FINAL

492nd SPECIAL OPERATIONS WING BEDDOWN AT DAVIS-MONTHAN AIR FORCE BASE ENVIRONMENTAL IMPACT STATEMENT

Prepared for:
Air Force Special Operations Command

March 2025

Privacy Advisory

This Final Environmental Impact Statement (EIS) has been provided in accordance with the National Environmental Policy Act as amended by Public Law 118-5, Fiscal Responsibility Act of 2023 (42 United States Code Section 4321 et seq.) and with 32 Code of Federal Regulations Part 989, *Environmental Impact Analysis Process (EIAP)*.

The EIAP provided an opportunity for public input on United States Department of the Air Force (DAF) decision-making, allowed the public to offer input on alternative ways for the DAF to accomplish what it is proposing, and solicited comments on the DAF's analysis of environmental effects.

Public input allows the DAF to make better-informed decisions. Letters or other written or verbal comments provided on the Draft EIS are published in this Final EIS. Providing personal information is voluntary. Private addresses were compiled to develop a stakeholders inventory. However, only the names of the individuals that made comments and specific comments are disclosed. Personal information, home addresses, telephone numbers, and email addresses are not published in the Final EIS.

Section 508 of the Rehabilitation Act of 1973

The digital version of this EIS and its project website are compliant with Section 508 of the Rehabilitation Act of 1973, because assistive technology (e.g., "screen readers") can be used to help the disabled to understand these electronic media. Due to the nature of graphics, figures, tables, and images occurring in the document, accessibility may be limited to a descriptive title for each item.

Cover Sheet

a. ***Responsible Lead Agency*:** Department of the Air Force (DAF)

b. ***Cooperating Agencies*:** None

c. ***Title:*** 492nd Special Operations Wing Beddown at Davis-Monthan Air Force Base, Arizona, Environmental Impact Statement

d. ***Inquiries*:** Information regarding the Environmental Impact Statement (EIS) is available on the website at www.492sow-beddown-eis.com. Questions can also be directed to 492 SOW Beddown EIS, 13397 Lakefront Drive, Suite 100, Earth City, MO 63045. For other inquiries, please contact Mr. Nicolas Post, NEPA Project Manager via email at afcec.czn.nepacenter@us.af.mil or by phone at 210-925-3516.

e. ***Designation*:** Final EIS

f. ***Abstract*:** This Final EIS has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the 492nd Special Operations Wing (492 SOW) Beddown. The 492 SOW, located at Hurlburt Field, Florida, is being transformed into an Air Force Special Operations Command (AFSOC) Power Projection Wing (PPW) that is proposed to be relocated to Davis-Monthan Air Force Base (AFB), Arizona. This EIS analyzes the environmental consequences of the beddown of the 492 SOW to Davis-Monthan AFB. AFSOC's PPW would include the 492 SOW, 492nd Theater Air Operations Squadron, 6th Special Operations Squadron, 6th Special Operations Aircraft Maintenance Squadron, an unnamed MC-130J Special Operations Squadron, an unnamed MC-130J Special Operations Aircraft Maintenance Squadron, 319th Special Operations Squadron, 21st Special Tactics Squadron, and the 22nd Special Tactics Squadron. Air Combat Command (ACC) will have a geographically separated Intelligence Squadron (IS) under the 361st Intelligence, Surveillance and Reconnaissance Group. Throughout this document, these units are included in the phrase "492 SOW Beddown." The 492 SOW Beddown includes both OA-1K and MC-130J aircraft and would occur over the next 6 years. The Proposed Action would include the construction, renovation and demolition of facilities at Davis-Monthan AFB, as necessary to support the 492 SOW Beddown. AFSOC aircrews would use airspace over areas in Arizona and New Mexico, including special use airspace. No new special use airspace would be created and no modifications to existing special use airspace dimensions or altitudes are being proposed due to this Programmatic Basing Action. Under the No Action Alternative, the 492 SOW Beddown would not occur at Davis-Monthan AFB and there would be no new AFSOC mission personnel or ACC IS personnel at Davis-Monthan AFB. Potential impacts could include impacts to noise, air quality, soil and water resources, biological and cultural resources, socioeconomics, infrastructure, and hazardous materials and hazardous waste. The EIS also identifies potential mitigation measures and best management practices that the DAF could implement to minimize or offset potential adverse impacts.

g. ***Final EIS:*** During the 45-day public review and comment period for the Draft EIS, the DAF received 19 total comment submittals containing 103 substantive comments. Some local citizens and agencies expressed concern about the potential noise impacts on local communities and historic and natural landmarks, as well as the frequency of night operations.

h. ***Note:*** Procedurally, this EIS was developed in compliance with the National Environmental Policy Act (NEPA), as amended by Public Law 118-5, Fiscal Responsibility Act of 2023 (42 United States Code 4321 et seq.), the DAF's *Environmental Impact Analysis Process* (32 Code of Federal Regulations Part 989), and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provision of NEPA (40 Code of Federal Regulations Parts 1500–1508) of July 2024. Executive Order (EO) 14154 of January 20, 2025, *Unleashing American Energy*, revoked EO 11991, *Relating to Protection and Enhancement of Environmental Quality*, which amended EO 11514, *Protection and Enhancement of Environmental Quality*. While CEQ has provided notice that it intends to rescind the CEQ NEPA regulations, the DAF has accepted in this instance CEQ's suggestion to voluntarily rely on the CEQ Regulations to allow for timely decision-making to meet critical mission requirements.

i. ***EIS Identification Number:*** EISX-007-57-UAF-1728379504.

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SUMMARY

S.1 INTRODUCTION

This Environmental Impact Statement (EIS) has been prepared in accordance with the National Environmental Policy Act (NEPA) to analyze the potential environmental consequences of the beddown of the 492nd Special Operations Wing (492 SOW). The 492 SOW, located at Hurlburt Field, Florida, is being transformed into an Air Force Special Operations Command (AFSOC) Power Projection Wing (PPW) that is proposed to be relocated to Davis-Monthan Air Force Base (AFB), Arizona. This EIS will analyze the environmental consequences of the beddown of the 492 SOW to Davis-Monthan AFB.

AFSOC's PPW will include the 492 SOW, 492nd Theater Air Operations Squadron, 6th Special Operations Squadron, 6th Special Operations Aircraft Maintenance Squadron, an unnamed MC-130J Special Operations Squadron, an unnamed MC-130J Special Operations Aircraft Maintenance Squadron, 319th Special Operations Squadron, 21st Special Tactics Squadron, and the 22nd Special Tactics Squadron. Air Combat Command (ACC) will establish a geographically separated Intelligence Squadron (IS) at Davis-Monthan AFB under the 361st Intelligence and Surveillance Reconnaissance Group. Throughout this document, all these units are included in the phrase "492 SOW Beddown." The 492 SOW Beddown includes both OA-1K and MC-130J aircraft. The 492 SOW Beddown is proposed to occur over the next 6 years.

S.2 PURPOSE OF AND NEED FOR ACTION (EIS CHAPTER 1.0)

The purpose of the Proposed Action is to create co-located AFSOC and ACC units that have the resources required to optimize the DAF's special operations and special warfare forces while maximizing AFSOC's capabilities as a PPW that provides United States Special Operations Command and combatant commands specialized airpower against the entire range of threats to the United States and our allies and partners.

The need for the Proposed Action is to transform AFSOC to properly prepare, prevent, and prevail against any adversary in today's uncertain environment. The Proposed Action is also needed to meet the National Defense Strategy (NDS) through the establishment of a continental United States AFSOC PPW.

S.3 INTERIM CONDITIONS

In addition to the proposed alternatives, for this EIS, it is important to understand other actions occurring at Davis-Monthan AFB during the same timeframe. Also occurring at the same time as the 492 SOW Beddown is the nationwide retirement of the A-10s. The retirement of A-10s is planned to occur in two phases at Davis-Monthan AFB. Phase 1 includes the retirement of all A-10 aircraft associated with the 354th Fighter Squadron and a portion of the A-10s associated with the 357th Fighter Squadron from Davis-Monthan AFB. Phase 2 includes the retirement of the remaining A-10s from Davis-Monthan AFB (DAF, 2024a). Therefore, the interim conditions for this EIS are defined as the timeframe between the Phase 1 and planned Phase 2 A-10 retirements, which reflects the continued operations of the remaining A-10s not included in the Phase 1 retirement, along with the other ongoing rotary- and fixed-wing aircraft missions.

S.4 OVERVIEW OF THE PROPOSED ALTERNATIVES

S.4.1 No Action Alternative (EIS Section 2.1)

The No Action Alternative for this EIS means that AFSOC's 492 SOW Beddown would not occur at Davis-Monthan AFB. Additionally, ACC's IS personnel would not come to Davis-Monthan AFB. However, the planned Phase 2 of the A-10 retirement would be implemented, to include associated personnel, airfield operations, and airspace and range utilization. Ongoing and currently planned activities, missions, and programs, including associated aircraft operations previously analyzed in separate NEPA documents, which are included in the interim conditions, would continue to occur at Davis-Monthan AFB. The No Action Alternative is the environmentally preferrable alternative.

S.4.2 Proposed Action Alternative (EIS Section 2.2)

Implementation of the Proposed Action Alternative would involve changes in personnel, airfield operations, airspace and range utilization, and facilities and infrastructure at Davis-Monthan AFB. The Proposed Action Alternative addresses several actions at Davis-Monthan AFB in support of the 2022 NDS. One of the actions includes relocating the 492 SOW (to include personnel and aircraft) from Hurlburt Field, Florida to Davis-Monthan AFB. Another action involves the transfer of additional AFSOC units and personnel to Davis-Monthan AFB that will align under the 492 SOW from Duke Field in Florida, Cannon AFB in New Mexico, Pope Field at Fort Bragg in North Carolina, and Joint Base Lewis-McChord in Washington. This also includes personnel associated with Special Tactics and Special Operations Theater Air Operations Squadrons. The remaining action is the activation of an ACC IS, which involves the relocation of personnel from Hurlburt Field in Florida and Cannon AFB in New Mexico to Davis-Monthan AFB.

Although not part of the Proposed Action Alternative, changes resulting from the planned and eventual Phase 2 of the A-10 retirement from Davis-Monthan AFB is considered in the analysis.

S.4.2.1 Personnel (EIS Section 2.2.1)

The DAF estimates that the 492 SOW Beddown would require approximately 2,300 military, civilian and contractor personnel. Using DAF estimates, there would be approximately 2,543 dependents associated with military personnel. However, after the planned Phase 2 A-10 retirement and implementation of the Proposed Action Alternative, there would be a net increase of approximately 1,317 military personnel and 1,380 associated dependents.

S.4.2.2 Airfield Operations (EIS Section 2.2.2)

All units under the 492 SOW would conduct approximately 20,040 aircraft operations per year from Davis-Monthan AFB. Under interim conditions, A-10 pilots currently conduct 24,068 of the total 63,968 aircraft operations occurring per year at Davis-Monthan AFB. After the planned Phase 2 A-10 retirement and implementation of the Proposed Action Alternative, there would be a net decrease of 4,028 operations per year, for a total of 59,940 annual operations.

Davis-Monthan AFB quiet hours policies would also apply to the proposed AFSOC aircrews (i.e., OA-1K and MC-130J) under the Proposed Action Alternative. Quiet hours are observed from 10:30 P.M. to 6:00 A.M. For base-assigned C-130 (HC-130J Model) and HH-60 aircraft, arrivals are allowed from 10:30 P.M. to midnight between October 1 and February 28 and are allowed from 10:30 P.M. to 2:00 A.M. from March 1 to September 30. During these periods, aircrews would make one approach to a full stop to comply with the base quiet hours. The only change to Davis-Monthan AFB local flying

guidance proposed at this time is to include the proposed AFSOC aircraft (i.e., OA-1K and MC-130J) in the list of aircraft that includes HC-130J and HH-60 aircraft currently operating at the base. Any deviations from the quiet hours policies would require approval of by the 355th Operations Group Commander.

A-10 pilots based at Davis-Monthan AFB conduct approximately 1,037 annual aircraft operations between 10:00 P.M. and 7:00 A.M. under interim conditions. These operations would no longer occur after the planned Phase 2 A-10 retirement. Certain AFSOC aircraft training mission requirements must also be completed after dark and some aircraft operations would extend into the late night. Aircrews from the 492 SOW would conduct approximately 1,964 aircraft operations per year (i.e., approximately 10 percent of total annual proposed AFSOC operations) between 10:00 P.M. and 7:00 A.M., resulting in a net increase of approximately 927 aircraft operations per year at Davis-Monthan AFB during these times.

AFSOC aircrews based at Davis-Monthan AFB would also use other military airfields and municipal airfields to support mission training requirements. OA-1K aircrews could use towered and non-towered airfields within 100 miles of Davis-Monthan AFB. Aircraft operations at other airfields would occur on an occasional basis. AFSOC aircrews (i.e., OA-1K and MC-130J) would comply with all air traffic control guidance and local flight procedures while operating at other airfields.

S.4.2.3 Airspace Use (EIS Section 2.2.3)

Under the Proposed Action Alternative, no new special use airspace would be created and there would be no modifications to existing special use airspace dimensions or altitudes.

Implementation of the Proposed Action Alternative compared to interim conditions would result in a decrease of 8,828 annual aircraft operations in the existing Military Operations Areas (MOAs) and Restricted Areas shown on Figure 2-2. Implementation of the Proposed Action Alternative compared to No Action Alternative would result in an increase of 3,040 annual aircraft operations. The No Action Alternative is a potential future scenario that has not yet been experienced because the A-10s are still operating at the installation.

AFSOC aircrews would conduct training in airspace after dark, with some operations occurring during the late night. Under interim conditions, A-10 pilots based at Davis-Monthan AFB conduct approximately 593 operations per year between 10:00 P.M. and 7:00 A.M. in the MOAs and Restricted Areas shown on Figure 2-2. These operations would no longer occur after the planned Phase 2 of the A-10 retirement. Under the Proposed Action, AFSOC aircrews would fly approximately 957 operations annually during this late-night period, which is 364 more airspace operations than under interim conditions between 10:00 P.M. and 7:00 A.M. (Table 3-32).

AFSOC aircrews would occasionally use other airspace, including the combat search and rescue low altitude tactical navigation area and various military training routes as shown on Figure 13 of the Noise Supporting Document available on the project website at www.492sow-beddown-eis.com. AFSOC aircrews would comply with flight procedures established for these existing airspaces.

S.4.2.4 Range Use (EIS Section 2.2.4)

Live munitions training would be conducted by air and ground units at existing ranges. The OA-1K (like the A-10) can carry and use air-to-ground ordnance (e.g., inert 2.75-inch rockets), and aircrews would require training in their use. OA-1K aircrews would use the existing Barry M. Goldwater Range for air-to-ground ordnance training. MC-130J aircrews would not conduct air-to-ground weapons training.

Implementation of the Proposed Action Alternative compared to interim conditions would result in a decrease of 768,185 air-to-ground munitions used per year.

Similar to A-10 pilots, AFSOC aircrews (OA-1K and MC-130J) would use chaff and flares as defensive countermeasures in training. Flares are one of the defensive mechanisms dispensed by military aircraft to avoid attack by enemy aircraft and air defense systems. Defensive countermeasures would only be used in areas approved for their use, and flares would be used above current minimum altitudes. Compared to interim conditions, the Proposed Action Alternative would result in a decrease of 45,680 chaff and flare drops per year.

Ground unit training by the Special Tactics Squadron (STS) would be conducted at existing facilities on the Davis-Monthan AFB Combat Arms Training and Maintenance range or at suitable existing facilities off base. Such facilities could include–but would not be limited to–Fort Huachuca and Barry M. Goldwater Range, which are used on a regular basis for similar live-fire training. The STS unit training would not result in any exceedances of training range usage, use of new ammunition types, or require creation of new ranges at this time.

S.4.2.5 Facilities and Infrastructure (EIS Section 2.2.5)

Construction of 9 new facilities (approximately 408,000 square feet), renovation or repair of 28 facilities (approximately 585,000 square feet), and demolition of 2 facilities (approximately 14,000 square feet) would be required to support the 492 SOW Beddown. Construction activities would take place on previously disturbed land adjacent to existing buildings and infrastructure. The planned areas of construction depicted in EIS Figure 2-3 reflect the proposed facility sites including the 492 SOW West Campus and the 492 SOW East Campus, as well as areas designated for construction support activities such as a construction access road, fence, and contractor laydown areas.

S.5 COMPARISON OF ENVIRONMENTAL CONSEQUENCES (EIS Section 2.3.1)

This EIS focuses on those resources potentially impacted by implementation of the proposed 492 SOW Beddown and the No Action Alternative. The environmental resources evaluated include acoustic environment, air quality, soil and water resources, biological resources, cultural resources, socioeconomics, infrastructure, and hazardous materials and hazardous waste. Implementation of either the No Action Alternative or the Proposed Action Alternative would not result in significant short- or long-term impacts to any environmental resources. Section 2.3.1, Table 2-8, includes a detailed comparison of impacts between the two alternatives.

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
354 FS	354th Fighter Squadron
357 FS	357th Fighter Squadron
47 FS	47th Fighter Squadron
492 SOW	492nd Special Operations Wing
ACAM	Air Conformity Applicability Model
ACC	Air Combat Command
ACM	asbestos-containing material
ADEQ	Arizona Department of Environmental Quality
AFB	Air Force Base
AFI	Air Force Instruction
AFFF	Aqueous Film Forming Foam
AFGM	Air Force Guidance Memorandum
AFMAN	Air Force Manual
AFSOC	Air Force Special Operations Command
AGE	aerospace ground equipment
AGL	above ground level
AMARG	Aerospace Maintenance and Regeneration Group
ANSI	American National Standards Institute
APE	Area of Potential Effect
APZ	accident potential zone
AST	aboveground storage tank
AT-802	Air Tractor 802
AZDA	Arizona Department of Agriculture
AZGFD	Arizona Game and Fish Department
AZPDES	Arizona Pollutant Discharge Elimination System
BASH	Bird/Wildlife Aircraft Strike Hazard
BCR	Bird Conservation Region
BMGR	Barry M. Goldwater Range
BMP	best management practice
C&D	construction and demolition
CAA	Clean Air Act
CATM	Combat Arms Training and Maintenance
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent

CWA	Clean Water Act
DAF	Department of the Air Force
dB	decibels
DNL	day-night average sound level
DNWG	Department of Defense Noise Working Group
DoD	Department of Defense
EA	Environmental Assessment
EESOH-MIS	Enterprise Environmental, Safety, and Occupational Health Management Information System
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FY	fiscal year
GHG	greenhouse gas
GPD	gallons per day
GWP	global warming potential
HAP	hazardous air pollutant
HDMS	Heritage Data Management System
HWMP	Hazardous Waste Management Plan
I-10	Interstate 10
I-19	Interstate 19
ICRMP	Integrated Cultural Resources Management Plan
IDP	Installation Development Plan
IEMP	Installation Emergency Management Plan
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IS	Intelligence Squadron
ISWMP	Integrated Solid Waste Management Plan
JLUS	Joint Land Use Study
K-8	kindergarten through eighth grade
L_{dnmr}	onset rate-adjusted day-night average sound level
LBP	lead-based paint
LED	light-emitting diode
L_{eq}	equivalent noise level
$L_{eq(SD)}$	equivalent noise levels during the school day
LID	Low Impact Development
L_{max}	maximum noise level
LTO	landing and takeoff
MCF	million cubic feet
MGD	million gallons per day

MILCON	military construction
MOA	Military Operations Area
MSA	Munitions Storage Area
mtpy	metric tons per year
MVA	megavolt ampere
NAAQS	National Ambient Air Quality Standards
NCD	Noise Control District
NDS	National Defense Strategy
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NOx	nitrogen oxides
NPS	National Park Service
NRHP	National Register of Historic Places
O_3	ozone
O&M	operations and maintenance
OWS	oil-water separator
pCi/L	picocuries per liter
PDEQ	Pima County Department of Environmental Quality
PEP	Project Evaluation Program
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
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
PPW	Power Projection Wing
PSD	Prevention of Significant Deterioration
R-2303	Restricted Area 2303
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SECAF	Secretary of the Air Force
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOF	Special Operations Forces
SPCC	Spill Prevention, Control, and Countermeasures
STS	Special Tactics Squadron
SUA	special use airspace
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property

tpy	tons per year
U.S.	United States
USC	United States Code
UST	underground storage tank
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
WOTUS	Waters of the United States

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The United States (U.S.) Department of the Air Force (DAF) is proposing the beddown of the 492nd Special Operations Wing (492 SOW). The 492 SOW, located at Hurlburt Field, Florida, is being transformed into an Air Force Special Operations Command (AFSOC) Power Projection Wing (PPW) that is proposed to be relocated to Davis-Monthan Air Force Base (AFB), Arizona (Figure 1-1). AFSOC's PPW will include the 492 SOW, 492nd Theater Air Operations Squadron, 6th Special Operations Squadron, 6th Special Operations Aircraft Maintenance Squadron, an unnamed MC-130J Special Operations Squadron, an unnamed MC-130J Special Operations Aircraft Maintenance Squadron, 319th Special Operations Squadron, 21st Special Tactics Squadron, and the 22nd Special Tactics Squadron. Air Combat Command (ACC) will establish a geographically separated Intelligence Squadron (IS) at Davis-Monthan AFB under the 361st Intelligence, Surveillance and Reconnaissance Group. Throughout this document, all these units are included in the phrase "492 SOW Beddown." The 492 SOW Beddown includes both OA-1K and MC-130J aircraft.

1.2 PURPOSE OF ACTION

The purpose of the Proposed Action Alternative is to create co-located (AFSOC and ACC) units that have the resources required to optimize the DAF's special operations and special warfare forces to support the National Defense Strategy (NDS), while maximizing AFSOC's capabilities as a PPW that provides United States Special Operations Command and combatant commands specialized airpower against the entire range of threats to the United States and our allies/partners.

AFSOC enables the joint force by delivering mission capabilities across the spectrum of competition and conflict. To better complete this mission and align with and implement the goals of the 2022 NDS, AFSOC is transforming the 492 SOW into a PPW. The PPW will encompass all of AFSOC's mission capabilities (Special Operations Forces [SOF] strike; SOF mobility; SOF intelligence, surveillance, and reconnaissance; and SOF air-to-ground integration) with the ability to rapidly deploy and sustain power in support of the NDS. This additional PPW would enable the DAF to regionally focus each PPW on a geographic combatant commander. This allows AFSOC to further diversify its locations to reduce mission impacts, while maintaining the ability to rapidly respond to Executive Office Presidential-directed missions on very tight timelines.

1.3 NEED FOR ACTION

As stated in the 2022 NDS, the global security environment has fundamentally changed. Adversaries now pose more dangerous challenges to safety and security of our forces even as terrorist threats persist.

The need to consider the 492 SOW Beddown stems from 2023 AFSOC strategic guidance, which aligns with the 2022 NDS. The strategic guidance emphasizes the AFSOC mission to enable the joint force by delivering AFSOC mission capabilities across the spectrum of competition and conflict.

The 492 SOW is currently located at Hurlburt Field with several other AFSOC assets, which presents challenges involving mission support, physical infrastructure, and weather. Mission support challenges consist of deconflicting shared training airspace and ranges, which are at a premium due to high demand. Challenges involving physical infrastructure include deconfliction of space for development of facilities to support the PPW and issues with installation accessibility that could limit the ability of units to deploy rapidly. Weather-related challenges include the potential for mission impacts that have the potential to damage multiple co-located AFSOC assets.

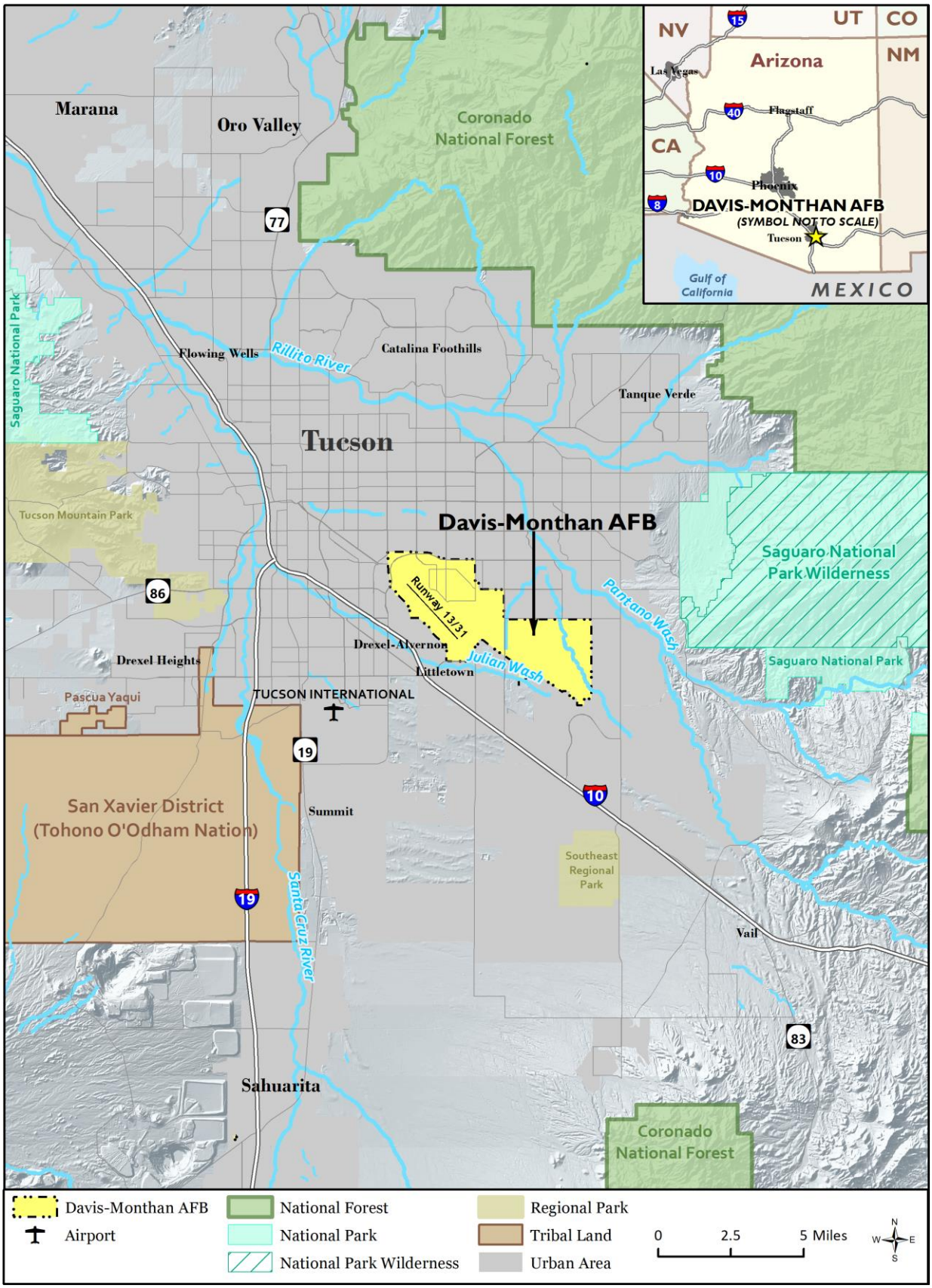


Figure 1-1. Regional Location of Davis-Monthan AFB

The 492 SOW requires geographical diversity of physical landscapes for training operations. AFSOC training is enhanced by presenting operators with new landscapes, terrain, and areas devoid of human influence, where they are required to adapt their skills to new conditions they encounter. AFSOC currently faces regional concerns related to natural disasters and real-world crises that have the potential to limit readiness. The optimization of missions across installations enhances readiness and provides special operators with diverse areas to train. Lastly, optimizing size and capabilities of units allows for more cultivated relationships with both community and joint partners.

AFSOC special operators require a continuous cycle of learning that ensures a margin of advantage over our adversaries, allowing them to create competitive, asymmetrical advantages, while remaining ready to respond to global crises within the theater of operation at a moment's notice.

1.4 BACKGROUND

Based on the underlying purpose and need, through a deliberative process involving collaborative staffing between AFSOC and the Secretary of the Air Force (SECAF) with the DAF Headquarters functional offices support, the need for an additional AFSOC Wing location was validated.

The 2022 NDS resulted in the DAF focusing on the need for an additional PPW in the western United States (DoD, 2022a). With the adoption of the fiscal year (FY) 2023 Presidential Budget and passing of the FY 2024 National Defense Authorization Act, the decision to retire A-10 aircraft, inactivate the 354th Fighter Squadron (354 FS), and downsize the 357th Fighter Squadron (357 FS) at Davis-Monthan AFB was announced. As the DAF's plan to retire the A-10 moves forward, AFSOC's focus turned to western Continental United States A-10 locations that are anticipated to have available facilities and ramp space, proximity to air-to-ground ranges, airspace availability, and synergies with existing rescue and fighter missions for a PPW. The SECAF determined that Davis-Monthan AFB, Arizona, was the preferred location to host an AFSOC PPW. The layout of existing facilities and infrastructure at Davis-Monthan AFB is shown on Figure 1-2.

The retirement of A-10s would occur in two phases at Davis-Monthan AFB. Phase 1 includes the retirement of all A-10 aircraft associated with the 354 FS and a portion of the A-10s associated with the 357 FS from Davis-Monthan AFB. The *Environmental Assessment* [EA] *for Fourth Generation Missions Regional Realignment* ("Realignment EA") (DAF, 2024a) establishes the interim conditions described in this Environmental Impact Statement (EIS). A Finding of No Significant Impact for the Realignment EA was signed on April 28, 2024.

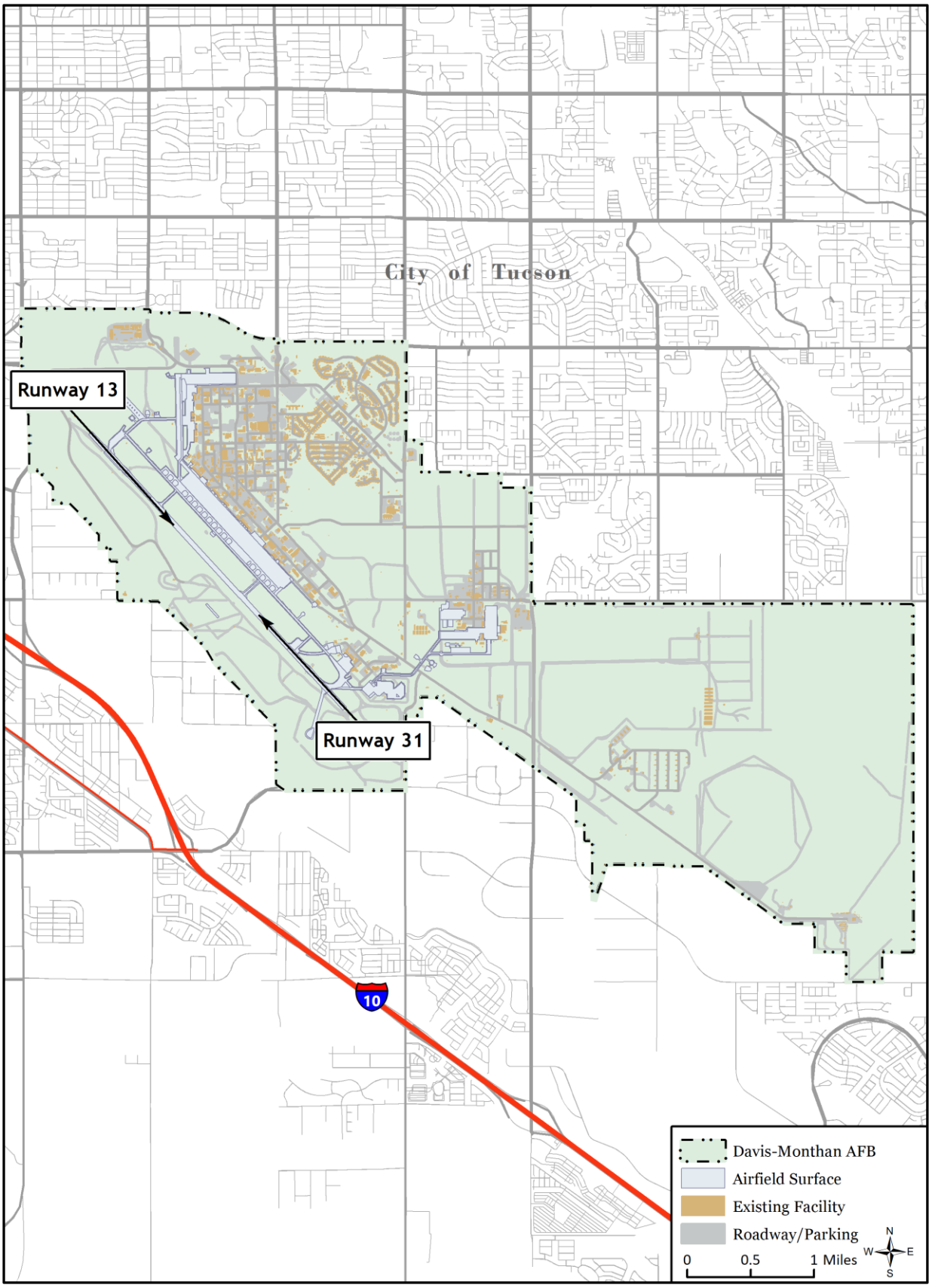
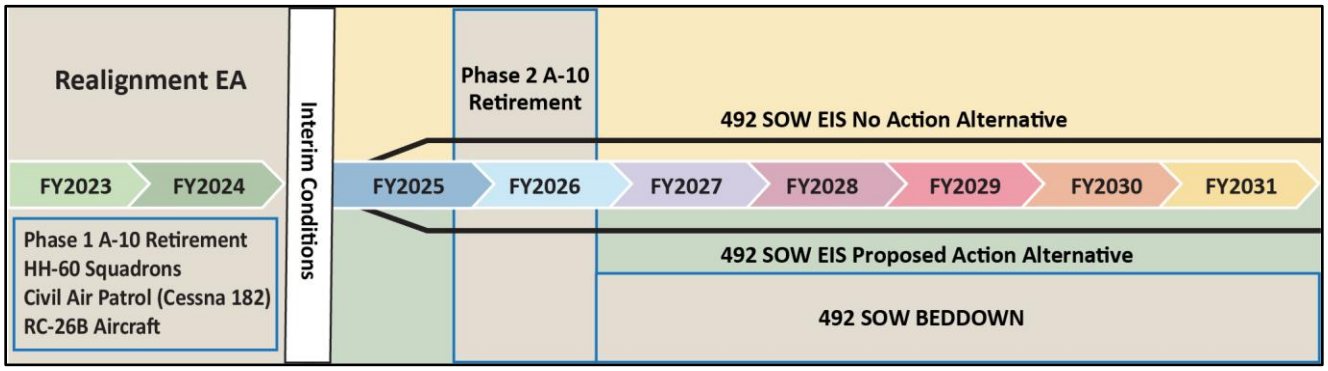


Figure 1-2. Base Overview of Davis-Monthan AFB

Results of the planned Phase 2 retirement, which includes retirement of the remaining A-10s, are reflected in this EIS under the No Action Alternative. The planned Phase 2 retirement of A-10s was announced as part of the FY 2024 Presidential Budget and is addressed in this EIS because the 492 SOW Beddown is dependent upon A-10s being retired from Davis-Monthan AFB. The graphic below (Figure 1-3) provides a visual description of the affected environment at Davis-Monthan AFB.

The 492 SOW Beddown is proposed to occur within the next 6 years. However, congressional-driven changes could change these timelines. The 47th Fighter Squadron (47 FS) Formal Training Unit is charged with training A-10 pilots for squadrons across the United States. Therefore, retirement of the 47 FS Formal Training Unit and associated A-10 aircraft from Davis-Monthan AFB is dependent upon the eventual retirement of all A-10s. As long as other DAF units are flying A-10s, the 47 FS Formal Training Unit is required to remain operational. For the purposes of the analysis in this EIS, it is assumed that this retirement would occur by the end of FY 2026 per the signed FY 2025 NDAA.



Dates shown are target dates and could change due to congressional-driven changes to timelines.

Figure 1-3. Affected Environment and Proposed Actions at Davis-Monthan AFB

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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The Description of Proposed Action and Alternatives is divided into the No Action Alternative and the Proposed Action Alternative sections below. The No Action Alternative considers conditions at Davis-Monthan AFB after all the A-10 retirements have occurred. This includes both the Phase 1 and the planned Phase 2 retirements as described in Section 1.4. However, the No Action Alternative does not include the beddown of the 492 SOW. The Proposed Action Alternative considers both the Phase 1 and planned Phase 2 A-10 retirements and includes the beddown of the 492 SOW. Table 2-1 provides a comparison of the interim conditions (the timeframe between the Phase 1 and planned Phase 2 A-10 retirements) against the No Action and Proposed Action Alternatives. Interim conditions are described in Chapter 3.0 of this Environmental Impact Statement and include conditions after the Phase 1 A-10 retirement but before both the 492 SOW Beddown and the planned Phase 2 A-10 retirement are implemented (see Figure 1-3).

Table 2-1. Comparison of Interim Conditions, No Action Alternative, and Proposed Action Alternative Components

Action Components	No Action Alternative	Proposed Action Alternative	Interim Conditions
Personnel (end state)	8,652	10,952	9,635
Airfield Operations[a]	39,900	59,940	63,968
Airspace Operations[a]	81,769	84,809	93,637
Air-to-Ground Munitions Usage[a]	0	315	768,500
Countermeasure Usage[a]	0	10,020	55,700

[a] Annual use only applies to A-10 and AFSOC aircraft.

Notes: Interim = conditions after the Phase 1 A-10 retirement but before the planned Phase 2 A-10 retirement; No Action Alternative = conditions after Phase 1 and planned Phase 2 A-10 retirements; no AFSOC or ACC beddown; and Proposed Action Alternative = AFSOC and ACC beddown, with Phase 1 and planned Phase 2 A-10 retirements. All numbers in table are approximate. Airfield operations include one of the following actions: a single takeoff, a single landing, the approach phase of a closed pattern, or the takeoff phase of a closed pattern.

Key: ACC = Air Combat Command; AFSOC = Air Force Special Operations Command.

2.1 NO ACTION ALTERNATIVE

The DAFs Environmental Impact Analysis Process requires the analysis of a No Action Alternative. No action is the absence of action and is not static. This means that an action would not take place. The resulting environmental effects from taking no action would be compared with the effects of implementing the Proposed Action Alternative over time.

Under the No Action Alternative, the 492 SOW Beddown would not occur at Davis-Monthan AFB. There would be no new AFSOC mission personnel or ACC IS personnel at Davis-Monthan AFB. The planned Phase 2 retirement of A-10 aircraft would occur with the inactivation of the 357th Fighter Squadron and the 47th Fighter Squadron, resulting in the retirement of all the remaining A-10 aircraft from Davis-Monthan AFB. The retirement of A-10s includes associated personnel, airfield operations, and airspace/range use. In addition, there would be no new AFSOC-related construction, demolition, or renovation. The No Action Alternative is described for each resource area in Chapter 3.0. The No Action Alternative is the environmentally preferred alternative.

2.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action Alternative, the DAF would implement the 492 SOW Beddown at Davis-Monthan AFB. This beddown would include developing existing and new infrastructure, and transferring personnel to support and conduct AFSOC missions and operations. Although Phase 2 of the planned A-10 retirement is not part of the Proposed Action Alternative, the changes (manpower, aircraft operations, etc.) that result from this retirement are reflected in the analysis. The DAF has identified the Proposed Action Alternative as the preferred alternative, giving consideration to economic, environmental, technical, and other factors.

The DAF is proposing a number of beddown actions at Davis-Monthan AFB to align with the 2022 NDS (DoD, 2022a) goal of prioritizing the placement of the U.S. fighter, rescue, and intelligence force structure. These actions include a proposal to stand up an AFSOC Wing at Davis-Monthan AFB by transforming the 492 SOW into a Continental United States AFSOC PPW. The 492 SOW is currently located at Hurlburt Field in Florida and would relocate to Davis-Monthan AFB in Arizona as part of this transformation. AFSOC units from Cannon AFB, New Mexico; Fort Bragg (Pope Field), North Carolina; Duke Field, Florida; and Joint Base Lewis-McChord, Washington, would transfer as part of this Proposed Action Alternative. In addition, ACC personnel from Hurlburt Field and Cannon AFB would transfer to Davis-Monthan AFB to staff the IS (Figure 2-1). These personnel changes are summarized in Section 2.2.1 and shown in Table 2-2. Aircraft movements associated with the Proposed Action Alternative are discussed in Section 2.2.2 and presented in Table 2-3.

