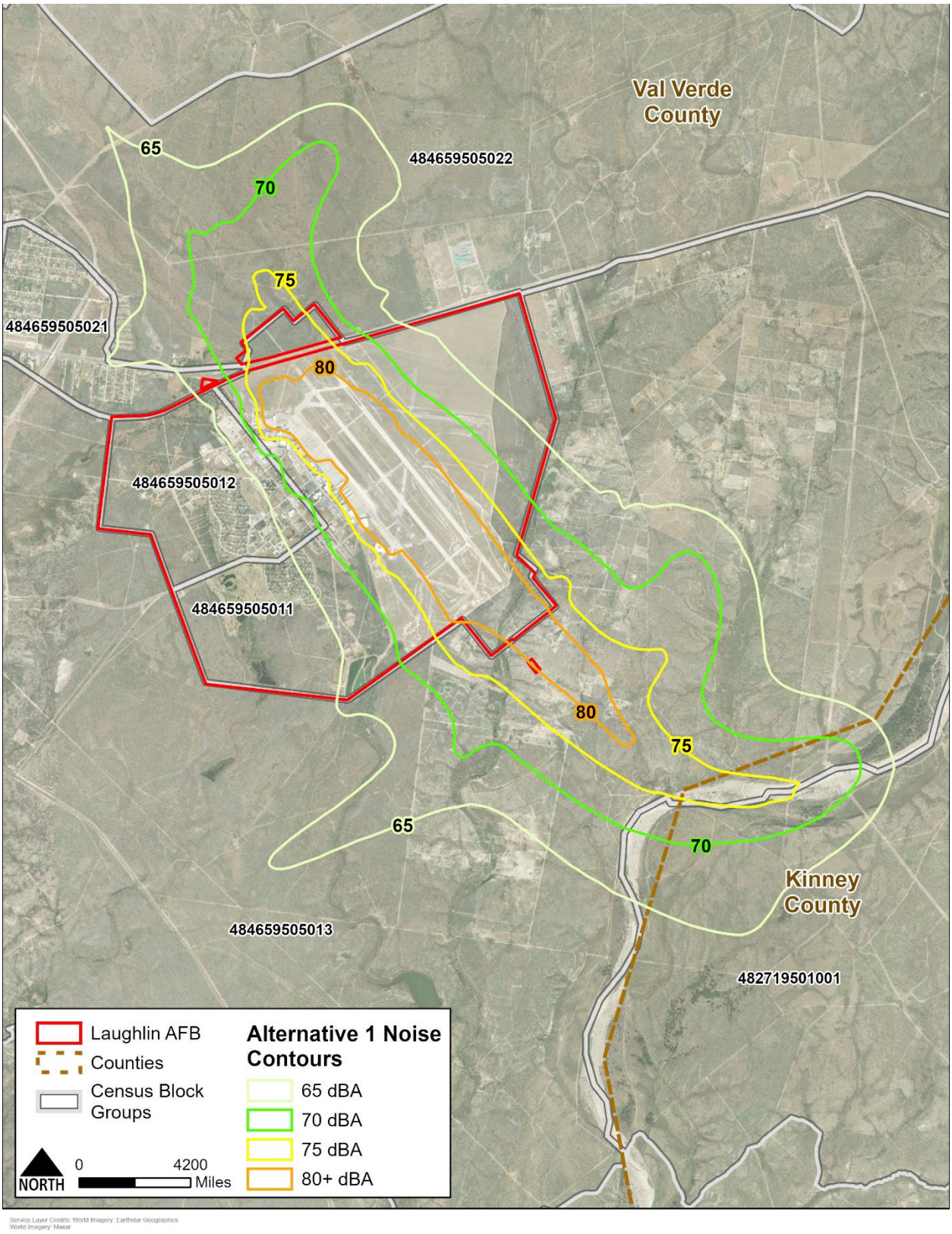

Figure 3-15. Alternative 1 Noise Contours Overlaid with the Census Block Groups of the Environmental Justice ROI

The Census Block Groups that would be affected from increased aircraft operations due to higher noise levels would be 484659505011, 484659505012, 484659505013, 484659505021, 484659505022, and 482719501001 (see **Section 3.3.2.1** for further discussion of noise impacts). Of these Block Groups, three contain environmental justice populations at either levels above 50 percent of the total population or greater than 10 percent of the community of comparison for minority, low-income, youth, or elderly populations (see **Table 3-47**). These three Census Block Groups are 484659505013, 484659505021, and 484659505022, and all are within Val Verde County. Although the baseline noise contours already impact these Census Block Groups, additional adverse impacts from increased noise levels would be expected because the overall land area (and therefore the population) within the noise contours would increase under Alternative 1. In addition, it is expected that there would be an increase in air emissions for some pollutants in the areas around the installation, which encompasses Census Block Groups that include environmental justice populations. Therefore, Alternative 1 would have a disproportionately adverse impact on environmental justice and sensitive receptor populations.

As part of the environmental justice analysis, the ways a proposed action may affect the health and safety risks of children is also reviewed in accordance with EO 13045. **Section 3.3.2.1** addresses the overall aircraft noise impacts associated with flight operations for Alternative 1. The discussion includes the overall sound levels at representative locations, residential areas, and four schools. **Table 3-29**, **Table 3-31**, and **Table 3-32** identify the number of events at representative locations, including these schools, that would interfere with indoor or outdoor speech due to the proposed operations with the T-7A aircraft for Alternative 1 and provide a comparison to baseline conditions. In the classroom setting, although interruption of classroom communication is not a direct risk to the health or safety of children within those classrooms, it does present an impact on learning time. In all instances, there is an increase in the number of speech interference events per day (see **Table 3-31**) and the time above metric (see **Table 3-32**). Therefore, increases in both the number of events and the duration of the events that would cause classroom learning interference would result in a disproportionate adverse impact to children.

3.11.2.2 Alternative 2

Impacts from Alternative 2 would be unavoidable, disproportionately high, and adverse to environmental justice and sensitive receptor populations and also would be slightly greater than those described for Alternative 1. Noise and air emissions would increase from baseline conditions to correspond with that resulting from T-7A operations that are 25 percent greater than Alternative 1. The same six Census Block Groups encompassed within the Alternative 1 65 dBA DNL noise contour would be impacted by Alternative 2 (see **Figure 3-16**). Like Alternative 1, because land area (and therefore population) would be impacted within Census Block Groups that have environmental justice populations, there would be a disproportionate adverse impact on these populations. This impact would be slightly greater than the impact from Alternative 1 because the amount of land area encompassed by the Alternative 2 65 dBA DNL noise contour would be slightly larger than that encompassed by the Alternative 1 65 dBA DNL noise contour.

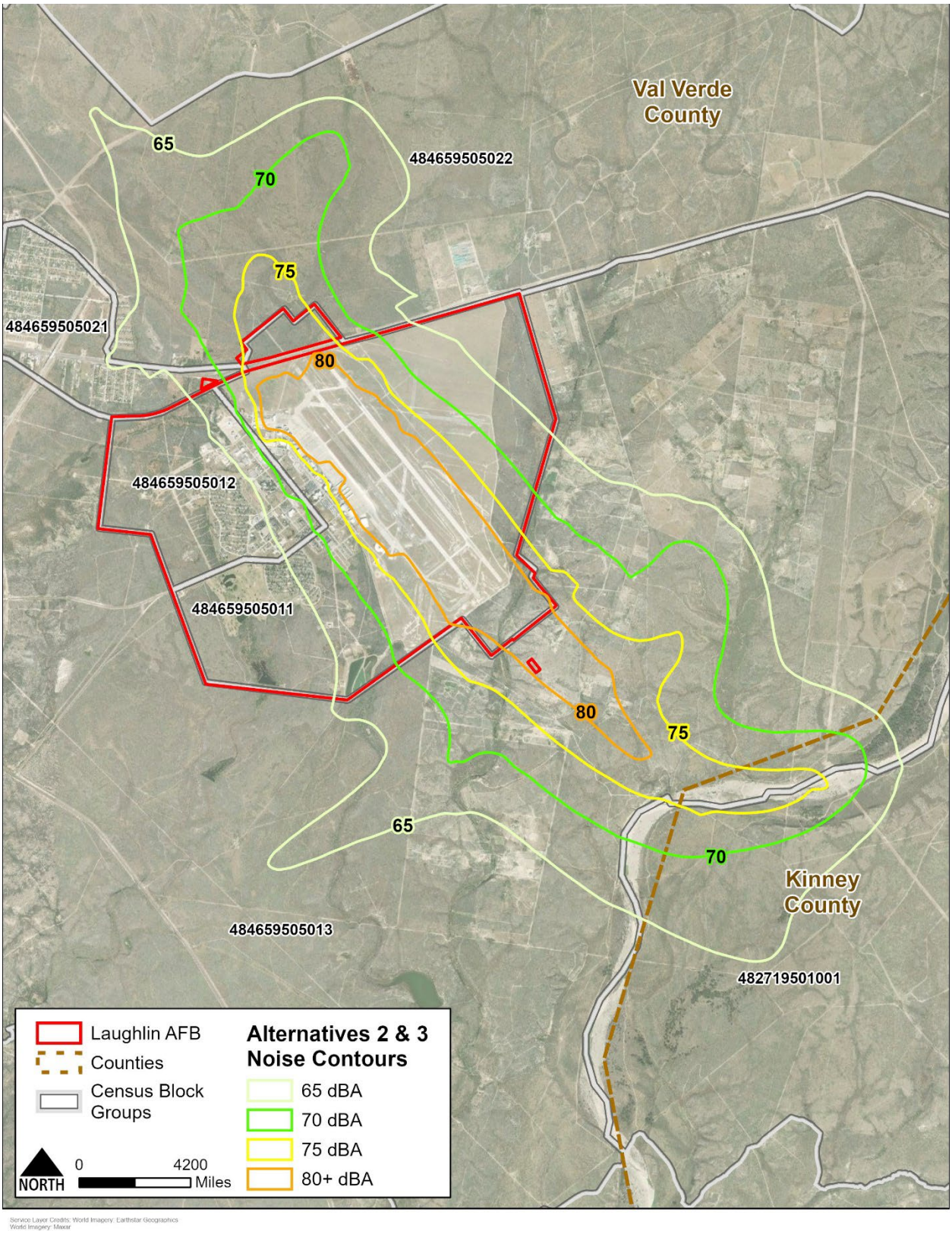

Figure 3-16. Alternatives 2 and 3 Noise Contours Overlaid with the Census Block Groups of the Environmental Justice ROI

Section 3.3.2.2 addresses the overall aircraft noise impacts associated with flight operations for Alternatives 2 and 3. The discussion includes the overall sound levels at representative locations, residential areas, and several schools. **Table 3-37**, **Table 3-39**, and **Table 3-40** identify the number of events at representative locations, including these schools, that would interfere with speech due to the proposed operations with the T-7A aircraft. Although interruption of classroom communication is not a direct risk to the health or safety of children within those classrooms, it does present an impact on learning time.

Like Alternative 1, the impacts from Alternative 2 would be unavoidable, disproportionate and adverse on children because there would be an increase in the number (see **Table 3-39**) and duration (see **Table 3-40**) of events that would cause classroom learning interference.

3.11.2.3 Alternative 3

Noise impacts from Alternative 3 would be identical to Alternative 2 (see **Figure 3-16**). Air emissions from Alternative 3 would be slightly greater than those of Alternatives 1 and 2. Like Alternatives 1 and 2, the noise and air quality impacts would result in an unavoidable, disproportionately high, and adverse impact to environmental justice and sensitive receptor populations.