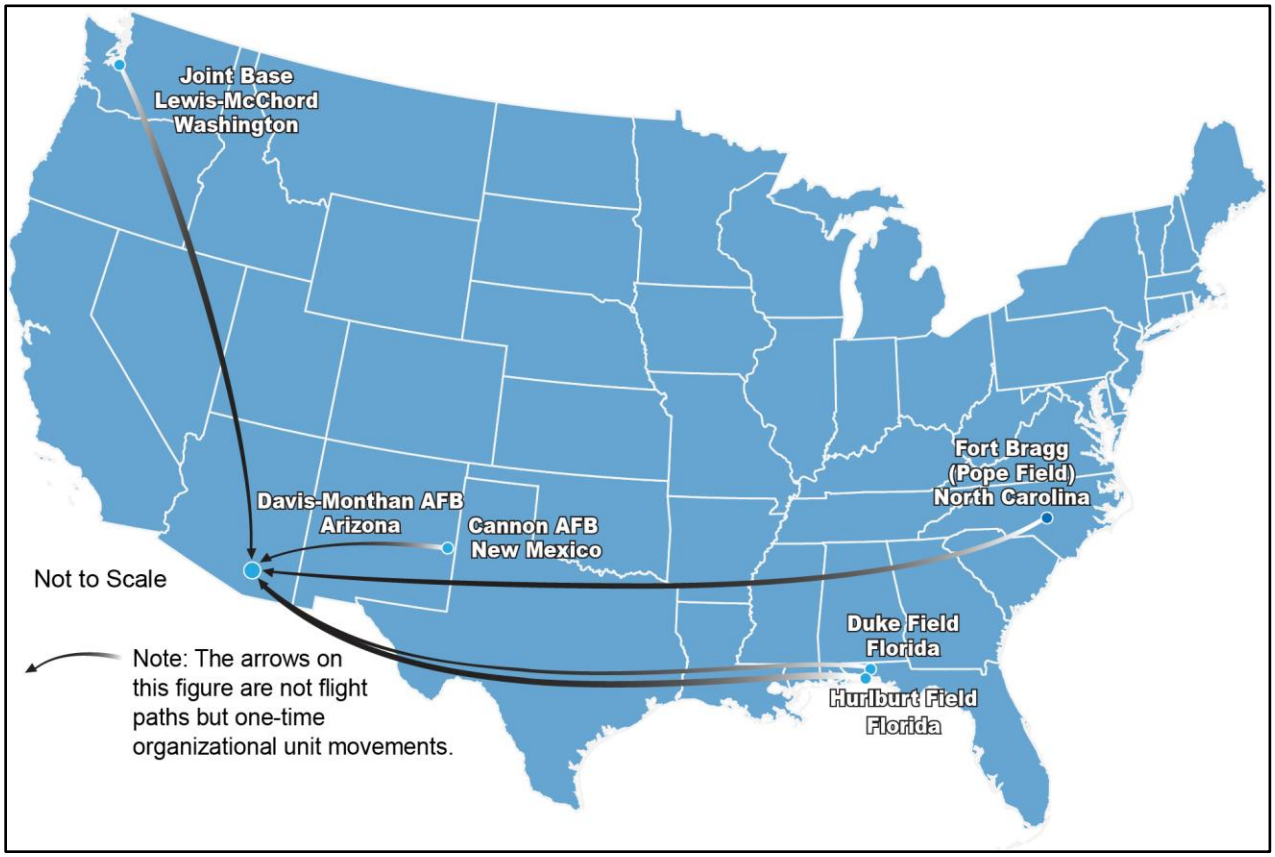

Figure 2-1. Unit Movements Associated with the Proposed Action Alternative

Implementation of the Proposed Action Alternative would occur over a period of approximately 6 years. Construction would be staged to allow some units and aircraft to arrive at Davis-Monthan AFB as early as 2026, while other units would arrive by 2031 or later dependent on congressional-driven changes.

The following actions are included in the Proposed Action Alternative:

- Relocate the following units from Hurlburt Field, Florida, to Davis-Monthan AFB, Arizona:
  - 492 SOW
  - 319th Special Operations Squadron – up to 15 OA-1K aircraft upon arrival at Davis-Monthan AFB, Arizona
  - An MC-130J Special Operations Aircraft Squadron (approximately seven aircraft) and Special Operations Aircraft Maintenance Squadron
- Relocate the 492nd Special Operations Theater Air Operations Squadron from Duke Field, Florida, to Davis-Monthan AFB, Arizona.
- Transfer personnel associated with a new IS under the ACC 361st Intelligence, Surveillance and Reconnaissance Group from Hurlburt Field, Florida, and Cannon AFB, New Mexico, to Davis-Monthan AFB.
- Relocate the 6th Special Operations Squadron and the 6th Special Operations Aircraft Maintenance Squadron (approximately seven MC-130J aircraft) from Cannon AFB, New Mexico, to Davis-Monthan AFB, Arizona.
- Relocate the 21st Special Tactics Squadron (STS) from Fort Bragg (Pope Field), North Carolina, to Davis-Monthan AFB, Arizona.
- Relocate the 22nd STS from Joint Base Lewis-McChord, Washington, to Davis-Monthan AFB, Arizona.

Approximately 29 new aircraft, as part of the 492 SOW Beddown, would be assigned to Davis-Monthan AFB. The new unit and aircraft changes would require personnel, airfield operations, airspace and range use, and facilities and infrastructure to support the various missions. Five elements of the Proposed Action Alternative have the potential to affect the base and associated ranges and airspace: (1) personnel, (2) airfield operations, (3) airspace use, (4) range use, and (5) facilities and infrastructure projects required to support the Proposed Action Alternative. These elements are explained below.

2.2.1 Personnel

Based on manpower reports, the DAF estimates that the 492 SOW Beddown would require approximately 2,300 military, civilian, and contractor personnel (Table 2-2). In addition, the DAF estimates that there would be approximately 2,543 dependents associated with military personnel under the Proposed Action Alternative.

Table 2-2. Personnel Changes Resulting from the Proposed Action Alternative and the Planned Phase 2 A-10 Retirement

Personnel Type	Interim Conditions Authorized Personnel	Planned Phase 2 A-10 Retirement	Proposed Action Alternative[a] Authorized Personnel	End State Personnel
Military/Civilian Personnel	9,635	-983	2,156	10,808
Contractor	0	0	144	144
Total	**9,635**	**-983**	**2,300**	**10,952 (14% increase)**

[a] Includes all the incoming AFSOC personnel plus the ACC Intelligence Squadron personnel

Note: All numbers in table are approximate.

Key: - = minus; % = percent; ACC = Air Combat Command; AFSOC = Air Force Special Operations Command.

2.2.2 Airfield Operations

Table 2-3 provides the number of airfield operations that would occur under the Proposed Action Alternative. As shown in this table, all units under the 492 SOW would conduct approximately 20,040 aircraft operations per year. Under interim conditions, A-10 pilots conduct approximately 24,068 of the total 63,968 annual operations. After the planned Phase 2 A-10 retirement and implementation of the Proposed Action Alternative, there would be a net decrease of 4,028 operations per year. This would result in a total of 59,940 annual operations.

Table 2-3. Annual Airfield Operations under Interim Conditions and Proposed Action Alternative

Aircraft Type	Annual Airfield Operations		
	Interim Conditions	Proposed Action Alternative	Change
OA-1K	0	6,600	+6,600
MC-130J	0	13,440	+13,440
A-10	24,068	0	-24,068
Other Based Aircraft	27,456	27,456	0
Civilian and Transient Aircraft	12,444	12,444	0
Total	**63,968**	**59,940**	**-4,028**

Note: All numbers in table are approximate.
Key: - = minus; + = plus.

Operations flown by AFSOC aircrews would be similar to operations flown by pilots of aircraft currently based at the installation. Existing local flight procedures, which include standard aircraft routing and several defined avoidance areas, would be used by AFSOC aircrews. Similar to currently based aircraft, AFSOC aircrews would practice tactical procedures. Tactical procedures are designed to minimize exposure of the aircraft to ground-based threats during operations from a deployed location and include a variety of routing or descent/climb rates.

Davis-Monthan AFB quiet hours policies would apply to the proposed AFSOC aircraft (i.e., OA-1K and MC-130J) under the Proposed Action Alternative. As described in local flying guidance, quiet hours are observed from 10:30 P.M. to 6:00 A.M. For base-assigned C-130 (HC-130J Model) and HH-60 aircraft, arrivals are currently allowed from 10:30 P.M. to midnight between October 1 and February 28 and from 10:30 P.M. to 2:00 A.M. from March 1 to September 30. During these periods, aircrews would make one approach to a full stop to comply with the base quiet hours. The only change to Davis-Monthan AFB local flying guidance proposed at this time would be to include the proposed AFSOC aircraft (i.e., OA-1K and MC-130J) in the list of aircraft that currently includes HC-130J and HH-60 aircraft assigned to Davis-Monthan AFB. Any deviations from the quiet hours policies would require from the 355th Operations Group Commander.

A-10 pilots based at Davis-Monthan AFB conduct approximately 1,037 annual aircraft operations between 10:00 P.M. and 7:00 A.M. under interim conditions. These operations would no longer occur after the planned Phase 2 A-10 retirement. Certain AFSOC aircraft training mission requirements must also be completed after dark, and some aircraft operations would extend into the late night. For the purposes of environmental impacts analysis, the number of aircraft operations conducted between 10:00 P.M. and 7:00 A.M. is relevant. Aircrews from the 492 SOW would conduct approximately 1,964 aircraft operations per year (i.e., approximately 10 percent of total annual proposed AFSOC operations) between 10:00 P.M. and 7:00 A.M., resulting in a net increase of approximately 927 aircraft operations

per year between these times. Approximately 10 percent of all OA-1K arrival operations and approximately 67 percent of all MC-130J arrival operations would occur between 10:00 P.M. and 7:00 A.M. However, MC-130J aircrews would only fly approximately 5 percent of their total departures and practice approaches during this time.

AFSOC aircrews based at Davis-Monthan AFB would use other military airfields and municipal airfields to support mission training requirements. OA-1K aircrews could use towered and non-towered airfields within 100 miles of Davis-Monthan AFB. Aircraft operations at other airfields would occur on an occasional basis. The proposed AFSOC aircraft (i.e., OA-1K and MC-130J) would comply with air-traffic control guidance and local flight procedures while operating at other airfields.

2.2.3 Airspace Use

Military aircraft associated with the 492 SOW mission flying from Davis-Monthan AFB would use existing special use airspace in Arizona and New Mexico as illustrated on Figure 2-2, including associated Air Traffic Control Assigned Airspaces. Under the Proposed Action Alternative, no new special use airspace dimensions or altitudes are being proposed. The airspace units proposed for use are the most cost-effective and convenient training areas available. As depicted on Figure 2-2, some airspaces in Arizona and New Mexico would be used. The Tombstone Military Operations Area (MOA) and R-2303 would be used on a regular basis although with relatively low proposed annual aircraft operations and other MOAs and Restricted Areas would be used on an occasional basis. In addition, AFSOC aircrews would occasionally use other airspace, including the combat search and rescue low altitude tactical navigation area and various military training routes as shown on Figure 13 of the Noise Supporting Document available on the project website at www.492sow-beddown-eis.com. Table 2-4 presents the total number of annual operations anticipated to decrease due to the planned A-10 retirement, as well as number of annual operations proposed to occur, by aircraft type, as part of the Proposed Action Alternative. Under interim conditions, A-10 aircraft currently conduct 11,868 of the total 93,637 annual airspace and range operations. After the A-10 retirement and implementation of the Proposed Action Alternative, there would be a net decrease of 8,828 annual operations. This would result in a total of 84,809 annual airspace and range operations.

Table 2-4. Airspace and Range Operations Associated with the Proposed Action Alternative

Aircraft	Annual Operations in Arizona and New Mexico Special Use Airspace				
	Interim Conditions	No Action Alternative	Proposed Action Alternative	Change from Interim Conditions	Change from No Action Alternative
OA-1K	0	0	1,440	+1,440	+1,440
MC-130J	0	0	1,600	+1,600	+1,600
A-10	11,868	0	0	-11,868	0
Other Aircraft	81,769	81,769	81,769	0	0
Total	**93,637**	**81,769**	**84,809**	**-8,828**	**3,040**

Notes: OA-1K aircraft missions include substantial amounts of time flying at more than 10,000 feet above ground level outside of special use airspace. All numbers in table are approximate.

Key: - = minus; + = plus.

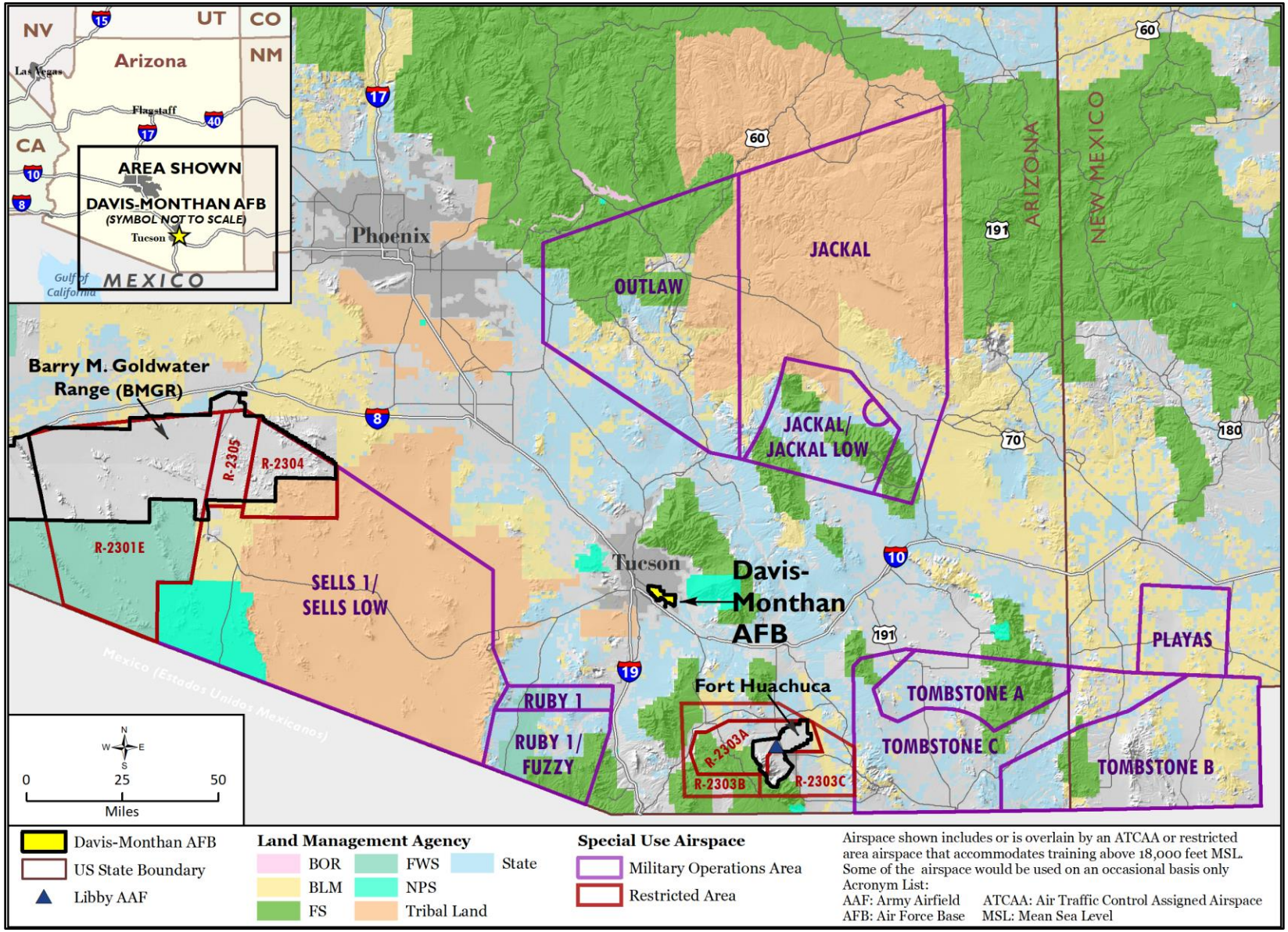

Figure 2-2. Airspace and Ranges

2.2.4 Range Use

Live munitions training would be conducted by air and ground units at existing ranges. The OA-1K (like the A-10) can carry and use air-to-ground ordnance (e.g., inert 2.75-inch rockets), and aircrews would require training in their use. Although OA-1K aircrews would use the existing Barry M. Goldwater Range for training using air-to-ground ordnance, the amount of ordnance used would decrease from that currently used by A-10 pilots (Table 2-5). Similar to A-10 pilots, AFSOC aircrews would use chaff and flares as defensive countermeasures in training. Flares are one of the defensive mechanisms dispensed by military aircraft to avoid attack by enemy aircraft and air defense systems. Defensive countermeasures would only be used in areas approved for their use, and flares would be used above current minimum altitudes. Additional information on emissions from defensive chaff and flares and fire risk can be found in Appendix A of the *Final Programmatic Environmental Assessment* [PEA] *for Testing and Training with Defensive Countermeasures* (https://www.airforcechaffandflareprogrammaticea.com) page 1-1 as incorporated by reference (DAF, 2023a). MC-130J aircrews would not conduct air-to-ground weapons training but would use chaff and flares.

Table 2-5. Annual Munitions Use

Munition Type	Annual Expenditure				
	Interim Conditions	No Action Alternative	Proposed Action Alternative	Change from Interim Conditions	Change from No Action Alternative
30-Millimeter Rounds[a]	750,000	0	0	-750,000	0
Rockets, Missiles, and Bombs[a, b]	18,500	0	+315	-18,185	+315
Chaff[a]	16,000	0	+6,000	-10,000	+6,000
Flares[a]	39,700	0	+4,020	-35,680	+4,020

[a] Munition type only applies to A-10 and AFSOC aircraft.

[b] OA-1K aircrews would only fire inert 2.75-inch rockets; OA-1K aircraft are not currently certified to use AGM-114 missiles but could become certified in the future, and expenditure of 15 inert AGM-114 missiles per year is anticipated. A-10 pilots currently expend a wide variety of inert and high-explosive bombs, missiles, and rockets in addition to the 30-millimeter rounds. All numbers in table are approximate.

Key: - = minus; + = plus; AFSOC = Air Force Special Operations Command; AGM = air-to-ground missile.

Ground unit training by the STS would be conducted at existing facilities on the Davis-Monthan AFB Combat Arms Training and Maintenance (CATM) range or at suitable existing facilities off base. Such facilities could include—but would not be limited to—Fort Huachuca, the Arizona National Guard Florence Military Reservation, and the Barry M. Goldwater Range (BMGR), which are used on a regular basis for similar live-fire training.

Table 2-6 lists weapons and munitions supported at the Davis-Monthan CATM range. The STS unit training would not result in any exceedances of training range usage, use of new ammunition types, or require creation of new ranges at this time. If future changes to the 492 SOW's live-fire range requirements involve major improvements to the Davis-Monthan CATM range or the establishment of new ranges, those actions would be addressed in separate National Environmental Policy Act (NEPA) documents.

Table 2-6. Range Capabilities at Davis-Monthan AFB

Weapon	Munition (mm)	Available at Davis-Monthan AFB
M9	9	Yes
M16	5.56	Yes
M4	5.56	Yes
MK46	5.56	No
M249 SAW	5.56	No
MK48	7.62	No
M240G	7.62	No
MK20	7.62	No
MK14	7.62	No
M2	.50 Caliber	No
M107	.50 Caliber	No
M203	40	Training rounds only
MK19	40	Training rounds only
MK47	40	Training rounds only
MAAWS Carl Gustav	84	No
AT4	84	No
Hand grenades	Not applicable	No

Key: AFB = Air Force Base; MAAWS = Multi-role Anti-armor Anti-tank Weapon System; mm = millimeter; SAW = Squad Automatic Weapon.

2.2.5 Facilities and Infrastructure

Davis-Monthan AFB hosts and supports a variety of unique ACC missions. DAF planners evaluated operational readiness, leveraged existing facilities and infrastructure, and factored in base-specific site constraints as a method to minimize mission impact, maximize facility reuse, and minimize cost. This selection process uses the strengths of Davis-Monthan AFB to optimize the 492 SOW Beddown strategy.

Physical conditions and site constraints that could limit project-related site choices at Davis-Monthan AFB include, but are not limited to, Environmental Restoration Program sites and cultural resources sites. Planners at Davis-Monthan AFB avoided these and other site constraints to the greatest extent possible.

The DAF specifically assessed whether existing infrastructure would create unacceptable land use constraints for clear zones and accident potential zones (APZs), APZ I and APZ II (Air Force Handbook 32-7084, *AICUZ* [Air Installations Compatible Use Zones] *Program Manager's Guide*). In addition to clear zone considerations, explosives safety arcs were used to help develop facility and infrastructure alternatives.

The Proposed Action Alternative involves construction, renovation, and demolition projects to support the AFSOC and ACC actions at Davis-Monthan AFB. Using the previously described planning processes, DAF planners at Davis-Monthan AFB developed projects necessary to support the Proposed Action Alternative (Table 2-7). The proposed new construction, demolition, and renovation redevelopment activities would occur along the flightline and within the previously disturbed cantonment area of Davis-Monthan AFB (see Figure 2-3). For new construction activities, DAF planners evaluated land use limitations and identified the general planned areas of construction,

as shown in Figure 2-3. These areas include contractor laydown areas, the 492 SOW West Campus and the 492 SOW East Campus. Implementation of the Proposed Action Alternative would not result in any new construction, renovation, or demolition of facilities outside of the Davis-Monthan AFB cantonment area.

Table 2-7. Facilities and Infrastructure Projects – Proposed Action Alternative

Facilities and Infrastructure Projects	
Building Number	**Demolition**
4809	2-Bay Hangar/AMU
4826	2-Bay Hangar/AMU
Building Number	**Existing Facility Modifications**
183	Administrative/Maintenance Facility
257	Aircraft Maintenance and Storage
2350	Convert to Headquarters Building
4201[a]	Convert to Detachment 2 Admin. Building
4400	Convert to Squadron Operations Facility
4413	Convert to Simulator Facility/Operational Clinical Services
4414	Convert to Simulator Facility
4710	Aerospace Ground Equipment Maintenance and Storage
4800	Squadron Operations
4845	Renovate for Interim Crash Damaged or Disabled Aircraft Recovery Storage
4859	Renovate for a Small Arms Vault
4884	Renovate for Aerospace Ground Equipment
4885	Renovate for Storage
4887	Refurbish for Wash Rack
4889	Mobility Readiness Spares Package and Classified Storage Vault
4891	Refurbish to Fuel Cell Facility
5045	Refurbish Aircraft Structural Repair
5230	Refurbish for Engine Shop
5245	Refurbish for Maintenance Backshops
5247	Convert to Squadron Operations
5251	Convert to Hangar/Maintenance Facility
5254	Interim Fiberglass Repair
5255	Addition/Alteration for Corrosion Control
5416	Wash Rack
5420	Renovate for ACC
5430	Weapons Load Training
5600	Convert to Squadron Operations Facility
5605	Aircraft Parts Storage and Decentralized Materials Support
Not Applicable	Parking Apron Improvements

Table 2-7. Facilities and Infrastructure Projects – Proposed Action Alternative (continued)

Facilities and Infrastructure Projects
New Facilities
Construct STS Aquatic Training Facility[b]
Construct STS Human Performance Training Center[b]
Construct STS Climbing Tower[b]
Construct 21 STS Operations[b]
Construct 21 STS Covered Storage[b]
Construct 22 STS Operations[b]
Construct 22 STS Covered Storage[b]
Construct 2-Bay Hangar and Maintenance (includes temporary facility for transitional storage)
Construct Installation Communications Center
Vehicle Parking for STS Facilities

[a] This project has been removed as a requirement; however, impacts associated with this project are already evaluated in the EIS and therefore this project has not been removed from the table.

[b] This facility would be located in the 492 SOW West or East Campus areas shown in Figure 2-3.

Key: 21 STS = 21st Special Tactics Squadron; 22 STS = 22nd Special Tactics Squadron; 492 SOW = 492nd Special Operations Wing; ACC = Air Combat Command; AMU = Aircraft Maintenance Unit; STS = Special Tactics Squadron.

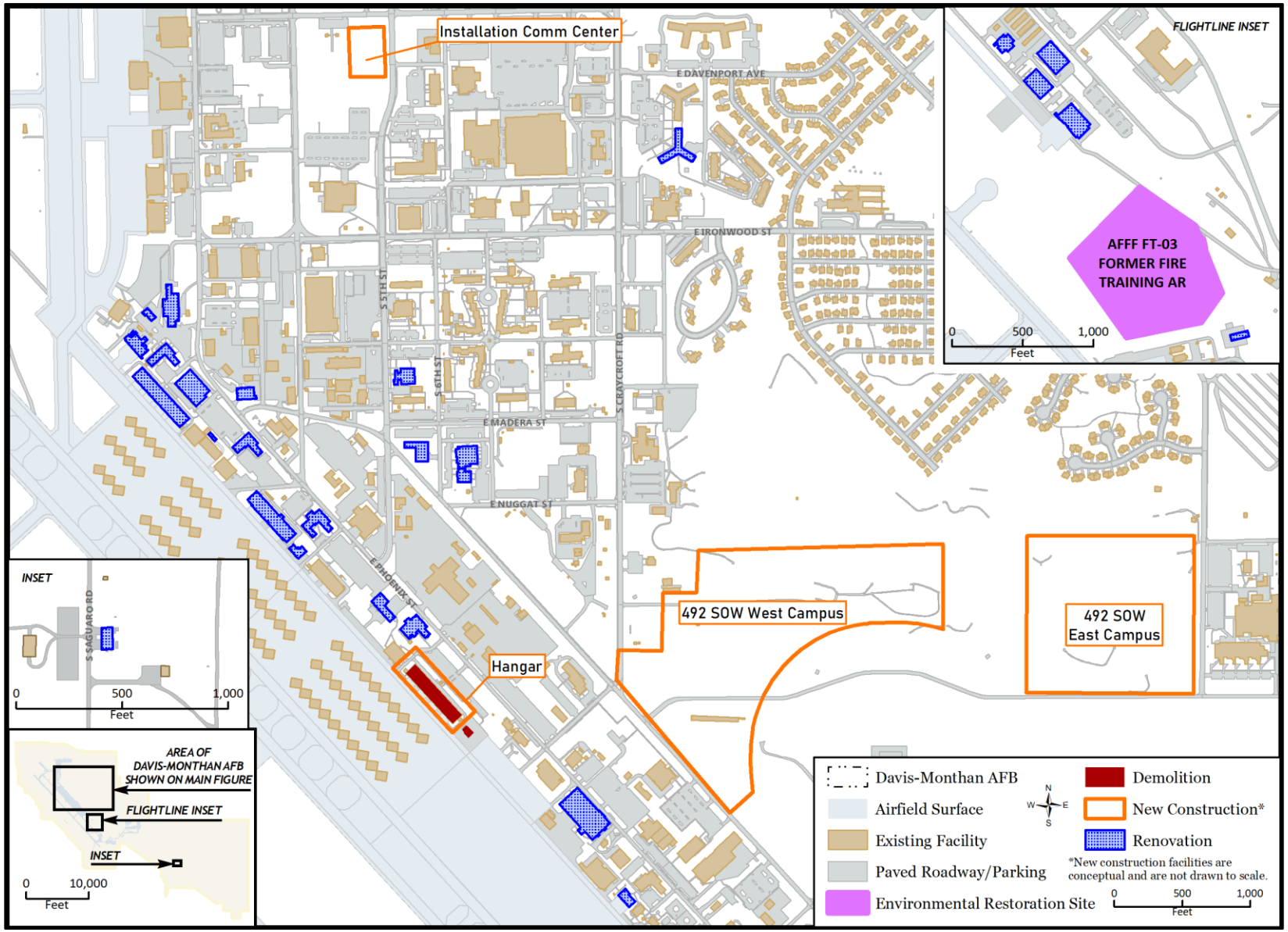

Figure 2-3. Facilities and Infrastructure Projects under the Proposed Action Alternative

2.3 COMPARISON OF ENVIRONMENTAL CONSEQUENCES

2.3.1 Comparison of Environmental Consequences

Table 2-8 presents a summary of potential environmental consequences for the 492 SOW Beddown by alternative and environmental resource area.

Table 2-8. Comparative Summary of Environmental Consequences

Resource Area	No Action Alternative	Proposed Action Alternative
Acoustic Environment	**Installation:** Under the No Action Alternative, although there would no longer be any A-10 operations, the other rotary- and fixed-wing missions at Davis-Monthan AFB would continue to operate. The No Action Alternative would result in a net decrease of 24,068 aircraft operations per year, thus reducing aircraft noise. Construction associated with the 492 SOW Beddown would not occur. Noise levels at Davis-Monthan AFB would continue as described in this EIS, and there would be no new OA-1K- or MC-130J-related noise impacts. Significant short- or long-term noise impacts would not result from implementation of the No Action Alternative. **Airspace and Ranges:** Under the No Action Alternative, the planned Phase 2 A-10 retirement would result in 11,868 fewer airspace operations per year. Noise levels, as measured in dB L_{dnmr}, would decrease or remain the same relative to interim conditions in all of the airspaces. In addition, 768,500 fewer air-to-ground munitions would be used per year and 55,700 fewer countermeasures would be	**Installation:** Implementation of the Proposed Action Alternative would not result in significant short- or long-term noise impacts at Davis-Monthan AFB or in the airspace and ranges proposed for use. Due to the planned Phase 2 A-10 retirement, net annual aircraft operations would decrease by 4,028 relative to interim conditions. AFSOC aircrews would conduct approximately 1,964 aircraft operations per year between 10:00 P.M. and 7:00 A.M. resulting in a net increase of approximately 927 aircraft operations per year during this timeframe. Relative to the No Action Alternative, which is a potential future scenario not yet experienced, the Proposed Action Alternative would result in 20,040 additional airfield operations per year affecting an additional 50 acres of non-residential land off of the installation. Although noise levels would remain at or below 63 dB DNL, noise levels at sensitive receptors would remain the same or increase by up to 3 dB DNL. Implementation of the Proposed Action Alternative would result in 30 fewer off-base acres being exposed to 65 dB DNL when compared to interim conditions. At the representative noise-sensitive locations near Davis-Monthan AFB, noise levels would decrease at some locations by up to 1 dB and increase at other locations by no more than 2 dB. However, none of the noise-sensitive locations would be exposed to noise levels above 63 dB. **Airspace and Ranges:** Compared to interim conditions, implementation of the Proposed Action Alternative would result in a net annual reduction of 8,828 aircraft operations in the airspace in Arizona and New Mexico. Noise levels, as measured in dB L_{dnmr}, would decrease or remain the same relative to interim conditions in all airspaces except the Fort Huachuca airspace (R-2303 A/B/C) where L_{dnmr} would increase by 5 dB. Relative to the No Action Alternative, which is a potential future scenario, the number of operations in the airspace in Arizona and New Mexico would increase by 3,040 per year; noise levels would remain the same except beneath R-2303 A/B/C, where L_{dnmr} would increase by 5 dB. In addition, compared to interim conditions, implementation of the Proposed Action Alternative would result in 768,185 fewer air-to-ground munitions used and 45,680 fewer

Table 2-8. Comparative Summary of Environmental Consequences (continued)

Resource Area	No Action Alternative	Proposed Action Alternative
	dropped per year at the BMGR and in the associated training airspace, where permitted. The reduction in aircraft operations, munitions and countermeasures would reduce the amount of noise occurring beneath the airspace and on the existing ranges.	countermeasures dropped annually. Relative to the potential future No Action Alternative, the number of air-to-ground munitions used would increase by 315, and the number of countermeasures would increase by 10,020, annually resulting in minimal noise level changes in the context of an active air-to-ground range.
Air Quality	**Installation:** Under the No Action Alternative, the planned Phase 2 A-10 retirement would result in substantial air emission reductions from (1) A-10 operations, (2) A-10 engine maintenance and testing, and (3) the reduced use of AGE. These emission reductions would produce beneficial air quality impacts within the installation ROI. **Airspace and Ranges:** Under the No Action Alternative, elimination of A-10 aircraft operations within the Davis-Monthan AFB airspaces and training areas would result in substantial air emission reductions in these areas. Therefore, the No Action Alternative would result in beneficial long-term air quality impacts within the regional airspaces and training areas.	**Installation:** Implementation of the Proposed Action Alternative would generate short-term minor amounts of emissions from demolition and construction activities that would remain well below annual insignificance indicator thresholds. Operation of the 492 SOW Beddown would generate emissions from (1) MC-130J and OA-1K aircraft operations, (2) MC-130J and OA-1K engine maintenance and testing, (3) AGE usage, and (4) privately owned vehicles due to personnel commuting activities. Annual emissions would not exceed any insignificance indicator threshold. Therefore, the Proposed Action Alternative within the Davis-Monthan AFB region would not result in significant long-term air quality impacts. **Airspace and Ranges:** Under the Proposed Action Alternative, operation of MC-130J and OA-1K aircraft and associated munitions usages within the Davis-Monthan AFB airspaces and training areas would result in increases in air emissions that would remain well below all conformity *de minimis* and insignificance indicator thresholds. Therefore, implementation of the Proposed Action Alternative in airspace and training areas would not result in significant long-term air quality impacts.
Soil and Water Resources	Under the No Action Alternative, although there would be no new 492 SOW Beddown-related impacts to soil and water resources on the installation, ongoing and planned development projects could result in up to approximately 1 million square feet of new construction. Implementation of the IDP projects would disturb up to approximately 29 acres of land. The implementation of management practices	Implementation of the Proposed Action Alternative would result in the disturbance of approximately 35 acres of previously disturbed land. Prior to construction, contractors would be required to apply for appropriate permits, prepare appropriate plans, and install best management practices to minimize and reduce impacts to soils and water quality. Potential impacts to soil and water resources would be minimal, and significant short- and long-term impacts to soil and water resources are not anticipated to result from implementation of the Proposed Action Alternative.

Table 2-8. Comparative Summary of Environmental Consequences (continued)

Resource Area	No Action Alternative	Proposed Action Alternative
	would minimize impacts to soil resources, and implementation of the No Action Alternative would not result in short- or long-term significant impacts to soil and water resources.	
Biological Resources	**Installation:** Under the No Action Alternative, the planned Phase 2 A-10 retirement at Davis-Monthan AFB would occur, resulting in a decrease in associated personnel and airfield operations. Construction of previously planned projects would continue on the installation. BASH incidents could decrease with reduced aircraft operations, and there would be no short- or long-term significant impacts to biological resources on the installation from implementation of the No Action Alternative. **Airspace and Ranges:** Under the No Action Alternative, aircraft operations in the designated military training airspace would decrease, resulting in reduced short- and long-term impacts to biological resources.	**Installation:** Implementation of the Proposed Action Alternative could result in impacts to vegetation and wildlife on the installation; however no short- or long-term significant impacts are expected. Construction associated with the 492 SOW Beddown would disturb approximately 35 acres of land. However, there are no threatened and endangered species known to occur on Davis-Monthan AFB and all areas proposed for construction have been previously disturbed and do not provide unique habitat for biological resources. Any clearing would be completed in accordance with state and federal regulations, including the Arizona Native Plant Law. The planned Phase 2 A-10 retirement would result in a net decrease of 4,028 annual aircraft operations when compared to interim conditions, thus reducing the chances for BASH incidents. No impacts to wetlands would occur. **Airspace and Ranges:** Compared to interim conditions, the Proposed Action Alternative would result in fewer annual aircraft operations in the airspace and ranges proposed for use, fewer air-to-ground munition rounds expended per year at the BMGR, and fewer countermeasures dropped per year, thus reducing impacts to biological resources beneath the airspace and ranges proposed for use. When compared to the No Action Alternative, implementation of the Proposed Action Alternative would result in an increase of annual aircraft operations, an increase in air-to-ground munitions used per year, and an increase of countermeasures dropped on the ranges proposed for use. However, the No Action Alternative is a potential future scenario that has not yet been experienced because the A-10s are still operating at the installation. Significant short- or long-term impacts to biological resources beneath the airspace and ranges proposed for use would not be anticipated to result from implementation of the Proposed Action Alternative.
Cultural Resources	**Installation:** Under the No Action Alternative, although there would be no new 492 SOW Beddown-related construction, demolition, or renovation, projects such as those in the IDP EA (DAF, 2024b) would continue to	**Installation:** Implementation of the Proposed Action Alternative would not result in short- or long-term adverse impacts to cultural resources on Davis-Monthan AFB. There would be no physical or visual impacts to architectural resources on the installation. All areas proposed for construction have been surveyed for archaeological resources or are located on previously

Table 2-8. Comparative Summary of Environmental Consequences (continued)

Resource Area	No Action Alternative	Proposed Action Alternative
	be constructed. No short- or long-term adverse effects to cultural resources near the installation or beneath the airspace and ranges proposed for use would result from implementation of the No Action Alternative. **Airspace and Ranges:** Under the No Action Alternative, there would be no OA-1K or MC-130J operations. However, the planned Phase 2 A-10 retirement would result in 11,868 fewer annual aircraft operations, 768,500 fewer munition rounds expended per year, and 55,700 fewer countermeasures being dropped per year. No short- or long-term adverse impacts to cultural resources beneath the airspace and ranges proposed for use would result from the No Action Alternative.	disturbed land. In the case of unanticipated or inadvertent discoveries, the DAF would comply with the procedures outlined in Section 7.4 of the ICRMP (DAF, 2021). **Airspace and Ranges:** Compared to interim conditions, implementation of the Proposed Action Alternative would result in 8,828 fewer annual aircraft operations in the airspace and ranges proposed for use, 768,185 fewer air-to-ground munitions rounds expended per year at the BMGR, and 45,680 fewer countermeasures dropped per year. Compared to the No Action Alternative, there would be an increase of 3,040 annual aircraft operations, an increase of 315 munitions used per year, and an increase of 10,020 countermeasures dropped per year. The No Action Alternative is a potential future scenario that has not yet been experienced because the A-10s are still operating at the installation. No short- or long-term adverse impacts to cultural resources beneath the airspace and ranges proposed for use would result from the Proposed Action Alternative. The Arizona and New Mexico SHPOs have concurred with the DAF's APE and determination of no adverse effects to historic properties. While the DAF and Davis-Monthan AFB will continue to have ongoing conversations with Native American tribes, Section 106 consultation with the tribes related to the 492 SOW Beddown is considered complete.
Socioeconomics	Under the No Action Alternative, no new 492 SOW Beddown mission personnel would arrive at the installation. The number of personnel at Davis-Monthan AFB would decrease by 983 military and civilian personnel under the No Action Alternative due to the planned Phase 2 A-10 retirement. In addition, there would be a corresponding decrease of approximately 1,152 dependents associated with the outgoing personnel. Although the decrease in population due to the planned Phase 2 A-10 retirements would result in minor short-term impacts to socioeconomic resources, significant impacts to socioeconomics would not result	Implementation of the Proposed Action Alternative would result in the addition of 2,300 military, civilian, and contractor personnel to Davis-Monthan AFB and the greater Tucson area. However, the planned Phase 2 A-10 retirement would result in a loss of 983 personnel, resulting in a net gain of 1,317 personnel to Davis-Monthan AFB. The 492 SOW Beddown would result in beneficial socioeconomic impacts to the community and would be a minor change to the population of Pima County that was estimated at 1,063,162 people in 2023 (USCB, 2024a). The net addition of 1,317 personnel would not result in significant short- or long-term socioeconomic impacts, including impacts to housing, education, and public and base services.

Table 2-8. Comparative Summary of Environmental Consequences (continued)

Resource Area	No Action Alternative	Proposed Action Alternative
	from implementation of the No Action Alternative.	
Infrastructure	Under the No Action Alternative, no new 492 SOW Beddown-related construction, demolition, or renovation would be implemented. However, there would be annually planned demolition, construction, renovation, and maintenance activities such as those in the IDP EA (DAF, 2024b). Under the No Action Alternative, the planned Phase 2 A-10 retirement would result in a decrease in associated personnel, vehicular traffic, and airfield operations. Implementation of the No Action Alternative would not result in significant long-term impacts to infrastructure at Davis-Monthan AFB.	Implementation of the Proposed Action Alternative would result in an approximate 14 percent increase of the base population when compared to interim conditions. Although this increase in personnel would increase the use of potable water, wastewater, and energy systems and increase the use of traffic systems on the installation, this increase would have little effect on the infrastructure capacity of the installation. Implementation of the Proposed Action Alternative would not result in significant long-term impacts to infrastructure on Davis-Monthan AFB.
Hazardous Materials and Hazardous Waste	Under the No Action Alternative, there would be no 492 SOW Beddown-related changes to hazardous materials and waste. Annually planned projects would continue to be implemented and the planned Phase 2 A-10 retirement would result in decreases in use of hazardous materials and generation of hazardous waste. The installation would continue to use hazardous materials and dispose of hazardous waste in compliance with installation hazardous materials and waste plans.	Implementation of the 492 SOW Beddown would not add any new hazardous materials that would exceed the base's current processes. No ASTs or USTs would be removed; however, one former OWS would be removed. The buildings proposed for demolition could contain ACM and LBP. Prior to demolition, Davis-Monthan AFB would complete the appropriate notifications and complete the abatement work in accordance with applicable plans and per all local, state, and federal requirements. None of the other proposed construction/renovation or demolition sites are located on or directly adjacent to active remediation sites or near any of the perfluorooctanoic acid and perfluorooctane sulfonate investigation sites on Davis-Monthan AFB. Should contaminated media be encountered during construction, storage/transport/disposal of contaminated media would be conducted in accordance with base plans and applicable regulations. Implementation of the new mission would not result in significant impacts to hazardous materials and waste.

Key: 492 SOW = 492nd Special Operations Wing; ACM = asbestos-containing material; AFB = Air Force Base; AGE = aerospace ground equipment; APE = Area of Potential Effect; AST = aboveground storage tank; BASH = Bird/Wildlife Aircraft Strike Hazard; BMGR = Barry M. Goldwater Range; DAF = Department of the Air Force; dB = decibels; DNL = day-night average sound level; EA = Environmental Assessment; EIS = Environmental Impact Statement; ICRMP = Integrated Cultural Resources Management Plan; IDP = Installation Development Plan; L_{dnmr} = onset-rate adjusted monthly day-night average sound level; LBP = lead-based paint; OWS = oil-water separator; R-2303 = Restricted Area 2303; ROI = region of influence; SHPO = State Historic Preservation Officer; UST = underground storage tank.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

For each environmental resource area analyzed in this EIS, Chapter 3.0 defines the resource area, describes the region of influence (ROI) potentially affected by the Proposed Action Alternative, explains the analysis methodology, and presents the environmental consequences of the No Action and the Proposed Action Alternatives.

The "Analysis Methodology" section for each resource area describes the approach taken to evaluate impacts and any assumptions made in the analysis for that resource area. The analysis methodology for each resource area primarily addresses the context of the environmental resource area and the intensity of any potential consequence to the resource area resulting from the Proposed Action Alternative per the requirements of 40 Code of Federal Regulations (CFR) Section 1501.3(d). In considering whether the effects of the Proposed Action are significant, agencies analyze the potentially affected environment (context) and degree of the effects of the action (intensity). For some environmental resource areas that use modeling and other calculations for quantitative analyses (e.g., air quality), supplemental technical information, data, and other background information relevant to the analyses are provided in supporting documentation reports on the project website at www.492sow-beddown-eis.com.

Overall, this EIS presents the No Action Alternative analysis before the Proposed Action Alternative analysis, which allows the reader and decision makers to easily compare the consequences from the No Action Alternative conditions with consequences of the Proposed Action Alternative. This EIS also presents the interim conditions, which include conditions after the Phase 1 A-10 retirement but before the 492 SOW Beddown and the planned Phase 2 A-10 retirements are implemented.

The mission levels and activities occurring at Davis-Monthan AFB for the No Action Alternative would contribute to the affected environment for each potentially affected resource area. The analysis under the No Action Alternative also includes evaluation of potential impacts associated with other development and infrastructure improvement projects including those identified in the Installation Development Plan (IDP) EA that would occur either on or in the vicinity of Davis-Monthan AFB, as well in the proposed training airspace and ranges.

Each resource area also includes an analysis of reasonably foreseeable future actions and environmental trends as shown in Table 3-1. This table lists the resource areas that are potentially affected by each project and trend and are therefore incorporated into the respective environmental consequences analyses.

Table 3-1. Reasonably Foreseeable Future Actions and Environmental Trends

Project/Trend	Description	Resources Potentially Affected
Reasonably Foreseeable Future Actions		
Planned Phase 2 Remaining A-10 Retirement[a]	The planned Phase 2 retirement of A-10s was announced as part of the FY 2024 Presidential Budget. Phase 2 is anticipated to start sometime after 2025 and would include the retirement of the remaining A-10s at Davis-Monthan AFB.	Airspace, Noise, Air Quality, Land Use, Biological and Cultural Resources, Water Resources, Visual Resources, Socioeconomics
Environmental Assessment for Installation Development Plan	Construction of projects would occur over a 5-year period, from FY 2024 through FY 2028. It	Air Quality, Land Use, Biological and Cultural

Table 3-1. Reasonably Foreseeable Future Actions and Environmental Trends (continued)

Project/Trend	Description	Resources Potentially Affected
(IDP) Projects – Davis-Monthan AFB (DAF, 2024b)	would add approximately 1 million ft^2 of new buildings and earth-covered magazines and pads/paved areas. It would demolish up to 128,000 ft^2 of buildings.	Resources, Water Resources, Socioeconomics
EIS for Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona (DAF, 2024c)	This proposed project is to modify the volume, time of use, horizontal and vertical dimensions, and other attributes of 10 existing DAF MOAs to address insufficient airspace capability and capacity for training aircrews stationed at Davis-Monthan AFB, Luke AFB, and Morris ANGB, Arizona. This project has independent utility from the 492 SOW Beddown EIS at Davis-Monthan AFB because once the decision-maker signs the Record of Decision, this project would proceed regardless of whether the 492 SOW beddown occurred and the same is true that, once approved, the 492 SOW beddown would occur regardless of whether the Airspace Optimization occurred or not.	Airspace, Noise, Air Quality, Land Use, Biological and Cultural Resources, Visual Resources, Safety, Hazardous Materials, Socioeconomics
Valencia Crossing commercial development	Project consists of commercial development of 30 acres (7 lots) at the intersection of Valencia Crossing Drive and Valencia Road.	Noise, Air Quality, Land Use, Infrastructure
Interstate 10 and 19 Road improvements	The Arizona Department of Transportation proposes improvements to Interstate 10 from Kino to Country Club Road, including a new interchange at Interstate 10 and Country Club Road. They also are proposing to rebuild the interchange at Interstate 19 and Irvington Road.	Noise, Air Quality, Land Use, Infrastructure, Biological and Cultural Resources, Infrastructure, Socioeconomics
Continental Divide Trail Comprehensive Plan	The Continental Divide Trail crosses federal lands administered by the USDA, USFS, BLM, and NPS. The comprehensive plan is intended to set forth direction and guide the development and management of the Continental Divide Trail. The purpose of the plan is to provide a uniform trail program that reflects the purposes of the National Scenic Trail system and allows for the use and protection of the natural and cultural resources found along the rights-of-way. In terms of recreational users, the trail currently exists beneath the Tombstone B MOA and also beneath the Playas MOA. The section of the trail beneath the Tombstone B MOA would have little to no change in the current recreational experience. Low-level overflights from Military Training Routes currently exist in this area (down to 500 feet AGL) and the Proposed Action would not substantially change that experience.	None - A portion of the Continental Divide Trail occurs on lands beneath the existing Playas and Tombstone B MOAs. The Proposed Action would not impede or interact with any existing or planned management activities along the trail. There would be no cumulative effect.

Table 3-1. Reasonably Foreseeable Future Actions and Environmental Trends (continued)

Project/Trend	Description	Resources Potentially Affected
Predictable Environmental Trends		
Climate change	Davis-Monthan AFB, Arizona, is located within the Southwest region of the United States, which encompasses Arizona, California, Colorado, New Mexico, Nevada, and Utah. The U.S. Global Change Research Program estimates in the Fifth National Climate Assessment that long-term environmental impacts in Arizona, due to increased atmospheric greenhouse gases, include an increasing risk of extreme heat and wildfires, an increase in the severity of storms and droughts, reduction of winter snowpacks, changing local and regional ecosystems (with potential losses of species), reductions in agricultural production, and increasing mortality due to excessive heat and air pollution (Marvel et al., 2023).	Air Quality, Biological Resources, Water Resources, Infrastructure
Population/demographic trends	Aspect includes changes in population and demographics within the affected environment. Trends are detailed within Section 3.7. These may be the direct result of other reasonably foreseeable future actions identified (such as roadway improvements and housing construction).	Socioeconomics
Community development trends	Notwithstanding the reasonably foreseeable future actions identified above, this aspect accounts for the overall trend of community development as represented by a combination of identified projects and those that may occur in the future that are not captured in this document (e.g., projects that may arise over time).	Socioeconomics, Land Use, Air Quality, Soils and Water Resources
Air emissions trends	Aspect includes changes in air emissions that could result in increase or reduction in criteria pollutant emissions within the affected environment. Trends are detailed in Section 3.3.	Air Quality

[a] Phase 2 A-10 retirement is analyzed under the No Action Alternative.

Key: AFB = Air Force Base; ANGB = Air National Guard Base; BLM = Bureau of Land Management; DAF = Department of the Air Force; EIS = Environmental Impact Statement; ft^2 = square feet; FY = fiscal year; IDP = Installation Development Plan; MOA = Military Operations Area; NPS = National Park Service; U.S. = United States; USFS = United States Forest Service; USDA = United States Department of Agriculture.

The OA-1K data cannot currently be obtained due to the relative immature nature of the aircraft[1] and resulting limitations on aircraft testing during its early developmental stage, the need for analyses during normal (versus developmental) flying conditions, and the time required to develop flight safety records. The AT-802 data available for the surrogate analysis are sufficient to evaluate the potential effects,

[1] Department of Defense contract reference. (see https://www.defense.gov/News/Contracts/Contract/Article/3112446/)

presented in the body of this EIS, and further detailed in the Noise Supporting Document (Table 12, and Section 1.4.1, page 1-53) and Air Quality Supporting Document (Section 2.2, page 3).[2]

3.1.1 Resources Eliminated from Further Study

Table 3-2 identifies the resource areas evaluated for this EIS. A brief discussion of the resource areas eliminated from further study is provided for each resource area after the table.

Table 3-2. Resource Areas Evaluated for this EIS

Resource Area	Base Affected Environment/Environmental Consequences	Airspace Affected Environment/Environmental Consequences
Airspace Management	No	No
Acoustic Environment	Yes	Yes
Air Quality	Yes	Yes
Safety	No	No
Soil and Water Resources	Yes	No
Biological Resources	Yes	Yes
Cultural Resources	Yes	Yes
Land Use and Recreation	No	No
Socioeconomics	Yes	No
Infrastructure	Yes	No
Hazardous Materials and Waste	Yes	No
Visual Resources	No	No

Key: EIS = Environmental Impact Statement.

Airspace Management. Airspace was eliminated from further study because no new special use airspace or changes to airspace would be created and no modifications to existing special use airspace dimensions or altitudes are being proposed. Compared to interim conditions, there would be a net decrease of 8,828 aircraft operations per year resulting in no changes to airspace dimensions or altitudes. The analysis of effects on civilian aviation users of the national airspace system is what is being eliminated from further study.

Safety. Safety applies to air and ground activities associated with aircraft flight and operations, as well as occupational safety associated with construction, operations, and maintenance activities that support base operations. Implementation of the Proposed Action would result in a decrease in aircraft and associated operations, thus reducing potential for Bird/Wildlife Aircraft Strike Hazard (BASH) and other potential aircraft incidents. In addition, proposed construction, renovation, and demolition activities would be similar to ongoing construction projects, and no new safety programs would be required. Therefore, this resource area was eliminated from further study.

Land Use and Recreation. Implementation of the Proposed Action would result in a decrease in land outside of the installation exposed to 65 decibels (dB) or greater day-night average sound level (DNL), and no recreational areas would be exposed to noise levels greater than 65 dB DNL. Proposed construction would occur in appropriate land use areas, and there would be no changes to existing land uses on the installation. Additionally, there are no proposed changes to land use or recreational areas beneath the airspace and ranges proposed for use. Noise levels, as measured in dB onset rate-adjusted day-night

[2] See Noise Supporting Document and Air Quality Supporting Document at www.492sow-beddown-eis.com.

average sound level (L_{dnmr}), would decrease or remain the same relative to interim conditions in all airspace and ranges proposed for use except beneath the Fort Huachuca Restricted Area 2303 (R-2303) A/B/C airspace, where L_{dnmr} would increase by 5 dB (see Section 3.2.2) but would remain less than 54 dB $L_{dnmr,}$ and this area is sparsely populated. Therefore, the land use and recreation resource area has been eliminated from further study.

Visual Resources. Implementation of the Proposed Action would not affect landscapes and landforms or other features that contribute to landscape-level visually aesthetic qualities. Proposed facility changes would occur in installation areas previously planned for those uses, and no off-installation facilities would be constructed or developed that could impact visual resources or the viewshed of resources. The number of aircraft operations within airspace and ranges proposed for use, as compared to interim conditions, would decrease and not result in additional overflights of any sensitive visual resources. Therefore, the visual resources resource area was eliminated from further study.

Geology and Topography. Implementation of the Proposed Action would not affect geological or topography resources. Geological resources include features such as bedrock and minerals. Topography pertains to the relief (elevation) and local landforms of a given region. Geology and topography are not addressed in this EIS because impacts would not occur on such features based on implementation of any of the alternatives. Neither bedrock nor minerals, including extraction of minerals by mining, would be affected by any of the actions. Therefore, the geology and topography resource areas were eliminated from further study.

3.2 ACOUSTIC ENVIRONMENT

3.2.1 Affected Environment

3.2.1.1 Definition of Resource and ROI

Noise, which is simply defined as unwanted sound, has the potential to affect several environmental resource areas. This acoustic environment section focuses on human annoyance and health, as well as physical effects on structures. Noise impacts to biological resources (e.g., wildlife), cultural resources and socioeconomics (e.g., property values) are discussed in sections dedicated to those resources. The primary sources of noise considered in this EIS are aircraft operations in the installation vicinity and in the training airspace and near the proposed construction activities. The acoustic environment ROI includes areas that experience aircraft noise at and near the installation, and in areas used for aircrew training.

Noise and sound are expressed in logarithmic units of dB. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB; sound levels above 120 dB begin to be felt inside the human ear as discomfort. Sound levels between 130 to 140 dB are felt as pain. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. The human ear perceives a doubling (or halving) of a sound's loudness when the sound level changes by 10 dB and a quadrupling (or quartering) of loudness when the sound level changes by 20 dB. All sounds have a spectral content, which means their magnitude or level changes with frequency. Sound levels that have been adjusted to account for frequencies heard best by the human ear are designated A-weighted dB levels. In this EIS, all referenced sound levels are A-weighted unless otherwise noted.

This EIS uses multiple noise descriptors (known as metrics) to provide a thorough description of noise levels and to assess various categories of noise impacts. These metrics are described below.

Maximum Noise Level (L_{max}). The L_{max} is the highest sound level measured during a single event in which the sound level changes with time (e.g., an aircraft overflight). During an aircraft overflight, the sound level starts at the ambient level (i.e., background sound level without aircraft noise), rises to the maximum level as the aircraft is nearest to the observer, and returns to the background level as the aircraft continues into the distance.

Equivalent Noise Level (L_{eq}). The L_{eq} represents aircraft noise levels decibels (dB)-averaged over a specified time period. The L_{eq} is useful for considering noise effects during a specific time period such as an 8-hour school day, which is denoted $L_{eq(SD)}$.

Day-Night Average Sound Level (DNL). The DNL noise metric is the dB-averaged sound level measured over a 24-hour period. The DNL noise metric includes a 10 dB penalty assigned to noise events occurring between 10:00 P.M. and 7:00 A.M. This 10 dB penalty is included to account for added intrusiveness of late-night noise.

DNL is the preferred noise metric of the U.S. Department of Housing and Urban Development, Federal Aviation Administration, U.S. Environmental Protection Agency, and Department of Defense. Studies of community annoyance in response to numerous types of environmental noise show that there is a positive correlation between DNL and the percent of the population that can be expected to be highly annoyed by the noise (refer to the Noise Supporting Documentation on the project website for details).

Onset Rate-Adjusted Day-Night Average Sound Level (L_{dnmr}) is a version of DNL that has been modified to account for the nature of flying operations in training airspace. While aircraft operations at airfields tend to be continuous or patterned, operations in airspace are sporadic and dispersed. L_{dnmr} also accounts for potential startle effects resulting from low-altitude and high-speed operations that can occur in airspace such as Military Operations Areas or Restricted Areas with addition of a "penalty" of up to 11 dB.

Because noise is a subjective experience, noise analysis requires assessing a combination of physical measurement of sound, physical and physiological effects, plus psycho- and socio-acoustic effects. Individual response to noise depends on several non-acoustic factors, including, but not limited, to the person's perceived importance of the noise, its appropriateness in the setting, the time of day, and the activity the person is involved in when the noise occurs. Further information on noise effects, metrics, modeling, and related information is contained in the Noise Supporting Document on the project website (www.492sow-beddown-eis.com).

Because legal limits on allowable noise levels could, in some cases, reduce the combat effectiveness of military equipment, military equipment is exempt from regulations that impose noise limitations. However, several policies and regulations are in place to limit the effects of military noise.

The DAF recognizes that noise-sensitive land uses are not compatible with elevated aircraft noise levels and has implemented the Air Installations Compatible Use Zones program, as described in Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*, and Department of Defense (DoD) Instruction 4165.57, *Air Installations Compatible Use Zones*, to minimize incompatible land use. At noise levels exceeding 65 dB DNL, certain noise-sensitive land uses, such as residential are considered incompatible. Land uses that are less noise-sensitive, such as industrial and wholesale commercial, are considered compatible at 65 to 70 dB DNL.

Workers in known high-noise exposure locations could be required to wear hearing protection devices, including, but not limited to, earplugs and earmuffs in accordance with applicable regulations. Per DoD policy, the 80 dB DNL noise contour is used to identify populations most at risk of potential hearing loss (USD, 2009). The potential for hearing loss is not discussed further in this EIS for the following reasons: existing programs for minimization of occupational hearing loss risk would not be affected by the Proposed Action Alternative, and noise levels would remain well below levels at which off-base hearing loss is a concern. Similarly, as discussed in Section 1.3.6 of the Noise Supporting Document, available studies do not currently support a causal relationship between noise at levels and durations associated with proposed propeller-driven aircraft operations and effects on the vestibular (inner ear) system.

3.2.1.2 Base Affected Environment

Interim conditions include 63,968 annual airfield operations at Davis-Monthan AFB (Table 3-3). As discussed in Section 1.4, the interim conditions reflect completion of ongoing changes that were previously analyzed in the Realignment EA (DAF, 2024a). These changes include the first phase of the A-10 retirement and the movement of six HH-60W helicopters assigned to the 34th Weapons Squadron and 88th Test and Evaluation Squadron from Nellis AFB to Davis-Monthan AFB. Although the Realignment EA also analyzed movement of the 66th Rescue Squadron (HH-60W), the 66th Weapons Squadron (A-10) and elements of the 422nd Test and Evaluation Squadron (A-10) to Davis-Monthan AFB, these movements are no longer planned to occur and aircraft operations counts have been adjusted accordingly in the updated interim conditions. The interim conditions also reflect the replacement of EC-130H aircraft with EA-37B aircraft, an action that is currently under way.

Interim conditions, after the changes described above, include 24,068 operations by the remaining A-10 flying units per year. Other military aircraft, which include EA-37B, F-16, HC-130J, and HH-60 helicopters, as well as aircraft assigned to the Aerospace Maintenance and Regeneration Group (AMARG) and aircraft taking part in Red Flag Rescue exercises, conduct 27,456 annual operations. Pilots from the AMARG conduct test-flights of older aircraft being stored at Davis-Monthan AFB. Civilian and transient aircraft conduct a total of 12,444 annual operations. Customs and Border Protection operates several types of small, fixed-wing, and rotary-wing aircraft and the Civil Air Patrol operates Cessna 182 aircraft. A wide variety of transient aircraft use the airfield for different purposes (e.g., stop-over during cross country flights, unfamiliar airfield for practice approaches, divert landing location during severe weather), and transient aircraft could potentially include any aircraft type.

Table 3-3. Annual Departure, Arrival, and Closed Pattern Airfield Operations Under Interim Conditions

Aircraft Category	Departure	Arrival	Closed Pattern	Total
A-10 (based units)	10,320	10,320	3,428	24,068
Other Based Military Aircraft	5,857	6,118	15,481	27,456
Civilian and Transient Aircraft	6,003	6,003	438	12,444
Total	22,180	22,441	19,347	63,968

Currently, late-night flights are minimized to the extent practicable but are sometimes required. The quiet hours policies are described in Section 2.2.2. Under interim conditions, approximately 4,264 annual airfield operations are conducted between 10:00 P.M. and 7:00 A.M. (Table 3-4). These late-night operations are primarily conducted as part of combat search and rescue missions. Approximately 1,037 based A-10 airfield operations are conducted between 10:00 P.M. and 7:00 A.M.

Table 3-4. Annual Operations Conducted Between 10:00 P.M. and 7:00 A.M. Under Interim Conditions

Aircraft Category	Departure	Arrival	Closed Pattern	Total
A-10 (based units)	0	1,037	0	1,037
Other Based Military Aircraft	117	2,312	550	2,979
Civilian and Transient Aircraft	123	125	0	248
All Aircraft (Overall)	240	3,474	550	4,264

3.2.1.2.1 Noise Exposure

Table 3-5 lists the maximum noise level (L_{max}) generated by three aircraft types that regularly operate at Davis-Monthan AFB (i.e., A-10, HC-130J, and F-16) during overflight at a distance of 1,000 feet. The F-16 fighter aircraft departure using afterburner power generates the highest noise levels of 114 dB L_{max}. Noise levels generated by A-10 (jet-powered attack aircraft) and HC-130J (propeller-driven cargo aircraft) generate 93 dB L_{max} and 84 dB L_{max}, respectively. Arrivals and the cruise portion of closed pattern operations require less engine power than departures, and generally produce less noise. The aircraft types listed in Table 3-5 are provided as examples selected from the large number of aircraft types that operate at Davis-Monthan AFB. Actual noise levels experienced by people on the ground differ from the levels presented in Table 3-5 because of several factors including but not limited to the distance between the listener and aircraft, exact power setting in use, atmospheric conditions (e.g., winds, temperature inversion, etc.), and intervening terrain and structures.

Table 3-5. Comparison of A-10, HC-130J, and F-16 Noise Levels at Distance of 1,000 Feet

Aircraft	Operation Type	Engine Power	L_{max} (dB)
A-10	Departure	97 %NC	93
HC-130J		4,500 HP	84
F-16[a]		105 %NC (afterburner)	114
A-10	Arrival	86 %NC	89
HC-130J		1,800 HP	84
F-16[a]		83 %NC	90
A-10	Closed Pattern	84 %NC	87
HC-130J		1,800 HP	84

[a] Equipped with GE-110 engine

Key: %NC = core engine speed; dB = decibels; HP = horsepower; L_{max} = maximum sound level.

Figure 3-1 shows interim condition DNL contours in 5-dB increments. Areas with the highest DNL are located along the runway and extended runway centerline or in areas where aircraft static engine runs are conducted. Although 96 acres of off-installation land area are exposed to noise levels greater than or equal to 65 dB DNL under interim conditions, land use in the affected area is industrial, commercial, and open space, and no residents are exposed to these noise levels. All existing land uses are compatible with interim conditions.

For reference, Figure 3-1 also shows the boundary of the 2004 Joint Land Use Study (JLUS) 65 dB DNL contour, which has been adopted by the City of Tucson and Pima County as the outer boundary of Noise Control District (NCD) A. Both the City of Tucson and Pima County use the NCD to plan land use decisions. The "notional" future mission noise contours that are the basis for the JLUS 65 dB DNL contour reflect five squadrons of F-16 aircraft operating at Davis-Monthan AFB (Arizona Department of Commerce, 2004).

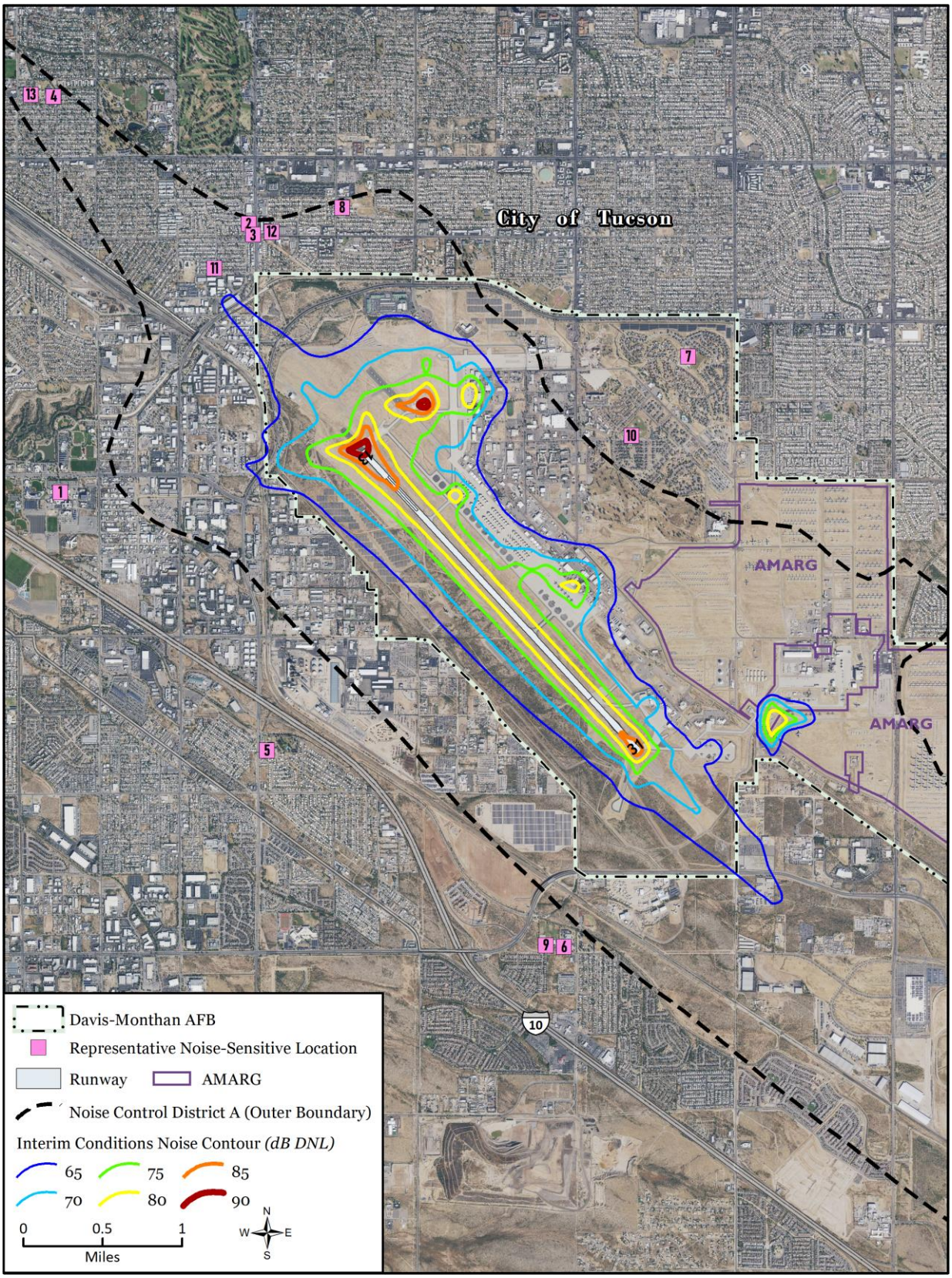

Figure 3-1. Interim Conditions Noise Contour (dB DNL) at Davis-Monthan AFB

Davis-Monthan AFB regularly communicates with the City of Tucson and Pima County providing updated information and perspectives relevant to land use decisions when appropriate. Information provided includes noise levels associated with foreseeable future missions, i.e., the potential noise level changes described in this EIS. Information also includes noise levels that reflect "notional" future missions that are not foreseeable at this time, such as the mission scenario reflected in the NCD. Local governments establish land use policies on the basis of conditions that are expected to exist in the near future and also based on a long-term outlook.

Table 3-6 lists current noise levels at several representative noise-sensitive locations around the base under interim conditions. These include a hospital, schools, and places of worship. Several of these locations are in residential areas and the interim condition DNLs at the locations listed in Table 3-6 are similar to the DNL in surrounding areas. None of the representative noise-sensitive locations in Table 3-6 are currently exposed to DNL of 65 dB or greater. Areas outside the 65 dB DNL contour line could also experience noise that can be disturbing at times. A low time-averaged noise level (e.g., DNL) does not imply that loud individual aircraft overflights never occur. Areas exposed to DNL less than 65 dB experience noise events that are less frequent and/or less intense than are experienced in areas exposed to DNL of 65 dB or greater.

Noise levels when aircraft operations are not occurring vary depending on the types and intensities of human activities. In densely populated areas or areas of noise-generating activities (e.g., vehicle traffic), median ambient noise levels (i.e., noise level exceeded 50 percent of the time) are often as high as 70 dB, as indicated by measurements taken in similar locations. In lightly populated areas (e.g., scattered residences), noise levels are typically approximately 45 dB (USEPA, 1974).

Table 3-6. DNL at Representative Noise-Sensitive Locations Under Interim Conditions

Type	ID	Description	DNL (dB)
Hospital	1	University Physicians Hospital	55
School	2	Children Reaching for the Sky Preparatory	56
	3	Future Investment Middle School	56
	4	Robison Elementary School	58
	5	Los Niños Elementary School	45
	6	Craycroft Elementary School	50
	7	Frank Borman K-8 School (on base)	52
	8	Roberts-Naylor K-8 School	53
	9	Billy Lauffer Middle School	48
	10[a]	Sonoran Science Academy on Davis-Monthan AFB[a]	51
Places of Worship	11	Ideal Missionary Baptist Church	63
	12	Redeemed Christian Church of God Glory Tabernacle	56
	13	First Free Will Baptist Church	58

[a] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Key: AFB = Air Force Base; dB = decibels; DNL = day-night average sound level; ID = identification code; K-8 = kindergarten through eighth grade.

3.2.1.2.2 Speech Interference

Speech interference is possible when noise levels exceed 50 dB. For the purposes of this analysis, any change to normal speech patterns is counted as an interference event. Table 3-7 lists the current number of events exceeding L_{max} of 50 dB in buildings with windows open and in buildings with windows closed

under interim conditions. Many of the locations listed in Table 3-7 are near residential areas, and noise levels are similar in the nearby residential areas. Flight paths are variable and speech interference events sometimes occur far from the standard Davis-Monthan AFB flight patterns. As shown in Table 3-7, L_{max} temporarily exceeds 50 dB at a rate ranging from less than one event to three events per hour.

Table 3-7. Potential Speech Interference Under Interim Conditions

Representative Noise-Sensitive Location			Annual Average Daily Indoor Daytime (7:00 A.M. to 10:00 P.M.) Events per Hour	
Type	**ID**	**Description**	**Windows Open[a]**	**Windows Closed[a]**
Hospital	1	University Physicians Hospital	1	1
School	2	Children Reaching for the Sky Preparatory	3	1
	3	Future Investment Middle School	3	1
	4	Robison Elementary School	2	1
	5	Los Niños Elementary School	<<1	<<1
	6	Craycroft Elementary School	2	<<1
	7	Frank Borman K-8 School (on base)	1	<<1
	8	Roberts-Naylor K-8 School	3	1
	9	Billy Lauffer Middle School	2	<<1
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	1	<<1
Place of Worship	11	Ideal Missionary Baptist Church	3	2
	12	Redeemed Christian Church of God Glory Tabernacle	3	1
	13	First Free Will Baptist Church	2	1

[a] Values are average number of events with an indoor L_{max} exceeding 50 dB per daytime hour (7:00 A.M. to 10:00 P.M.), assuming a 15 dB and 25 dB noise level reduction with windows open and closed, respectively; "<<1" indicates less than one event per hour (rounding to zero).

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Key: AFB = Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade; L_{max} = maximum sound level.

3.2.1.2.3 Interference with Classroom Learning

Noise interference with learning in schools is of particular concern because noise can interrupt communication or interfere with concentration. When considering intermittent noise caused by aircraft overflights, American National Standards Institute (ANSI) guidelines for classroom interference indicate that an appropriate criterion is a limit of 35 to 40 dB (depending on classroom size) on indoor background equivalent noise levels (L_{eq}) during the school day ($L_{eq(SD)}$). In addition, an appropriate criterion for single events is 50 dB L_{max}. In accordance with the current DoD Noise Working Group (DNWG) recommendations, estimated interior $L_{eq(SD)}$ exceeding 40 dB was taken as an indication that the ANSI criteria are being exceeded (DNWG, 2013). Table 3-8 lists $L_{eq(SD)}$ at the noise-sensitive locations. $L_{eq(SD)}$ currently exceeds 40 dB at the Children Reaching for the Sky, Future Investment Middle School, and Robison Elementary when windows are open but not when they are closed (Table 3-8). $L_{eq(SD)}$ at all other schools studied are currently below the L_{eq} criterion. The average number of events per hour currently exceeding an L_{max} of 50 dB at schools near Davis-Monthan AFB when windows are open and when windows are closed under interim conditions range from less than one event to three events per hour (Table 3-7).

Table 3-8. Indoor Classroom Learning Disruption Under Interim Conditions

Type	ID	Description	$L_{eq(SD)}$ (dB)	
			Windows Open[a]	Windows Closed[a]
School	2	Children Reaching for the Sky Preparatory	42	<35
	3	Future Investment Middle School	42	<35
	4	Robison Elementary School	42	<35
	5	Los Niños Elementary School	<35	<35
	6	Craycroft Elementary School	36	<35
	7	Frank Borman K-8 School (on base)	35	<35
	8	Roberts-Naylor K-8 School	39	<35
	9	Billy Lauffer Middle School	<35	<35
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	37	<35

[a] Assumes standard values of 15 dB noise level reductions for windows open and 25 dB noise level reductions for windows closed, respectively.

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Key: < = less than; AFB = Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade; $L_{eq(SD)}$ = equivalent noise level during the 8-hour school day.

3.2.1.2.4 Sleep Disturbance

Nighttime flying, which is currently required as part of training for certain missions has an increased likelihood of causing sleep disturbance. The lack of quality sleep has the potential to affect health and concentration. The probability of being awakened at least once per night was calculated using a method described by the ANSI (ANSI, 2008). The method first predicts the probability of awakening associated with each type of flying event and then sums the probabilities associated with all event types. The overall probability of awakening at least once per night reflects all flying events that occur between 10:00 P.M. and 7:00 A.M., when most people sleep (Table 3-9). Sleep disturbance probabilities listed for places of worship are not intended to imply that people regularly sleep in places of worship, but instead are representative of impacts in nearby residential areas. Results only apply to people who sleep during the night. People who sleep during the day experience additional noise events, resulting in higher probabilities of awakening.

Table 3-9. Probability of Awakening Under Interim Conditions

Type	ID	Name/Description	Annual Average Nightly (10:00 P.M. to 7:00 A.M.) Probability of Awakening at Least Once per Night (%)	
			Windows Open[a]	Windows Closed[a]
Hospital	1	University Physicians Hospital	8	4
School	2	Children Reaching for the Sky Preparatory	10	4
	3	Future Investment Middle School	10	4
	4	Robison Elementary School	8	5
	5	Los Niños Elementary School	1	<<1
	6	Craycroft Elementary School	1	<<1
	7	Frank Borman K-8 School (on base)	3	1
	8	Roberts-Naylor K-8 School	6	1
	9	Billy Lauffer Middle School	1	<<1
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	2	1

Table 3-9. Probability of Awakening Under Interim Conditions (continued)

Type	ID	Name/Description	Annual Average Nightly (10:00 P.M. to 7:00 A.M.) Probability of Awakening at Least Once per Night (%)	
			Windows Open[a]	Windows Closed[a]
Place of Worship	11	Ideal Missionary Baptist Church	14	7
	12	Redeemed Christian Church of God Glory Tabernacle	9	2
	13	First Free Will Baptist Church	8	5

[a] Assumes standard values of 15 dB noise level reductions for windows open and 25 dB noise level reductions for windows closed, respectively.

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Note: Locations where the percentage probability of awakening rounds to zero are listed using the symbol <<1%.

Key: % = percent; AFB= Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade.

3.2.1.3 Airspace and Ranges Affected Environment

This section describes the noise levels under interim conditions in special use airspace (SUA), ranges, and other areas where aircraft operations would occur under the Proposed Action Alternative. In addition to airspace flight operations noise levels, the noise analysis also describes noise levels generated by munitions training on approved training ranges.

Table 3-10 lists the number of operations and percentage of total operations during the late-night period (10:00 P.M. to 7:00 A.M.) for each airspace under interim conditions in which operations would change under the Proposed Action Alternative. Numbers of operations are stated for A-10 aircraft based at Davis-Monthan AFB as well as for "other" aircraft. "Other" aircraft includes fighter aircraft based at Luke AFB and Morris Air National Guard Base as well many additional types of fighter, cargo, bomber, and rotary-wing aircraft. The airspaces listed currently support between 1,194 and 28,765 annual operations and the percentage of operations that occur during 10:00 P.M. and 7:00 A.M. ranges from 1 to 9 percent under interim conditions.

Table 3-10. Annual Airspace Operations Under Interim Conditions

Airspace Description[a]	Annual Operations			Percent of Operations Between 10:00 P.M. and 7:00 A.M.
	A-10	Other	Total	
Ruby/Fuzzy MOAs	3,096	4,711	7,807	2
Sells 1/Sells Low MOAs	[b]	15,705	15,705	2
Outlaw MOA	[b]	1,194	1,194	1
Jackal/Jackal Low MOAs	1,548	2,201	3,749	3
Tombstone A/B/C MOAs	3,096	2,464	5,560	9
BMGR (R-2301E)	4,128	9,729	13,857	7
Fort Huachuca Airspace (R-2303 A/B/C)	[b]	28,765	28,765	9

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Areas.

[b] Operations reflect occasional use or transit only.

Key: BMGR = Barry M. Goldwater Range; MOA = Military Operations Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Table 3-11 lists L_{max} generated by aircraft that are currently operating in the airspace and ranges proposed for use. The aircraft types listed are examples selected from the large number of aircraft types that use the training and range airspaces. Noise levels, which are listed for engine power settings common in training airspace, are provided for comparative purposes. Actual noise levels experienced by a person on the ground differ from the listed levels because of factors including but not limited to distance between aircraft and listener, atmospheric conditions, and the exact power setting in use at the time. In general terms, fighter aircraft, such as the F-16, generate the loudest overflight noise levels. Jet aircraft equipped with less-powerful engines, such as the A-10 and propeller-driven aircraft, such as the HC-130J, generate noise levels lower than those generated by fighter aircraft when operating at equivalent altitudes.

Table 3-11. Comparison of L_{max} for Aircraft Using Special Use Airspace Under Interim Conditions

Aircraft	Engine Power	L_{max} (dB) During Direct Overflight at Distance (feet)				
		100	500	1,000	3,000	10,000
A-10	97 %NC	110	100	92	78	60
F-16[a]	100 %NC	117	108	100	87	69
HC-130J	1,800 HP	99	91	83	70	54

[a] Equipped with GE-100 engine.

Key: %NC = core engine speed; dB = decibels; HP = horsepower; L_{max} = maximum sound level.

The L_{dnmr} beneath the affected airspaces currently ranges from less than 45 dB to 64 dB under interim conditions (Table 3-12). The highest noise level (64 dB L_{dnmr}) occurs beneath R-2301E (airspace associated with Barry M. Goldwater Range [BMGR]). which is intensively used by several types of fighter aircraft. Areas beneath the other airspaces also experience loud aircraft noise levels, but overflight noise is less frequent and/or less intense than beneath R-2301E.

Table 3-12. Noise Levels Beneath Airspaces Under Interim Conditions

Airspace Description[a]	Noise Level (dB L_{dnmr})[b]
Ruby/Fuzzy MOAs	58
Sells 1/Sells Low MOAs	53
Outlaw MOA	<45
Jackal/Jackal Low MOAs	47
Tombstone A/B/C MOAs	54
BMGR (R-2301E)	64
Fort Huachuca Airspace (R-2303 A/B/C)	49

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Airspaces.

[b] Airspace floor altitudes vary between subunits of the named airspace, and some areas are overflown at higher minimum altitudes than others. L_{dnmr} values reflect the highest sound level beneath any subunit of the named airspace.

Key: < = less than; BMGR = Barry M. Goldwater Range; dB = decibels; L_{dnmr} = onset-rate adjusted monthly day-night average sound level; MOA = Military Operating Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

As shown in Table 3-13, the number of events exceeding 50 dB L_{max} (i.e., a level with some potential to at least momentarily interrupt quiet conversation) beneath each airspace unit currently ranges from very close to zero (indicated by "<<1") to 16 events per average day.

Table 3-13. Number of Events Exceeding 50 dB L_{max} per Average Day Under Interim Conditions

Airspace Description[a]	Events Exceeding 50 dB L_{max} per Average Day[a]
Ruby/Fuzzy MOAs	7
Sells 1/Sells Low MOAs	1
Outlaw MOA	<<1
Jackal/Jackal Low MOAs	<<1
Tombstone A/B/C MOAs	1
BMGR (R-2301E)	16
Fort Huachuca Airspace (R-2303 A/B/C)	1

[a] Values are rounded to the nearest whole number. Airspace floor altitudes vary between subunits of the named airspace, and some areas are overflown at higher minimum altitudes than others. Numbers of events per average day values reflect subunit of the named airspace with the highest sound level. Airspace operations also make use of overlying Air Traffic Control Assigned Airspaces.

Note: "<<1" indicates a number that rounds to zero.

Key: BMGR = Barry M. Goldwater Range; dB = decibels; L_{max} = maximum sound level; MOA = Military Operating Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

When aircraft noise is not occurring, ambient noise levels near urban areas are louder due to highways and other human activities, versus noise levels that are quieter in geographically remote areas devoid of human activities. Median noise levels measured at Saguaro National Park, which is representative of extremely remote areas in Arizona and New Mexico, were measured between 23 and 28 dB during the day and between 20 and 41 dB during the night (Job, 2016). In this quiet setting, non-natural noise sources, such as aircraft noise, are more noticeable.

Areas outside of SUA are used by both military and civilian aircraft transiting between airfields or conducting other activities. The noise levels generated by aircraft depend on the type of aircraft (e.g., jet, propeller-driven, or rotary-wing) altitude, and other factors. For example, a commercial Boeing 767 overflight at 10,000 feet above ground level (AGL) in a typical climb configuration generates approximately 60 dB. Noise generated by these activities is often experienced as a single overflight event, but some aircraft (e.g., news helicopter, crop duster) may spend more time operating in a specific area.

Air-to-ground ordnance used by A-10 and other aircraft types at the BMGR under interim conditions include, but are not limited to, 30-millimeter rounds, 2.75-inch rockets, AGM-114 Hellfire missiles, and MK-84 2,000-pound bombs. Many of the munitions used at BMGR are specifically designed for target practice. Inert rounds and target practice variant missiles do not detonate on impact (or use only a small spotting charge), but noise generated during firing or flight of the missile may be audible near the target, but only minimal noise is generated on impact. Some interim condition air-to-ground munitions training by A-10 pilots is conducted with high-explosive bombs, and these munitions generate high noise levels on detonation.

The Davis-Monthan AFB CATM range, Fort Huachuca ranges, the Arizona National Guard Florence Military Reservation, and the BMGR are also used for a wide variety of ground-to-ground (small arms) munitions training. Training is only conducted on approved ranges to ensure that safety is maintained. Ground-to-ground munitions use generates localized temporary noise level increases while training is underway.

3.2.1.4 Analysis Methodology

Impacts are assessed by comparing noise levels under the Proposed Action Alternative against interim conditions and the No Action Alternative. In accordance with AFI 32-1015, the Noisemap suite of software was used to calculate noise levels. Noise levels at and near the installation were calculated using the program Noisemap version 7.3, while noise levels beneath the airspace and ranges proposed for use were calculated using the MOA-Route Noisemap (MR_NMAP) version 3. Noise levels were analyzed in accordance with the DNWG guidance.