3.11.2.4 No Action Alternative

The No Action Alternative would not impact environmental justice and sensitive receptor populations. The Proposed Action would not be implemented, no T-7A aircraft would be delivered to Laughlin AFB, no facility construction would occur, and there would be no changes in aircraft operations or maintenance. No impacts on environmental justice or sensitive receptor populations at and near Laughlin AFB would occur.

3.11.3 Cumulative Effects

The reasonably foreseeable actions (see **Table 3-2**) would occur within two Census Block Groups (i.e., 484659505011 and 484659505012) that are within the Proposed Action's 65 dBA DNL noise contour. These Census Block Groups do not contain environmental justice or sensitive receptor populations; therefore, no disproportionately adverse cumulative effects are anticipated from the Proposed Action when combined with the reasonably foreseeable actions.

3.12 Other Environmental Considerations

3.12.1 National Park Service Properties

Three National Park Service- (NPS) managed properties are beneath the SUA where the T-7A aircraft would fly. These properties are Amistad National Recreational Area, Big Bend National Park, and the Rio Grande Wild and Scenic River, and each property is shown on **Figure 1-3**. Amistad National Recreational Area is beneath the Laughlin 1 MOA and MTRs IR-169 and IR-170. Big Bend National Park is beneath MTRs VR-165 and VR-187. Rio Grande Wild and Scenic River is beneath the Laughlin 1 MOA and in proximity to MTRs VR-165 and VR-187. Because SUA affected by the Proposed Action coincides with three NPS-managed properties, DAF informed NPS of the preparation of this EIS and solicited their comments on the proposal. **Table 4-1** summarizes the comments provided by NPS during scoping.

DAF considered impacts to the three NPS-managed properties as part of the EIAP process. The following paragraphs summarize those impacts.

Air Quality. Big Bend National Park is an USEPA Class I protected area. Class I protected areas are national parks larger than 6,000 acres and national wilderness areas larger than 5,000 acres that were in existence when the CAA was amended in 1977. Additional regulations are imposed on stationary sources within 10 kilometers of Class I protected areas to protect air quality and visibility. The Proposed Action would entail no new stationary sources within 10 kilometers of Big Bend National Park; therefore, the additional air quality regulations for Class I protected areas are not applicable.

No air emissions would be produced in the Laughlin 1 MOA because no operations would occur below 3,000 feet AGL. **Table 3-5**, **Table 3-9**, and **Table 3-11** provide the net change in air emissions for the MTR ROI, which include MTRs IR-169, IR-170, VR-165, and VR-187, for Alternatives 1, 2, and 3, respectively. The pollutant with the greatest quantity emitted in the MTR ROI is NO_X with 9.683 tons emitted annually for Alternatives 2 and 3. These emissions would negligibly impact regional air quality and result in no disproportionate impacts to any of the three NPS-managed properties.

Noise. The SUA where the T-7A aircraft would fly already is used for such operations with the T-38C, and the Proposed Action would not change the configuration (e.g., shape, size, altitudes) or active times of this SUA. As shown in **Table 2-2**, the number of operations performed in the SUA would not change for Alternative 1 but, as shown in **Table 2-5**, would increase by 25 percent for Alternatives 2 and 3.

While this EIS does not directly estimate noise levels at the three NPS-managed properties, noise modeling performed as part of this EIS found that T-7A aircraft noise in the SUA would not exceed 65 decibels at any location on the ground—including at the three NPS-managed properties—due to a combination of infrequent and high-altitude (i.e., greater than 500 feet AGL) operations (see **Sections 3.3.2.1.2** and **3.3.2.2.2**). DAF recognizes the DNL metric may not adequately address noise impacts to visitors of NPS-managed properties; therefore, the SEL and L_{MAX} metrics also were considered. **Table 3-28** compares single-event sounds for the T-38C and T-7A. As shown in the fourth row of the table, the T-7A has a slightly quieter SEL and identical L_{MAX} at 500 feet AGL. This means noise impacts from low level flight activity within the SUA would be similar to existing conditions and would not adversely change the soundscape or wilderness value in the three NPS-managed properties.

Dark Night Sky. Similar to the T-38C aircraft, the T-7A aircraft would perform operations after sunset, but these operations would stay around the Laughlin AFB airfield and would not enter the MOAs and MTRs (see **Sections 3.3.2.1.2** and **3.3.2.2.2**). As such, visitors to the three NPS-managed properties would not experience any noticeable changes to dark night sky.

Biological Resources. As noted in **Section 3.4.2.1**, the Proposed Action would have no effect on any special status species (including the Yellow-billed Cuckoo and Mexican long-nosed bat) with potential to occur in the SUA or at the three NPS-managed properties. This determination was made by reviewing T-38C strike data for Laughlin AFB from October 2017 through September 2022, and there were no records of T-38C aircraft striking a special status species

(Laughlin AFB 2023b). Continued adherence of the Laughlin AFB BASH Plan would help avoid and minimize the potential for strikes in the event of an incidental occurrence of a federally listed/candidate species. If determined to be necessary, new measures would be developed to reduce the potential for impacts to occur and the BASH Plan would be updated accordingly.

Cultural Resources. As noted in **Section 3.5**, the APE for this undertaking does not include the SUA where the T-7A aircraft would perform operations, which includes the three NPS-managed properties. These areas were excluded from the APE because, as noted in the Noise paragraph, the SUA where the T-7A aircraft would fly already is used for such operations with the T-38C aircraft, this undertaking would not change the configuration or active times of this SUA, and noise modeling for this SUA concluded that noise levels would not exceed 65 decibels at any location in the three NPS-managed properties. Based on this information, T-7A flight training would have no potential to effect historic properties—including plaster, adobe, or other structures and traditional cultural properties—beneath any SUA or within the three NPS-managed properties.

Visitor Experience and Transportation. **Section 2.2.2.1.3** describes the change in personnel that would result from the Proposed Action. Notably, during the aircraft transition period in 2030 and 2031, a temporary 190-person increase in personnel and their estimated 361 dependents would occur. It is possible some of these additional personnel and their dependents would use the three NPS-managed properties for recreational activities, which would negligibly increase the demand for services such as campgrounds. Vehicle movements from these visitors may also negligibly increase traffic and noise on the roads that service the three NPS-managed properties. The Governor's Landing Day Use Area and Campground at Amistad National Recreational Area is the most popular NPS-managed facility to Laughlin AFB and has the greatest potential to experience additional visitors and vehicle traffic. If additional visitors are experienced at any NPS-managed property, they would represent a very small proportion of the total visitation and would not adversely affect visitor experience. After the aircraft transition period, 60 personnel and 114 dependents would leave Laughlin AFB (as compared to current baseline staffing levels) potentially resulting in a less than significant reduction in visitation to the three NPS-managed properties. **Section 3.8.2** describes impacts on transportation from the Proposed Action.

3.12.2 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the impacts that use of these resources would have on future generations. Irreversible impacts result primarily from use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. The irreversible and irretrievable commitment of resources that would result from the Proposed Action involves the consumption of material resources used for construction, energy resources, biological resources, and human labor resources. The use of these resources is considered permanent.

Material Resources. The material resources that would be used for the Proposed Action include concrete, steel, and various construction materials and supplies. The materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. The energy resources, including petroleum-based products (e.g., gasoline, diesel, aviation fuel), used for the Proposed Action would be irretrievably lost. During construction, gasoline and diesel would be used for the operation of vehicles and construction equipment. Additionally, operation of the T-7A aircraft would require the consumption of aviation fuel. However, the volume of aviation fuel consumed for the T-7A aircraft would not be appreciably different from that consumed for the T-38C. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, less than significant impacts would occur.

Biological Resources. The Proposed Action would result in a less than significant loss of vegetation and wildlife habitat. Most of the losses would be lower quality vegetation and habitat on the airfield or in developed portions of the installation and would not include water features. Temporarily disturbed sites would be revegetated with native species to support the native plant community in the long term.

Human Resources. The use of human resources for construction is considered an irretrievable loss only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities and is considered beneficial.

3.12.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from the Proposed Action. However, none of those impacts would be significant.

Air Quality and Climate Change. Criteria pollutant and GHG emissions would be directly produced during MILCON/UMMC and FSRM project construction and would be unavoidable. Additionally, new, unavoidable air emissions would be produced from operation and heating of new facilities and from flight operations. The net annual emissions from the Proposed Action would not exceed the insignificance indicator of 250 tpy for all criteria pollutants (25 tpy for lead).

Noise. The proposed flight operations would increase land acreage and population exposed to a DNL of at least 65 dB, and this increase would be unavoidable. These newly exposed areas encompass numerous land uses including residential, commercial, undeveloped, and agricultural.

Biological Resources. Ground-disturbing activities associated with the MILCON/UMMC and FSRM projects would result in the loss of vegetation and wildlife habitat. These losses would be unavoidable; however, temporarily disturbed sites would be revegetated with native species following construction to support the native plant community and restore wildlife habitat in the long term. Vegetation and wildlife habitat within the new construction footprint would be lost permanently.

Energy. The MILCON/UMMC and FSRM projects and aircraft operations would require the use of fossil fuels, which are non-renewable natural resources. The use of non-renewable resources is an unavoidable occurrence, although not considered significant.

Hazardous Materials and Wastes. The use and generation of hazardous materials and wastes during construction of the MILCON/UMMC and FSRM projects and during the maintenance of aircraft would be unavoidable. However, hazardous materials and wastes would be handled in accordance with federal, state, and local policies and would not be expected to result in significant impacts.

Environmental Justice. The proposed flight operations would result in an increase in air emissions and noise in the area around the installation, which encompasses three Census Block Groups that contain environmental justice populations. The increased noise would increase classroom learning interference at nearby schools. These adverse impacts on environmental justice and sensitive receptor populations are unavoidable.

3.12.4 Relationship between Short-term Uses and Long-term Productivity

Short-term uses of the biophysical components of the human environment include direct, project-related disturbances and direct impacts associated with an increase in population and activity that occurs over less than 5 years. Long-term uses of the human environment include those impacts occurring over more than 5 years, including permanent resource loss.

The MILCON/UMMC and FSRM projects for the Proposed Action would not require short-term resource uses that would result in long-term productivity compromises. Although implementation of these projects would result in an increase of impervious surfaces, it would not result in intensification of land use at Laughlin AFB or within the surrounding area, as most projects would occur within previously developed or disturbed areas. Therefore, it is anticipated that the Proposed Action would not result in any adverse cumulative effects on land use or aesthetics.

3.12.5 Compatibility with Existing Plans and Policies

The Proposed Action would occur on government-owned lands that DAF operates and within SUA over property that is not all government-owned. The proposed construction and long-term operations associated with the Proposed Action would not differ from the current activities occurring at Laughlin AFB. DAF would continue to follow all requirements related to development and would therefore be consistent with current federal, regional, state, and local land use policies and controls. The Proposed Action would not conflict with any applicable off-installation land-use ordinances and would follow all applicable permitting, building, and safety requirements. After the arrival of the T-7A aircraft at Laughlin AFB and the commencement of T-7A training operations, DAF would monitor aircraft noise and collect additional flight data to update the AICUZ plan. Based on the results of the refined or validated projected noise footprints, DAF would coordinate with local, county, and city land use planners to update current planning documents.

4. Submitted Alternatives, Information, and Analysis

4.1 Public Involvement Summary

NOI. A notice announcing DAF's intent to prepare an EIS was published in the *Federal Register* on January 17, 2023. The NOI formally initiated the public scoping process and included a description of the Proposed Action and alternatives; a date and time for a virtual public scoping meeting; and an invitation to federal, state, and local agencies, elected officials, affected Native American tribes, and interested persons (e.g., public) to participate in the scoping process.