Although C-130J measured noise levels are available in the DoD reference noise levels database, the DoD has not yet conducted noise levels measurements for the OA-1K aircraft, and reference noise levels were developed using best available data to support the current noise impact analysis. After a review of available data sources, the best available data source was found to be measurements of the civilian equivalent aircraft to the OA-1K called the AT-802. Noise measurements of the AT-802 were conducted by the European Union Aviation Safety Agency. Federal Aviation Administration reference noise databases were searched and did not contain measured noise levels for the civilian equivalent aircraft to the OA-1K (i.e., AT-802 aircraft). The T-6 aircraft is the most similar aircraft to the OA-1K for which measurements exist in the DoD reference noise level database; however, the T-6 is equipped with a less-powerful engine (1,100 horsepower) than the OA-1K (1,434 horsepower) and does not provide a conservative noise level surrogate for the OA-1K. European Union Aviation Safety Agency measurements of the AT-802 are the best available data and were used as the basis for developing OA-1K reference noise levels. Additional details regarding noise surrogates and other aspects of analysis methodology are provided in the Noise Supporting Document on the project website.

3.2.2 Environmental Consequences

This section describes noise impacts that would result from implementation of the No Action and Proposed Action Alternatives.

3.2.2.1 No Action Alternative Environmental Consequences

Following completion of the second phase of the A-10 aircraft retirement, there would be no A-10 aircraft based at Davis-Monthan AFB. Noise from A-10 aircraft operations would no longer be heard near the base or beneath the airspace and ranges proposed for use on a regular basis. A-10 aircraft assigned to the Aircraft Maintenance and Regeneration Facility could conduct test flights and operate on an occasional basis.

3.2.2.1.1 Base Environmental Consequences

As shown in Table 3-14, based A-10 flying unit operations would cease under the No Action Alternative. Flying operations by all other aircraft, which include fighter aircraft operating as transients or as part of the alert mission, would remain the same as interim conditions. The result would be a net reduction of 24,068 operations flown per year at Davis-Monthan AFB.

The numbers of operations flown by non-A-10 aircraft between 10:00 P.M. and 7:00 A.M. under the No Action Alternative would be the same as under interim conditions (see Table 3-4). The discontinuation of A-10 operations would result in 1,037 fewer A-10 arrival operations occurring between 10:00 P.M. and 7:00 A.M. The total number of operations during 10:00 P.M. and 7:00 A.M. would decrease from 4,264 per year to 3,227 per year under the No Action Alternative (Table 3-4).

Table 3-14. Annual Departure, Arrival, and Closed Pattern Airfield Operations Under the No Action Alternative

Aircraft Category	Departure		Arrival		Closed Pattern		Total	
	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions
A-10 (based units)	0	-10,320	0	-10,320	0	-3,428	0	-24,068
Other Based Military Aircraft	5,857	0	6,118	0	15,481	0	27,456	0
Civilian and Transient Aircraft	6,003	0	6,003	0	438	0	12,444	0
Total	11,860	-10,320	12,121	-10,320	15,919	-3,428	39,900	-24,068

Key: - = minus.

Noise Exposure

The operations of other aircraft types would continue as described for interim conditions (see Section 3.2.1.2.1). Figure 3-2 shows the No Action Alternative DNL contours, which are smaller than the noise contours associated with interim conditions. The number of off-installation acres exposed to DNL of 65 dB or greater would decrease from 96 to 16 acres. The operations of fighter aircraft (i.e., operating as transients or as part of the alert mission) would not change under the No Action Alternative. Because fighter aircraft are louder than the other aircraft types that operate at Davis-Monthan AFB, they have a strong influence on overall time-averaged noise levels despite occurring less frequently than the operations of other aircraft types. DNL reductions associated with the discontinuation of 24,068 annual A-10 aircraft operations are less than they would be if noise generated by fighter aircraft were not present. Land use types in the affected off-installation area consists entirely of industrial, commercial, and open space, and no residents would be exposed to noise levels above 65 dB DNL under the No Action Alternative.

As shown in Table 3-15, DNL under the No Action Alternative, representative noise-sensitive locations around the base would remain the same or decrease by up to 2 dB relative to interim conditions. Loud noise events would still be heard, but the planned Phase 2 A-10 retirement would result in flight operations being less frequent.

Speech Interference

Under the No Action Alternative, the number of events per average hour with potential to interfere with speech would decrease by up to two or remain the same at noise-sensitive locations relative to interim conditions (Table 3-16).

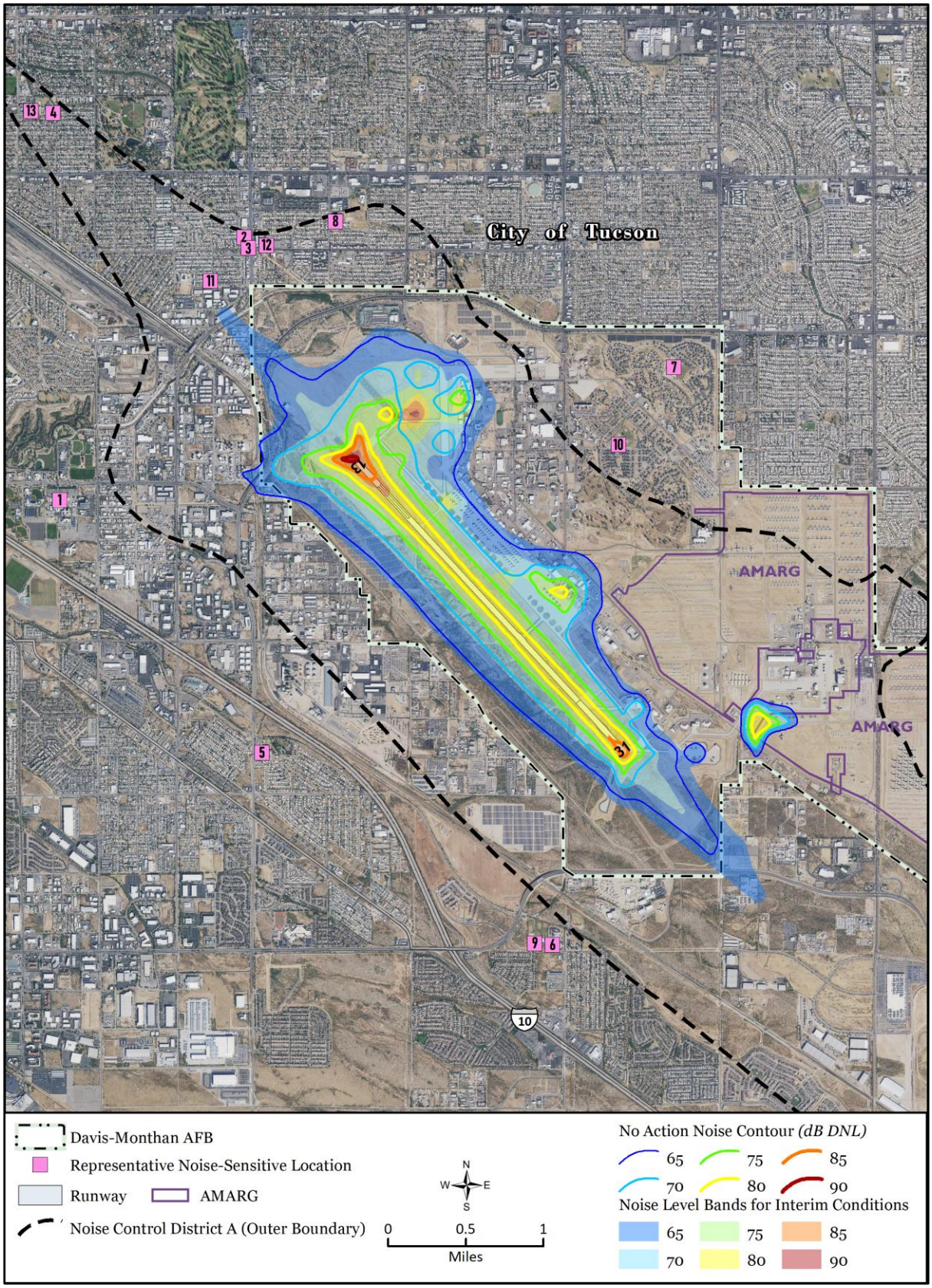

Figure 3-2. No Action Alternative DNL Contours at Davis-Monthan AFB

Table 3-15. DNL at Representative Noise-Sensitive Locations Under the No Action Alternative

Type	ID	Description	DNL (dB)	
			No Action Alternative	Change from Interim Conditions
Hospital	1	University Physicians Hospital	55	0
School	2	Children Reaching for the Sky Preparatory	55	-1
	3	Future Investment Middle School	55	-1
	4	Robison Elementary School	57	-1
	5	Los Niños Elementary School	45	0
	6	Craycroft Elementary School	49	-1
	7	Frank Borman K-8 School (on base)	52	0
	8	Roberts-Naylor K-8 School	52	-1
	9	Billy Lauffer Middle School	47	-1
	10[a]	Sonoran Science Academy on Davis-Monthan AFB	51	0
Place of Worship	11	Ideal Missionary Baptist Church	61	-2
	12	Redeemed Christian Church of God Glory Tabernacle	55	-1
	13	First Free Will Baptist Church	57	-1

[a] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Key: - = minus; AFB = Air Force Base; dB = decibels; DNL = day-night average sound level; ID = identification code; K-8 = kindergarten through eighth grade.

Interference with Classroom Learning

The potential for noise interference with learning in schools would decrease or remain the same as interim conditions under the No Action Alternative as indicated by $L_{eq(SD)}$ values (Table 3-17), and the number of potential speech interference events per average hour (Table 3-16). The $L_{eq(SD)}$ would decrease by up to 2 dB with windows open and would remain the same with windows closed. The number of events exceeding 50 dB L_{max} indoors (i.e., with potential to momentarily interfere with speech) would decrease by as much as two per hour with windows open and by as much as one per hour with windows closed.

Table 3-16. Potential Speech Interference Under the No Action Alternative

Representative Noise-Sensitive Location			Annual Average Daily Indoor Daytime (7:00 A.M. to 10:00 P.M.) Events per Hour			
Type	ID	Description	No Action Alternative		Change From Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open[b]	Windows Closed[b]
Hospital	1	University Physicians Hospital	1	1	—	—
School	2	Children Reaching for the Sky Preparatory	1	<<1	-2	-1
	3	Future Investment Middle School	1	<<1	-2	-1
	4	Robison Elementary School	1	1	-1	—
	5	Los Niños Elementary School	<<1	<<1	—	—
	6	Craycroft Elementary School	<<1	<<1	-2	—

Table 3 16. Potential Speech Interference Under the No Action Alternative (continued)

Representative Noise-Sensitive Location			Annual Average Daily Indoor Daytime (7:00 A.M. to 10:00 P.M.) Events per Hour			
Type	ID	Description	No Action Alternative		Change From Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open[b]	Windows Closed[b]
	7	Frank Borman K-8 School (on base)	1	<<1	—	—
	8	Roberts-Naylor K-8 School	1	<<1	-2	-1
	9	Billy Lauffer Middle School	<<1	<<1	-2	—
	10[c]	Sonoran Science Academy on Davis-Monthan AFB	1	<<1	—	—
Place of Worship	11	Ideal Missionary Baptist Church	1	1	-2	-1
	12	Redeemed Christian Church of God Glory Tabernacle	1	<<1	-2	-1
	13	First Free Will Baptist Church	1	1	-1	—

[a] Values are annual average daily number of indoor daytime (7:00 A.M. to 10:00 P.M.) events per hour with L_{max} exceeding 50 dB assuming 15 dB and 25 dB noise level reduction with windows open and closed, respectively; "<<1" indicates less than one event per hour (rounding to zero).

[b] Em dash (—) indicates no change.

[c] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Key: - = minus; AFB = Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade; L_{max} = maximum sound level.

Table 3-17. Indoor Classroom Learning Disruption Under the No Action Alternative

Representative Noise-Sensitive Location			$L_{eq(SD)}$ dB			
Type	ID	Description	No Action Alternative		Change From Interim Conditions	
			Windows Open[a]	Windows Open[a]	Windows Open[a]	Windows Closed[a]
School	2	Children Reaching for the Sky Preparatory	40	<35	-2	—
	3	Future Investment Middle School	41	<35	-1	—
	4	Robison Elementary School	41	<35	-1	—
	5	Los Niños Elementary School	<35	<35	—	—
	6	Craycroft Elementary School	<35	<35	-1	—
	7	Frank Borman K-8 School (on base)	35	<35	—	—
	8	Roberts-Naylor K-8 School	38	<35	-1	—
	9	Billy Lauffer Middle School	<35	<35	—	—
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	37	<35	—	—

[a] Indoor sound levels assume 15 dB and 25 dB noise level reduction with windows open and closed, respectively. Em dash (—) indicates no change.

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Notes: $L_{eq(SD)}$ is the equivalent noise level during a school day (defined as 8:00 A.M. to 4:00 P.M.); <<1 indicates that the number of potential speech interference (>50 dB) events per hour resulting from Davis-Monthan AFB-based aircraft overflights is low (rounding to zero).

Key: > = greater than; < = less than; AFB = Air Force Base; dB = decibels; K-8 = kindergarten through eighth grade; L_{max} = maximum sound level.

Sleep Disturbance

The likelihood of sleep disturbance would decrease or remain the same under the No Action Alternative (Table 3-18). As noted in Section 3.2.2.1.1, 4 percent of the 24,068 annual A-10 operations occur between 10:00 P.M. and 7:00 A.M. The discontinuation of these late-night operations with retirement of remaining A-10 aircraft would result in the reduced probability of awakening at certain locations.

Table 3-18. Average Probability of Awakening Under the No Action Alternative

Type	ID	Name/Description	Annual Average Nightly (10:00 P.M. to 7:00 A.M.) Probability of Awakening at Least Once per Night (%)			
			No Action Alternative		Change from Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]
Hospital	1	University Physicians Hospital	8	4	0	0
School	2	Children Reaching for the Sky Preparatory	7	2	-3	-2
	3	Future Investment Middle School	7	2	-3	-2
	4	Robison Elementary School	5	3	-3	-2
	5	Los Niños Elementary School	1	<<1	0	0
	6	Craycroft Elementary School	1	<<1	0	0
	7	Frank Borman K-8 School (on base)	3	1	0	0
	8	Roberts-Naylor K-8 School	6	1	0	0
	9	Billy Lauffer Middle School	1	<<1	0	0
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	2	1	0	0
Place of Worship	11	Ideal Missionary Baptist Church	9	4	-5	-3
	12	Redeemed Christian Church of God Glory Tabernacle	7	2	-2	0
	13	First Free Will Baptist Church	5	3	-3	-2

[a] Assumes standard values of 15 dB noise level reductions for windows open and 25 dB noise level reductions for windows closed, respectively

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Note: Locations where the percentage probability of awakening rounds to zero are listed using the symbol <<1%.

Key: - = minus**;** % = percent; AFB = Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade.

3.2.2.1.2 Airspace and Ranges Environmental Consequences

Under the No Action Alternative, operations being conducted by A-10 pilots based at Davis-Monthan AFB would cease, but all other operations would remain the same as under interim conditions (Table 3-19). The discontinuation of A-10 operations would result in reduction in the number of operations occurring between 10:00 P.M. and 7:00 A.M. beneath the airspace and ranges proposed for use by as many as 206 operations per year (Table 3-20).

Table 3-19. Annual Operations at Any Time of Day Under the No Action Alternative

Airspace Name[a]	Annual Operations					
	A-10		Other		Total	
	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions
Ruby/Fuzzy MOAs	[b]	-3,096	4,711	—	4,711	-3,096
Sells 1/ Sells Low MOAs	[b]	—	15,705	—	15,705	—
Outlaw MOA	[b]	—	1,194	—	1,194	—
Jackal/Jackal Low MOAs	[b]	-1,548	2,201	—	2,134	-1,548
Tombstone A/B/C MOAs	[b]	-3,096	2,464	—	2,464	-3,096
BMGR (R-2301E)	[b]	-4,128	9,729	—	26,458	-4,128
Fort Huachuca Airspace (R-2303 A/B/C)	[b]	[b]	28,765	—	28,765	—

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Areas.
[b] Operations reflect occasional use or transit only.
***Note*:** Em dash (—) indicates no change.
Key: - = minus; BMGR = Barry M. Goldwater Range; MOA = Military Operating Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Table 3-20. Annual Operations Conducted Between 10:00 P.M. and 7:00 A.M. Under the No Action Alternative

Airspace Name[a]	Annual Operations[b]					
	A-10		Other		Total	
	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions
Ruby/ Fuzzy MOAs	[b]	-155	37	—	37	-155
Sells 1/ Sells Low MOAs	[b]	—	293	—	293	—
Outlaw MOA	[b]	—	13	—	13	—
Jackal/ Jackal Low MOAs	[b]	-77	22	—	22	-77
Tombstone A/B/C MOAs	[b]	-155	341	—	341	-155
BMGR (R-2301E)	[b]	-206	695	—	695	-206

Table 3-20. Annual Operations Conducted Between 10:00 P.M. and 7:00 A.M. Under the No Action Alternative (continued)

Airspace Name[a]	Annual Operations[b]					
	A-10		Other		Total	
	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions	No Action Alternative	Change from Interim Conditions
Fort Huachuca Airspace (R-2303 A/B/C)	[b]	[b]	2,517	—	2,517	—

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Areas.
[b] Operations reflect occasional use or transit only.
Note: Em dash (—) indicates no change.
Key: - = minus; BMGR = Barry M. Goldwater Range; MOA = Military Operating Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Noise levels (dB L_{dnmr}) beneath the airspace and ranges proposed for use would decrease by up to 2 dB or remain the same under the No Action Alternative relative to interim conditions (Table 3-21).

Table 3-21. Noise Levels Beneath Affected Airspaces Under the No Action Alternative

Airspace Name[a]	Noise Level (dB L_{dnmr})[b]	Change from Interim Conditions
Ruby/Fuzzy MOAs	57	-1
Sells 1/Sells Low MOAs	53	0
Outlaw MOA	<45	0
Jackal/Jackal Low MOAs	<45	-2
Tombstone A/B/C MOAs	54	0
BMGR (R-2301E)	64	0
Fort Huachuca Airspace (R-2303 A/B/C)	49	0

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Airspaces.
[b] Airspace floor altitudes vary between subunits of the named airspace, and some areas are overflown at higher minimum altitudes than others. L_{dnmr} values reflect the highest sound level beneath any subunit of the named airspace.
Key: - = minus; < = less than; BMGR = Barry M. Goldwater Range; dB = decibels; L_{dnmr} = onset-rate adjusted monthly day-night average sound level; MOA= Military Operating Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

The number of noise events exceeding 50 dB L_{max} per average day under the No Action Alternative would be the same as under interim conditions (Table 3-22). A-10 aircraft are less loud than many other aircraft types that operate in the airspaces and affect relatively small ground areas at levels exceeding 50 dB L_{max} within the context of large MOA footprints. As a result, there is no change in the average number of events exceeding 50 dB L_{max} when rounded to the nearest whole number.

Table 3-22. Number of Events Exceeding 50 dB L_{max} per Average Day Under the No Action Alternative

Airspace Name	Events Exceeding 50 dB L_{max} per Average Day[a]	
	No Action Alternative	Change from Interim Conditions
Ruby/Fuzzy MOAs	7	—
Sells 1/Sells Low MOAs	1	—
Outlaw MOA	<<1	—
Jackal/Jackal Low MOAs	<<1	—
Tombstone A/B/C MOAs	1	—
BMGR (R-2301E)	16	—
Fort Huachuca Airspace (R-2303 A/B/C)	1	—

[a] Values are rounded to the nearest whole number. Airspace floor altitudes vary between subunits of the named airspace, and some areas are overflown at higher minimum altitudes than others. Numbers of events per average day values reflect the subunit of the named airspace with the highest sound level.

Notes: Em dash (—) indicates no change; "<<1" indicates a value that rounds to zero.

Key: BMGR = Barry M. Goldwater Range; dB = decibels; L_{max} = maximum sound level; MOA = Military Operating Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Munitions use by Davis-Monthan AFB A-10 pilots would cease. The discontinuation of munitions use would result in reductions in munitions noise levels at BMGR.

3.2.2.2 Proposed Action Alternative Environmental Consequences

The Proposed Action Alternative includes the beddown of OA-1K and MC-130J aircraft. The planned Phase 2 of the A-10 retirement would occur simultaneously with the proposed beddown. This analysis describes changes in noise levels relative to interim conditions and also compares noise levels resulting from the Proposed Action Alternative to those that would result from the No Action Alternative (which also reflects the remaining A-10 retirements).

3.2.2.2.1 Base Environmental Consequences

Under the Proposed Action Alternative, there would be 6,600 OA-1K operations and 13,440 MC-130J operations conducted annually at Davis-Monthan AFB (i.e., 20,040 additional operations in total). However, the planned Phase 2 A-10 retirement would discontinue 24,068 annual A-10 operations (Table 3-23). The overall number of airfield operations would decrease by 4,028 relative to interim conditions. Quiet hours and noise abatement policies would apply to the proposed AFSOC aircraft operations (i.e., OA-1K and MC-130J).

As described in local flying guidance, quiet hours are observed from 10:30 P.M. to 6:00 A.M. For base-assigned HC-130J and HH-60 aircraft, arrivals are allowed from 10:30 P.M. to midnight between October 1 and February 28 and are allowed from 10:30 P.M. to 2:00 A.M. from March 1 to September 30. During these periods, aircrews would make one approach to a full stop to comply with the base quiet hours. The only change to Davis-Monthan AFB local flying guidance proposed at this time would be to include the proposed AFSOC aircraft (i.e., OA-1K and MC-130J) in the list of aircraft that currently includes HC-130J and HH-60 aircraft assigned to Davis-Monthan AFB. Any deviations from the quiet hours policies would require approval by the 355th Operations Group Commander.

Table 3-23. Annual Airfield Operations Under the Proposed Action Alternative

Aircraft Type	Departure			Arrival			Closed Pattern			Total		
	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions
OA-1K	3,000	+3,000	+3,000	3,000	+3,000	+3,000	600	+600	+600	6,600	+6,600	+6,600
MC-130J	1,600	+1,600	+1,600	1,600	+1,600	+1,600	10,240	+10,240	+10,240	13,440	+13,440	+13,440
A-10	0	—	-10,320	0	—	-10,320	0	—	-3,428	0	—	-24,068
Other Based Military Aircraft	5,857	—	—	6,118	—	—	15,481	—	—	27,456	—	—
Civilian and Transient Aircraft	6,003	—	—	6,003	—	—	438	—	—	12,444	—	—
Total	**16,460**	**+4,600**	**-5,720**	**16,721**	**+4,600**	**-5,720**	**26,759**	**+10,840**	**+7,412**	**59,940**	**+20,040**	**-4,028**

Note: Em dash (—) indicates no change.
Key: + = plus; - = minus.

Certain AFSOC aircraft training mission requirements must be completed after dark, and some aircraft operations would extend into the late night. As shown in Table 3-24, approximately 300 OA-1K initial arrivals per year would occur between 10:00 P.M. and 7:00 A.M. MC-130J aircrews would fly approximately 1,072 initial arrivals, 512 closed pattern operations, and 80 departures per year during this same time period. In total, 492 SOW aircrews would fly an estimated 1,964 annual operations between 10:00 PM and 7:00 AM.

Table 3-24. Number of Annual Operations Between 10:00 P.M. and 7:00 A.M. Under the Proposed Action Alternative

Aircraft Type	Departure			Arrival			Closed Pattern			Total		
	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions
OA-1K	0	—	—	300	+300	+300	0	—	—	300	+300	+300
MC-130J	80	80	80	1,072	+1,072	+1,072	512	+512	+512	1,664	+1,664	+1,664
A-10	0	—	—	0	—	-1,037	0	—	—	0	—	-1,037
Other Based Military Aircraft	117	—	—	2,312	—	—	550	—	—	2,979	—	—
Civilian and Transient Aircraft	123	—	—	125	—	—	0	—	—	248	—	—
Total	**320**	**80**	**80**	**3,809**	**+1,372**	**+335**	**1,062**	**+512**	**+512**	**5,191**	**+1,964**	**+927**

Note: Em dash (—) indicates no change.
Key: + = plus; - = minus.

A-10 pilots currently based at Davis-Monthan AFB conduct approximately 1,037 initial approach aircraft operations per year between 10:00 P.M. and 7:00 A.M. under interim conditions. These operations would no longer occur once the remaining A-10 aircraft retire. The overall total number of operations flown annually at Davis-Monthan AFB between 10:00 P.M. and 7:00 A.M. would increase from 4,264 to 5,191. This net increase of 927 operations per year relative to interim conditions equates to 3 operations per night, on average, between 10:00 P.M. and 7:00 A.M. As shown in Table 3-24, proposed operations between 10:00 P.M. and 7:00 A.M. would consist primarily of arrivals. Arrivals are conducted at lower engine power settings than departures and generate lower noise levels.

Existing noise abatement procedures at Davis-Monthan AFB, which would also apply to proposed AFSOC operations, include guidance on the determination of the active runway. During nighttime hours, on weekends, and on holidays, in wind conditions up to a 10-knot tailwind, the preference is to conduct departures from Runway 13 (i.e., southbound) and arrivals to Runway 31 (i.e., northbound). The current noise abatement procedure defines "nighttime" as lasting from "the end of dusk civil twilight to the beginning of dawn civil twilight." This definition differs from time periods specified for quiet hours (described previously) and the time period between 10:00 P.M. and 7:00 A.M., which is relevant to calculation of DNL. During daylight hours (i.e., times that are not "nighttime"), in wind conditions up to a 10-knot tailwind, the preference is to conduct departures from and arrivals to Runway 13 (i.e., southbound). Impacts would be minimized, as AFSOC aircrews would follow existing active runway selection noise abatement procedures, which reduce overflights of densely populated areas and particularly departure operations over densely populated areas.

Current noise abatement procedures at Davis-Monthan AFB require aircrews to restrict multiple practice instrument approaches when possible, consistent with training requirements. In addition, noise abatement procedures require avoidance of noise-sensitive areas by specified distances. As discussed in Section 2.2.2, AFSOC aircrews would accomplish some practice approach training at other airfields (e.g., Libby Army Airfield and associated unimproved airstrips) thereby reducing the number of practice approaches that need to be conducted at Davis-Monthan AFB. All of the flying distance restrictions currently in place around noise-sensitive areas would be maintained under the Proposed Action Alternative.

Noise Exposure

The propeller-driven OA-1K and MC-130J aircraft that would bed down under the Proposed Action Alternative generate noise levels (dB L_{max}) that are less than or the same as the noise levels generated by currently based aircraft (Table 3-25). In the typical departure configuration, an OA-1K overflight at 1,000 feet AGL generates a noise level (L_{max}) that is 9 dB less than an A-10 overflight. OA-1K arrivals and closed pattern operations are 8 and 6 dB (L_{max}) lower, respectively, than A-10 aircraft in equivalent configurations.

The proposed MC-130J aircraft would generate the same noise levels as HC-130J aircraft currently based at Davis-Monthan AFB. OA-1K and MC-130J overflights generate substantially lower noise levels than those generated by fighter aircraft such as the F-16s operated as part of the alert mission or as transient aircraft.

Actual noise levels experienced on the ground differ from levels listed in Table 3-25 because of factors including but not limited to the distance between the listener and aircraft, exact power setting in use, atmospheric conditions (e.g., winds, temperature inversion, etc.), and intervening terrain and structures.

Table 3-25. Comparison of OA-1K, MC-130J, and Representative Currently Based Fixed-Wing Aircraft Noise Levels at Distance of 1,000 Feet

Aircraft	Operation Type	Engine Power	L_{max} (dB)
OA-1K	Departure	1,443 HP	84
A-10		97 %NC	93
HC-130J or MC-130J		4,500 HP	84
F-16[a]		105 %NC (afterburner)	114
OA-1K	Arrival	800 HP	81
A-10		86 %NC	89
HC-130J or MC-130J		1,800 HP	84
F-16[a]		83 %NC	90
OA-1K	Closed Pattern	800 HP	81
A-10		84 %NC	87
HC-130J or MC-130J		1,800 HP	84

[a] Equipped with GE-100 engine

Key: %NC = core engine speed; dB = decibels; HP = horsepower; L_{max} = maximum sound level.

As shown in Figure 3-3 and Figure 3-4, the 65 dB DNL noise contours under the Proposed Action Alternative are larger than noise contours under the No Action Alternative. Noise contours resulting from the Proposed Action Alternative are smaller than noise contours under interim conditions at all off-installation locations.

Comparison to the 65 dB DNL or Greater No Action Alternative Noise Contour Extent. As discussed in Section 3.2.2.1, noise levels under the No Action Alternative are lower than under interim conditions because of the discontinuation of the Phase 2 A-10 operations. The Proposed Action Alternative would add AFSOC aircraft operations, and therefore increase noise levels relative to the No Action Alternative. The No Action Alternative is a potential future scenario that has not yet been experienced because the A-10s are still operating at the installation.

Comparison to 65 dB DNL or greater Interim Conditions Noise Contour Extent. Relative to interim conditions (i.e., conditions similar to those being experienced currently) the Proposed Action Alternative 65 dB DNL contours are slightly smaller at all off-installation locations. This change reflects the addition of AFSOC aircraft operations and also the discontinuation of A-10 operations that would occur over time concurrent with implementation of the Proposed Action Alternative. The DNL in the flightline area of Davis-Monthan AFB would increase relative to interim conditions because of an increased number of engine runs conducted on the central parking apron. No off-installation residential areas would be exposed to noise levels exceeding 65 dB DNL under the Proposed Action Alternative, the No Action Alternative, or interim conditions.

During scoping, a commenter suggested that, if noise levels would be reduced under the Proposed Action Alternative, then zoning in areas near the installation should be adjusted. As described in Section 3.2.1.2.1, the boundary of the 2004 JLUS 65 dB DNL contour has been adopted by the City of Tucson and Pima County as the outer boundary of NCD A. Both the City of Tucson and Pima County use the NCD to plan land use decisions (Arizona Department of Commerce, 2004). Information in this EIS regarding potential future noise levels reflects the Proposed Action Alternative that could occur after the DAF signs the Record of Decision. When making land use decisions, local governments also consider the possibility of future mission changes at the installation that are not foreseeable at this time. Davis-Monthan AFB will continue to provide updates and information, as appropriate, to support well-informed decision making by local governments.

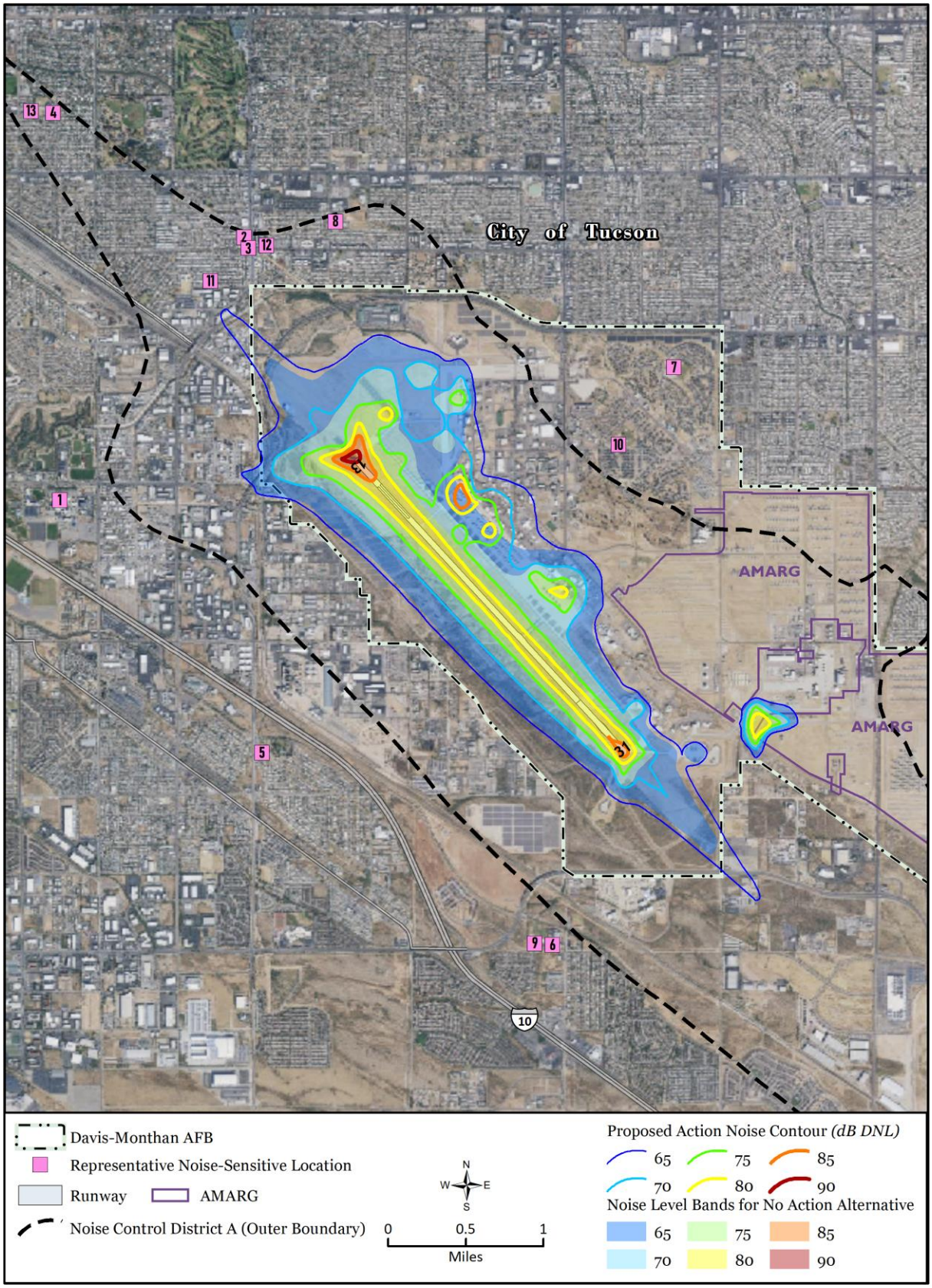

Figure 3-3. Proposed Action Alternative and No Action Alternative DNL Contours

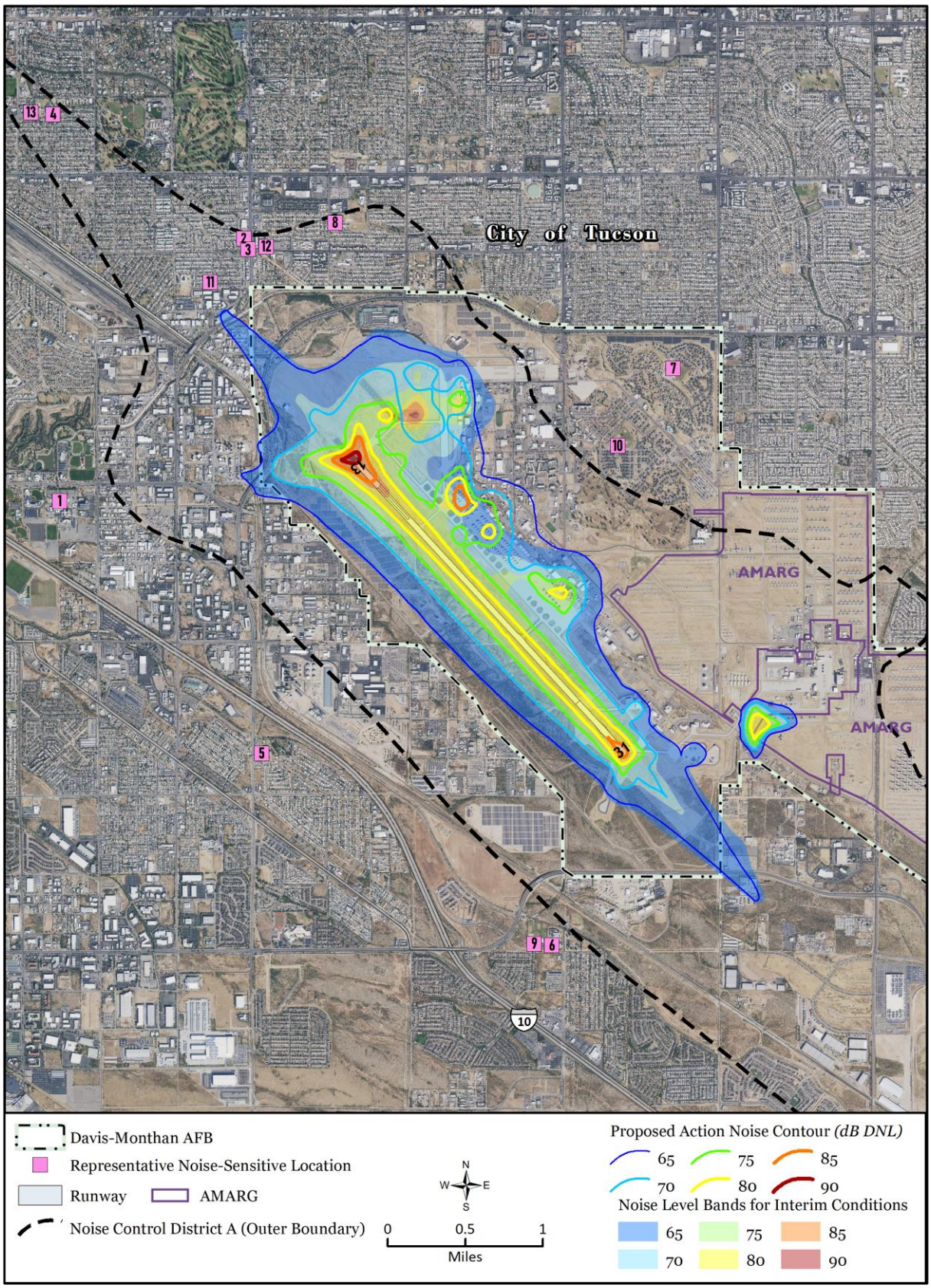

Figure 3-4. Proposed Action Alternative and Interim Conditions DNL Contours

Comparison to the No Action Alternative Noise Contour Acres Affected by a DNL of 65 dB or Greater. The Proposed Action Alternative 65 dB or greater DNL noise contours affect 50 more off-installation acres than the No Action Alternative (Table 3-26). However, relative to interim conditions (i.e., conditions similar to those being experienced currently), the Proposed Action Alternative affects 30 fewer off-installation acres at noise levels exceeding 65 dB DNL. As mentioned previously, the off-installation area exposed to noise levels above 65 dB DNL is industrial/commercial or open space, and no residential land uses are affected. Industrial and commercial land uses are compatible at 65-70 dB DNL in accordance with DoD guidelines.

Table 3-26. Acres Affected by DNL Exceeding 65 dB DNL Under Interim Conditions, the No Action Alternative, and the Proposed Action Alternative

dB DNL	Interim Conditions			No Action Alternative			Proposed Action Alternative		
	Off Installation	Davis-Monthan AFB	Total	Off Installation	Davis-Monthan AFB	Total	Off Installation	Davis-Monthan AFB	Total
65	96	944	1,040	16	927	943	66	971	1,037
70	0	634	634	0	540	540	0	654	654
75	0	398	398	0	290	290	0	367	367
80	0	261	261	0	204	204	0	230	230
85	0	43	43	0	23	23	0	29	29
90	0	5	5	0	2	2	0	3	3
Total	**96**	**2,285**	**2,381**	**16**	**1,986**	**2,002**	**66**	**2,254**	**2,320**

Key: AFB = Air Force Base; dB = decibels; DNL = day-night average sound level.

Comparison to Interim Condition Noise Contour Acres Affected. The total number of acres exposed to noise levels exceeding 65 dB DNL under interim conditions (2,381 acres) is 3 percent more than the 2,320 total acres exposed under the Proposed Action Alternative. The total number of off-installation acres affected by noise levels exceeding 65 dB DNL would decrease by 30 acres relative to interim conditions. As previously noted, changes in noise levels on base are not all decreases; noise levels in certain portions of the flightline area would slightly increase.

As shown in Table 3-27, DNL would remain below 65 dB at the representative noise-sensitive locations around the base under the Proposed Action Alternative. Aircraft noise would continue to be heard at these locations, and may be annoying or disruptive at times, but noise levels would be compatible with residential land uses in accordance with DoD guidelines.

Comparison to the No Action Alternative DNL at Sensitive Locations. Proposed Action Alternative DNL is the same as or up to 3 dB higher than DNL under the No Action Alternative, which reflects the discontinuation of A-10 operations without the 492 SOW Beddown. The No Action Alternative is a potential future scenario and does not reflect conditions that are currently being experienced.

Comparison to Interim Conditions DNL at Sensitive Locations. Changes relative to interim conditions, which approximate current conditions, would range from a decrease of 1 dB to an increase of 2 dB. Noise increases in certain areas reflect additional flights conducted as part of the 492 SOW Beddown, which occur more often during the late-night period between 10:00 P.M. and 7:00 A.M. than interim condition operations.

Table 3-27. DNL at Representative Noise-Sensitive Locations near Davis-Monthan AFB Under the Proposed Action Alternative

Type	ID	Description	DNL (dB)		
			Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions
Hospital	1	University Physicians Hospital	55	—	—
School	2	Children Reaching for the Sky Preparatory	56	+1	—
	3	Future Investment Middle School	57	+2	+1
	4	Robison Elementary School	59	+2	+1
	5	Los Niños Elementary School	46	+1	+1
	6	Craycroft Elementary School	49	—	-1
	7	Frank Borman K-8 School (on base)	53	+1	+1
	8	Roberts-Naylor K-8 School	55	+3	+2
	9	Billy Lauffer Middle School	48	+1	—
	10[a]	Sonoran Science Academy on Davis-Monthan AFB	52	+1	+1
Place of Worship	11	Ideal Missionary Baptist Church	63	+2	—
	12	Redeemed Christian Church of God Glory Tabernacle	56	+1	—
	13	First Free Will Baptist Church	59	+2	+1

[a] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Note: Em dash (—) indicates no change.