Scoping. CEQ regulations at 40 CFR § 1501.9 require a process called "scoping" to involve the public early in the assessment process. The scoping process is designed to solicit input from the public and interested agencies on the nature and extent of issues and impacts to be addressed and the methods by which potential impacts are evaluated.

In addition to the NOI, DAF published newspaper advertisements in English and Spanish in *The 830 Times* on January 25 and February 1, 2023; issued press releases to local media outlets and via Facebook posts; and mailed letters to potentially affected federal, state, and local agencies, elected officials, and Native American tribes to announce the scoping period. Each newspaper advertisement, press release, and letter briefly described the Proposed Action, solicited comments, and provided the date and time for the virtual public scoping meeting, which was held on February 8, 2023, at 5:30 p.m. central standard time to inform the public and answer questions about the proposal. The 30-day scoping period began on January 17, 2023, and officially ended on February 17, 2023, although input submitted after the close of the scoping period was still accepted.

Draft EIS Public Comment. DAF initiated a 60-day Draft EIS public comment period on November 9, 2023, when the Notice of Availability for the Draft EIS was published in the *Federal Register*. The public was notified of the Draft EIS public comment period through notices published in both English and Spanish in the *Del Rio & Eagle Pass News Leader* on November 12 and December 3, 2023, and *The 830 Times* on November 17 and 23, 2023; press releases to local media outlets and social media channels; and letters to potentially affected federal, state, and local agencies, elected officials, and Native American tribes.

DAF held an in-person and a virtual public hearing to foster greater community involvement. The in-person public hearing was held at the Grand Ballroom of the Ramada Hotel in Del Rio, Texas on December 5, and the virtual public hearing was held via Webex on December 11, 2023. A recording of the virtual public hearing was published on the project website. DAF invited the public, interested parties, and stakeholders to learn about and provide comments on the Proposed Action, alternatives, or issues related to environmental concerns at these public hearings and through review of the Draft EIS and project website. The Draft EIS public comment period ended on January 8, 2024.

4.2 Submitted Alternatives

Scoping. No additional alternatives were submitted during scoping.

Draft EIS Public Comment. No additional alternatives were submitted during the Draft EIS public comment period.

4.3 Information and Analysis

Scoping. Seven comment correspondences were received during scoping. These comment correspondences were from two federal agencies, one state agency, one Native American tribal nation, and three private citizens. **Table 4-1** provides a summary of the comments contained in the comment correspondences and DAF's responses.

Draft EIS Public Comment. Eleven comment correspondences were received during the Draft EIS public comment period. These comment correspondences were from FEMA, TCEQ, Texas SHPO, USEPA, Amphibian Refuge, and six private citizens. **Table 4-2** provides a summary of the comments contained in the comment correspondences and DAF's responses. **Appendix C** contains all comment correspondences received for the Draft EIS.

Table 4-1. Scoping Comments Received and DAF Responses

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
NPS	Noted the Proposed Action has the potential to impact night skies, air quality, threatened and endangered wildlife, visitor experience, and the acoustic environment of three NPS-managed properties: Amistad National Recreational Area, Big Bend National Park, and Rio Grande Wild and Scenic River. Requested changes to ambient and natural sound levels caused by changes in aircraft and operations be evaluated for the affected NPS-managed properties. Noise analysis should include supplemental metrics including single event metrics, and SEL and L_{max} metrics for locations beneath MTRs and MOAs near or within park boundaries. Requested DAF reconcile the new airplanes with what was committed to in the 2019 MTR Environmental Assessment. Requested additional language similar to FAA Order 1050.1F, acknowledging DNL measure does not adequately address the impacts of noise on visitors to areas within national parks, and supplemental metrics be included as described in FAA 1050.1F, the 2004 FAA Circular: Visual Flight Rules AC No. 91-36D, and the 2009 Defense Noise Working Group Guide to Using Supplemental Metrics. Noted if plaster, adobe, archaeological structures, and other sensitive resources may be impacted by the proposal, the NPS would request consultation pursuant to Section 106 of the NHPA. Requested this EIS provide the net change in air emissions from aircraft operations and the effect of these emissions on air quality. Noted that Big Bend National Park is a Class I area under the CAA. Requested mitigation to reduce impacts regarding night operations in SUA over Big Bend National Park or Rio Grande Wild and Scenic River, which could have potential effects on dark night skies. Noted that MTR IR-170 and Laughlin 1 MOA overlap Amistad Recreational Area, which hosts thousands of park visitors per year. Noted potential for highway traffic and noise to change and affect campgrounds at Governor's Landing campground and day use area.	Yes. **Section 3.12.1** provides impact analysis on NPS-managed properties. NPS requested during scoping that mitigation measures be developed for impacts on dark night sky at two NPS-managed properties, threatened and endangered species, and bats and migratory birds from aircraft strikes. However, the analysis performed for this EIS determined that no mitigation measures were required to address these impacts for the following reasons: • Consistent with current T-38C operations, the proposed after sunset T-7A operations would stay around the Laughlin AFB airfield and not enter the SUA, resulting in no impacts on dark night sky over Big Bend National Park or Rio Grande Wild and Scenic River (see **Section 3.12.1**). • Through consultation with USFWS, DAF determined the Proposed Action would have no effect on any special status species, including the Yellow-billed Cuckoo and Mexican long-nosed bat (see **Section 3.4.2.1**).

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
NPS (continued)	Requested that sensitive areas and noise sensitive times be included in this EIS to mitigate impacts to threatened and endangered species, including the Yellow-billed Cuckoo and Mexican long-nosed bat. Noted that identifying migration times and nocturnal activity, mitigations can be incorporated to avoid aircraft strike hazards to bats and migratory birds in potential MTRs and MOAs over NPS-managed properties. Requested this EIS include analysis of potential impacts to wilderness values at Big Bend National Park, especially as it relates to the effects of noise and overflights on the wilderness quality of outstanding opportunities for solitude or a primitive and unconfined type of recreation. Noted in wilderness and backcountry areas of national parks, the aircraft noise would be inconsistent with an opportunity for solitude and primitive recreation and expectations for natural quiet and remoteness from sights and sounds of aircraft.	• Bat and migratory bird aircraft strike potential would not be significantly greater than baseline because adherence to current flight safety guidelines and regulations, including the Laughlin AFB BASH Plan, would continue (see **Sections 3.4.2.1** and **3.9.2.1**). As such, no mitigation measures are necessary to address the NPS scoping comments.
FEMA	Requested the floodplain administrators for Bexar County, Texas, and the city of San Antonio, Texas, be contacted for the review and possible permit requirements for the proposal. Upon follow up by DAF, corrected the request to contact the floodplain administrators for Val Verde County and the city of Del Rio.	Yes. **Section 3.10.2.1** provides floodplain impacts. The requested floodplain administrators were notified by letter of the availability of the Draft EIS.
TCEQ	Noted the proposal is in Val Verde County, which is designated as attainment for NAAQS for all six criteria pollutants. Recommended this EIS address actions taken to prevent surface and groundwater contamination. Noted debris or waste disposal should be at an appropriate authorized disposal facility.	Yes. **Section 3.2** provides air quality impacts and discusses the attainment status of Val Verde County. **Section 3.10.2.1** provides impacts on surface and groundwater resources and includes measures to be taken to prevent contamination. **Section 3.8.2.1** discusses solid waste management and notes that wastes would be disposed of at a permitted facility.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
San Carlos Apache Tribe	Noted concurrence with report findings and no adverse effect. Deferred requests for additional information to the Fort Sill Apache and Mescalero Apache Tribes.	Yes. **Section 3.5.2.1** addresses Native American tribal nation consultation. DAF is consulting with the Fort Sill Apache and Mescalero Apache Tribes.
Private Citizen 1 (initials M.B.)	Provided a comment via the website unrelated to the Proposed Action concerning current aircraft noise at a nearby property.	No. Comment was unrelated to the Proposed Action. DAF addressed the comment outside of this EIS.
Private Citizen 2 (initials E.C.)	Provided a supportive comment in favor of the proposal and requested a printed copy of the public scoping materials be mailed.	No. Comment was an opinion that required no incorporation into the EIS. A hardcopy of the public scoping materials was mailed on February 6, 2023.
Private Citizen 3 (initials M.S.)	Asked two questions about aircraft operations. Asked if nighttime operations are currently authorized in the MTRs over west Texas and asked if the proposed nighttime operations would go over these areas.	No. DAF answered both questions via email correspondence on May 8, 2023.