Key: + = plus; - = minus; AFB = Air Force Base; dB = decibels; DNL = day-night average sound level; ID = identification code; K-8 = kindergarten through eighth grade.

Construction and demolition (C&D) projects in support of the Proposed Action Alternative would generate short-term, localized noise increases. The installation is currently exposed to elevated aircraft noise levels as well as noise generated by the day-to-day operations of vehicles and equipment. Construction would occur during normal working hours (i.e., 7:00 A.M. to 5:00 P.M.), and construction equipment would be equipped with mufflers. Workers would wear hearing protection in accordance with applicable regulations. Transportation of materials and equipment to and from the construction sites would generate noise similar to heavy trucks currently operating on base and along local roadways. In the context of ongoing frequent and intense aircraft noise events and other noise sources typical of an active military installation, construction noise generated as part of the Proposed Action Alternative would be short-term and would not result in significant noise impacts.

Speech Interference

Comparison to the No Action Alternative Speech Interference. The number of events per average hour with potential to interfere with speech would increase by up to two per hour or remain the same with windows open relative to the No Action Alternative. With windows closed, the number of events per average hour would increase by up to one or remain the same. The No Action Alternative, which reflects discontinuation of A-10 operations, is a potential future scenario and does not reflect conditions that are currently being experienced.

Comparison to Interim Condition Speech Interference. Under the Proposed Action Alternative, the number of events per average hour with potential to interfere with speech would decrease by up to two or remain the same relative to interim conditions with windows open (Table 3-28). If windows are closed,

the number of events would decrease by one at one location (Ideal Missionary Baptist Church), increase by one at one location (Frank Borman K-8 [kindergarten through eighth grade] School), and remain the same at the remainder of the noise-sensitive locations relative to interim conditions.

Table 3-28. Potential Speech Interference Under the Proposed Action Alternative

Representative Noise-Sensitive Location			Annual Average Daily Indoor Daytime (7:00 A.M. to 10:00 P.M.) Events per Hour					
Type	ID	Description	Proposed Action Alternative		Change from No Action Alternative		Change from Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open	Windows Closed	Windows Open	Windows Closed
Hospital	1	University Physicians Hospital	1	1	—	—	—	—
School	2	Children Reaching for the Sky Preparatory	2	1	+1	+1	-1	—
	3	Future Investment Middle School	2	1	+1	+1	-1	—
	4	Robison Elementary School	2	1	+1	—	—	—
	5	Los Niños Elementary School	<<1	<<1	—	—	—	—
	6	Craycroft Elementary School	<<1	<<1	—	—	-2	—
	7	Frank Borman K-8 School (on base)	1	1	—	+1	—	+1
	8	Roberts-Naylor K-8 School	1	1	—	+1	-2	—
	9	Billy Lauffer Middle School	<<1	<<1	—	—	-2	—
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	1	<<1	—	—	—	—
Place of Worship	11	Ideal Missionary Baptist Church	3	1	+2	—	—	-1
	12	Redeemed Christian Church of God Glory Tabernacle	2	1	+1	+1	-1	—
	13	First Free Will Baptist Church	2	1	+1	—	—	—

[a] Values are average number of events with indoor L_{max} exceeding 50 dB per daytime hour (7:00 A.M. to 10:00 P.M.) assuming 15 dB and 25 dB noise level reduction with windows open and closed, respectively; "<<1" indicates less than 1 event per hour (rounding to zero).

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Note: Em dash (—) indicates no change

Key: + = plus; - = minus; dB= decibels; ID = identification code; L_{max} = maximum sound level; K-8 = kindergarten through eighth grade.

Interference with Classroom Learning

Noise level interference with learning in schools is of particular concern because noise can interrupt communication or affect concentration. When considering intermittent aircraft overflight noise, ANSI guidelines for classroom interference indicate that an appropriate indoor background L_{eq} criterion is a limit of 35 to 40 dB (depending on classroom size) during the school day ($L_{eq(SD)}$). These guidelines also indicate a 50 dB L_{max} limit on single events. In accordance with the DNWG recommendations, estimated interior $L_{eq(SD)}$ exceeding 40 dB was taken as an indication that ANSI criteria are being exceeded (DNWG, 2013).

Comparison to No Action Alternative Classroom Noise Conditions. $L_{eq(SD)}$ values under the Proposed Action Alternative would be up to 2 dB higher than under the No Action Alternative with windows open or with windows closed (Table 3-29). At Roberts-Naylor K-8 School, $L_{eq(SD)}$ would be 40 dB (i.e., the criterion level) if windows are open (but not if windows are closed), whereas $L_{eq(SD)}$ would not equal or exceed the threshold under the No Action Alternative. The criteria level would not be exceeded at any other school where it was not exceeded under the No Action Alternative. The number of potential speech interference events per average hour, which is relevant to classroom impacts, are listed in Table 3-28. As noted previously, the number of events per average hour with potential to interfere with speech would increase by up to two per hour or remain the same with windows open or with windows closed relative to the No Action Alternative. The No Action Alternative reflects the discontinuation of A-10 operations as a potential future scenario and is considered an analytical reference point and does not reflect current conditions.

Comparison to Interim Classroom Noise Conditions. $L_{eq(SD)}$ would increase by 1 dB relative to interim conditions (which approximate conditions being experienced currently) to 40 dB at Roberts-Naylor K-8 School, if windows are open. If windows are open, $L_{eq(SD)}$ at the other schools studied would decrease relative to interim conditions or would be below 40 dB. If windows are closed, all of the schools would be below the 40 dB $L_{eq(SD)}$ criterion. The L_{max} temporarily exceeds 50 dB at schools at a rate ranging from less than one event per hour to two events per hour (Table 3-28).

Table 3-29. Indoor Classroom Learning Disruption Under the Proposed Action Alternative

Representative Noise-Sensitive Location			$L_{eq(SD)}$ dB					
Type	ID	Description	Proposed Action Alternative		Change from No Action Alternative		Change from Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]
School	2	Children Reaching for the Sky Preparatory	41	<35	+1	+1	-1	—
	3	Future Investment Middle School	42	<35	+1	+1	—	—
	4	Robison Elementary School	42	<35	+1	+1	—	—
	5	Los Niños Elementary School	<35	<35	+1	+1	—	—
	6	Craycroft Elementary School	36	<35	+1	+1	—	—
	7	Frank Borman K-8 School (on base)	37	<35	+2	+2	+2	—

Table 3-29. Indoor Classroom Learning Disruption Under the Proposed Action Alternative (continued)

Representative Noise-Sensitive Location			$L_{eq(SD)}$ dB					
Type	ID	Description	Proposed Action Alternative		Change from No Action Alternative		Change from Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]
	8	Roberts-Naylor K-8 School	40	<35	+2	+2	+1	—
	9	Billy Lauffer Middle School	<35	<35	+1	+1	—	—
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	38	<35	+1	+1	+1	—

[a] Values assume 15 dB and 25 dB noise level reduction with windows open and closed, respectively.

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Note: Em dash (—) indicates no change.

Key: < = less than; + =plus; - = minus; AFB = Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade; $L_{eq(SD)}$ = equivalent noise level during the 8-hour school day.

Sleep Disturbance

Nighttime flying, which is required for certain AFSOC training missions, has an increased likelihood of causing sleep disturbance. The probability of awakening at certain representative noise-sensitive locations would increase under the Proposed Action Alternative relative to interim conditions and under the No Action Alternative (Table 3-30). The highest probability of awakening would occur at the Ideal Missionary Baptist Church where the likelihood of being awakened at least once per night would be 16 percent if windows are open and 9 percent if windows are closed. Sleep disturbance probabilities listed for places of worship are not intended to imply that people regularly sleep in places of worship, but instead are indicative of impacts in nearby residential areas. Results only apply to people who sleep during the night within a structure. People who sleep during the day or that sleep outdoors experience additional noise events, resulting in higher probabilities of awakening.

Comparison to No Action Alternative Likelihood of Sleep Disturbance. Probabilities of awakening at least once per night under the Proposed Action Alternative would be up to 7 percent higher than under the No Action Alternative with windows open and up to 5 percent higher with windows closed.

Comparison to Interim Conditions Likelihood of Sleep Disturbance. If windows are open, the probability of awakening would remain the same at one location, increase by one at one location, increase by two at nine locations, increase by three at one location, and increase by four at one location. If windows are closed, the probability of awakening would remain the same at five locations, increase by one at four locations, increase by two at three locations, and increase by four at one location.

Table 3-30. Probability of Awakening at Least Once per Night Under the Proposed Action Alternative

Type	ID	Name/Description	Annual Average Nightly (10:00 P.M. to 7:00 A.M.) Probability of Awakening (%) at Least Once per Night					
			Proposed Action Alternative		Change from No Action Alternative		Change from Interim Conditions	
			Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]	Windows Open[a]	Windows Closed[a]
Hospital	1	University Physicians Hospital	10	4	+2	—	+2	—
School	2	Children Reaching for the Sky Preparatory	12	6	+5	+4	+2	+2
	3	Future Investment Middle School	12	6	+5	+4	+2	+2
	4	Robison Elementary School	10	6	+5	+3	+2	+1
	5	Los Niños Elementary School	1	<<1	—	—	—	—
	6	Craycroft Elementary School	3	<<1	+2	—	+2	—
	7	Frank Borman K-8 School (on base)	4	2	+1	+1	+1	+1
	8	Roberts-Naylor K-8 School	10	2	+4	+1	+4	+1
	9	Billy Lauffer Middle School	3	<<1	+2	—	+2	—
	10[b]	Sonoran Science Academy on Davis-Monthan AFB	4	1	+2	—	+2	—
Place of Worship	11	Ideal Missionary Baptist Church	16	9	+7	+5	+2	+2
	12	Redeemed Christian Church of God Glory Tabernacle	12	6	+5	+4	+3	+4
	13	First Free Will Baptist Church	10	6	+5	+3	+2	+1

[a] Assumes standard values of 15 dB noise level reductions for windows open and 25 dB noise level reductions for windows closed, respectively.

[b] The Sonoran Science Academy closed on June 1, 2024. Even though the school is closed, using the location as a noise-sensitive location provides the public with noise levels at that point and in the immediate surrounding areas.

Notes: Locations where the percentage probability of awakening rounds to zero are listed using the symbol <<1%. Em dash (—) indicates no change.

Key: % = percent; + = plus; AFB = Air Force Base; dB = decibels; ID = identification code; K-8 = kindergarten through eighth grade.

3.2.2.2.2 Airspace and Ranges Environmental Consequences

Comparison to No Action Alternative Operations. AFSOC OA-1K and MC-130J aircraft would comprise a relatively small fraction of overall flight operations in the airspace and ranges proposed for use (Table 3-31). In comparison to the No Action Alternative, Proposed Action Alternative aircraft operations would increase by as much as 1,953 operations per year. The largest increase in operations, which would occur in Fort Huachuca airspace (R-2303 A/B/C), would be a 7 percent increase over the No Action Alternative. The largest change, in terms of percentage increase would occur in the Tombstone MOAs, where the number of annual operations would be 30 percent higher than the annual number of operations under the No Action Alternative.

Certain AFSOC training missions conducted in SUA must occur at night, and operations during the late-night (10:00 P.M. to 7:00 A.M.) are unavoidable. AFSOC aircrews would conduct small numbers of operations between 10:00 P.M. and 7:00 A.M. (three per year or less) in all airspaces and ranges except the Tombstone MOAs and Fort Huachuca airspace (R-2303 A/B/C) (Table 3-32). In the Tombstone MOAs and Fort Huachuca airspace (R-2303 A/B/C), the number of operations between 10:00 P.M. and 7:00 A.M. would increase by 271 and 677, respectively. The No Action Alternative (includes the remaining A-10 retirements) is a potential future scenario. This potential future scenario does not reflect conditions currently being experienced and is included to provide an analytical point of reference.

Comparison to Interim Condition Operations. The planned Phase 2 A-10 retirement would result in a net reduction in overall airspace operations counts relative to interim conditions in the Ruby/Fuzzy MOAs, the Jackal/Jackal Low MOAs, the Tombstone MOAs, and the BMGR airspace (R-2031E). In the Sells MOAs, the number of operations would increase by 60 to 15,765. This is a 0.4 percent increase from interim conditions. In the Outlaw MOA, the number of operations would remain the same as under interim conditions. The only airspace in which AFSOC aircraft would result in an operations count increase of greater than 1 percent would be the Fort Huachuca airspace (R-2303 A/B/C), where operations would increase by 7 percent relative to interim conditions.

As shown in Table 3-32, the number of operations between 10:00 P.M. and 7:00 A.M. would decrease or stay the same relative to interim conditions in all airspace except the Sells MOAs, the Tombstone MOAs, and Fort Huachuca airspace (R-2303 A/B/C). In the Sells MOAs, the operations increase between 10:00 A.M. and 7:00 A.M. is very small (three operations per year), whereas the net increase in the number of operations per year during this time period is higher in the Tombstone MOAs and Fort Huachuca airspace (R-2303 A/B/C). In the airspace with the largest net increase, there would be an additional 677 operations during 10:00 P.M. and 7:00 A.M. equating to approximately two operations per night on average.

Maximum noise levels generated by overflights of OA-1K and MC-130J aircraft are lower than those generated by many of the aircraft types currently operating in the airspace and ranges proposed for use when operating at equivalent altitudes and in typical airspace flight configurations (Table 3-33). Fighter aircraft, which are represented by the F-16 in Table 3-33, are more than 15 dB louder than the OA-1K or MC-130J at the distances listed. Jet aircraft, such as the A-10, that are equipped with less-powerful engines than those used by fighter aircraft are more than 6 dB louder than the OA-1K or MC-130J at the distances listed. Noise levels generated by the MC-130J are the same as those generated by the HC-130J aircraft that currently use the airspace. The aircraft types and configurations listed in Table 3-33 are representative of a wide variety of aircraft types that operate in the airspace and ranges proposed for use. Noise levels in Table 3-33 are provided for comparative purposes. Actual noise levels experienced vary with distance between the aircraft and listener, the exact engine power setting in use, and several other factors.

Table 3-31. Annual Airspace Operations at Any Time of Day Under the Proposed Action Alternative

Airspace Name[a]	Annual Airspace and Range Operations														
	Proposed Action Alternative					Change from No Action Alternative					Change from Interim Conditions				
	OA-1K	MC-130J	A-10	Other	Total	OA-1K	MC-130J	A-10	Other	Total	OA-1K	MC-130J	A-10	Other	Total
Ruby/Fuzzy MOAs	60	[b]	[b]	4,711	4,771	+60	—	—	—	+60	+60	—	-3,096	—	-3,036
Sells 1/Sells Low MOAs	60	[b]	[b]	15,705	15,765	+60	—	—	—	+60	+60	—	—	—	+60
Outlaw MOA	0	[b]	[b]	1,194	1,194	—	—	—	—	—	—	—	—	—	—
Jackal/Jackal Low MOAs	60	[b]	[b]	2,201	2,261	+60	—	—	—	+60	+49	—	-1,254	—	-1,205
Tombstone A/B/C MOAs	300	451	[b]	2,464	3,215	+300	+451	—	—	+751	+300	+451	-3,096	—	-2,345
BMGR (R-2301E)	60	96	[b]	9,729	9,885	+60	+96	—	—	+156	+60	+96	-4,128	—	-3,972
Fort Huachuca Airspace (R-2303 A/B/C)	900	1,053	[b]	28,765	30,718	+900	+1,053	—	—	+1,953	+900	+1,053	—	—	+1,953

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Areas.

[b] Less than one overflight per day per average year

Note: Em dash (—) indicates no substantial change.

Key: + = plus; - = minus; BMGR = Barry M. Goldwater Range; MOA = Military Operations Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Table 3-32. Airspace Operations Between 10:00 P.M. and 7:00 A.M. Under the Proposed Action Alternative

Airspace Name[a]	Annual Airspace and Range Operations														
	Proposed Action Alternative					Change from No Action Alternative					Change from Interim Conditions				
	OA-1K	MC-130J	A-10	Other	Total	OA-1K	MC-130J	A-10	Other	Total	OA-1K	MC-130J	A-10	Other	Total
Ruby/Fuzzy MOAs	3	[b]	[b]	37	40	+3	—	—	—	+3	+3	—	-155	—	-152
Sells 1/Sells Low MOAs	3	[b]	[b]	293	296	+3	—	—	—	+3	+3	—	—	—	+3
Outlaw MOA	[b]	[b]	[b]	13	13	—	—	—	—	—	—	—	—	—	—
Jackal/Jackal Low MOAs	3	[b]	[b]	22	25	+3	—	—	—	+3	+3	—	-77	—	-74
Tombstone A/B/C MOAs	[b]	271	[b]	341	612	—	+271	—	—	+271	—	+271	-155	—	+116
BMGR (R-2301E)	[b]	[b]	[b]	695	695	—	—	—	—	—	—	—	-206	—	-206
Fort Huachuca Airspace (R-2303 A/B/C)	45	632	[b]	2,517	3,194	+45	+632	—	—	+677	+45	+632	—	—	+677

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Areas.

[b] Less than one overflight per day per average year.

Note: Em dash (—) indicates no substantial change.

Key: + = plus; - = minus; BMGR = Barry M. Goldwater Range; MOA = Military Operations Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Table 3-33. Comparison of L_{max} Generated by OA-1K and MC-130J to Interim Conditions Fixed-Wing Aircraft in Airspace Flight Configurations

Aircraft	Engine Power	L_{max} (dB) During Direct Overflight at Distance (feet)				
		100	500	1,000	3,000	10,000
OA-1K	80 % RPM	96	87	80	69	53
MC-130J/HC-130J	2200 HP	99	91	83	70	54
A-10	97 %NC	110	100	92	78	60
F-16[a]	100 %NC	117	108	100	87	69

[a] Equipped with GE-100 engine

Key: % = percent; %NC = core engine speed; dB = decibels; HP = horsepower; L_{max} = maximum sound level; RPM = revolutions per minute.

Comparison to the No Action Alternative Noise Levels. Under the Proposed Action Alternative, noise levels (dB L_{dnmr}) would remain the same relative to the No Action Alternative in all airspaces except the Fort Huachuca airspace (R-2303 A/B/C), where L_{dnmr} would increase by 5 dB (Table 3-34). Because the No Action Alternative reflects potential future conditions (i.e., after retirement of all A-10 aircraft), comparisons between the Proposed Action Alternative and the No Action Alternative do not reflect changes relative to current conditions. In this EIS, impacts are assessed against the No Action Alternative to provide an analytical point of reference.

Table 3-34. Noise Levels Beneath Affected Airspaces Under the Proposed Action Alternative

Airspace Name[a]	L_{dnmr} (dB)		
	Proposed Action Alternative L_{dnmr} (dB)	Change from No Action Alternative	Change from Interim Conditions
Ruby/Fuzzy MOAs	57	—	-1
Sells 1/Sells Low MOAs	53	—	—
Outlaw MOA	<45	—	—
Jackal/Jackal Low MOAs	<45	—	-2
Tombstone A/B/C MOAs	54	—	—
BMGR (R-2301E)	64	—	—
Fort Huachuca Airspace (R-2303 A/B/C)	54	+5	+5

[a] Airspace operations also make use of overlying Air Traffic Control Assigned Airspaces.

Note: Em dash (—) indicates no change.

Key: < = less than; - = minus; + = plus; dB = decibels; BMGR = Barry M. Goldwater Range; L_{dnmr} = onset-rate adjusted monthly day-night average sound level; MOA = Military Operations Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

Comparison to Interim Condition Noise Levels. Noise levels, as measured in dB L_{dnmr}, would decrease or remain the same relative to interim conditions in all airspaces except the Fort Huachuca airspace (R-2303 A/B/C) (Table 3-34). The discontinuation of the A-10 operations is the primary reason that noise levels would decrease or remain the same in most airspaces. Also, the number of proposed AFSOC aircraft operations are small as compared to the current total number of aircraft operations in the airspace and ranges proposed for use. In addition, the OA-1K and the MC-130J are not as loud as other jet aircraft that currently operate in these same areas (see Table 3-33).

In the Fort Huachuca airspace (R-2303 A/B/C), A-10 aircraft operations under interim conditions only occur on an occasional basis or as transients (see Table 3-31). As a result, the retirement of A-10 aircraft from Davis-Monthan AFB would not result in reductions in operations or associated noise in this airspace. The increased number of operations during the late-night under the Proposed Action Alternative would also contribute to increased L_{dnmr} in the Fort Huachuca airspace (R-2303 A/B/C).

Noise levels beneath R-2303 A/B/C would increase relative to interim conditions and the No Action Alternative by 5 dB up to 54 dB L_{dnmr}. The area beneath R-2303 A/B/C is currently exposed to noise from munitions and other military uses and noise levels would remain below the 55 dB noise level considered by the U.S. Environmental Protection Agency (USEPA) to be protective of the public health and welfare with an adequate margin of safety (USEPA, 1974). Long-term impacts would be limited to a moderate increase in annoyance for people experiencing noise generated by OA-1K or MC-130J operations.

AFSOC aircrews would occasionally use other airspace, including the combat search and rescue low altitude tactical navigation area and various military training routes as shown on Figure 13 of the Noise

Supporting Document available on the project website at www.492sow-beddown-eis.com. The occasional aircraft operations in the low altitude tactical navigation area would be distributed across a very large area such that any one location on the ground would rarely be overflown and operations would not result in appreciable changes in DNL at any point on the ground. In addition, the occasional use of the military training routes would not result in measurable increases in DNL on the ground below these route.

Comparison to No Action Alternative and Interim Condition Number of Events per Average Day Exceeding 50 dB L_{max}. The number of noise events exceeding 50 dB L_{max} per average day under the Proposed Action Alternative would be the same as under the No Action Alternative and interim conditions when rounded to the nearest whole number (Table 3-35). Noise events exceeding 50 dB L_{max} have some potential to at least momentarily interfere with quiet conversation. In areas with minimal human activity (e.g., undeveloped areas) where ambient noise levels are low, aircraft noise events are more likely to be noticed. The reason for the lack of change in the number of noise events exceeding 50 dB L_{max} per average day is that OA-1K and MC-130J aircraft are less loud than many of the aircraft types currently operating in the airspace and ranges proposed for use. As a result, noise levels exceeding 50 dB L_{max} generated by OA-1K and MC-130J operations affect relatively small ground areas within the MOA footprints. In the Fort Huachuca airspace (R-2303), the L_{dnmr} increases while the number of events per average day exceeding 50 dB L_{max} remains the same because the L_{dnmr} metric includes a dB adjustment for noise events between 10:00 P.M. and 7:00 A.M. while the number of events per average day exceeding 50 dB L_{max} does not.

Table 3-35. Number of Events Exceeding 50 dB L_{max} per Average Day Under the Proposed Action Alternative

Airspace Name	Events Exceeding 50 dB L_{max} per Average Day[a]		
	Proposed Action Alternative	Change from No Action Alternative	Change from Interim Conditions
Ruby/Fuzzy MOAs	7	—	—
Sells 1/Sells Low MOAs	1	—	—
Outlaw MOA	<<1	—	—
Jackal/Jackal Low MOAs	<<1	—	—
Tombstone A/B/C MOAs	1	—	—
BMGR (R-2301E)	16	—	—
Fort Huachuca Airspace (R-2303 A/B/C)	1	—	—

[a] Values are rounded to the nearest whole number. Airspace floor altitudes vary between subunits of the named airspace, and some areas are overflown at higher minimum altitudes than others. Numbers of events per average day values reflect the subunit of the named airspace with the highest sound level.

***Note*:** Em dash (—) indicates no change. "<<1" indicates a value that rounds to zero.

Key: BMGR = Barry M. Goldwater Range; dB = decibels; L_{max} = maximum sound level; MOA = Military Operations Area; R-2301E = Restricted Area 2301E; R-2303 = Restricted Area 2303.

OA-1K aircraft operations outside of SUA (i.e., outside of MOAs and Restricted Areas) would primarily occur at 10,000 feet AGL and at cruise power settings. At this altitude and power configuration, a direct overflight would generate approximately 54 dB L_{max} — a sound level comparable to civilian aircraft that operate in the same areas under interim conditions (e.g., passenger aircraft, general aviation aircraft, and helicopters). In quiet ambient conditions, OA-1K aircraft may be noticeable, and could be considered annoying. OA-1K overflights outside of SUA would occur over large areas such that flight operations would not be concentrated or focused over single locations on the ground. Overflights would be sporadic with noise affecting different ground areas that would vary from one mission to the next.

As described in Section 2.2.4, OA-1K aircrews would use ordnance types that are also used by A-10 pilots under interim conditions but would use much smaller quantities of these munitions than are currently used. The 2.75-inch Hydra rockets and AGM-114 Hellfire missile proposed for use by OA-1K aircraft would be "inert," meaning that they would only contain a small spotting charge rather than a high-explosive charge. Ongoing A-10 air-to-ground munitions training includes high-explosive bombs that are much louder than the inert missiles and rockets proposed for use by OA-1K aircrews. The discontinuation of A-10 air-to-ground munitions training and replacement of those munitions with substantially smaller numbers of relatively quieter munitions proposed for use by OA-1K aircrews would result in net reductions in noise levels at BMGR. Munitions used by MC-130J aircrews (i.e., defensive chaff and flares) do not generate noise that is audible on the ground. Relative to the potential future No Action Alternative, the number of air-to-ground munitions used would increase by 315 and the number of countermeasures would increase by 10,020 annually, resulting in minimal noise level changes in the context of an active air-to-ground range.

The AFSOC Special Tactics Squadrons would use ground-to-ground (small arms) munition types that are currently used at the Davis-Monthan AFB CATM range, the Arizona National Guard Florence Military Reservation, Fort Huachuca ranges, and BMGR. These range facilities currently support a wide variety of units that use small arms. The addition of AFSOC Special Tactics Squadron munitions training noise would result in similar noise levels currently generated and would not result in new noise impacts.

3.2.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Cumulative impacts are defined as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable 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 a period of time."

Actions described in the *Final Environmental Assessment Addressing the Angel Thunder Personnel Recovery/Rescue Training Exercise in the Southwestern United States* (DAF, 2017)are reflected in interim conditions for the current analysis. As described in Section 3.3.1.2, interim conditions also reflect actions described in the Realignment EA (DAF, 2024a), with adjustments to operational parameters to account for recent changes in plans for unit relocations.

The Proposed Action Alternative in the EIS for *Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona* (DAF, 2024c) proposes to expand and/or lower the floor of MOAs that could be used by AFSOC aircrews resulting in noise level changes beneath the MOAs. As described in Section 3.2.2.2.2, the planned Phase 2 A-10 retirement, combined with the proposed 492 SOW aircraft operations would result in a net 0.4 percent increase in the overall number of airspace operations in the Sells 1/Sells Low MOAs, no change in the Outlaw MOA, and net reductions in all other MOAs. As a result of the Proposed Action, noise levels beneath MOAs either decrease or remain the same relative to interim conditions. These noise levels are a result of the small or net negative changes in aircraft operations combined with the fact that OA-1K and MC-130J aircraft are less loud than many of the jet aircraft currently operating in the MOAs. The combined effects of the 492 SOW Beddown EIS aircraft operations with the Regional Special Use Airspace Optimization EIS Proposed Action changes would not be anticipated to exceed the impacts described for the Regional Special Use Airspace Optimization EIS Proposed Action alone.

Commercial development and improvement of interstates near Davis-Monthan AFB would result in temporary, localized increases in noise levels while construction is in progress. As described in Section 3.2.2.2.1, no noise-sensitive off-installation areas would be exposed to noise levels exceeding 65 dB DNL under the 492 SOW Beddown EIS Proposed Action Alternative. Although aircraft operations noise may be audible at the same time construction is under way, the combined noise levels would not be expected to result in significant long-term impacts.

3.2.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

Measures adopted by Davis-Monthan AFB to reduce noise impacts would also apply to the 492 SOW Beddown, and no additional noise mitigation measures are proposed at this time. Noise impact reduction measures include the quiet hours program and flight procedures designed to avoid noise-sensitive locations near the installation, which are described in Section 3.2.1.2. Davis-Monthan AFB officials meet on a regular basis to discuss potential improvements to operational procedures at and near the installation. These discussions include consideration of adjustments to policies related to noise abatement. At this time, existing noise abatement procedures and quiet hours policies at Davis-Monthan AFB provide operational flexibility while also minimizing noise impacts to the extent practicable.

3.3 AIR QUALITY

The proposed 492 SOW Beddown would result in an increase in air emissions within the base region and associated airspaces. The following section describes the air quality affected environment and estimations of impacts due to proposed construction and operational activities within the ROI.

3.3.1 Affected Environment

3.3.1.1 Definition of Resource and ROI

Air quality refers to concentrations of various air pollutants in the atmosphere. Air quality is defined by the size and topography of the air basin, the local and regional meteorological influences, and the types and concentrations of pollutants in the atmosphere. One aspect of the significance of a pollutant concentration is to compare it to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare and include a reasonable margin of safety to protect the more sensitive individuals in the population.

The Clean Air Act (CAA) and its amendments provide the authority for the USEPA to establish ambient air quality standards to protect public health and welfare nationwide. National Ambient Air Quality Standards (NAAQS) exist for the following criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than or equal to 10 microns in diameter (PM_{10}), particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead. Units of concentration for the NAAQS are generally expressed in parts per million or micrograms per cubic meter. While no ambient standards have been established for volatile organic compounds (VOCs) and nitrogen oxides (NO_x), they are important as precursors to O_3 formation.

Identifying the ROI for air quality requires knowledge of the pollutant type, source emission rates, the proximity of project emission sources to other emission sources, and local and regional meteorology. For inert pollutants (such as CO and particulates in the form of dust), the ROI is generally limited to a few miles

downwind from a source. The ROI for reactive pollutants such as O_3 can extend much farther downwind than for inert pollutants. The pollutant O_3 is formed in the atmosphere by photochemical reactions of previously emitted pollutants called precursors. O_3 precursors are mainly NO_x and VOCs. In the presence of solar radiation, the maximum effect of precursor emissions on O_3 levels usually occurs several hours after they are emitted and many miles from their source.

The USEPA designates all areas of the United States in terms of having air quality better (attainment) or worse (nonattainment) than the NAAQS. An area is in attainment of the NAAQS if its pollutant concentration remains below the standard value. Former nonattainment areas that have attained NAAQS are designated as maintenance areas.

3.3.1.1.1 Applicable Regulations and Standards

The CAA establishes air quality regulations and the NAAQS and delegates the enforcement of these standards to the states. The CAA requires areas in nonattainment of the NAAQS to develop a State Implementation Plan (SIP) that details how the state will attain the standards within mandated timeframes. The requirements and compliance dates for attainment are based on the severity of the nonattainment classification of the area.

The Arizona Department of Environmental Quality (ADEQ) is responsible for enforcing air pollution regulations in Arizona. However, the Pima County Department of Environmental Quality (PDEQ) has the authority to regulate air quality in Pima County. The PDEQ enforces the NAAQS by monitoring air quality, developing rules to regulate and to permit stationary sources of air emissions, and contributing to the air quality attainment planning processes in Pima County. The PDEQ air quality regulations are found in Title 17 of the Pima County Code, Air Quality Control.

CAA Section 176(c)(1), commonly known as the USEPA General Conformity Regulation, generally prohibits federal agencies from engaging in, supporting, permitting, or approving any activity that does not conform to the most recent USEPA-approved SIP. The General Conformity Regulation applies to federal actions located in areas that are in nonattainment of the NAAQS or designated as maintenance areas. Conformity requirements only apply to criteria pollutants and their precursor emissions. Conformity determinations are required when the annual direct and indirect emissions that would result from a proposed federal action equal or exceed an applicable annual *de minimis* threshold. These thresholds vary by pollutant and the severity of nonattainment conditions in the region that would be affected by a proposed action. If a conformity applicability analysis shows that the net annual direct and indirect emissions generated by a federal action would be below the applicable *de minimis* thresholds, then the action would be exempt from any further requirements under the General Conformity Regulation.

The USEPA also regulates hazardous air pollutants (HAPs) that are known or are suspected to cause serious health effects or adverse environmental effects. The CAA identifies 188 substances as HAPs (e.g., benzene, formaldehyde, mercury, and toluene). HAPs are emitted from a range of industrial facilities and vehicles. The USEPA sets federal regulations to reduce HAP emissions from stationary sources in the National Emission Standards for Hazardous Air Pollutants regulations specifically pertaining to HAP emissions from aircraft engines or DAF bases. The USEPA also promulgated a Mobile Source Air Toxics Rule to regulate HAPs from mobile sources, although not specifically pertaining to HAP emissions from aircraft engines or DAF bases.

3.3.1.1.2 Greenhouse Gases and Climate Change

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. GHG emissions are generated by both natural processes and human activities. Recent scientific evidence indicates a correlation between increasing global temperatures over the past century and the worldwide proliferation of GHG emissions by mankind. Climate change associated with global warming is predicted to produce negative environmental, economic, and social consequences across the globe (Intergovernmental Panel on Climate Change, 2023; U.S. Global Change Research Program, 2023).

The latest National Climate Assessment (Fifth National Climate Assessment) documents the following recent changes in climate in the ROI: (1) annual average temperature has risen about 1.5 to 2 degrees Fahrenheit (°F), and (2) annual precipitation has decreased by 5 to 10 percent (for the 2002 to 2021 average compared to averages for 1901 to 1960) (Marvel et al., 2023). Projections of long-term environmental impacts in Arizona due to increased atmospheric GHGs include an increasing risk of extreme heat and wildfires, increases in the severity of storms and droughts, reducing winter snowpacks, changing local and regional ecosystems (with potential losses of species), reductions in agricultural production, and increasing mortality due to excessive heat and air pollution.

GHGs include water vapor, carbon dioxide (CO_2), methane, nitrous oxide, O_3, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated global warming potential (GWP), which is a function of its lifetime and ability to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. To simplify GHG analyses, total GHG emissions from a source are often expressed as a carbon dioxide equivalent (CO_2e). The CO_2e is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single combined emission rate representing all GHGs. Methane and nitrous oxide have much higher GWPs than CO_2. However, CO_2 is emitted in such greater quantities that it is the overwhelming contributor to global CO_2e emissions from both natural processes and human activities.

The DAF addresses emissions of GHGs by reporting and meeting reductions mandated in federal laws, Executive Orders (EOs), and agency policies such as the DoD Strategic Sustainability Performance Plan. Based on DAF guidance, this EIS estimates GHGs emitted from the project alternatives and considers their potential impacts to climate change (AFCEC/CZTQ, 2023a).

3.3.1.2 Base Affected Environment

Air emissions resulting from implementation of the proposed 492 SOW Beddown would primarily affect air quality in the Tucson region and eastern Pima County. The USEPA designates Pima County as in attainment of all criteria pollutants, with the exception of the Rillito PM_{10} nonattainment area about 12 miles northwest of Davis-Monthan AFB and the Ajo PM_{10} and SO_2 maintenance areas about 100 miles west-northwest of Davis-Monthan AFB (USEPA, 2024a).

While Pima County currently attains the O_3 NAAQS, monitoring data at stations within the county from 2020 through 2022 show some exceedances of the standard (USEPA, 2024b). Based on these data, the USEPA estimates that two stations within the county have design values that equal the NAAQS of 0.070 parts per million. The current O_3 attainment designation will remain in effect until further action is taken by the USEPA.

3.3.1.2.1 Davis-Monthan AFB Emissions

Operations at Davis-Monthan AFB generate emissions from stationary and mobile sources. Stationary emissions occur from sources such as fuel storage tanks and dispensing equipment, diesel-powered emergency electrical generators, jet engine test cells, paint spray booths, natural-gas-fired boilers and heaters, and miscellaneous solvent usage. The base maintains air permits issued by the PDEQ that limit emissions from several types of stationary sources.

Mobile source emissions at Davis-Monthan AFB occur from aircraft, nonroad equipment, government-owned vehicles, and privately owned vehicles. Aircraft operations include landings and takeoffs (LTOs), the use of aerospace ground equipment (AGE), and engine maintenance and testing activities.

3.3.1.2.2 Regional Climate

Meteorological data collected at the Tucson International Airport from 1946 to 2016 are used to describe the climate of the Davis-Monthan AFB ROI (Western Regional Climate Center, 2024).

Temperature. Pima County is known for extreme heat in the summer months and mild conditions during the winter. The average high and low temperatures during the summer months at Davis-Monthan AFB range from about 100 to 68 °F. The average high and low temperatures during the winter months range from 74 to 39 °F.

Precipitation. Average annual precipitation for Davis-Monthan AFB is 11.4 inches. Annual precipitation in the region peaks in the summer months (July through September) due to monsoonal flow from the tropics. The peak monthly average rainfall of 2.4 inches occurs in July. Spring is the driest season, as the lowest monthly average of 0.2 inches occurs in May. Snowfalls in the region are rare and average at 1.0 inch per year.

Prevailing Winds. Wind data collected in the Tucson area are used to describe the wind climate of the Davis-Monthan AFB ROI (National Climatic Data Center, 1998). The annual average wind speed is 8.3 miles per hour. April through June experience the strongest winds, with a monthly average speed of 9 miles per hour during this period. The winds prevail from the southeast year-round, except in June and July, when they prevail from the south-southeast.

3.3.1.3 Airspace and Ranges Affected Environment

Project aircraft operations in the airspace and ranges proposed for use and along the flight routes between these locations and Davis-Monthan AFB would affect air quality within these portions of Arizona and New Mexico. Most of the regions below and adjacent to these areas currently attain all of the NAAQS. Areas that do not attain or are in maintenance of the NAAQS and could be affected by proposed aircraft operations within 3,000 feet AGL include the (1) Ajo SO_2 and PM_{10} maintenance areas in western Pima County, (2) Douglas SO_2 maintenance area and Douglas-Paul Spur PM_{10} moderate nonattainment area in south-central Cochise County, and (3) the San Manuel SO_2 maintenance area in southeast Pinal County.

Several of the airspace and range areas proposed for use as part of the 492 SOW Beddown are also in close proximity to or overlie pristine Class I areas, including the (1) Galiuro Wilderness Area, (2) Chiricahua Wilderness Area, and (3) Chiricahua National Monument Wilderness Area. Therefore, due to the proximity of these pristine areas to projected aircraft operations, this EIS provides a qualitative analysis of the potential for projected emissions to affect air quality within these areas.

3.3.1.4 Analysis Methodology

The air quality analysis estimated the magnitude of emissions that would result from construction and operation of the proposed 492 SOW Beddown. Version 5.0.23a of the DAF Air Conformity Applicability Model (ACAM) was used to estimate air emissions that would be generated by construction and/or operational activities from the proposed alternatives (Solutio Environmental, 2022). The analysis also used emission factors developed by the USEPA to estimate emissions from proposed munitions usage by aircraft (USEPA, 2024c).

The analysis of criteria pollutant impacts from aircraft operations is limited to operations that would occur within the lowest part of the atmosphere known as the mixing layer, because this is where the release of aircraft emissions would affect ground-level pollutant concentrations. In general, aircraft emissions released above the mixing layer would not appreciably affect ground-level air quality. In accordance with the General Conformity Regulation (40 CFR Part 93 Subpart B), where the applicable SIP or Transportation Implementation Plan does not specify a mixing height, the federal agency can use 3,000 feet AGL as a default mixing height. Since the SIP for the locations of proposed activities does not specify a mixing height, the analysis used 3,000 feet AGL as a default mixing height. Since the altitude floors of some airspaces evaluated in this EIS are at or above 3,000 feet AGL, aircraft operations would not affect ground-level air quality in these areas and therefore were not considered in the air quality analysis (although they are evaluated in the project noise analysis). These airspaces include the Ruby, Sells 1, Jackal, and Outlaw MOAs.

To estimate total GHG emissions that would occur from the project alternatives, the analysis included aircraft operations within the immediate Davis-Monthan AFB ROI, plus aircraft sorties between Davis-Monthan AFB and affected airspaces and training areas and operations within these areas, regardless of aircraft altitude.

The ACAM does not have the OA-1K aircraft in its inventory. Therefore, the U-28A aircraft was chosen as a best-fit surrogate, which has a single PT6A-67B turboprop engine rated at 1,200 horsepower or slightly below the 1,434 horsepower rated for the PT6A-67AG engine in the OA-1K.

The air emissions estimated for existing A-10 and proposed MC-130J and OA-1K aircraft operations are based on the same site-specific operational data as the project noise analyses. Both analyses of noise and air quality factor in the number and types of operations, location-specific flight patterns, aircraft power settings, and other relevant details. Site-specific representative time-in-mode cycles for the actions that would occur at or below the mixing layer were used as inputs to the ACAM. As a result, airspaces evaluated in the project noise analyses for aircraft operations above 3,000 feet AGL were not considered in the air quality analysis. Details of the emissions calculation methods, derivations of the aircraft time-in-mode metrics used in the air quality analyses, and ACAM output reports are presented in the Air Quality Supporting Document on the project website at www.492sow-beddown-eis.com.

The air quality analysis estimated the effects of the proposed 492 SOW Beddown activities by comparing the increase in annual criteria pollutant emissions to applicable General Conformity Regulation de minimis thresholds within affected nonattainment/maintenance areas or insignificance indicators for attainment areas (AFCEC/CZTQ, 2023b). The ROI surrounding Davis-Monthan AFB currently attains all NAAQS, and the insignificance indicator used to evaluate actions in such areas is the USEPA Prevention of Significant Deterioration (PSD) permitting threshold of 250 tons per year (tpy) of a criteria pollutant besides lead. The insignificance indicator for lead in this area 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 to air quality. Any action with net emissions below the insignificance indicators is considered so insignificant that the action would not cause or contribute to an exceedance of any NAAQS.