Table 4-2. Draft EIS Public Comment Period Comments and DAF Responses

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
FEMA, Region 6	Requested the community floodplain administrator be contacted for review and possible permit requirements. If federally funded, the project needs to maintain compliance with EOs 11988 and 11990.	Yes. DAF notified the Val Verde County and city of Del Rio community floodplain administrators of the availability of the Draft EIS (see **Section 3.10.2.1**). **Section 3.10** describes EOs 11988 and 11990 and states that the MILCON/UMMC and FSRM projects would not occur within or near any potential wetland or the 100- or 500-year floodplains.
TCEQ	Noted Val Verde County is attainment/unclassifiable for the NAAQS for all six criteria pollutants and the General Conformity Rule is not applicable. Noted the Draft EIS addresses issues related to surface water and groundwater quality. Advised the management of industrial and hazardous waste (including waste treatment, processing, storage, and/or disposal) is subject to state and federal regulations. Advised that construction and demolition waste be sent for recycling or disposal at a facility authorized by TCEQ and special waste authorization may be required for the disposal of ACM.	Yes. **Section 3.2** addresses air quality and states the General Conformity Rule is not applicable. **Section 3.10** addresses impacts on surface water and groundwater quality. **Section 3.7.2.1** states construction contractors would be responsible for the disposal of hazardous wastes in accordance with federal and state laws. The installation's SPCC Plan, Facility Response Plan, ISWM Plan, and HWMP and federal and state laws and regulations would continue to be followed to lessen the potential for a release. **Section 3.8.2.1** notes to maximize landfill diversion rates, construction contractors would be required to recycle solid waste in accordance with applicable federal, state, and installation policies. Non-recyclable debris would be disposed of at a permitted waste facility. **Section 3.7.2.1** states all ACM-contaminated debris would be disposed of at a USEPA-approved landfill.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Texas SHPO	Acknowledged receipt of the Draft EIS. Requested that if the project changes, or if new historic properties are found, the installation contact the review staff.	Yes. **Section 3.5** describes historic properties, impacts on cultural resources, and consultation with the Texas SHPO. DAF will contact the Texas SHPO should any project changes occur or if new historic properties are discovered.
USEPA, Region 6	Requested this EIS explain how DAF plans to revegetate disturbed areas with native plants. Recommended a plan be developed to provide a written protocol to be followed and to explain how long-term success would be measured. Recommended reseeding disturbed areas as soon as practicably possible using native seed mixes designed for west Texas habitat and contacting the U.S. Department of Agriculture, Natural Resources Conservation Service to assist in defining the proper seed mixes. Noted the installation has an unlined stormwater drainage ditch that discharges into Sacatosa and Zorro creeks, which eventually lead to the Rio Grande. Noted the stormwater drainage ditch was exposed to PFAS pollution from firefighting training. Requested DAF identify measures to be implemented to prevent future PFAS pollution to waterbodies on or near the installation. Noted the Draft EIS included a CWA and NPDES regulatory background discussion but lacked information regarding discharges of stormwater from construction sites. Noted all construction activities causing disturbance of 1 acre or greater are required to develop a SWPPP and obtain NPDES permit coverage via the Construction General Permit. Advised that TCEQ is the NPDES permitting authority for Laughlin AFB. Requested the EIS include text indicating coordination with TCEQ would occur to provide assurance that NPDES permitting requirements will be satisfied.	Yes. **Section 3.4.2.1** states that vegetation surrounding the new construction would be restored with native vegetation, to the maximum extent possible, as part of landscaping efforts following construction. Replacement vegetation would be planted as soon as possible following construction using seed mixtures suitable for the local climate and in accordance with the installation's INRMP. **Section 3.7.2.1** states no impacts from PFAS are anticipated. None of the MILCON/UMMC or FSRM projects would be sited within the footprint of the three AFFF areas; therefore, no potentially PFAS-contaminated soil would be disturbed. Construction coinciding with PFAS-contaminated groundwater would not require excavation to the depth of groundwater. DAF has developed measures to prevent future PFAS pollution, but inclusion of these measures in this EIS is outside of the scope of this project. **Sections 3.8.2** and **3.10.2** note that in accordance with the NPDES stormwater program, the installation would obtain a Construction General Permit from TCEQ for projects where 1 acre or more would be disturbed and construction would be governed by SWPPPs.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
USEPA, Region 6 (continued)	Noted the Draft EIS stated less than significant, adverse impacts could occur to environmental justice populations from increased noise and air emissions. Noted increased noise may increase classroom learning interference and be unavoidable. Noted all alternatives could have a disproportionately adverse impact on environmental justice and sensitive receptor populations. Recommended DAF coordinate and engage with environmental justice and sensitive receptor populations because unavoidable adverse impacts would occur to these communities. Recommended DAF plan to mitigate or address noise and air emissions.	**Section 3.11.2** revised to remove wording indicating less than significant impacts on environmental justice populations. Text revised to describe these impacts as unavoidable, disproportionately high and adverse. **Section 3.3** includes an analysis of classroom learning interference. **Section 3.11.1** describes DAF's efforts to contact the affected environmental justice communities to inform them of the Proposed Action and solicit meaningful feedback. **Sections 3.2** and **3.3** outline measures to mitigate and minimize adverse impacts on air quality and noise.
Amphibian Refuge	Advised that amphibian populations are declining worldwide and are experiencing high extinction rates due to habitat loss, chytrid fungus, pollutants, pesticides, and climate change. Noted amphibians are the most threatened class of vertebrate and merit special attention in this EIS. Noted this EIS states Laughlin AFB provides habitat for five amphibian species and impacts on amphibians would be reduced by avoiding or minimizing habitat reduction. Noted that it will be important to implement the BMPs described in the Laughlin AFB SPCC Plan to minimize water quality impacts, such as fuel releases, that would affect amphibians. Recommended designating protected amphibian habitat areas and periodically monitoring amphibian populations to ensure that activities at the installation do not reduce amphibian populations.	Yes. **Section 3.4.1** states Laughlin AFB generally lacks suitable aquatic habitat for amphibians, although the five referenced frog and toad species have been identified on the installation during surveys. **Section 3.4.2.1** states the proposed MILCON/UMMC and FSRM projects would occur on either impervious cover, existing structures, or maintained, nonnative grasslands and lawns. No activities are proposed in aquatic or semi-aquatic environments where amphibians are common. As such, no impacts on amphibians would occur, and the designation of protected amphibian habitat areas for the Proposed Action is unnecessary. **Section 3.7.2.1** states jet fuel would continue to be managed in accordance with the Laughlin AFB SPCC Plan and other management plans to reduce the potential for a fuel release and contamination of surface water.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Private Citizen 1 (initials J.H.)	Noted existing aircraft noise is very bothersome and is destroying peace and tranquility. Believes FAA and Congress approved the Next Generation Air Transportation System without proper environmental review. Noted aircraft flights are polluting marine sanctuary, such as Monterey Bay in California. Noted CO_2, SO_X, NO_X, PM_{10}, and $PM_{2.5}$ air emissions, heavy metals, and noise are poisoning life under the flight paths causing illness. Noted the presence of three municipal airports within 30 minutes of the commentor's area. Estimates aircraft overflights are heard every 3 to 5 minutes at night. Has contacted FAA in past with these concerns but has not been satisfied with their analysis and response. Feels FAA has not considered better alternatives for airspace management.	Yes. Although this comment does not directly regard the Proposed Action, its relevant themes were addressed in this EIS. **Section 3.3** describes existing noise conditions, noise impacts from the Proposed Action, and includes an analysis of individual aircraft overflight noise and assessment of the potential for speech interference, classroom learning interference, sleep disturbance, hearing loss, and damage to structures. **Section 3.10.2** addresses impacts on water quality. Monterey Bay is more than 1,000 miles from the Proposed Action's region of impact. **Section 3.2.2** describes the air quality impacts and estimates CO_2, SO_X, NO_X, PM_{10}, and $PM_{2.5}$ air emissions. **Section 2.2.2.1.2** states the Proposed Action would not use any airfields (including municipal airports) other than Laughlin AFB to perform T-7A aircraft operations and no changes to SUA configurations (i.e., size, shape, or location) would occur. Comments regarding the Next Generation Air Transportation System and the FAA's management of airspace are unrelated to the Proposed Action and are not addressed by this EIS.
Private Citizen 2 (initials A.F.)	Asked if the Proposed Action would impact employment at the installation.	Yes. **Section 2.2.2.1.3** provides the estimated changes to personnel and dependents from the Proposed Action. The steady state personnel requirement at Laughlin AFB is projected to be approximately 60 positions fewer than the current baseline staffing level.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Private Citizen 3 (initials D.D.)	Noted the public hearing presentation stated the noise levels for Alternatives 1 and 2 are negligible. Asked if DAF will reach out to the populations that reside within the 65 dBA noise contours to inform them of the future changes. Noted the public hearing presentation stated environmental justice populations (minority and low income) would be impacted, but the impacts would not be significant. Noted if the impacts were not discussed with the affected environmental justice populations, then the less than significant impacts conclusion may not be accurate. Asked to be added to the project mailing list.	Yes. **Section 3.11.1** describes DAF's efforts to contact the affected environmental justice communities and the populations that reside within the 65 dBA noise contours to inform them of the Proposed Action and solicit meaningful feedback. The feedback received was considered in developing the impact conclusions. **Section 3.11.2** revised to removed wording indicating significant or less than significant impacts on environmental justice populations. Text revised to describe these impacts as unavoidable, disproportionately high and adverse. Commentor added to project mailing list.
Private Citizen 4 (initials L.B.)	Noted Big Bend is one of the last sanctuaries for wide open spaces in Texas. Requested DAF not destroy the last peaceful place to get away from noise with additional aircraft. Noted people use this area at night for stargazing.	Yes. **Section 3.12.1** addresses noise and dark night sky impacts to National Park Service-managed properties, including Big Bend National Park. The SUA in the Big Bend region already is used for operations with the T-38C, and the Proposed Action would not change the configuration (e.g., shape, size, altitudes) or active times of this SUA. Low level flight activity within this area would be similar to existing conditions and would not adversely change the soundscape or wilderness value of the region. After sunset T-7A operations would stay around the Laughlin AFB airfield and not enter the SUA in the Big Bend region, resulting in no changes to dark night sky. The response to Private Citizen 6's comment correspondence contains further detail regarding noise impacts in the Big Bend region.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Private Citizen 5 (initials intentionally omitted to protect their privacy)	Advised they reside on 158 acres immediately past the runway on the south side of the installation, and they experience a lot of noise at their property. Feels they and their dogs may have experienced hearing loss. Stated if noise is going to get worse, then this is going to be a problem. Noted that when the wind is blowing from the north, the smell of diesel exhaust is so strong they cannot go outside. Asked what can be done to protect their residence from increased noise and air emissions. Noted the T-7A will only have one engine. Asked what are the chances of a crash from a bird strike during landing or takeoff. Feels the single engine configuration of the T-7A may be more prone to a crash than a double engine aircraft of the T-38C, and this crash potential represents a danger to their lifestyle. Asked if DAF plans to expand the installation. Requested more information to understand the noise and air emissions situation.	Yes. DAF has investigated this commenter's residence in particular. **Section 3.3** contains a detailed analysis of noise impacts including PHL at the commenter's residence. **Section 3.9.2** describes flight safety impacts. Compared to the T-38C, the increased T-7A operations would result in an increased potential for BASH incidents and other mishaps; however, this potential would not be significantly greater because flight safety guidelines and regulations, including the BASH program, would continue to be followed. DAF has concluded the single engine configuration of the T-7A is not more prone to a mishap than the double engine configuration of the T-38C. DAF has no plans at this time to expand Laughlin AFB. Commentor added to project mailing list.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Private Citizen 6 (initials M.S.)	Provided multiple written and verbal correspondences throughout the public comment period. Asked if overnight flight operations would occur in the area west of Big Bend National Park, south of Fort Davis and east of Fort Hancock in Texas. Asked if overnight flight operations would occur above Big Bend National Park. Asked how DAF is informing impacted communities of the availability of the Draft EIS. Provided commentary on the effectiveness of DAF's public notices. Requested clarification on proposed changes for Big Bend National Park. Expressed concern about noise impacts to the Big Bend region, including to Big Bend National Park, because the area has little existing aircraft traffic, a uniquely quiet soundscape, and prevalence for silence. Noted the absence of existing background noise makes increased noise more impactful and difficult to measure. Feels aircraft noise may project farther than the SUA boundaries in such a quiet environment. Cited studies that show the public has become more sensitive to aircraft noise. Noted the lack of existing noise in the Big Bend region provides an ideal sensory friendly environment for individuals with noise sensitivity conditions, such as autism, and increased aviation noise from the Proposed Action, particularly at night, would be more noticeable in this region and more impactful to noise sensitive populations than the average person.	Yes. The geographical extent of T-7A operations is depicted on **Figure 1-3**. **Sections 2.2.2.1.2** and **3.12.1** state after sunset T-7A operations would stay around the Laughlin AFB airfield and not enter the SUA in the Big Bend National Park region. **Section 4** describes DAF's public outreach efforts. The proposed T-7A operations in the Big Bend National Park region would occur within existing SUA that has a defined location, floor and ceiling height, and active time. No changes to the configuration or active time of this SUA is proposed. This SUA already is used for operations with the T-38C, and operations with the T-7A may increase by 25 percent for Alternatives 2 and 3. No changes are proposed to the frequency of operations in this SUA from other users and aircraft types. **Sections 3.3.2.1.2**, **3.3.2.2.2**, and **3.12.1** contain an analysis of noise impacts to the Big Bend region. Modeling found T-7A aircraft noise in this region would not exceed 65 dBA at any location on the ground. DAF recognizes the DNL metric may not adequately address noise impacts in such an austere environment, so the SEL and L_{MAX} metrics also were considered. The fourth row of **Table 3-28** demonstrates the T-7A has a slightly quieter SEL and identical L_{MAX} at 500 feet AGL compared to the T-38C. This means noise impacts from low level flight activity within this SUA would be similar to existing conditions and would not adversely change the soundscape of the Big Bend region.

Source	Summary of Comment Correspondence	Addressed in EIS? If Yes, Location in EIS. If No, Rationale.
Private Citizen 6 (initials M.S.) (continued)	Cited studies showing shortcomings of noise assessments to properly address aviation noise. Feels the DNL and dBA metrics do not accurately measure annoyance and loudness. Noted low frequency noise can damage vestibular organs.	**Section 3.3** states the Department of the Navy submitted a report to Congress in November 2021 that addresses the accuracy of the NOISEMAP modeling results. The report concluded the DoD approved noise models operate as intended and provide an accurate prediction of noise exposure levels from aircraft operations for use in impact assessments and long-term land use planning. **Section 3.3** contains an analysis of PHL.

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