Regarding effects from proposed GHG emissions, the analysis used the PSD threshold for GHGs of 75,000 tpy of CO2e (or 68,039 metric ton per year [mtpy]) as an indicator or threshold of insignificance for NEPA air quality impacts. A source this large would trigger major source PSD permitting requirements for GHGs, assuming the source first triggered PSD permitting for another regulated pollutant. Actions with a net change in GHG (CO2e) emissions below the insignificance indicator (threshold) are considered too insignificant on a global scale to warrant any further analysis.

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative Environmental Consequences

3.3.2.1.1 Base Environmental Consequences

Under the No Action Alternative, the remaining A-10 aircraft based at Davis-Monthan AFB would be retired and would cease to operate in the region. The retirement of the remaining A-10 aircraft within the Davis-Monthan AFB region would eliminate emissions from (1) A-10 operations, (2) A-10 engine maintenance and testing, and (3) the use of AGE required to support the A-10 aircraft. The action would also result in a reduction of privately owned vehicle usage and associated commuting activities due to the departure of 983 military and civilian personnel.

The analysis employed the ACAM to estimate emissions from sources affected by the No Action Alternative. The analysis assumed that completion of the planned Phase 2 A-10 retirement action would occur by calendar year 2026. Table 3-36 summarizes the annual emissions estimated by activity with elimination of the remaining A-10 operations at Davis-Monthan AFB. The emission reductions associated with the No Action Alternative would produce beneficial long-term air quality impacts within the Davis-Monthan AFB ROI.

Table 3-36. No Action Alternative - Annual Emission Reductions by Activity at Davis-Monthan AFB due to the Retirement of A-10 Operations

Activity Type	Air Pollutant Emissions (tons per year)						
	VOCs	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2e (mt)
Landing and Take-Offs and Engine Trim Tests	(75.59)	(218.06)	(18.33)	(3.97)	(23.97)	(21.58)	(10,829)
Closed Patterns	(0.39)	(1.78)	(0.68)	(0.10)	(0.48)	(0.43)	(272)
Aircraft Engine Test Cells	(0.18)	(0.69)	(0.27)	(0.04)	(0.17)	(0.15)	(103)
Aerospace Ground Equipment	(134.25)	(186.95)	(285.04)	(13.95)	(36.34)	(35.19)	(9,772)
Privately Owned Vehicles	(1.70)	(21.20)	(0.86)	(0.01)	(0.03)	(0.02)	(1,944)
Total Emissions[a]	**(212.11)**	**(428.68)**	**(305.18)**	**(18.07)**	**(60.99)**	**(57.38)**	**(22,920)**

[a] Calculated values and totals have been rounded; therefore, sum totals might not match the totals row.

Note: Total lead (Pb) emissions would be < -0.001 tons per year.

Key: < = less than; ( ) = negative values and reductions in emissions; AFB = Air Force Base; CO = carbon monoxide; CO_2e (mt) = carbon dioxide equivalent in metric tons; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; SO_X = sulfur oxides; VOC = volatile organic compound.

3.3.2.1.2 Airspace and Ranges Environmental Consequences

Under the No Action Alternative, retirement of the remaining A-10 aircraft based at Davis-Monthan AFB would eliminate A-10 operations in the airspace and range areas and decrease munitions use at BMGR. The analysis focused on operations within the lowest 3,000 feet of the atmosphere and used aircraft flight profiles developed by the project noise analyses as inputs to the ACAM.

Table 3-37 summarizes the annual emissions estimated for the elimination of the remaining A-10 operations within the Davis-Monthan AFB airspaces and training areas. These data show that elimination of A-10 aircraft operations within these areas would result in net reductions in all air pollutant emissions below 3,000 feet AGL. Therefore, the No Action Alternative would improve ground-level air quality within the regional airspaces and training areas. This would also be the case for impacts in any nearby pristine Class I areas.

Table 3-37. No Action Alternative - Annual Emission Reductions within Regional Airspaces and Ranges due to the Retirement of A-10 Operations at Davis-Monthan AFB

Airspace/Range	Air Pollutant Emissions (tons per year)						
	VOCs	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2e (mt)
Fuzzy MOA	(2.67)	(11.56)	(15.99)	(1.69)	(4.86)	(4.37)	(4,594)
Jackal Low MOA	(1.66)	(8.09)	(15.40)	(1.59)	(4.35)	(3.91)	(4,338)
Tombstone A and B MOAs	(0.15)	(2.77)	(13.47)	(1.35)	(3.35)	(3.01)	(3,671)
BMGR – R-2301E	(0.17)	(3.03)	(14.72)	(1.47)	(3.36)	(3.29)	(4,014)
BMGR – R-2301E - Munitions	(0.03)	(4.10)	(0.15)	(0.00)	(2.25)	(1.68)	(0.00)

Note: Total lead (Pb) emissions would be < 0.001 tons per year.

Key: < = less than; ( ) = negative values and reductions in emissions; AFB = Air Force Base; BMGR = Barry M. Goldwater Range; CO = carbon monoxide; CO_2e (mt) = carbon dioxide equivalent in metric tons; MOA = Military Operations Area; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; R-2301E = Restricted Area 2301E; SO_X = sulfur oxides; VOC = volatile organic compound.

3.3.2.1.3 Total GHG Emissions

To estimate total GHG emissions that would occur from the No Action Alternative, the analysis included operations for the A-10 detachments within the immediate Davis-Monthan AFB ROI (as presented above in Table 3-37), plus A-10 sorties between Davis-Monthan AFB and affected airspaces and training areas and operations within these areas, regardless of aircraft altitude. The analysis determined that an A-10 sortie beyond the Davis-Monthan AFB ROI would last for 1.3 hours, and the retirement of these sorties would amount to a reduction of 72,700 mtpy of CO_2e. Therefore, the retirement of the A-10 detachments at Davis-Monthan AFB under the No Action Alternative would result in a total reduction of 95,500 mtpy of CO_2e. These GHG emission reductions would amount to -0.105 and -0.002 percent of the Arizona and U.S. GHG emissions (5-year averages of emissions from 2016 through 2020).

3.3.2.2 Proposed Action Alternative Environmental Consequences

3.3.2.2.1 Base Environmental Consequences

<u>Construction</u>

Infrastructure improvements for the 492 SOW Beddown would require the demolition of two hangars, renovation of existing buildings, and construction of new facilities such as training facilities, a hangar,

maintenance and storage facilities, and vehicle parking lots. Air quality impacts resulting from the proposed construction activities would occur from (1) combustive emissions due to the use of fossil-fuel-powered equipment and (2) fugitive dust emissions (PM10/PM2.5) from demolition and/or renovation activities or the operation of equipment on exposed soil. Prior to project initiation, the 492 SOW would determine if asbestos-containing materials exist in any facilities proposed for demolition and/or renovation (see Table 3-50) and would comply with the requirements of the PDEQ Asbestos National Emissions Standards for Hazardous Air Pollutants Notification Activity Permit Application process (PDEQ, 2024).

Construction activity data were developed to estimate construction equipment usages and areas of disturbed ground due to the proposed 492 SOW Beddown. These data were used as inputs to the ACAM, which were used to estimate air emissions from proposed construction activities at Davis-Monthan AFB. The air quality analysis assumed that the proposed demolition activities would occur in 2025. To provide a conservative analysis, it was assumed that all proposed renovation and construction activities would occur as early as 2026.

The 492 SOW would implement standard construction practices to comply with the PDEQ Fugitive Dust Activity Permit Program and to minimize fugitive dust emissions generated from the use of construction equipment on exposed soil (a reduction of at least 50 percent from uncontrolled levels) (as listed in Section 3.3.2.4) (Countess Environmental, 2006).

Table 3-38 presents estimates of emissions from the infrastructure improvements for the 492 SOW Beddown. These data show that even if total construction emissions occurred in 1 year, the construction emissions would be well below the annual insignificance indicator thresholds. Therefore, construction emissions associated with the proposed 492 SOW Beddown would not result in significant long-term air quality impacts.

Table 3-38. Annual Construction Emissions for the 492 SOW Mission at Davis-Monthan AFB

Activity (Year)	Air Pollutant Emissions (tons per year)						
	VOCs	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2e (mt)
Demolition (2025)	0.01	0.15	0.10	0.00	0.07	0.01	22
Renovations (2026)	0.27	1.70	1.27	0.00	0.04	0.04	279
Construction (2026)	0.98	4.09	3.28	0.01	8.20	0.82	800
Total Emissions[a]	**1.26**	**5.94**	**4.65**	**0.01**	**8.31**	**0.87**	**1,102**
Insignificance Indicator	**250**	**250**	**250**	**250**	**250**	**250**	**68,039**
Exceed Threshold Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

[a] Calculated values and totals have been rounded; therefore, sum totals might not match the totals row.

Note: Total lead (Pb) emissions would be < 0.001 tons per year, substantially less than the insignificance indicator of 25 tons per year.

Key: < = less than; 492 SOW = 492nd Special Operations Wing; AFB = Air Force Base; CO = carbon monoxide; CO_2e (mt) = carbon dioxide equivalent in metric tons; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; SO_X = sulfur oxides; VOC = volatile organic compound.

Operations

The 492 SOW Beddown primarily would generate air emissions from (1) MC-130J and OA-1K aircraft operations, (2) MC-130J and OA-1K engine maintenance and testing, (3) AGE usage, and (4) privately owned vehicles due to personnel commuting activities. The analysis assumed that the proposed MC-130J and OA-1K missions would reach full operations, with resulting emissions in year 2027 or 2028.

Table 3-39 summarizes the annual operational emissions that would result from implementation of the 492 SOW Beddown at Davis-Monthan AFB. These data show that the primary sources of emissions would be (1) aircraft LTO and closed patterns for particulates and CO_2e; (2) AGE usage for VOCs, NO_x, and SO_x; and (3) personnel commuting activities in privately owned vehicles for CO emissions. The increase in emissions that would result from implementation of the 492 SOW Beddown would not exceed any insignificance indicator threshold. Therefore, operational emissions resulting from implementation of the proposed 492 SOW Beddown in the Davis-Monthan AFB region would not result in significant long-term air quality impacts.

Table 3-39. Annual Emissions for Operation of the 492 SOW Beddown at Davis-Monthan AFB

Activity (Year)	Air Pollutant Emissions (tons per year)						
	VOCs	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2e (mt)
Landing and Take-Offs and Engine Trim Tests	5.26	22.14	14.35	1.84	4.33	3.90	5,005
Closed Patterns	0.08	5.16	17.20	2.06	4.24	3.81	5,603
Aircraft Engine Test Cells	0.02	0.20	0.41	0.05	0.10	0.09	126
Aerospace Ground Equipment	13.70	38.88	201.08	4.23	4.62	4.43	5,842
Privately Owned Vehicles	3.85	47.73	1.82	0.02	0.06	0.05	4,472
Total Emissions[a]	**22.92**	**114.11**	**234.86**	**8.19**	**13.35**	**12.29**	**21,048**
Insignificance Indicator	**250**	**250**	**250**	**250**	**250**	**250**	**68,039**
Exceed Threshold Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

[a] Calculated values and totals have been rounded; therefore, sum totals may not match the totals row.

Note: Total lead (Pb) emissions would be < 0.001 tons per year, substantially less than the insignificance indicator of 25 tons per year.

Key: < = less than; 492 SOW = 492nd Special Operations Wing; AFB = Air Force Base; CO = carbon monoxide; CO_2e (mt) = carbon dioxide equivalent in metric tons; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; SO_X = sulfur oxides; VOC = volatile organic compound.

3.3.2.2.2 Airspace and Ranges Environmental Consequences

To quantify the air quality effects of the 492 SOW Beddown in the airspace and range areas proposed for use, the analysis used MC-130J and OA-1K aircraft flight profiles developed by the project noise analyses as inputs to the ACAM. The analysis focused on operations within the lowest 3,000 feet of the atmosphere.

Table 3-40 presents the annual operational emissions that would result from implementation of the 492 SOW Beddown in the airspace and range areas proposed for use. As shown in Table 3-40, the proposed aircraft operations within each of these areas would result in minor increases in air pollutant emissions below 3,000 feet AGL. Not all airspaces are shown in this table because operations in the other airspaces would occur above 3,000 feet AGL. These minor increases would remain well below all conformity *de minimis* and insignificance indicator thresholds. These minor amounts of emissions would also occur intermittently within each airspace and training area and would produce inconsequential ambient pollutant concentrations. As a result, proposed aircraft operations within these areas would not significantly impact any nearby pristine Class I areas. Therefore, implementation of the proposed 492 SOW Beddown would not result in significant long-term air quality impacts in the airspace and range areas proposed for use.

Table 3-40. Annual Emissions from the 492 SOW Beddown Operations in the Airspace and Range Areas Proposed for Use (below 3,000 feet AGL)

Airspace/Range	Air Pollutant Emissions (tons per year)						
	VOCs	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2e (mt)
Jackal Low MOA	0.001	0.01	0.01	0.002	0.001	0.001	5
Tombstone A and B MOAs	0.03	2.51	11.58	1.36	1.84	1.65	3,701
Fort Huachuca (R-2303 A/B/C)	0.04	3.12	14.41	1.69	2.29	2.05	4,606
BMGR – R-2301E	0.01	0.53	2.46	0.29	0.39	0.35	788
BMGR – R-2301E - Munitions	0.00	0.31	0.01	0.00	0.03	0.03	0.00
General Conformity *De Minimis* Threshold	**NA**	**NA**	**NA**	**100**	**100**	**NA**	**NA**
Insignificance Indicator	**250**	**250**	**250**	**NA**	**NA**	**250**	**68,039**
Exceed Threshold Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Note: Total lead (Pb) emissions would be < 0.001 tons per year, substantially less than the insignificance indicator of 25 tons per year.

Key: < = less than; 492 SOW = 492nd Special Operations Wing; AGL = above ground level; BMGR = Barry M. Goldwater Range; CO = carbon monoxide; CO_2e (mt) = carbon dioxide equivalent in metric tons; MOA = Military Operations Area; NA = not applicable; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; R-2301E = Restricted Area 2301E; SO_X = sulfur oxides; VOC = volatile organic compound.

3.3.2.2.3 Total GHG Emissions

Total GHG emissions from the Proposed Action Alternative would occur from operations of the 492 SOW Beddown within the immediate Davis-Monthan AFB ROI (as presented above in Table 3-39), plus proposed aircraft sorties between Davis-Monthan AFB and affected airspaces and training areas and operations within these areas, regardless of aircraft altitude. The analysis determined that MC-130J and OA-1K sorties beyond the Davis-Monthan AFB ROI would last for 1.5 hours each, and these sorties would generate 28,400 mtpy of CO_2e. Therefore, the Proposed Action Alternative would result in a total increase of 49,306 mtpy of CO_2e. Emissions would not exceed the insignificance indicator of 68,039 mtpy. The GHG emissions from the Proposed Action Alternative would amount to 0.05 and 0.001 percent of the Arizona and U.S. GHG emissions (5-year averages of emissions from 2016 through 2020).

3.3.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Future projects that emit air emissions at Davis-Monthan AFB and within the greater 492 SOW Beddown ROI could combine with emissions from the Proposed Action Alternative and result in cumulative impacts. Currently, all air pollutants within Pima County except O_3 and PM_{10} within the Rillito PM_{10} nonattainment area are well below their applicable NAAQS (USEPA, 2024a). Since the Rillito PM_{10} nonattainment area is about 12 miles northwest of Davis-Monthan AFB, transport of proposed emissions from Davis-Monthan AFB to this location would result in low ambient PM_{10} impacts. Therefore, cumulative impacts resulting from implementation of the Proposed Action Alternative, in conjunction with reasonably foreseeable future actions within the Davis-Monthan AFB ROI, would not exceed the NAAQS for any pollutant except potentially O_3.

It is unknown if the current trend towards higher O_3 values will continue in Pima County to the point that the USEPA designates the region as nonattainment for this pollutant. Table 3-38 and Table 3-40 above show that replacement of the A-10 detachments with the 492 SOW Beddown at Davis-Monthan AFB would result in substantial reductions in combined O_3 precursor emissions (VOCs and NO_x) of about 260 tpy within Pima County. Therefore, it is expected that cumulative impacts of O_3 precursor emissions resulting from implementation of the Proposed Action Alternative, in conjunction with reasonably foreseeable future

actions within the Davis-Monthan AFB ROI, would not exceed the NAAQS for O_3. In conclusion, long-term cumulative air emission impacts from the 492 SOW Beddown would not be significant.

Aircraft operations from the Proposed Action Alternative in the airspace and range areas proposed for use would produce intermittent and dispersed air pollutants. Therefore, long-term cumulative air emission impacts from the 492 SOW Beddown within these areas would not be significant.

Climate change could impact implementation of the Proposed Action Alternative and the adaptation strategies needed to respond to future conditions. As discussed in Section 3.3.1.1.2, the Fifth National Climate Assessment predicts that temperatures will continue to rise and it will get drier in Arizona (Marvel et al., 2023). Operations at Davis-Monthan AFB have adapted to their changing climate. For example, Davis-Monthan AFB specifically designs facilities to minimize excessive heat by integrating heat mitigation strategies into site development plans through the use of vegetation or built shade structures. However, exacerbation of climate conditions in the future could increase the cost of proposed operations and could impede operations during extreme events. Through implementation of its Climate Action Plan, the DAF has developed measures to adapt to future climatic events and therefore make facilities more resilient to future climate impacts. Implementation of these measures would mitigate the effects of climate change resulting from the Proposed Action Alternative.

3.3.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

In the absence of any long-term significant impacts to air quality, no mitigations are identified that would reduce air quality impacts from the Proposed Action Alternative. The 355th Wing/Civil Engineer Squadron would incorporate standard construction practices into proposed construction activities to reduce fugitive dust emissions generated from the use of construction equipment on exposed soil. These actions would include the following:

1. Use water trucks to keep areas of vehicle movement damp enough to minimize the generation of fugitive dust.
2. Minimize the amount of disturbed ground area at a given time.
3. Suspend all soil disturbance activities when winds exceed 25 miles per hour or when visible dust plumes emanate from the site and stabilize all disturbed areas with water application.
4. Designate personnel to monitor the dust control program and to increase watering, as necessary, to minimize the generation of dust.

To reduce combustive emissions from construction and to the extent practical, Davis-Monthan AFB would solicit bids that seek to reduce construction emissions, such as encouraging contractors to use electric or alternative fuel vehicles during construction. In addition, contractors would be encouraged to use grid-based electricity for construction activities and to minimize worker vehicle trips during construction through carpooling or use of public transportation. Periodic inspections of emission control systems on heavy construction equipment would be required, and unnecessary idling of heavy construction equipment would be minimized. Lastly, construction equipment and vehicles would be staged away from sensitive receptors and fresh air intakes to buildings and building heating and cooling intakes.

3.4 SOIL AND WATER RESOURCES

3.4.1 Affected Environment

3.4.1.1 Definition of Resource and ROI

The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment.

Water resources include surface water, groundwater, and floodplains. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health factors. Groundwater includes the subsurface hydrologic resources of the physical environment; its properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition. Floodplains are lowland areas adjacent to surface waterbodies where flooding events periodically cover areas with water. Wetlands are discussed in Section 3.5.

For the purposes of the analysis of soil and water resources, the ROI for the No Action Alternative and Proposed Action Alternative includes the areas proposed for infrastructure upgrades and construction, along with areas immediately downstream of base outfalls that could be impacted during construction.

3.4.1.2 Base Affected Environment

3.4.1.2.1 Soil Resources

Davis-Monthan AFB is located in the Tucson Basin between the Tucson Mountains and the Rincon, Santa Catalina, and Santa Rita Mountains in the Sonoran Desert. This area is characterized by deep alluvial deposits transported from the adjacent mountains. Mohave soils and urban land is the most common soil classification at Davis-Monthan AFB. Other soils include Tubac gravelly loam and cave soils and urban land. These soils are all deep, well-drained soils with a slight susceptibility to wind and water erosion. More detailed descriptions of soil types on the base are provided by the Web Soil Service (Soil Survey Staff, 2024).

3.4.1.2.2 Water Resources

Surface Water. The base is located along the border of the Upper Santa Cruz and Rillito Watersheds. A ridge extending roughly from the north to the south divides the installation with the west side of the installation draining to the Julian Wash, which eventually flows into the Santa Cruz River. The east side of the installation drains to the Atterbury and Kinnison Washes and eventually flows into the Rillito River. None of the drainages on the base are perennial and only experience flows of water during and immediately after storms. The Atterbury Wash flows off the base into Lakeside Park Lake, which is a man-made lake fed by stormwater runoff and groundwater. This lake is considered impaired by the ADEQ and eventually drains into the Pantano Wash. The stormwater drainage system on the base is directed by surface channels and underground pipes. The base has three large underground collector pipes that eventually drain into the retention pond located on the edge of the AMARG area.

The base is subject to the requirements of both the 2021 Small Municipal Separate Stormwater Sewer System permit and the 2019 Multi-Sector General Permit for industrial activities. Both permits are issued by the ADEQ under the Arizona Pollutant Discharge Elimination System (AZPDES) program. The permit requires the base to enforce a program to address stormwater runoff from new development and redevelopment projects maintained by the installation.

As part of the Multi-Sector General Permit, the base is required to prepare, implement, and maintain a Stormwater Pollution Prevention Plan (SWPPP) (Davis-Monthan AFB, 2020). The most recent version of the SWPPP was prepared in 2020 to address the requirements of the ADEQ Municipal Separate Stormwater Sewer System permit. The plan is reviewed annually and revised as necessary.

The plan identifies 11 different drainage areas on the installation and includes the amount of impervious surface for each of the drainage areas. Each drainage area has one or more outfalls for a total of 16 outfalls. The permit requires the collection of stormwater samples for laboratory analysis from certain industrial sectors from which stormwater is discharged to waters of the United States.

Groundwater. The primary water source for the base is groundwater from the Tinaja Beds of the Tucson Basin Aquifer. Groundwater is extracted through a series of wells on the base and is distributed through two separate distribution systems. The base does not have any interconnection with the City of Tucson or other water supply sources. Historically, the base has not experienced water shortages during peak demand. The wells, combined with approximately 2.5 million gallons of water storage, are considered more than adequate to meet the current needs of the base, with capacity for growth in demand.

Floodplains. According to the Federal Emergency Management Agency Flood Insurance Rate Maps, the base is located in an area categorized as Zone D, "Areas in which Flood Hazards are Undetermined." Federal Emergency Management Agency Flood Insurance Rate Maps 04019C2265K and 04019C2262K indicate, via extrapolation, that the 100-year floodplains for three washes (the Julian Wash, Kinnison Wash, and Atterbury Wash) are located on Davis-Monthan AFB property. The extent of study of all three of the floodplains terminates just prior to entering the base. Therefore, it is assumed that the 100-year and 500-year floodplains would be present on the base along these washes (DAF, 2023b).

3.4.1.3 Analysis Methodology

Impacts on soils can result from earth disturbance that would expose soil to wind or water erosion. Analysis of impacts on soils examines the potential for such erosion at Davis-Monthan AFB and describes typical measures employed to minimize erosion. In addition, soil limitations and associated typical engineering remedial measures are evaluated with respect to proposed construction. During scoping, the Natural Resources Conservation Service sent a letter stating that although the Natural Resources Conservation Service has no comments on the project, they would like to advise the DAF of the Farmland Policy Protection Act (7 CFR Part 658). However, according to 7 CFR Section 658.3(b), the use of farmland by a federal agency for national defense purposes is exempted by Section 1547(b) of the Act, 7 United States Code (USC) Section 4208(b).

Criteria for evaluating impacts related to soil resources include impacts on unique soil resources, minimization of soil erosion, and the siting of facilities relative to potential soil limitations. The impact analysis for soils is based on context and intensity. Soil disturbance was calculated by summing the square footages of the new construction, including the facilities proposed within the 492 SOW West Campus and the 492 SOW East Campus areas, and multiplying by a factor of three. The factor of three is a conservative planning factor to account for the facility, setbacks, parking, and other unknowns.

The criteria for evaluating impacts related to water resources are water availability, water quality, adherence to applicable regulations, and existence of floodplains. Impacts are measured by the potential to reduce water availability to existing users; to endanger public health or safety by creating

or worsening health hazards or safety conditions; or to violate laws or regulations adopted to protect or manage water resources.

Flooding impacts are evaluated by determining whether proposed construction is located within a designated floodplain. Groundwater impacts are evaluated by determining whether groundwater beneath the project site would be used for implementing the Proposed Action Alternative and, if so, determining the potential to adversely affect those groundwater resources. Soil and water resource impacts are not evaluated for areas outside the installation that are exposed to noise from the Proposed Action Alternative because no ground-disturbing activities or use of water resources would occur at these locations.

3.4.2 Environmental Consequences

3.4.2.1 No Action Alternative Environmental Consequences

3.4.2.1.1 Soil Resources

Under the No Action Alternative, there would be no 492 SOW Beddown ground disturbance; ongoing and planned development projects could result in up to approximately 1 million square feet of new construction. Planned projects are described in the *Environmental Assessment for Installation Development Plan Projects* (IDP EA) (DAF, 2024b). Implementation of the IDP projects could result in up to approximately 29 acres of land disturbance (DAF, 2024b). Implementation of the proposed projects in the IDP EA would result in short-term impacts to soil resources from ground disturbance (e.g., compaction; vegetation removal; and excavation for foundations, footings, or utilities). Implementation of management practices would minimize impacts to soil resources. These actions could include, but would not be limited to, installation of silt fencing and sediment traps, application of water sprays to keep soil from becoming airborne, and revegetation of disturbed areas as soon as possible.

3.4.2.1.2 Water Resources

Surface Water. Impacts to surface water can result from land clearing, grading, and moving soil resulting in localized increases in stormwater runoff volume and intensity. Planned projects would create new impervious surfaces and have the potential to introduce pollutants into waterways. Implementation of the IDP projects could disturb up to approximately 29 acres of soil (DAF, 2024b). Construction activities would take place on previously disturbed land adjacent to existing buildings and infrastructure. There are no known currently planned projects that would occur within or intersect surface waters. However, ongoing and planned construction would have the potential to increase erosion and sedimentation of nearby surface waters during and for a brief period after construction due to temporary disturbance of soils.

Groundwater. The planned Phase 2 retirement of A-10s from Davis-Monthan AFB would result in a decrease in personnel. This decrease in personnel is not anticipated to result in significant long-term impacts to groundwater resources. See Section 3.8.1.2.1 for a description of potable water use.

Floodplains. Under the No Action Alternative, there are no planned projects located in floodplains; therefore, impacts to floodplains are not anticipated.

3.4.2.2 Proposed Action Alternative Environmental Consequences

3.4.2.2.1 Soil Resources

Implementation of the projects identified in Table 2-7 would disturb approximately 35 acres of previously disturbed land. Short-term impacts to soil resources near each of the project sites would result from ground disturbance (e.g., compaction; vegetation removal; and excavation for foundations, footings, or utilities). The soil types in the areas proposed for construction are generally acceptable for construction or urban development. On-site soils (predominantly Mohave and Urban land) have moderate potential for wind and water erosion but only slight limitations for shallow excavations (Soil Survey Staff, 2024). Implementation of management practices such as temporary and/or permanent drainage management features, integration of Low Impact Development (LID) concepts into site designs along with the use of silt fences would minimize impacts to soil resources. Potential impacts to soil resources would be minimal and long-term significant impacts to soil resources are not anticipated to result from implementation of the Proposed Action Alternative.

3.4.2.2.2 Water Resources

Surface Water. Long-term impacts to surface water can result from land clearing, grading, and moving soil resulting in localized increases in stormwater runoff volume and intensity. Proposed construction projects would create new impervious surfaces and potentially introduce pollutants such as oil and grease or sediment into surface water resources. However, in accordance with Unified Facilities Criteria 3-210-10, LID (as amended, 2016) and the Emergency Independence and Security Act Section 438 (42 USC Section 17094), any increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features (i.e., use of porous materials, directing runoff to permeable areas, and use of detention basins to release runoff over time). The integration of LID concepts incorporates site design and stormwater management principles to maintain the site's pre-development runoff rates and volumes to further minimize potential adverse long-term impacts associated with increases in impervious surface area.

Prior to construction, contractors would be required to obtain coverage under an AZPDES Construction General Permit by filing a Notice of Intent with the ADEQ and preparing a site-specific SWPPP to manage stormwater discharges during and after construction until the area is revegetated. Upon revegetation, the contractor would file the Notice of Termination with the ADEQ to terminate permit coverage. The DAF would specify compliance with the stormwater discharge permit in all contractor construction requirements. The contractor would be required to prepare the SWPPP in accordance with the ADEQ SWPPP template and the plan would include site-specific management practices to eliminate or reduce sediment and non-stormwater discharges. Other management practices could include the use of water sprays during construction to keep soil from becoming airborne, use of silt fences, covering soil stockpiles, using secondary containment for hazardous materials, and revegetating the site in a timely manner. During the short-term construction period, all contractors would be required to comply with applicable statutes, standards, regulations, and procedures regarding stormwater management.

Stormwater management principles would be incorporated into construction contracts to maintain each site's pre-development runoff rates and volumes, further minimizing potential adverse long-term impacts from increased impervious surface area. During the design phase, site-specific plans for each construction site would include a variety of structural stormwater controls (e.g., control mats, silt fences, etc.) to account for the increased intensity of storms where rainfall amounts could stay the same but occur all at once. Permanent landscape forms such as berms, widening swales, and terraces would be

incorporated into site designs, where possible, to better channel stormwater. Additionally, stormwater infrastructure could be upsized, where possible, to accommodate increased rainfall intensity during monsoon storms. Other measures could include planting native vegetation in disturbed areas as soon as possible after construction; constructing retention facilities; and implementing structural controls (e.g., interceptor dikes, swales [excavated depressions], silt fences, straw bales, and other storm drain inlet protection), as necessary, to prevent sediment from entering inlet structures. The active use of LID principles around new construction would help mitigate both the potential flooding of new facilities and the runoff created by new facilities.

Continued monitoring and the routine inspection of storage and handling of potential pollutants such as pesticides, chemicals, and construction trash during construction would prevent accidental spills and contamination of stormwater. Overall, potential impacts to stormwater from construction activities would be short term and negligible with strict adherence to applicable permits and management plans and implementation of best management practices (BMPs) identified for each construction site, as well as usage of appropriate site planning and the implementation of erosion/sedimentation management techniques.

The Atterbury, Julian, and Kinnison Washes are located 1.5 miles or more from the nearest proposed construction site. Strict adherence to the SWPPP and the management actions identified for each construction site would reduce potential long-term impacts to these washes and other water resources.

The areas planned for development as part of the proposed mission are located in drainage areas 001, 002A, and 004, which have a total existing impervious surface area of approximately 960 acres (Davis-Monthan AFB, 2020). Approximately 11 acres of impervious surfaces would be added to the existing impervious surface of these drainage areas, resulting in a 0.1 percent increase in impervious surface.

The existing SWPPP also identifies control practices to be followed for spill prevention and response, routine inspection of discharges at sites, and proper training of employees. As part of the SWPPP, the base has identified individuals to be part of the Stormwater Pollution Prevention Team. The Stormwater Pollution Prevention Team meets annually, is responsible for all aspects of the SWPPP, and provides recommendations to the Environment, Safety, and Occupational Health Leadership Committee regarding the SWPPP status, any deficiencies, and outfall monitoring data.

Groundwater. Implementation of the 492 SOW Beddown would result in a net increase of approximately 1,317 personnel when compared to interim conditions. This increase in personnel is not anticipated to result in significant long-term impacts to groundwater resources. See Section 3.8 for a description of potable water use.

Floodplains. No floodplains are located near any of the areas proposed for infrastructure development on Davis-Monthan AFB. Therefore, impacts to floodplains would not result from implementation of the 492 SOW Beddown.

3.4.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Facility projects associated with the proposed 492 SOW Beddown would occur near other ongoing and future facility projects (e.g., IDP projects) during the same time periods. Construction, renovation, and demolition projects have been and will continue to be a regular occurrence on and near Davis-Monthan AFB. These construction projects would increase the amount of soil disturbed and have the potential to increase erosion and sedimentation into surface water features. Management practices described in Section 3.4.2.4 would avoid and minimize impacts to both soil and water resources. Cumulative impacts resulting from implementation of the Proposed Action Alternative in conjunction with reasonably

foreseeable future actions on the soil and water resources at Davis-Monthan AFB would not be significant or long-term.

Additionally, soil and water resources could be adversely affected by future climate-change-related impacts. Climate change predictions indicate there will be an overall increase in local temperatures (U.S. Global Change Research Program, 2018). Prolonged heat in excess of 100 °F could reduce precipitation events, increasing drought conditions, thus, impacting soil and water resources over time.

3.4.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

No specific mitigations are required for soil and water resources. Management Actions such as the following would be applied as necessary:

- use of temporary and/or permanent drainage management features
- site-specific SWPPP to manage stormwater discharges
- integration of LID concepts into site design
- use of water sprays during construction to keep soil from becoming airborne
- use of silt fences
- covering soil stockpiles
- using secondary containment for hazardous materials
- revegetating the site in a timely manner

3.5 BIOLOGICAL RESOURCES

3.5.1 Affected Environment

3.5.1.1 Definition of Resource and ROI

Biological resources include the plant and animal species, habitats, and ecological relationships of the land and water areas within the ROI. The ROI for biological resources includes the base affected environment and the airspace and range affected environment. The base affected environment is the areas affected by ground disturbance at Davis-Monthan AFB (Figure 2-3) (Section 2.2.5) and the areas surrounding the base that experience aircraft noise of 65 dB DNL or greater (Figure 3-1) (Section 3.2.1). The airspace and range affected environment includes lands beneath the airspace and ranges proposed for use in Arizona and New Mexico (Figure 2-2) (Section 2.2.3).

For the purposes of this EIS, sensitive and protected biological resources include plant and animal species protected under federal and/or state law, including threatened and endangered species, migratory birds, bald and golden eagles, and Waters of the United States (WOTUS), including wetlands, subject to regulatory protection. Species and resources that potentially occur within the ROI were identified through literature reviews, online database submissions, publicly available data reviews, and coordination with federal and state regulatory agency representatives, resource managers, and other knowledgeable experts.

3.5.1.2 Base Affected Environment

Vegetation. Davis-Monthan AFB is in the Sonoran Basin and Range Ecoregion (Griffith et al., 2014). Native vegetation transitions between three biotic communities: Sonoran Xeri-Riparian Series, Paloverde-Cacti-Mixed Scrub Series, and the Creosote-White Bursage Series (USEPA, 2023). Historical

livestock grazing and extensive development of the area have altered the overall vegetative structure. Most native vegetative cover has been disturbed by development, agriculture, landscaping, and the introduction of non-native and invasive plant species (DAF, 2023b). Approximately 60 percent of Davis-Monthan AFB has been altered by human activities (e.g., construction of buildings, roads, airfields, and yards) and these lands are characterized as developed, improved, and semi-improved areas. The remaining 40 percent of the base is comprised of unimproved areas of native Sonoran Desert vegetation, although some areas contain non-native invasive species (DAF, 2023b).

Improved and semi-improved grounds on base are urbanized, with mowed grassland or landscaped desert vegetation within the developed portions of the base. Mowed grasses are maintained at a height of approximately 1 to 3 inches and are primarily composed of Lehmann's lovegrass (*Eragrostis lehmanniana*) and Bermuda grass (*Cynodon dactylon*). Buffelgrass (*Cenchrus ciliaris*) does occur on the base and is managed per the guidance of the Installation Pest Management Plan (located in Appendix F and Section 8.2 of the Integrated Natural Resources Management Plan [INRMP]) (DAF, 2023b). Common landscaped plant species include agaves (*Agave* spp.) and various cacti such as barrel (*Ferocactus* spp.), hedgehog (*Echinocereus* spp.), organ pipe (*Stenocereus thurberi*), prickly pear (*Opuntia* sp.), saguaro (*Carnegiea gigantea*), and senita (*Pachycereus schottii*). Common trees and shrubs include Mexican Washington fan palms (*Washingtonia gracilis*), blue and foothills palo verde (*Parkinsonia* spp.), mesquites (*Prosopis juliflora, P. chilensis*), junipers (*Juniperus* spp.), oleander (*Nerium* sp.), pines (*Pinus* spp.), desert broom (*Baccharis sarothroides*), and globemallows (*Sphaeralcea* spp.).

Unimproved grounds consist of the relatively undisturbed vegetation of three Sonoran Desert scrub communities: the Paloverde-Cacti-Mixed Scrub Series of the Arizona Upland Subdivision, the Creosote-White Bursage Series of the Lower Colorado River Valley Subdivision, and Sonoran Xeri-Riparian series. Vegetation management at Davis-Monthan AFB is guided by the INRMP, Appendix F (DAF, 2023b) and the BASH Plan (DAF, 2023c).

The Arizona Department of Agriculture (AZDA) submitted a scoping comment on May 22, 2024, requesting that the project consider the Arizona Native Plant Law (Title 3., Chapter 3., Article 11). The AZDA maintains a list of native plant species that warrant protection under the law. Only one species of protected plant, the saguaro cactus, is known to occur at Davis-Monthan AFB (DAF, 2023b). The saguaro cactus is present within the Sonoran habitat on base and is designated as Highly Safeguarded (i.e., a plant that is threatened for survival or in danger of extinction) (AZDA, 2019).

Wildlife. Information on wildlife occurring on Davis-Monthan AFB is provided in the 2023 INRMP (DAF, 2023b). Common wildlife species documented on the base include a wide variety of birds, mammals, reptiles, and invertebrate species adapted for survival in the hot, dry environment of the Sonoran Desert. There are no fish resources at Davis-Monthan AFB, and there is no hunting permitted on base. Desert wildlife species documented at the installation within areas of human disturbance include roadrunner (*Geococcyx californianus*), Gambel's quail (*Callipepla gambelii*), burrowing owls (*Athene cunicularia hypugaea*), collared peccary (*Tayassu tajacu*), and coyotes (*Canis latrans*) (DAF, 2023b).

Endangered Species Act (ESA)-Listed Species. The United States Fish and Wildlife Service's (USFWS's) Information for Planning and Consultation (IPaC) online system was accessed on June 18, 2024, to identify current USFWS trust resources (e.g., migratory birds, species proposed or listed under the ESA [16 USC Section 1531 et. seq.], inter-jurisdiction fishes, specific marine mammals, wetlands, and USFWS National Wildlife Refuge System lands) with potential to occur within the ROI (see

Biological Resources Supporting Document on the project website located at https://492sow-beddown-eis.com/documentation.aspx).

On June 18, 2024, the USFWS provided an automated *Official Species List* via Section 7 letter (see Biological Resources Supporting Document on the project website located at https://492sow-beddown-eis.com/documentation.aspx) identifying 11 species (including 1 candidate species, and 10 threatened and endangered species that are protected under the ESA [16 USC Section 1531 et seq.]) with potential to occur at the installation (USFWS, 2024a). The species are presented in Table 3-41. Per the USFWS letter, no designated and proposed critical habitats occur in the ROI.

Table 3-41. Federally Listed Species with Potential to Occur on Davis-Monthan AFB

Common Name	Scientific Name	Federal Listing Status	Habitat	Historically Observed at Davis-Monthan AFB?
Mammals				
Ocelot	*Leopardus pardalis*	FE	The ocelot is a habitat specialist; the species lives in areas of dense cover or vegetation and high prey populations. The ocelot avoids open country.	No
Birds				
Cactus Ferruginous Pygmy-Owl	*Glaucidium brasilianum cactorum*	FT	The cactus ferruginous pygmy-owl nests in existing cavities in saguaro cacti. The thickets of palo verde trees, mesquite, and saguaro cactus in and surrounding Atterbury Wash are potential suitable habitat (DAF, 2024b).	No
California Least Tern	*Sternula antillarum browni*	FE	California least terns nest on barren to sparsely vegetated sandbars along rivers, sand and gravel pits, lake and reservoir shorelines, and occasionally on gravel rooftops.	No
Yellow-Billed Cuckoo	*Coccyzus americanus*	FT	Yellow-billed cuckoos prefer streamside cottonwood, willow groves, and large mesquite bosques for migrating and breeding in Arizona. The species is rarely observed as transient in xeric desert or urban settings.	No
Reptiles and Amphibians				
Sonoyta Mud Turtle	*Kinosternon sonoriense longifemorale*	FE	The Sonoyta mud turtle is found only in Quitobaquito Pond in Arizona and a few isolated sites in Sonora, Mexico.	No
Fishes				
Gila Chub	*Gila intermedia*	FE	The Gila chub occupies cool-to-warm water in mid-to-headwater stretches of mid-sized streams of the Gila River Basin. The species is often found in deep, near-shore pools adjacent to swift riffles and runs, and near obstructions. Cover consists of root wads, boulders, undercut banks, submerged organic debris, or deep water.	No

Table 3-41. Federally Listed Species with Potential to Occur on Davis-Monthan AFB (continued)

Common Name	Scientific Name	Federal Listing Status	Habitat	Historically Observed at Davis-Monthan AFB?
Gila Topminnow	*Poeciliopsis occidentalis*	FE	The Gila topminnow occupies headwater springs, and vegetated margins and backwater areas of intermittent and perennial streams and rivers. The species prefers shallow warm water in a moderate current with dense aquatic vegetation and alga mats. Gila topminnows can withstand a wide range of water temperatures and water chemistries.	No
Insects				
Monarch Butterfly	*Danaus plexippus*	PT	Monarch butterflies feed on nectar from many flower species but breed only where there are milkweed species (*Asclepias* spp.). A number of monarchs from the western population overwinters at Arizona sites and require moisture for hydration, defense against freezing temperatures, and protection against strong winds. Migrating monarchs occur near water sources.	No
Plants				
Arizona Eryngo	*Eryngium sparganophyllum*	FE	The Arizona Eryngo occurs in spring-fed aridland cienegas of the International Four Corners Region (USFWS, 2022a). As a wetland obligate species, the plant only occurs at two sites in Pima County (USFWS, 2022a).	No
Huachuca Water-Umbel	*Lilaeopsis schaffneriana* var. *recurva*	FE	Huachuca water-umbel habitat consists of cienegas or marsh wetlands at elevations between 2,000 and 6,000 feet mean sea level, within Sonoran desert scrub, grassland or oak woodland, and conifer forest. The species can be found in sites with shallow water, saturated soil near seeps, springs, and streams. The water-umbel requires perennial water, gentle stream gradients, and mild winters.	No
Pima Pineapple Cactus	*Coryphantha scheeri* var. *robustispina*	FE	Pima pineapple cactus habitat consists of ridges in semidesert grassland and alluvial fans in Sonoran desert scrub. The cactus does occur at several localities several miles from the base (DAF, 2024b).	No

Key: AFB = Air Force Base; FE = federally endangered; FT = federally threatened; PT = proposed threatened.
Sources: (DAF, 2020; DAF, 2023b), (DBG, 2024) (Arizona Bird Conservation Initiative and Sonoran Joint Venture, 2023), (USFWS, 1998) (USFWS, 2015; USFWS, 2016; USFWS, 2017a; USFWS, 2017b; USFWS, 2018) (USFWS, 2020a; USFWS, 2020b; USFWS, 2021a; USFWS, 2022a; USFWS, 2022b; USFWS, 2024a; USFWS, 2024b)

Of the 11 species identified in Table 3-41, there are no federally threatened or endangered species known to occur on Davis-Monthan AFB (DAF, 2023b). This assessment is based on historical surveys completed

by the Arizona Game and Fish Department (AZGFD) at the installation and subsequent annual survey work conducted as part of the goals outlined in the INRMP (DAF, 2023b). Potential suitable habitat for two species, the cactus-ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) and Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), occurs in the unimproved grounds at the installation. The Pima pineapple cactus does occur at some localities several miles from the base; although, no cacti were found during surveys conducted in 1990, 2009, and 2015 by the AZGFD (DAF, 2024b). The cactus ferruginous pygmy-owl has not been documented on Davis-Monthan AFB, but potential suitable habitats (thickets of palo verde trees, mesquite, and saguaro cactus) are present (DAF, 2023b).

Migratory Birds. Migratory bird species protected under the Migratory Bird Treaty Act (16 USC Sections 703–712) could occur as residents or migrants on Davis-Monthan AFB. According to the INRMP, nearly 100 bird species have been historically documented as present or are known to utilize Sonoran Desert scrub communities on or near the base (refer to the INRMP for a comprehensive list) (DAF, 2023b), including protected raptor species. Under the INRMP and through various agency partnerships (Partners in Flight, AZGFD, and University of Arizona), Davis-Monthan AFB manages and monitors populations of burrowing owls, Swainson's hawks (*Buteo swainsoni*), Cooper's hawks (*Accipiter cooperii*), and great horned owls (*Bubo virginianus*) through collaborative programs that include annual and seasonal bird of prey surveys and Tucson Bird Count Surveys (DAF, 2023b). The AZGFD routinely monitors western burrowing owl populations each season, and the Burrowing Owl Project Clearance Protocol is followed if active burrows are discovered to be in direct conflict with development of semi-improved areas (DAF, 2023b). The USFWS IPaC identified eight Birds of Conservation Concern with potential to occur at the installation (USFWS, 2024a) (see Biological Resources Supporting Document on the project website located at https://492sow-beddown-eis.com/documentation.aspx for a complete list of these species).

Davis-Monthan AFB maintains an existing BASH Plan that establishes an overall bird/wildlife control program to minimize aircraft exposure to potentially hazardous wildlife strikes (DAF, 2023c). The BASH Plan delineates responsibilities for minimizing potential hazards in the areas where tasked units assigned to Davis-Monthan AFB conduct flying operations. A U.S. Department of Agriculture wildlife biologist manages potential wildlife hazards by removal, dispersal, and wildlife control methods to avoid any BASH incidents.

Bald and Golden Eagles. Bald (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) protected under the Bald and Golden Eagle Protection Act (16 USC Sections 668–668c) are not known to occur on Davis-Monthan AFB or in the immediate vicinity of the base. Both bald and golden eagles may occur in the generally vicinity of the installation as transients. Golden eagles have been observed soaring within the Tucson area, whereas bald eagles are less common to the area and generally occur- only as winter migrants (DAF, 2020).

Research has also shown that raptors (e.g., peregrine falcons, prairie falcons, golden eagles) showed very little response to low-level, mid-level, and high-level flyovers, resulting in no change in productivity (Ellis et al., 1991). In a literature review of raptor responses to aircraft noise, Manci et al. (1988) found that most raptors did not show a negative response to overflights. Also, the DAF has identified golden eagle nesting sites in the vicinity of its low-level flying routes and MOAs and has implemented 1,000-foot avoidance buffers.

State-Listed Species. The AZGFD Heritage Data Management System (HDMS) and Project Evaluation Program (PEP) online review tool was accessed on 2 May 2024 to identify special status species (e.g., Arizona Species of Conservation Concern, Species of Greatest Conservation Need (SGCN), and

Species of Economic and Recreation Importance) with potential to occur at Davis-Monthan AFB (Project ID: HGIS-21894) (AZGFD, 2024a). The AZGFD HDMS and PEP online review tool, based on predicted range models identified six state SGCN that could intersect the installation boundary (AZGFD, 2024a). These species are monitored through the INRMP and Rare Species Assessments coordinated through the installation natural resource manager, AZGFD, USFWS, and the University of Arizona (DAF, 2023b) Refer to the Biological Resources Supporting Document on the project website for the list of special status wildlife species in Pima County generated by the AZGFD online review tool. In a letter dated May 2, 2024, the AZGFD identified a wildlife habitat connectivity feature located in the ROI. The riparian/wash features are part of the Tucson Urban Riparian Linkages within Pima County wildlife movement area (AZGFD, 2024a).

Wetlands and WOTUS. Wetlands are protected under both federal and state law. The Clean Water Act (CWA) (33 USC Section 1251 et seq.) establishes the basic structure for regulating discharges of pollutants into WOTUS and regulating quality standards for surface waters. The U.S. Army Corps of Engineers determines whether a wetland is a WOTUS. If the U.S. Army Corps of Engineers determines a wetland is not subject to the CWA, the wetland could still be subject to regulation by the ADEQ under the Surface Water Protection Program.

An analysis of potential WOTUS was conducted in 1996 at Davis-Monthan AFB, and no jurisdictional wetlands were identified (DAF, 2023b). The CWA-protected habitats at the installation are all ephemeral drainages; there are no perennial drainages on Davis-Monthan AFB (DAF, 2023b). Several channelized ephemeral drainages carry runoff from the developed portions of the installation and exit the base through underground or open drainage systems. The Atterbury Wash is the primary ephemeral drainage on the undeveloped portion of the base and is designated as a WOTUS that is regulated either under the CWA or the Surface Water Protection Program (ADEQ, 2023). The drainage only experiences flow of water during and immediately after storms and is prone to flash flooding (ADEQ, 2023; DAF, 2023b). Additionally, the Atterbury Wash contains an ephemeral stock tank that provides aquatic habitat for amphibians and bats during the wet season (DAF, 2023b). The Atterbury Wash flows off the base into Lakeside Park Lake, which is a man-made lake fed by stormwater runoff and groundwater. This lake is considered impaired by the ADEQ and eventually drains into the Pantano Wash.

3.5.1.3 Airspace and Ranges Affected Environment

Vegetation. Lands beneath the airspace and ranges proposed for use span across three ecoregions: Sonoran Basin and Range (Arizona), Madrean Archipelago (Arizona), and Chihuahuan Deserts (New Mexico) (Griffith et al., 2014). These areas contain scattered low mountains, vegetated desert, and large tracts of federally owned lands, a large portion of which are used for military training. Vegetation is comprised of typical Sonoran plants including white bursage (*Ambrosia dumosa*), ocotillo (*Fouquieria splendens*), brittlebush (*Encelia farinosa*), creosotebush (*Larrea tridentata*), catclaw acacia (*Senegalia greggii*), various cacti and cholla species, desert saltbush (*Atriplex polycarpa*), ironwood (*Ostrya virginiana*), and various mesquite species.

Wildlife. Wildlife occurring beneath the airspace and ranges proposed for use include a very large variety of birds, mammals, reptiles, amphibians, fish, and invertebrate species adapted to Sonoran, Mohave, and Chihuahuan Desert climates and differ by range in elevation. Some common bird and mammal species known to the region include Gambel's quail (*Lophortyx gambelii*), Gila woodpecker (*Melanerpes uropygialis*) roadrunner, curve-billed thrasher (*Taxostoma curvirostre*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), black-throated sparrow (*Amphispiza bilineata*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), bighorn sheep, mountain lion (*Puma concolor*), coyote, bobcat (*Felis rufus*), black-tailed jackrabbit (*Lepus*

californicus), desert cottontail (*Sylvilagus audubonii*), Merriam's kangaroo rat (*Dipodomys merriami*), white-throated woodrat (*Neotoma albigula*), desert pocket mouse (*Perognathus penicillatus*), and round-tailed ground squirrel (*Spermophilous tereticaudus*). Common reptiles and amphibians of the region include an expansive variety of snakes, lizards, whiptails, geckos, toads, frogs, and salamanders. Some of the most common include collared lizards (*Crotaphytus collaris*), desert spiny lizard (*Sceloporus magister*), common chuckwalla (*Sauromalus obesus*), desert horned lizard (*Phrynosoma platyrhinos*), ground snake (*Sonora semiannulata*), gopher snake (*Pituophis catenifer*), Sonoran Desert toad (*Bufo alvarius*), and American bullfrog (*Lithobates catesbeianus*). Wildlife under the airspace proposed for use and near the BMGR are currently exposed to overflight noise, sonic booms and the use of munitions and defensive countermeasures.

ESA-Listed Species. On August 13, 2024, the USFWS provided an automated *Official Species List* via Section 7 letter identifying 51 species with potential to occur on the lands beneath the airspace and ranges proposed for use (Figure 2-2) (USFWS, 2024b). There are 23 critical habitats wholly or partially beneath these areas (Figure 2-2) (USFWS, 2024b) (see Biological Resources Supporting Documentation on the project website located at https://492sow-beddown-eis.com/documentation.aspx for a complete list of these species).

Migratory Birds. Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The airspace and ranges proposed for use overlap three BCRs (two in Arizona and one in New Mexico). These BCRs include the Sonoran and Mohave Deserts (BCR 33), Sierra Madre Occidental (BCR 34), and Chihuahuan Desert (BCR 35) (USFWS, 2021b). The USFWS IPaC identified 44 Birds of Conservation Concern with potential to occur in the airspace and ranges proposed for use (USFWS, 2024b) (see Biological Resources Supporting Document on the project website located at https://492sow-beddown-eis.com/documentation.aspx for a list of these species).

Bald and Golden Eagles. Eagle habitat is present beneath the airspace and ranges proposed for use. In Arizona, bald eagles use a variety of habitats throughout the state, but nearly all bald eagle breeding areas are located in the central part of Arizona (SBEMC, n.d.). Golden eagles also utilize a variety of habitats state-wide, ranging from mountain areas to open country, and desert (AZGFD, 2022).

State-Listed Species. On August 14, 2024, the AZGFD HDMS PEP tool was accessed to identify special status species with potential to occur on lands beneath the airspace and ranges proposed for use (Figure 2-2) (AZGFD, 2024b). Refer to the Biological Resources Supporting Document on the project website located at https://492sow-beddown-eis.com/documentation.aspx) for a comprehensive list of all special status species.

Wetlands and WOTUS. Wetlands and WOTUS occur beneath the airspace and ranges proposed for use. These wetlands and WOTUS typically occur within or adjacent to perennial or intermittent streams or other relatively permanent waterbodies located in the ROI.

3.5.1.4 Analysis Methodology

This section describes the potential impacts to biological resources associated with the No Action and the Proposed Action Alternatives. Under the Proposed Action Alternative, impacts to biological resources could occur due to the following:

Direct impacts:

- Habitat loss from ground disturbance/land-clearing activities

- Changes to the noise environment from facility and infrastructure projects and/or from aircraft operations and airspace use, resulting in impacts to noise-sensitive or receptive species
- Mortality or injury from bird/wildlife-aircraft strikes

Indirect impacts:

- Habitat fragmentation (i.e., contiguous habitats get divided into smaller, isolated patches adversely affecting species populations over time)
- Increased sediment, dust, or other pollutants from construction, demolition, and renovation activities causing changes to terrestrial and aquatic habitat(s)

3.5.2 Environmental Consequences

3.5.2.1 No Action Alternative Environmental Consequences

Under the No Action Alternative, the 492 SOW Beddown would not occur, and there would be no new 492 SOW Beddown-related construction/demolition or renovation. Annually planned demolition, construction, renovation, and maintenance activities would continue to occur (see Section 2.1). Under the No Action Alternative, the planned Phase 2 A-10 retirement would occur resulting in a decrease in associated personnel and airfield and airspace operations. Significant impacts to biological resources would not result from implementation of the No Action Alternative.

3.5.2.1.1 Base Environmental Consequences

Vegetation and Wildlife. Because there would be no new 492 SOW Beddown-related construction associated with the No Action Alternative, there would be no impacts to vegetation or wildlife species. Due to the planned Phase 2 A-10 retirement, aircraft operations would decrease resulting in the potential for decreased BASH-related incidents. Wildlife resources on the installation would also experience reductions in noise. Although annual maintenance and updates to facilities and infrastructure would continue, changes to facilities and infrastructure would not occur as part of the 492 SOW Beddown. Therefore, short- or long-term impacts to vegetation and wildlife resources from the No Action Alternative on the installation would not be considered significant.

Protected Species and Migratory Birds. No federally listed threatened or endangered species are known to occur on Davis-Monthan AFB, nor does critical habitat exist on the installation. Potential suitable habitat for the cactus-ferruginous pygmy-owl is located on Davis-Monthan AFB. No impacts to this habitat would occur as a result of implementing the No Action Alternative. Several state SGCN have the potential to occur on Davis-Monthan AFB and impacts to special status species from the No Action Alternative would be the same as those described above for vegetation and wildlife. Short- or long-term significant impacts to protected species and migratory birds on the installation would not result from implementation of the No Action Alternative. The No Action Alternative would have no effect on any federally listed threatened or endangered species.

Wetlands and WOTUS. No jurisdictional wetlands occur on Davis-Monthan AFB and no wetlands are present in the construction ROI; therefore, no impacts to wetlands would occur. No 492 SOW Beddown-related construction would occur and the Atterbury Wash, located on the undeveloped portion of the installation, is the only wash regulated as a WOTUS by ADEQ (ADEQ, 2023). Annual demolition, construction, renovation, and maintenance would continue under the No Action Alternative; and non-stormwater discharges associated with these actions could produce short-term indirect, minor impacts

on water quality of the Atterbury Wash. However, existing controls and management practices would minimize impacts to water quality.

3.5.2.1.2 Airspace and Ranges Environmental Consequences

Vegetation and Wildlife. Implementation of the No Action Alternative would have no impacts on vegetation and wildlife beneath the airspace and ranges proposed for use because the planned Phase 2 A-10 retirement would result in an overall reduction in aircraft operations. There would be decreases in the use of munitions and defensive countermeasures. Impacts to vegetation and wildlife resulting from the No Action Alternative would not result in significant long- or short-term impacts.

Protected Species and Migratory Birds. Implementation of the No Action Alternative would have no effect on protected species or migratory birds beneath the airspace and ranges proposed for use. Due to the planned Phase 2 A-10 retirement, there would be an overall reduction in aircraft operations. There would also be decreases in the use of munitions and defensive countermeasures.

Wetlands and WOTUS. Because there would be no earth disturbance associated with the No Action Alternative, there would be no impact to wetlands and WOTUS beneath the airspace and ranges proposed for use.

3.5.2.2 Proposed Action Alternative Environmental Consequences

Implementation of the 492 SOW Beddown would result in ground disturbance for the proposed construction/demolition or renovation on the installation. However, all of the areas proposed for construction are previously disturbed and do not provide unique habitat for vegetation, wildlife or protected species. In addition to the impact evaluation for biological resources on the installation, the analyses included a qualitative evaluation of potential impacts to vegetation, wildlife, and protected species under the airspace and ranges proposed for use. Compared to interim conditions, implementation of the Proposed Action Alternative would result in 8,828 fewer airspace operations, 768,185 fewer munitions used, and 45,680 fewer defensive countermeasures released from aircraft on an annual basis.

3.5.2.2.1 Base Environmental Consequences

Vegetation and Wildlife. Activities associated with the facilities and infrastructure projects would occur on previously developed improved and semi-improved areas (i.e., along the flightline, within the previously disturbed cantonment area [Figure 2-3]). The proposed construction activities would not impact the remaining unimproved areas of native Sonoran Desert scrub communities on the installation. The INRMP outlines management goals and objectives for sensitive plant species and landscape management in Sections 8.1 and 8.3 to avoid damage to vegetation. Under the Proposed Action Alternative, revegetation of disturbed areas would be conducted as directed by the base natural resource manager to minimize the potential for erosion and dust generation. Native Sonoran Desert plant species would be used for replacement vegetation. Additionally, Davis-Monthan AFB would adhere to the Arizona Native Plant Law to help conserve protected native plants. As such, it is anticipated that short- or long-term impacts to native vegetation would not be significant under the Proposed Action Alternative within the ROI of Davis-Monthan AFB.

Under the Proposed Action Alternative, potential impacts to wildlife may include habitat loss and land disturbance when new facilities are constructed. The areas planned for development for the proposed 492 SOW Beddown are located along the flightline and within the previously disturbed cantonment area and provide urbanized habitat for wildlife species. The existing turfgrass and landscaped areas within the

former golf course area provide limited habitat to some urban adapted wildlife species (e.g., coyote and javelina). Only previously developed land would be disturbed with construction in the two proposed areas on the former golf course (492 SOW West Campus and the 492 SOW East Campus; see Figure 2-3). As such, significant long-term impacts to wildlife habitat would not result from implementation of the 492 SOW Beddown.

Noise resulting from the proposed construction, demolition, and renovation activities would be localized, short-term, and only occur during daylight hours. Areas proposed for construction are in a military/industrial land use with frequent elevated noise levels. The installation is currently exposed to elevated aircraft noise levels as well as noise generated by the day-to-day operations of vehicles and equipment. Construction would occur during normal working hours (i.e., 7:00 A.M. to 5:00 P.M.), and construction equipment would be equipped with mufflers. Construction noise generated as part of the Proposed Action Alternative would not result in significant long-term impacts to wildlife.

Areas with the highest DNL are located along the runway and extended runway centerline or in areas where aircraft static engine runs are conducted. The total number of acres affected by noise levels exceeding 65 dB DNL would decrease by 31 relative to interim conditions. The propeller-driven OA-1K and MC-130J aircraft that would bed down under the Proposed Action Alternative would generate noise levels that are less than or the same as currently based aircraft (Table 3-25); and OA-1K and MC-130J overflights generate substantially lower noise levels than those generated by fighter aircraft such as the F-16s. Therefore, no short- or long-term noise-related impacts to wildlife are anticipated to result from the 492 SOW Beddown.

Protected Species and Migratory Birds. Because no federally listed threatened, endangered, or candidate species and/or designated critical habitat occurs at Davis-Monthan AFB, no impacts to ESA-listed species would result from implementation of the facilities and infrastructure projects as part of the Proposed Action Alternative. Although potential suitable habitat for the cactus-ferruginous pygmy-owl and Pima pineapple cactus occurs within the undeveloped areas of the installation, no impacts to these species' habitats would occur, as their potential suitable habitats are outside of the ROI (Figure 2-3).

The annual estimated number of total 492 SOW aircraft operations is approximately 20,040 per year for all units. Based A-10 aircraft, which conduct 24,068 annual operations under interim conditions, would retire from Davis-Monthan AFB resulting in a net decrease of 4,028 annual airfield operations. Any decrease in airfield operations within the ROI could result in a decreased opportunity for bird-aircraft strikes to occur. Adherence to the existing BASH program would minimize the risk of bird-aircraft strikes for migratory birds (DAF, 2023c). A decrease in airfield operations may reduce impacts to nesting migratory birds in the ROI as well.

The DAF has determined that implementation of the Proposed Action Alternative would have no effect on federally listed species known to occur or with potential to occur in the areas affected by ground disturbance and areas surrounding the base.

Under the INRMP program and Rare Species Assessments (as coordinated through the installation natural resource manager, AZGFD, USFWS, and the University of Arizona), Davis-Monthan AFB would continue to closely manage and monitor populations of state-listed species at the installation.

No bald or golden eagle nesting is known to occur at Davis-Monthan AFB or in the immediate vicinity of the base, therefore impacts to sensitive nesting habitat would not likely occur (DAF, 2020). Golden and bald eagles have been observed soaring in the general vicinity of the installation and noise-related impacts to these birds would be similar to those described for other wildlife. (throughout Tucson) (DAF,

2020). Continued adherence to the 2023 BASH guidelines would minimize the risk of eagle-aircraft collisions (DAF, 2023c).

Wetlands and WOTUS. No jurisdictional wetlands occur on Davis-Monthan AFB; therefore, no impacts to wetlands would occur. Construction, demolition, and renovation projects associated with the Proposed Action Alternative would occur near the Atterbury Wash. The Proposed Action Alternative would require new construction, demolition of existing facilities, and renovation of existing facilities, potentially increasing surface water runoff to the Atterbury Wash and impacting water quality. Strict adherence to the existing SWPPP, which outlines control practices for spill prevention and response, routine inspection of discharge sites, and proper employee training, would reduce potential long-term impacts to the Atterbury Wash (Davis-Monthan AFB, 2020). Additionally, contractors would obtain an AZPDES Construction General Permit requiring a site-specific SWPPP to manage runoff discharges during and after construction until an area is revegetated (Davis-Monthan AFB, 2020). As such, it is anticipated that impacts to WOTUS would be indirect and minor under the Proposed Action Alternative.

3.5.2.2.2 Airspace and Range Environmental Consequences

Vegetation and Wildlife. Ground disturbance beneath the airspace and ranges proposed for use would be limited to the use of flares and munitions, which would be less than what is currently being used by A-10 pilots from Davis-Monthan AFB and would only occur in areas and at altitudes that are currently approved for such use. No significant impacts to vegetation would result from implementation of the Proposed Action Alternative in the airspace and ranges proposed for use.

All airspace and ranges proposed for use by OA-1K and MC-130J pilots are currently used as active military airspace by military jet aircraft; therefore, no new types of impacts would be introduced into these areas as a result of introducing the new aircraft. Potential impacts for overflights and associated noise and bird-aircraft collisions are described as follows.

L_{dnmr} would remain the same or decrease beneath all of the airspace and range areas proposed for use, except under the Fort Huachuca Airspace (R-2303 A/B/C). Under the Fort Huachuca airspace, the L_{dnmr} would increase by 5 dB. Wildlife under the Fort Huachuca airspace have been previously exposed to aircraft noise and use of munitions and could be habituated to the sound. Wildlife under the airspace and ranges proposed for use would not be exposed to significant changes in the noise environment and therefore significant long-term impacts to wildlife would not result from noise.

Chaff and flares would be used as a defensive countermeasure by AFSOC pilots during training operations. Flares would only be used in airspace areas currently approved for such use. Flare use by pilots would conform to existing altitude and seasonal restrictions to ensure fire safety. Ordnance delivery would only occur in ranges authorized for such use. When compared to interim conditions, use of munitions and defensive countermeasures would decrease. The new mission would not result in an increased potential for adverse short- or long-term impacts to wildlife under the airspace and near the ranges proposed for use.

As described in Section 3.2, aircraft operations would increase in some areas of special use airspace and decrease in others. These changes in operations are not anticipated to substantially change the BASH risk in the airspace. Current procedures for avoiding flight operations during periods of high concentrations of birds (both in space and time) would continue. Adherence to the existing BASH program would minimize the risk of bird-aircraft strikes to negligible levels. Therefore, significant short- or long-term impacts to wildlife are not anticipated to result from the 492 SOW Beddown.

Protected Species and Migratory Birds. Potential impacts to federally listed species, critical habitats, migratory birds, and bald and golden eagles that could occur under the airspace and ranges proposed for use would be the same as those described for wildlife. Therefore, it is anticipated that significant adverse short- or long-term impacts to federally listed species, migratory birds, and bald and golden eagles would not result from implementation of the 492 SOW Beddown. As such, the DAF has determined that implementation of the Proposed Action Alternative would have no effects on federally listed species known to occur or with potential to occur in the land beneath the airspace and ranges proposed for use.

Wetlands and WOTUS. Wetlands and other WOTUS beneath the airspace and ranges proposed for use would not be disturbed or otherwise impacted from implementation of the 492 SOW Beddown.

3.5.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Reasonably foreseeable projects are anticipated to affect biological resources within the ROI. Wildlife could be cumulatively impacted by increased exposure to aircraft noise and potential increase in bird/aircraft strikes. Future actions could require additional Section 7 consultation with the USFWS to evaluate impacts to federally protected species.

The Proposed Action for the EIS for *Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona* (DAF, 2024c) would modify the volume, time of use, horizontal and vertical dimensions, and other attributes of 10 existing DAF MOAs to address insufficient airspace capability and capacity for training aircrews stationed at Davis-Monthan AFB, Luke AFB, and Morris Air National Guard Base. Supersonic operations are proposed to occur at 5,000 feet AGL for the Tombstone, Outlaw, Jackal, Morenci, and Reserve MOAs, and the floor of the Tombstone, Outlaw, Jackal, Bagdad, and Gladded MOAs is proposed to be lowered (https://www.arizonaregionalairspaceeis.com/). Potential impacts to biological resources residing beneath the proposed airspace could include disturbance resulting from noise and visual observation. However, due to the reductions in aircraft operations associated with the Phase 2 A-10 retirement, and the minor number of aircraft operators proposed by the 492 SOW, cumulative impacts to biological resources are not anticipated.

Additionally, vegetation and wildlife could be adversely affected by future climate-change-related impacts. Although native flora and fauna are adapted for survival in hot, dry environments, climate change predictions indicate there will be an overall increase in local temperatures (U.S. Global Change Research Program, 2018). Prolonged heat in excess of 100° F could reduce species' ranges, shorten species dormant periods, and increase drought conditions, thus, impacting biological resources over time.

3.5.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

The following is a list of proposed BMPs proposed to reduce the potential for impacts on biological resources.

3.5.2.4.1 Vegetation

- Materials used for on-site erosion control will be free of non-native plant seeds and other plant parts to limit potential for establishment of invasive species.
- Check construction sites for presence of invasive plants. If present, employ mechanical or chemical treatment to invasive plants, and thoroughly clean and inspect equipment and work clothing before moving off site to lessen the probability of spreading invasive seeds throughout the installation.

- Native weed free seeds or plants will be used to revegetate temporarily disturbed areas.
- Obtain materials such as gravel, topsoil, or fill from existing developed or previously used sources that are compatible with the project site and are from legally permitted sites. Materials from undisturbed areas adjacent to the project site will not be used.

3.5.2.4.2 Wildlife

- To prevent entrapment of wildlife species, ensure that excavated, steep-walled holes or trenches are either completely covered by plywood or metal caps at the close of each workday or provided with one or more escape ramps (at no greater than 1,000-foot intervals and sloped less than 45 degrees) constructed of earthen fill or wooden planks.
- Each morning, before the start of construction or maintenance activities and before such holes or trenches are filled, ensure that they are thoroughly inspected for trapped animals. Ensure that any animals discovered are allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, and before construction activities resume, or are removed from the trench or hole by a qualified person and allowed to escape unimpeded.
- The Migratory Bird Treaty Act (16 USC Sections 703–712 [1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989]) requires that federal agencies coordinate with the USFWS if a construction activity would result in the known take of a migratory bird. Construction contractors are to coordinate with the on-site U.S. Department of Agriculture wildlife biologist to ensure impacts to migratory birds are minimized. All construction activities within known habitat should be scheduled outside of nesting seasons. If construction or clearing activities are scheduled during nesting seasons (March 1 through September 1) within potential nesting habitats, surveys would be performed to identify active nests. Other mitigation measures that would be considered include if an active nest is found, a buffer zone would be established around the nest and no activities would occur within that zone until nestlings have fledged and abandoned the nest.
- Avoid lighting impacts during the night by conducting construction and maintenance activities during daylight hours only. If night lighting is unavoidable, (1) use special light-emitting diode (LED) bulbs designed to ensure no increase in ambient light conditions, (2) minimize the number of lights used, (3) place lights on poles pointed down toward the ground, with shields on lights to prevent light from going up into sky, or out laterally into landscape, and (4) selectively place lights so they are directed away from all native vegetative communities.
- Avoid contamination of ground and surface waters by storing concrete wash water, and any water that has been contaminated with construction materials, oils, equipment residue, etc., in closed containers on site until removed for disposal. Concrete wash water can be toxic to wildlife. Storage tanks must have proper air space (to avoid rainfall-induced overtopping), be on-ground containers, and be located in upland areas away from washes.

3.6 CULTURAL RESOURCES

3.6.1 Affected Environment

3.6.1.1 Definition of Resource and ROI

Cultural resources are any prehistoric or historic district, site, building, structure, or objects considered important to a culture or community for scientific, traditional, religious, or other purposes. These resources are protected and identified under several federal laws and EOs including the Archaeological

and Historic Preservation Act of 1974 (54 USC Section 312501–312508 et seq.), the American Indian Religious Freedom Act of 1978 (42 USC Section 1996), the Archaeological Resources Protection Act of 1979, as amended (16 USC Sections 470aa–470mm), the Native American Graves Protection and Repatriation Act of 1990 (25 USC Sections 3001–3013), and the National Historic Preservation Act (NHPA) (54 USC Section 300101 et seq.) and its implementing regulations (36 CFR Part 800). The NHPA requires federal agencies to consider the effects of federal undertakings on historic properties prior to deciding or taking an action and integrate historic preservation values into their decision-making process. Federal agencies fulfill this requirement by completing the NHPA Section 106 consultation process, as set forth in 36 CFR Part 800. NHPA Section 106 also requires agencies to consult with federally recognized American Indian tribes with a vested interest in the undertaking. NHPA Section 106 requires all federal agencies to seek to avoid, minimize, or mitigate adverse effects to historic properties (36 CFR Section 800.1(a)).

Cultural resources include the following subcategories:

- Archaeological (i.e., prehistoric or historic sites where human activity has left physical evidence of that activity, but no structures remain standing)
- Architectural (i.e., buildings, structures, groups of structures, or designed landscapes that are of historic or aesthetic significance)
- Traditional Cultural Properties (TCPs) (resources of traditional, religious, or cultural significance to American Indian tribes)

Significant cultural resources are those listed on the National Register of Historic Places (NRHP) or determined to be eligible for listing. To be eligible for the NRHP, properties must be 50 years old and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. Properties must possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance and meet at least one of four criteria for evaluation:

A. Associated with events that have made a significant contribution to the broad patterns of our history (Criterion A)
B. Associated with the lives of persons significant in our past (Criterion B)
C. Embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C)
D. Have yielded or be likely to yield information important in prehistory or history (Criterion D)

Properties that are less than 50 years old can be considered eligible for the NRHP under criteria consideration G if they possess exceptional historical importance. Those properties must also retain historic integrity and meet at least one of the four NRHP criteria (Criteria A, B, C, or D). The term "historic property" refers to National Historic Landmarks (NHL), NRHP-listed, and NRHP-eligible cultural resources.

For cultural resources analysis, the ROI is defined by the Area of Potential Effect (APE). The APE is defined as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR Section 800.16[d]) and thereby diminish their historic integrity. The physical and visual APE for this EIS is 0.03 miles and 0.5 miles around each project location, respectively. Project locations are defined

as the buildings associated with construction, demolition, and renovation under the Proposed Action Alternative. The APE also includes the land beneath the airspace and ranges proposed for use. Cultural resource data were obtained from Davis-Monthan AFB; National Park Service (NPS) (NPS, 2020; NPS, 2024); AZSITE, Arizona's cultural resource inventory (Arizona SHPO et al., 2024); and the New Mexico Cultural Resources Information System (New Mexico SHPO, 2024).

3.6.1.2 Base Affected Environment

3.6.1.2.1 Architectural Resources

To date, there are 138 buildings within the APE constructed prior to 1991, which marks the end of the Cold War era (1945–1991). Of these buildings, 126 have been determined not eligible and 12 have been determined eligible for listing in the NRHP (Table 3-42) as a result of four architectural surveys/evaluations (Table 3-43) (DAF, 2021). All 12 eligible architectural resources within the APE are located within the visual APE of Building 183, an administrative/maintenance facility slated for modification under the Proposed Action Alternative. These 12 eligible resources are associated with the Munitions Storage Area (MSA) and were determined eligible under the Advisory Council on Historic Preservation Program Comment for World War II and Cold War Era Army Ammunition Production Facilities and Plants, dated August 18, 2006 (coordinated with the State Historic Preservation Office [SHPO] letter dated November 13, 2012). The Program Comment allows the installation to perform a variety of activities with these structures including ongoing operations, maintenance and repair, rehabilitation, renovation, new construction, and demolition without requiring individual Section 106 consultation on these activities. These facilities are listed in DAF's Automated Civil Engineer System – Project Management using Historic Status Code "Eligible for the Purposes of a Program Alternative" (DAF, 2021). Building 183, previously determined not eligible for the NRHP, was constructed in 1956 and is centrally located between the eligible MSA buildings. None of the facilities proposed for renovation, modification, or demolition under the Proposed Action Alternative are eligible or potentially eligible for listing in the NRHP (Table 3-44). All buildings managed by Davis-Monthan AFB constructed prior to 1991 have been evaluated for NRHP eligibility (DAF, 2021). Therefore, there are no unevaluated architectural resources from or prior to the Cold War era within the direct physical APE.

Table 3-42. NRHP-Eligible Architectural Resources within the APE

Bldg. No.	Description from GIS Data	Date Built	NRHP Status	APE
151	Storage, Igloo	1952	Eligible	Visual
153	Storage, Igloo	1952	Eligible	Visual
155	Storage, Igloo	1952	Eligible	Visual
157	Storage, Igloo	1952	Eligible	Visual
186	Storage	1980	Eligible	Visual
187	Storage	1956	Eligible	Visual
265	Storage	1959	Eligible	Visual
270	Storage, Multicubicle Magazine	1959	Eligible	Visual
275	Storage, Multicubicle Magazine	1959	Eligible	Visual
280	Storage, Multicubicle Magazine	1959	Eligible	Visual
285	Storage, Multicubicle Magazine	1959	Eligible	Visual
290	Storage, Multicubicle Magazine	1959	Eligible	Visual

Key: APE = Area of Potential Effect; Bldg. No. = Building Number; GIS = Geographic Information System; NRHP = National Register of Historic Places.

Table 3-43. Architectural Surveys within the APE

Report Author(s)	Report Title	Year
Patterson et al.	A Systemic Study of Air Combat Command Cold War Material Culture: Volume II-5: A Baseline Inventory of Cold War Material Culture at Davis-Monthan Air Force Base	1995
GeoMarine, Inc.	Cold War-Era Historic Property Survey	Pre-2006
GeoMarine, Inc.	DMAFB Historic Evaluation of 10 Buildings	2009
Thompson, Scott	An Architectural Survey, Documentation, and Evaluation of Built-Environment Resources at Davis-Monthan Air Force Base, Arizona	Pre-2019

Key: APE = Area of Potential Effect; DMAFB = Davis-Monthan Air Force Base.
Sources: (Patterson et al., 1995; Geomarine, Pre-2006; Geomarine, 2009; Thompson, Pre-2019)

Table 3-44. NRHP Status of Buildings Proposed for Renovation, Modification, or Demolition

Bldg. No.	Description/Proposed Action Alternative	Date Built	NRHP Status
183	Administrative/Maintenance Facility	1956	Not Eligible
257	Crash Damaged or Disabled Aircraft Recovery Overflow Storage	2006	Not Eligible
2350	Convert to Headquarters Building	1968	Not Eligible
4201	Convert to Administrative Building	1953	Not Eligible
4400	Convert to Squadron Operations Facility	2009	Not Eligible
4413	Convert to Simulator Facility	1981	Not Eligible
4414	Convert to Simulator Facility	1972	Not Eligible
4710	Aerospace Ground Equipment Maintenance and Storage	1992	Not Eligible
4800	Squadron Operations	1953	Not Eligible
4809	Demolish for 2-Bay Hangar/AMU	1971	Not Eligible
4826	Demolish for 2-Bay Hangar/AMU	1988	Not Eligible
4845	Renovate for Interim Crash Damaged or Disabled Aircraft Recovery Storage	1995	Not Eligible
4859	Renovate for a Small Arms Vault	n/a	Not Eligible
4884	Renovate for Aerospace Ground Equipment	n/a	Not Eligible
4885	Renovate for Storage	2013	Not Eligible
4887	Refurbish for Wash Rack	2018	Not Eligible
4889	Mobility Readiness Spares Package and Classified Storage Vault	2014	Not Eligible
4891	Refurbish to Fuel Cell Facility	2015	Not Eligible
5045	Refurbish Aircraft Structural Repair	1960	Not Eligible
5230	Refurbish for Engine Shop	2005	Not Eligible
5245	Refurbish for Maintenance Backshops	1970	Not Eligible
5247	Convert to Squadron Operations	1953	Not Eligible
5251	Convert to Hangar/Maintenance Facility	1971	Not Eligible
5254	Interim Fiberglass Repair	1992	Not Eligible
5255	Addition/Alteration for Corrosion Control	1958	Not Eligible
5416	Wash Rack	2006	Not Eligible
5420	Renovate for ACC	1953	Not Eligible
5430	Weapons Load Training	1984	Not Eligible

Table 3-44. NRHP Status of Buildings Proposed for Renovation, Modification, or Demolition (continued)

Bldg. No.	Description/Proposed Action Alternative	Date Built	NRHP Status
5600	Convert to Squadron Operations Facility	1953	Not Eligible
5605	Aircraft Parts Storage and Decentralized Materials Support	1966	Not Eligible

Key: 492 SOW = 492nd Special Operations Wing; ACC = Air Combat Command; AMU = Aircraft Maintenance Unit; Bldg. No. = Building Number; n/a = construction date not available; NRHP = National Register of Historic Places.

3.6.1.2.2 Archaeological Resources

To date, 21 archaeological sites have been identified and evaluated within the APE (Table 3-45) as a result of an intensive 3,180-acre cultural resource survey and site-conditions assessment conducted in 2017 (Statistical Research Inc., 2017). Of these 21 sites, 2 are individually eligible for listing in the NRHP under Criterion D (AZ BB:13:896 and AZ BB:13:900). Both sites are located within the visual APE over 0.31 miles southeast and south, respectively, of Building 183 in the eastern portion of the installation. The remaining 19 sites are not eligible for listing according to AZSITE records managed by Arizona State University and SHPO (Arizona SHPO et al., 2024). According to the Integrated Cultural Resources Management Plan (ICRMP) (DAF, 2021), all areas within the physical APE have been either previously surveyed or previously disturbed by facilities construction.

Table 3-45. NRHP-Eligible Archaeological Resources within the APE

Site No.	Temporal Affiliation(s)	Site Type	NRHP Status	APE
BB:13:896	Prehistoric: Unassigned	Native American resource procurement and processing	Eligible (D)	Visual
BB:13:900	Middle or Late Ceramic period (700–1450 CE) Middle Historical period (1860–1900) Late Historical period (1901–1967)	Multicomponent site: • Native American resource procurement and processing (Hohokam) • Railroad-catering and maintenance trash, cumulative roadway trash scatter, railroad and utility demolition	Hohokam Component: Eligible (D) Euro-American Component: Not Eligible	Visual

Key: APE = Area of Potential Effect; No. = Number; NRHP: National Register of Historic Places.

3.6.1.2.3 Traditional Cultural Properties

TCPs may include traditionally used plants and animals, trails, and certain geographic areas. Types of resources that have been specifically identified in recent studies include, but are not limited to, rock art sites; “power” rocks and locations; medicine areas; and landscape features such as specific

peaks or ranges, hot springs, meadows, valleys, and caves. To date, no TCPs, sacred sites, human remains, associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony have been identified or recovered at Davis-Monthan AFB. Davis-Monthan AFB has identified 15 Native American tribes with ancestral ties to installation lands, including:

- Ak-Chin Indian Community
- Fort McDowell Yavapai Nation
- Fort Sill Apache Tribe
- Gila River Indian Community of the Gila River Indian Reservation
- Hopi Tribe
- Jicarilla Apache Nation
- Mescalero Apache Tribe of the Mescalero Reservation
- Pascua Yaqui Tribe
- Pueblo of Zuni
- San Carlos Apache Tribe of the San Carlos Reservation
- Salt River Pima-Maricopa Indian Community of the Salt River Reservation
- Tohono O'odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe of the Fort Apache Reservation
- Yavapai-Apache Nation of the Camp Verde Indian Reservation

Three Native American tribes own land under the airspace proposed for use, including:

- Fort Sill Apache Tribe of Oklahoma
- San Carlos Apache
- Tohono O'odham Nation

3.6.1.3 Airspace and Ranges Affected Environment

Table 3-46 summarizes the number of NRHP-listed sites, Native American lands, and NHLs under MOAs and ranges used by aircrews from Davis-Monthan AFB. The training airspace overlies portions of 10 Arizona counties (Apache, Cochise, Gila, Graham, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yuma) and 3 New Mexico counties (Grant, Hidalgo and Luna). A total of 129 NRHP-listed properties, including both architectural and archaeological resources, and 9 NHLs have been identified under the MOAs and ranges used by Davis-Monthan AFB aircrews. Three NPS units (physical properties owned by the NPS) are beneath the airspace: Chiricahua Wilderness, Organ Pipe Cactus National Monument, and Organ Pipe Cactus Wilderness. Mount Graham is a TCP as identified by the Apache Tribes of Arizona and is located in the Outlaw/Jackal/Morenci MOAs (DAF, 2021). Three Native American tribes—Fort Sill Apache Tribe of Oklahoma, San Carlos Apache, and the Tohono O'odham Nation—own land under the MOAs and ranges proposed for use; this land may contain TCPs. No other TCPs have been identified; however, the location of these resources is often confidential.

During the 45-day Draft EIS review and comment period, the DAF hosted a teleconference with Dr. Bob Estes and Ms. Michelle Ensey of the New Mexico SHPO office. During this teleconference, the New Mexico SHPO requested that the DAF conduct a search of the New Mexico Cultural Resource Information System (NMCRIS) using the boundary of the Tombstone and Playas MOAs including a 0.5-kilometer buffer area as the APE under the airspace proposed for use in New Mexico. This search

resulted in the identification of 26 Historic Cultural Properties Inventory properties, 5 of which are eligible for the NRHP. One of the five sites is a section of the El Paso and Southwestern Railroad, and the remaining four sites are homestead sites associated with the Gray Ranch. In addition, this search identified two state registered properties and 548 archaeological sites, 69 of which have been identified as eligible for the NRHP and 407 as unevaluated. The information obtained during this search is included in the Cultural Resources Supporting Document located on the project website[3] at www.492sow-beddown-eis.com.

Table 3-46. NRHP-Listed Sites and Native American Reservation Lands Under Military Operations Areas

Airspace Designation	Number of NRHP Properties Under Airspace	Native American Lands Under Airspace	NHLs Under Airspace
Jackal/Jackal Low MOAs	31	Fort Sill Apache Tribe of Oklahoma and San Carlos Apache	Kinishba Ruins Point of Pines Sites
Outlaw MOA	39	San Carlos Apache	None
BMGR (R-2301E)	1	None	None
Fort Huachuca (R-2303A/B/C)	8	None	Fort Huachuca Lehner Mammoth-Kill Site Murray Springs Clovis Site
Ruby/Fuzzy MOAs	2	Tohono O'odham Nation	None
Sells 1/Sells Low MOAs	10	Tohono O'odham Nation	Ventana Cave
Tombstone A/B/C MOAs	27	None	Double Adobe Site Phelps Dodge General Office Building San Bernardino Ranch
Playas MOA	11	None	None

Key: BMGR = Barry M. Goldwater Range; MOA = Military Operations Area; NHL = National Historic Landmark; NRHP = National Register of Historic Places.

3.6.1.4 Analysis Methodology

Adverse impacts on cultural resources would occur if the Proposed Action Alternative results in the following:

- Physically altering, damaging, or destroying all or part of a resource
- Altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting
- Neglecting the resource to the extent that it deteriorates or is destroyed
- The sale, transfer, or lease of the property out of agency ownership (or control) without adequate enforceable restrictions or conditions to ensure preservation of the property's historic significance

For the purposes of this EIS, an impact is considered significant if it alters the integrity of a NRHP-listed, eligible, or potentially eligible resource or potentially impacts TCPs.

[3] See Cultural Resources Supporting Document at www.492sow-beddown-eis.com.

3.6.2 Environmental Consequences

3.6.2.1 No Action Alternative Environmental Consequences

3.6.2.1.1 Base Environmental Consequences

No new 492 SOW Beddown-related construction, demolition, or renovation would be implemented with the No Action Alternative. However, there would be annually planned demolition, construction, renovation, and maintenance activities. Davis-Monthan AFB would continue to manage cultural resources in accordance with the ICRMP. Due to the planned Phase 2 retirement of the A-10 aircraft, additional space would be available in the facilities previously used to support the A-10 missions. These facilities would be available for use by other missions. Davis-Monthan AFB would continue to manage cultural resources in accordance with the ICRMP and evaluate these activities for any potential undertakings or required consultations under Section 106. No adverse effects to cultural resources would be anticipated to occur under the No Action Alternative.

3.6.2.1.2 Airspace and Ranges Environmental Consequences

Under the No Action Alternative, all of the A-10 aircraft operating from the installation would be retired, and no new aircraft would arrive at the installation, resulting in 11,868 fewer airspace operations per year. The planned Phase 2 retirement of the remaining A-10s occurring under the No Action Alternative would also result in 768,500 fewer air-to-ground munitions used per year and 55,700 fewer defensive countermeasures dropped per year at BMGR and in the associated training airspace, where permitted. The reduction in aircraft operations, munitions and countermeasures would reduce the amount of noise occurring beneath the airspace and on the existing ranges.

3.6.2.2 Proposed Action Alternative Environmental Consequences

3.6.2.2.1 Base Environmental Consequences

Implementation of the proposed 492 SOW Beddown would include the construction of 9 new facilities, demolition of 2 buildings, and 28 renovation projects (Table 2-7 and Figure 2-3). All buildings within the physical APE have been recorded and evaluated for NRHP eligibility (see Table 3-46). The 12 NRHP-eligible buildings associated with the MSA are within the visual APE of Building 183, which is not NRHP eligible. The MSA buildings are covered under the Advisory Council on Historic Preservation Program Comment and there would be no significant impacts to these resources. There would be no physical or visual impacts to other architectural resources on the installation. The Arizona and New Mexico SHPOs have concurred with the DAF's APE and determination of no adverse effects to historic properties. While the DAF and Davis-Monthan AFB will continue to have ongoing conversations with Native American tribes, Section 106 consultation with the tribes related to the 492 SOW Beddown is considered complete.

No short- or long-term impacts to archaeological resources would be anticipated to result from implementation of the Proposed Action Alternative. All areas of the installation proposed for construction, including the proposed 492 SOW West Campus and the 492 SOW East Campus areas have been disturbed by previous construction or have been inventoried for archaeological resources. Two NRHP-eligible archaeological resources have been identified in the visual APE for Building 183 (AZ BB:13:896 and AZ BB:13:900). As archaeological sites eligible under Criterion D, there would be no adverse effects caused by visual changes to the surrounding environment. Because ground-disturbing

activities would occur in previously disturbed and inventoried areas, it would be unlikely that any previously undocumented archaeological resources would be encountered during facility demolition, renovation, addition, or construction. In the case of unanticipated or inadvertent discoveries, the DAF would comply with the procedures outlined in Section 7.4 of the ICRMP (DAF, 2021).

No short- or long-term impacts to tribal resources or traditional cultural properties within Davis-Monthan AFB would be anticipated to result from implementation of the Proposed Action Alternative. As required by Sections 101(d)(6)(B) and 106 of the NHPA; implementing regulations prescribed in 36 CFR Section 800.2(c)(2); DoD Instruction 4710.02, *DoD Interactions with Federally Recognized Tribes*; and AFI 90-2002, *Department of the Air Force Interactions with Federally Recognized Tribes*, Davis-Monthan AFB mailed scoping notification letters on May 9, 2024, to Native American tribes with potential interest in the Proposed Action Alternative. To date, fourteen tribes have responded. Additionally, Davis-Monthan AFB initiated Section 106 government-to-government consultation with tribes to identify TCPs. The consultation correspondence included an invitation to participate in the NEPA process and an invitation to consult directly with the Davis-Monthan AFB Commander regarding any comments, concerns, and suggestions. Davis-Monthan AFB will continue to coordinate with interested tribes throughout the EIS process.

3.6.2.2.2 Airspace and Ranges Environmental Consequences

Under the Proposed Action Alternative (once the A-10 aircraft are retired and the 492 SOW is fully operational) there would be a net annual decrease of 8,828 aircraft operations in the airspace and ranges proposed for use as compared to interim conditions. Compared to interim conditions, air-to-ground munitions use within BMGR would be reduced by 768,185 per year, and the use of defensive countermeasures would decrease by 45,680 per year. The reduction in aircraft operations, munitions and countermeasure use would reduce the amount of noise occurring beneath the airspace and ranges proposed for use and on existing ranges. When compared to the No Action Alternative, the noise reductions would be less than what would occur compared to interim conditions, and noise would increase by 5 dB L_{dnmr} under the restricted area at Fort Huachuca. This would have no impact on cultural resources underlying the proposed airspace and ranges. No adverse impacts to cultural resources beneath the airspace and ranges proposed for use would result from the Proposed Action Alternative. Consultation with both the Arizona and New Mexico SHPOs is complete (see the Cultural Resources Supporting Document on the project website for SHPO correspondence).

Mount Graham is a TCP as identified by the Apache Tribes of Arizona and is located beneath the Outlaw/Jackal/Morenci MOAs (DAF, 2021). Three Native American tribes—Fort Sill Apache Tribe of Oklahoma, San Carlos Apache, and the Tohono O'odham Nation—own land under the MOAs proposed for use. The DAF consulted on a government-to-government basis with 32 different Native American tribes. The consultation included various letters, telephone calls, and emails to representatives of each of the tribes. While the DAF and Davis-Monthan AFB will continue to have ongoing regular conversations apart from this EIS as part of preexisting government-to-government consultation with Native American tribes, Section 106 consultation with the tribes related to the 492 SOW Beddown is considered complete. Information regarding the government-to-government tribal consultation is contained in the Cultural Resources Supporting Document available on the project website.

3.6.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

The Proposed Action for the *Environmental Assessment for Installation Development Plan Projects* (DAF, 2024b) would occur over a 5-year period from FY 2024 through FY 2028. Under that Proposed

Action, the DAF would add approximately 1 million square feet of new buildings, earth-covered magazines, and pads/paved areas and would demolish up to 128,000 square feet of buildings. There would be no impacts to NRHP-eligible/listed archaeological sites, historic buildings, or TCPs.

The Proposed Action for the EIS for *Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona* (DAF, 2024c) would modify the volume, time of use, horizontal and vertical dimensions, and other attributes of 10 existing DAF MOAs to address insufficient airspace capability and capacity for training aircrews stationed at Davis-Monthan AFB, Luke AFB, and Morris Air National Guard Base. Supersonic operations are proposed to occur at 5,000 feet AGL for the Tombstone, Outlaw, Jackal, Morenci, and Reserve MOAs, and the floor of the Tombstone, Outlaw, Jackal, Bagdad, and Gladded MOAs is proposed to be lowered (https://www.arizonaregionalairspaceeis.com/). Potential impacts to cultural resources could occur if the increased noise from supersonic operations occurring at lower altitudes and/or presence of aircraft in the modified MOAs is significant enough to affect the character and/or setting of an NRHP-eligible/listed historic property beneath each respective airspace. Further, changes in flare use within the MOA would have the potential to increase fire risks to existing cultural resources. Proposed changes in chaff use would minimally impact resources. These changes include proposing to authorize the use of chaff in the Tombstone MOA where none is currently allowed and lowering the minimum altitude for releasing flares in Tombstone, Outlaw, Jackal, Bagdad, and Gladden MOAs. Potential resources most sensitive to these types of impacts would be TCPs, culturally sensitive historic landmarks, and historic districts.

The Arizona Department of Transportation proposes improvements to Interstate 10 (I-10) from Kino Parkway to Country Club Road, which includes a new interchange at I-10 and Country Club Road. This undertaking would also include the reconstruction of the interchange at Interstate 19 (I-19) and Irvington Road. Potential impacts to cultural resources would be anticipated if NRHP-eligible/listed archaeological resources are located in areas with intact cultural stratigraphy and if NRHP-eligible/listed architectural and/or district resources are located within or adjacent to the projects and the alteration of the landscape affects the character and/or setting of such resources.

Cumulative impacts resulting from implementation of the 492 SOW Beddown in conjunction with reasonably foreseeable actions on cultural resources would not be expected to be significant.

3.6.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

No additional resource-specific mitigations and management actions would be required with implementation of the Proposed Action Alternative.

3.7 SOCIOECONOMICS

3.7.1 Affected Environment

3.7.1.1 Definition of Resource and ROI

Socioeconomics refers to features or characteristics of the social and economic environment. The factors affecting socioeconomic resources are the change in personnel, construction of new facilities, and renovations and modifications to existing facilities. These factors are evaluated relative to the existing population, employment, earnings, housing, education, and public and base services. Davis-

Monthan AFB is located in Tucson, Arizona, in Pima County. Impacts to socioeconomic resources would extend beyond the base boundaries. Therefore, for the purposes of this socioeconomic analysis, the ROI for the No Action and Proposed Action Alternatives is Pima County, with an emphasis on Davis-Monthan AFB.

3.7.1.2 Base Affected Environment

3.7.1.2.1 Population

More than 1.06 million people were estimated to reside in Pima County in 2023 (USCB, 2024b). The state of Arizona has an estimated population of 7.4 million (USCB, 2024b). Growth in the county has been less than the state (Table 3-47).

Table 3-47. Population in the ROI for Davis-Monthan AFB

Location	2020 Census	2023 Estimates	Percent Change (2020–2023)
Pima County	1,043,435	1,063,162	1.9
Arizona	7,157,902	7,431,344	3.8

Key: AFB = Air Force Base; ROI = region of influence.
Source: (USCB, 2024b)

3.7.1.2.2 Economic Activity (Employment and Earnings)

In 2022, employment in Pima County totaled 557,893 jobs (BEA, 2022). The largest employment sector in Pima County was government and government enterprises (15.7 percent), followed by health care and social assistance (12.5 percent), and retail trade (9.5 percent) (BEA, 2022). Construction accounted for 5.3 percent of total employment. Over the last several years, the average annual unemployment rate in the county has steadily declined from 4.5 percent in 2019 to 3.8 percent in 2023 (BLS, 2024a). During this same time, the state average annual unemployment rate declined from 4.8 percent to 3.7 percent (BLS, 2024b). Per capita personal income in Pima County is estimated at $54,464, which is less than the estimated $58,442 per capita personal income in the state (BEA, 2024).

Davis-Monthan AFB is an important economic contributor to southern Arizona and Pima County through employment of military and civilian personnel, and expenditures for goods and services. The total economic impact of the base on the surrounding communities in 2016 was $1,018 million (without retirees), an increase of $27 million since 2015 (Davis-Monthan AFB, 2016b). Of the total $253.7 million in expenses during 2016, approximately 21 percent ($52.2 million) was spent on military construction (MILCON), non-appropriated funds, and operations and maintenance. The total payroll for military, civilians, and other base personnel exceeded $579 million in 2016 (Davis-Monthan AFB, 2016b). The current on-base authorized employment of 9,635 personnel supports an estimated additional 4,496 secondary jobs in the community.

3.7.1.2.3 Housing

Military family housing at Davis-Monthan AFB is privatized and owned by Actus Lend Lease/Soaring Heights Communities. Dormitories for permanent party unaccompanied personnel are available on base. According to the Davis-Monthan AFB Housing Requirements and Market Analysis there are 327 surplus housing units at the installation (Davis-Monthan AFB, undated). The county has an estimated 471,058 total housing units (houses), of which 10.1 percent (47,983 units) were vacant in 2022 (USCB, 2024c). A recent housing market analysis for the Tucson area indicated that the active listing count is over 3,000

units, and the months of supply metric is 3.51. Months of supply reflects the number of months it would take to sell off the existing inventory if no new properties were added to the market. The analysis concludes that the Tucson housing market is currently maintaining a balance between supply and demand (Norado, 2024).

3.7.1.2.4 Education

Pima County has 17 school districts and 241 non-charter schools. During the 2022 to 2023 school year, approximately 143,604 students were enrolled in Pima County district schools. Fourteen of the school districts are unified and serve kindergarten through 12th-grade students. The remaining three districts include two transportation districts (districts that do not have schools) and one Joint Technical Education District (Pima County Schools, 2024). As described in Section 3.2, no off-base schools are currently exposed to DNL of 65 dB or greater.

Two schools, the Tucson Unified School District for children attending elementary school and a charter school for children attending middle school, are located on Davis-Monthan AFB. Class size or the teacher-student ratio for regular education is the responsibility of the board and is flexible to accommodate a variety of variables including budget, student needs, and curriculum requirements (Arizona School Board Association, 2024). Two child development centers are also located on base and accommodate a combined 512 children, ages infancy to 5 years old (Davis-Monthan AFB, 2023c).

3.7.1.2.5 Public Services

Nineteen fire districts/fire departments serve Pima County and provide emergency services, permits and inspections, and fire protection to the county (Pima County, 2024a). Law enforcement services in the county include the Pima County Sheriff's Department, the Tucson Police Department, and nine other law enforcement jurisdictions throughout the county (Pima County, 2024b). Health care in Pima County includes 23 primary care areas and 7 hospitals. The ratio of population to primary care physicians is 1,167:1 (Pima County, 2021).

3.7.1.2.6 Base Services

Base services include shopping and dining facilities, airman and family services, community activity center, exchange shop, family support building, education and training facilities, and outdoor and indoor recreational facilities (Davis-Monthan AFB, 2023c).

3.7.1.3 Analysis Methodology

The socioeconomic analysis focuses on the effects that would result from personnel changes, construction, and/or operations and maintenance at the installation. As a basis for estimating population changes in the ROI, the total number of personnel and dependents were added together and assumed to be migrating into the area.

A qualitative determination of the effect of construction and operations and maintenance costs (if any) was based on previously conducted economic analysis in the region. To determine whether the local housing market could support the personnel associated with the 492 SOW Beddown, it was assumed that the total number of homes required off base was equal to the total number of incoming personnel. This number was compared against the number of vacant housing units as defined by the American

Community Survey 5-year estimate for years 2017–2022. Construction workers are anticipated to be hired from the local area and would not require additional housing capacity. If the number of incoming, personnel would not exceed the number of vacant housing units as defined by the American Community Survey estimates, the housing market in the ROI would be able to support the incoming population.

Public services were analyzed by considering the overall percentage change to the respective county population. Base services were analyzed by considering the capacity, staffing, and infrastructure available to support the incoming personnel.

If potential socioeconomic changes were to result in substantial shifts in population trends or a decrease in regional spending or earning patterns, those effects would be considered adverse. The 492 SOW Beddown could impact socioeconomic conditions in the surrounding ROI if the following were to occur:

- Change in the local business volume, employment, or population that exceeds the ROI's historical annual change
- Adverse change in social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates

3.7.2 Environmental Consequences

3.7.2.1 No Action Alternative Environmental Consequences

No significant impacts to socioeconomics are anticipated to result from implementation of the No Action Alternative. Details on impacts to population, economic activity, housing, education, public and base services are discussed below.

3.7.2.1.1 Population

Under the No Action Alternative, there would be no new AFSOC mission personnel or ACC IS personnel at Davis-Monthan AFB. The No Action Alternative includes the planned Phase 2 retirement of the remaining A-10s along with the loss of associated personnel. Due to the planned Phase 2 A-10 retirement, the number of personnel would decrease by 983 from 9,635 to 8,652 (Table 3-48). To obtain the ratio of DAF active-duty members to family members for this EIS, the DAF reviewed the 2022 Demographics Profile of the Military Community published by the U.S. DoD. According to that report, on average, there are 1.2 family members, or dependents, for each active-duty DAF personnel (DoD, 2022b). Under the No Action Alternative, there would be approximately 7,174 dependents associated with active-duty DAF personnel.

Table 3-48. Personnel Changes Resulting from the No Action Alternative

Personnel Type	Interim Conditions Authorized Personnel	No Action Alternative Change in Personnel	End State Personnel
Military/Civilian Personnel	9,635	-983	8,652
Contractor	0	0	0
Total	**9,635**	**-983**	**8,652 (10% decrease)**

Note: Dependents are calculated based on military personnel (6,947 under interim conditions, loss of 969 under the No Action Alternative, and 5,978 under end state).

Key: % = percent; - = minus.

3.7.2.1.2 Economic Activity (Employment and Earnings)

Implementation of the No Action Alternative would decrease the full-time work force assigned to the base and would have negative short-term economic impacts in the surrounding community. The loss of 983 personnel to the base could result in an additional loss of 450 induced jobs. No construction-related economic benefits would be associated with the No Action Alternative other than the normal construction activities associated with an active military base.

3.7.2.1.3 Housing

The loss of military personnel, their dependents, and the secondary jobs associated with those personnel would create additional housing opportunities but would also create a negative impact due to lack of homeowners or renters in the ROI.

3.7.2.1.4 Education

The loss of military personnel and their dependents would potentially result in a loss of 194 school age children. This change in enrollment would be approximately 0.01 percent of the current enrollment in the Pima County school districts and would have minimal direct impacts. Negative indirect short-term impacts would occur related to the loss of taxable incomes to support school districts in the ROI.

3.7.2.1.5 Public Services

The loss of military personnel and their dependents would have no discernible direct effects on public services.

3.7.2.1.6 Base Services

A decrease in the number of personnel would have a negative impact on revenue-generating services on base. Populations on military bases are constantly changing as deployments and mission personnel changes are assigned.

3.7.2.2 Proposed Action Alternative Environmental Consequences

No significant impacts to socioeconomics are anticipated to result from implementation of the Proposed Action Alternative. Details on impacts to population, economic activity, housing, education, public, and base services are discussed below.

3.7.2.2.1 Population

The current personnel at Davis-Monthan AFB and the projected change anticipated to support the Proposed Action Alternative are provided in Table 3-49. Implementation of the Proposed Action Alternative would result in an increase of 2,300 personnel when compared to the No Action Alternative. However, when the planned Phase 2 A-10 retirement and other ongoing actions are considered, the net change is a gain of approximately 1,317 base personnel plus 1,380 military dependents. An increase of 1,317 people from interim conditions would represent a minor change to the population of Pima County that was estimated at 1,063,162 people in 2023 (USCB, 2024a).

Table 3-49. Personnel Changes Resulting from the Proposed Action Alternative

Personnel Type	Interim Conditions Authorized Personnel	Planned Phase 2 A-10 Retirement	Proposed Action Alternative[a] Authorized Personnel	End State Personnel
Military/Civilian Personnel	9,635	-983	2,156	10,808
Contractor	0	0	144	144
Total	**9,635**	**-983**	**2,300**	**10,952 (14% increase)**

[a] Includes all the incoming AFSOC personnel plus the ACC Intelligence Squadron personnel

Notes: All numbers in table are approximate. Dependents are calculated based on military personnel (6,947 under interim conditions, loss of 969 under the Planned Phase 2 A-10 retirement, and 8,097 under end state).

Key: % = percent; - = minus; ACC = Air Combat Command; AFSOC = Air Force Special Operations Command.

3.7.2.2.2 Economic Activity (Employment and Earnings)

Implementation of the Proposed Action Alternative would increase the full-time work force assigned to the base and would have positive long-term economic impacts in the surrounding community. Adding 1,317 (net change) personnel to the base would result in an additional 615 induced jobs. This increase in employment would be a benefit to the county economy.

Construction activities provide economic benefits to surrounding areas through the employment of construction workers and the purchase of materials and equipment. Construction activities would be temporary and provide a limited economic benefit. Noise associated with construction activities would be limited to within the base boundaries and would not impact economic activity. The DAF estimates that approximately $413 million in MILCON expenditures would be associated with implementation of the Proposed Action Alternative. The total expenditures could generate approximately 2,300 jobs during the construction period, primarily in the construction industry or related industries, and to a lesser extent in real estate, architectural, engineering and related services; retail stores; hospitals; full-service and limited-service restaurants; and employment services. With an unemployment rate of 3.8 percent, it is expected that the local labor force in the ROI and in the surrounding areas would be sufficient to fill these new jobs without a migration of workers into the area. Implementation of the Proposed Action Alternative and projected total MILCON expenditures of $413 million would generate an estimated $211 million in direct, indirect, and induced labor income in the ROI. The jobs and related income generated would be temporary (i.e., during the construction activity).

3.7.2.2.3 Housing

Military housing is available at Davis-Monthan AFB but would not be able to accommodate an influx of 1,317 personnel. However, not all personnel would reside on base, and the local housing market would provide sufficient available housing in the ROI.

3.7.2.2.4 Education

The change in dependents when compared to interim conditions, including spouses and children is estimated at 1,380. Assuming that one dependent is a spouse, it is estimated that up to 411 dependents would be children of school age and would attend schools in Pima County. The projected number of new students would represent less than a 0.03 percent increase of the current total enrollment throughout the 17 districts located in Pima County. Based on the number and size of the school districts in the ROI, as

well as class size for the state, it is anticipated that the school capacity in the county would not be adversely impacted.

3.7.2.2.5 Public Services

Pima County represents a large community with police, fire, and other services. The estimated increase of personnel and dependents would represent an increase of 0.02 percent of the existing Pima County population. This increase would have no discernible effect on public services.

3.7.2.2.6 Base Services

An increase in the number of personnel would have a positive impact on revenue generating services on base.

3.7.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Populations on military bases are constantly changing as deployments and mission personnel changes are assigned. Currently, there are no major mission changes planned during the time period analyzed in this EIS for reasonably foreseeable future actions. Population in the ROI would continue to increase and construction projects such as those described in the IDP EA would continue to provide minor economic benefits related to expenditures and job creation. No significant impacts to socioeconomics are anticipated to result from the Proposed Action Alternative when combined with reasonably foreseeable future actions and environmental trends.

3.7.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

There are no resource-specific mitigations and management actions associated with the socioeconomic resource area.

3.8 INFRASTRUCTURE

3.8.1 Affected Environment

3.8.1.1 Definition of Resource and ROI

Infrastructure consists of the systems and physical structures that enable the population of a DAF base to function. Infrastructure is primarily human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as urban or developed built environment. The availability of infrastructure and its capacity for expansion are essential to the ability of a base to carry out a specific mission and provide for the needs of employees and residents.

Utilities analyzed in this EIS include water supply and distribution, sanitary sewer and wastewater systems, stormwater drainage, electrical system, natural gas, solid waste, and transportation. The infrastructure information contained in this section provides a brief overview of each infrastructure component and describes its capacities, effectiveness, deficiencies, and existing general condition.

The transportation infrastructure includes the public roadway network, public transportation systems, airports, railroads, pedestrian/bicycle facilities, and waterborne transportation required for the movement of people, materials, and goods. Implementation of the 492 SOW Beddown has the potential to impact the

public roadways that provide access to Davis-Monthan AFB, base access control points or gates, and the internal roadway systems of the base.

The ROI for the infrastructure analyses in this EIS includes the areas proposed for infrastructure upgrades on Davis-Monthan AFB and areas surrounding the base that could be affected by traffic from implementation of the proposed 492 SOW Beddown.

3.8.1.2 Base Affected Environment

3.8.1.2.1 Potable Water System

Davis-Monthan AFB's potable water demand is met by eight active on-base wells (from a total of 17), which pump water from the Tinaja Beds and the Fort Lowell Formation of the Upper Santa Cruz & Avra Basin, which is designated as a Sole Source Aquifer under the Safe Drinking Water Act. The City of Tucson no longer completely relies on groundwater from this aquifer for potable water. Since 2017, 85 percent of potable water for the City of Tucson is obtained from the Colorado River (https://www.geo.arizona.edu/sites/default/files/data/20180900_tw_-_aquifer_report.pdf). Because drawdown of the aquifer has been substantially reduced, water tables in the aquifer have been rising in certain parts of the city (https://tucson.com/news/local/government-politics/groundwater-tucson-arizona-development/article_0cd1b7e6-1f51-11ee-ba55-1703a8007674.html). Davis-Monthan AFB produces, treats, and distributes its own water for consumption and fire protection. Well depths vary between 800 and 1,300 feet deep and operate for 2 to 3 hours a day to meet demand via a 10-inch-diameter line from the wells to the base (Davis-Monthan AFB, 2016a; Davis-Monthan AFB, 2023d).

Davis-Monthan AFB can supply a maximum of approximately 4 million gallons per day (MGD) from the aquifer to meet peak demands. The estimated peak demand is approximately 1.6 MGD and the average demand is approximately 1.2 MGD. The water demand has decreased by more than 25 percent since 2007 because of substantial investments in landscape xeriscaping and water metering. The installation uses gray water from the Pima County Publicly Owned Treatment Works to irrigate areas where needed to reduce drawdown from the aquifer (DAF, 2023b). Reclaimed water use on the base ranges from a summer peak of 9 million gallons per month to winter use of nearly 5 million gallons per month, which equates to approximately 16.7 percent of the total amount of water annually consumed on the base (Davis-Monthan AFB, 2016a).

Water storage capacity at Davis-Monthan AFB is handled by a mix of elevated and underground tanks with a capacity of 2.53 million gallons. The potable water distribution system is generally considered adequate to meet existing needs (Davis-Monthan AFB, 2016a) with considerable capacity to support upcoming growth and expansion (Davis-Monthan AFB, 2023d).

Davis-Monthan AFB's original water distribution system was constructed in the 1950s. Despite the age of the piping, the distribution system and water pressure are in adequate condition, with few leaks or buildup issues. The active wells are in good condition, but some could require deeper bore holes to continue operating to full capacity. If water in the Tucson Basin aquifer continues to be consumed without recharge, deeper wells could be required (Davis-Monthan AFB, 2016a).

3.8.1.2.2 Wastewater

The Davis-Monthan AFB sanitary sewer system was installed in the 1960s. This system extends east-west through two 15-inch-diameter pipes and exits in the extreme northwest corner of the installation to

the Pima County sanitary sewer system. Most of the sanitary sewer system functions by gravity flow, but the installation does have five lift stations. Pima County treats an average of 0.48 MGD of wastewater discharged from the installation. The peak wastewater demand is 0.72 MGD, with the maximum capacity of the Pima County discharge connection of 3 MGD. The wastewater system is in adequate condition with enough capacity for current and future needs (Davis-Monthan AFB, 2016a; Davis-Monthan AFB, 2023d).

3.8.1.2.3 Stormwater System

Stormwater runoff is managed through a stormwater system consisting of a combination of surface channels and underground infrastructure that currently have adequate capacity to handle most flows. However, during the rainy season from July through September, storms can lead to flooding in undeveloped portions of the base near the Atterbury Wash (Davis-Monthan AFB, 2016a; Davis-Monthan AFB, 2023d). Additional information regarding the stormwater system and associated permits is contained in Section 3.4.

3.8.1.2.4 Electrical System

The electrical network is a mix of above and below-ground electrical utility lines. Tucson Electric Power provides electricity to the installation via two separate overhead 46-kilovolt feeder lines that enter on the northeast side of the installation and extend along Wilmot Road to the substation. A single, three-phase, 25 megavolt ampere (MVA) transformer steps the voltage down to 13.8 kilovolts for distribution throughout the base via eight primary circuits. Seven of the 10 transformer switchgears are currently used and 70 percent of the electrical distribution lines on base are overhead. Davis-Monthan AFB also has two solar arrays with a total capacity of 16.4-megawatt. Most of the electrical system is fairly new and in good condition (Davis-Monthan AFB, 2023d; DAF, 2022b). The capacity of the electrical system is sufficient, but the redundancy is currently limited (Davis-Monthan AFB, 2023d).

Privatization of the housing electrical system reduced the load on the main transformer and opened a substantial amount of capacity at the substation. The current electrical demand is approximately 16 MVA with the system having a capacity of approximately 25 MVA. The electrical system capacity is considered adequate (Davis-Monthan AFB, 2016a; DAF, 2022a).

3.8.1.2.5 Natural Gas System

The natural gas system is supplied by Southwest Gas Corporation through two high-pressure transmission lines connecting to the base at the northwest corner along Valencia Road and the southeast corner along Wilmot Road. Natural gas supplied to installation flows through the utility's regulator and metering station via two 6-inch-diameter, buried, and coated supply lines. All of the main lines are polyethylene plastic and in good condition (Davis-Monthan AFB, 2023d). The natural gas pipeline distribution capacity is 3.4 million cubic feet (MCF) per day with a current demand of approximately 0.36 MCF per day (Davis-Monthan AFB, 2016a).

3.8.1.2.6 Solid Waste Management

Municipal solid waste management and compliance at DAF installations is established in Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention.* In general, AFI 32-7002 establishes the requirements for installations to have a solid waste management program to incorporate a solid waste management plan; procedures for handling, storage, collection and disposal of solid waste; record-keeping and reporting; and pollution prevention. The Integrated Solid Waste Management Plan

(ISWMP) describes the solid waste management and recycling program. The purpose of this program is to maximize the diversion of solid waste from landfills through reuse, donation, and recycling; and to describe Qualified Recycling Program business practices (Davis-Monthan AFB, 2022).

The DAF goal for solid waste reduction is to divert 40 percent of non-hazardous solid waste by 2025 and 60 percent of C&D debris by 2025 (Davis-Monthan AFB, 2022). Davis-Monthan AFB's solid waste and C&D debris diversion rates in FY 2023 were 24.5 and 11 percent, respectively. In FY 2022, the solid waste and C&D debris diversion rates were 27 and 46 percent, respectively (Proffitt, 2024).

Municipal solid waste that is not recycled is collected by a contractor. The contractor removes and disposes of the refuse in the City of Tucson Los Reales Landfill. No active municipal landfills are located on the installation. Collection of C&D debris generated during contracted facility demolition, renovations, or new construction activity is the responsibility of the contractor performing the work (Davis-Monthan AFB, 2022).

3.8.1.2.7 Transportation

I-10 is located just west of the installation and I-19 is southwest of the installation. I-10 provides east-west access to Phoenix and El Paso, Texas, while I-19 connects Tucson with the Mexican border. Access to the base includes the main gate on Craycroft Road and additional gates off Swan, Wilmot, and Irvington Roads.

The City of Tucson does not provide mass transit on Davis-Monthan AFB, although there are nearby bus stops, and there is no direct rail connection to the base. There are officially designated bike paths on base as well as two major pedestrian routes on Kachina and Sixth Streets that serve the dormitory area. Additional pedestrian paths are planned for the airman living areas.

Tucson International Airport provides air passenger service to several cities where airline hubs provide worldwide access. The airport is located approximately 10 miles from the main gate at Davis-Monthan AFB and can be reached in approximately 15 minutes by car or by airport shuttle bus. Military passenger and military cargo are served by the Military Air Passenger Terminal Building (Building 4819) and the Air Cargo Terminal (Building 4822).

Generally, parking is adequate on Davis-Monthan AFB. However, as is the case with many installations, parking at high-use customer-oriented locations can be problematic. The base commissary and dining facility parking lots experience parking problems during peak use and on military paydays and holidays. Additional parking capacity is required to address this situation along with the rightsizing of the commissary. The base is currently exploring alternatives to address parking (Davis-Monthan AFB, 2023d).

Vehicle access to the base is provided through four gates: the recently upgraded main gate accessed on Craycroft Road, and additional gates off Swan, Wilmot, and Valencia Roads. Current gates meet minimum mission demands. However, throughput for commercial traffic, currently at the Swan Gate, needs improvement (Davis-Monthan AFB, 2016a). The South Wilmot Gate is currently being upgraded to process commercial vehicles (Davis-Monthan AFB, 2019b) with a planned completion date of August 2026 (Davis-Monthan AFB, 2021c).

Four major, primary roads provide ingress and egress to Davis-Monthan AFB. Craycroft Road extends generally north/south through the main base and provides the main entry point to the base. Wilmot Road provides access to the AMARG and the base hospital.

The intersection of Sunglow Road, 5th Street and Yuma Street, begins at the Swan Gate and extends north/south through the base. The Yuma Street extension of these combined arteries intersects with Craycroft Road and Picacho Street. Picacho Street extends east/west and connects with the Yuma Street extension and Wilmot Road.

The major secondary roads on the main base area include Quijota Road, Arizola Street, Comanche Street, Granite Street, Ironwood Street, First Street, and Third Street. The AMARG area of Davis-Monthan AFB is served by Irvington Road, the Wilmot Road extension, Coolidge Street, and Wickenburg Avenue.

The on-base transportation network is sufficient to handle the existing traffic volume. The road system has a good base and requires only minor maintenance repair on its top surface (Davis-Monthan AFB, 2016a).

3.8.1.3 Analysis Methodology

The analysis to determine potential significant impacts to infrastructure systems potentially resulting from the alternatives considered if the capacity of utility systems would be exceeded or if the new mission would place unreasonable demands on any of the infrastructure systems. In addition, the analysis considered potential disruption or improvement of existing levels of service and additional demands for water, energy and natural gas consumption, wastewater and stormwater drainage systems, and solid waste system availability. Changes in interim condition populations and the proposed development were used to determine impacts on infrastructure systems.

To assess the potential environmental consequences to transportation resources, the analysis considered how changes in traffic volumes could impact roadways, cause delays at installation gates, reduce traffic safety, or cause permanent changes to roadway accessibility.

3.8.2 Environmental Consequences

3.8.2.1 No Action Alternative Consequences

Under the No Action Alternative, the 492 SOW Beddown would not occur. No new 492 SOW Beddown-related construction, demolition, or renovation would occur. However, there would be annually planned demolition, construction, renovation, and maintenance activities. Under the No Action Alternative, the planned Phase 2 of the A-10 retirement would occur resulting in a net decrease in associated personnel, vehicular traffic, and airfield operations. The No Action Alternative is described in Section 2.1.

Potable Water System. Under the No Action Alternative, as compared to interim conditions, the full-time work force assigned to the base would decrease by 983 personnel. Based on the average usage rate of 76 gallons per day (GPD) per person (Tucson 2022), it is anticipated that the loss in population would decrease the potable water demand by approximately 74,708 GPD.

Wastewater System. The USEPA estimates that the average person generates approximately 120 GPD of wastewater between showering, toilet use, and general water use (USEPA, 2014). Based on this rate, the proposed decrease in population (i.e., 983 personnel), under the No Action Alternative relative to interim conditions, would decrease the wastewater discharge load from by 117,960 GPD.

Stormwater System. The net loss of military personnel and their dependents under the No Action Alternative as compared to interim conditions would have no discernible direct effects on the stormwater

system. No new 492 SOW Beddown-related construction, demolition, or renovation would occur. Ongoing and planned activities would continue to add impervious surfaces.

Electrical System. The loss of military personnel and their dependents associated under the No Action Alternative would reduce the electrical use demand as compared to interim conditions and have no discernible direct effects on the electrical system.

Natural Gas System. Under the No Action Alternative, as compared to interim conditions, the full-time work force assigned to the base would decrease, thus reducing the demand for natural gas natural gas demand. Therefore, implementation of the No Action Alternative would have no discernible direct effects on the natural gas system.

Solid Waste Management. Under the No Action Alternative, solid waste would continue to be managed in accordance with AFI 32-7002 and the ISWMP. No new 492 SOW Beddown-related construction, demolition, or renovation would occur nor would the additional generation of associated solid waste. The reduction of military personnel and their dependents under the No Action Alternative would reduce solid waste generation when compared to interim conditions and have no discernible direct effects on solid waste management. However, ongoing and planned construction projects would continue to produce solid waste in the form of construction waste that would be managed as described above.

Transportation System. The reduction of military personnel and their dependents under the No Action Alternative as compared to interim conditions would decrease the full-time work force assigned to the base by 983 personnel resulting in a decrease in the number of vehicles utilizing the transportation systems surrounding and on the installation. Minor decreases in on- and off-installation traffic would result in increases in levels of service and decreases in gate access wait times.

3.8.2.2 Proposed Action Alternative Environmental Consequences

Implementation of the Proposed Action Alternative would result in a net increase of 1,317 or approximately 14 percent of the current base population when compared to the interim conditions. When compared to the No Action Alternative, there is an increase of 2,300 personnel. Both increases would represent a minor change to the population of Pima County, that was estimated at 1,063,162 people in 2023 (USCB, 2024a). The impact of the proposed 492 SOW Beddown on infrastructure systems would be negligible based on the net increase in population and the overall infrastructure capacities. The potable water, wastewater, electric, natural gas, and transportation infrastructure systems are sufficient to support the projected increase in population, though extension of these infrastructure systems may be required for the proposed 492 SOW West Campus and 492 SOW East Campus. However, extensions of these systems would not impact overall capacity.

3.8.2.2.1 Potable Water System

The planned Phase 2 A-10 retirement would result in a total decrease of 983 people from the installation. Based on the average usage rate of 76 GPD per person, these retirements would result in a decrease of 74,708 GPD (76 GPD x 983). Implementation of the 492 SOW Beddown would result in a net increase of 1,317 employees from interim conditions. Based on the same average usage rates, it is anticipated that the increase in population associated with the proposed beddown would increase the water use demand by approximately 100,092 GPD, as compared to interim conditions. As stated in Section 3.8.1.2.1, the installation has the ability to provide up to 4 MGD for peak demand and the installation is only using 40 percent of the available capacity. The minor increase in demand from the 492 SOW Beddown would result in less than a 3 percent increase to the peak demand. Based on the installation's current demand

and supply capacity, this increase would have no adverse effect on the ability to provide potable water, and the overall long-term impacts would not be significant. Therefore, significant impacts to potable water would not result from implementation of the 492 SOW Beddown.

3.8.2.2.2 Wastewater

The USEPA estimates that the average person generates approximately 120 GPD of wastewater between showering, toilet use, and general water use (USEPA, 2014). Based on this rate, the proposed net increase in population (i.e., 1,317 people) would increase the wastewater discharge by 158,040 GPD. This increase would have no effect on the ability to handle and treat wastewater, and the overall long-term impacts would not be significant.

3.8.2.2.3 Stormwater System

The proposed 492 SOW Beddown would require renovation and demolition of facilities and construction of new facilities. The total disturbed area associated with these projects would be approximately 35 acres.

Stormwater management principles would be incorporated into construction contracts to maintain each site's pre-development runoff rates and volumes further minimizing potential adverse impacts from increased impervious surface area. During the design phase, site-specific plans for each construction site would include a variety of structural stormwater controls. Measures could include planting native vegetation in disturbed areas as soon as possible after construction; constructing retention facilities; and implementing structural controls (e.g., interceptor dikes, swales [excavated depressions]) to manage stormwater runoff.

Overall, potential impacts to stormwater systems from construction activities would be short term and negligible with strict adherence to applicable permits and management plans and implementation of BMPs identified for each construction site, as well as usage of appropriate site planning. Significant short- or long-term impacts to stormwater systems would not result from implementation of the 492 SOW Beddown.

3.8.2.2.4 Electrical System

The U.S. Energy Information Administration estimates that the average household in Arizona uses 12.732 megawatt hours per year (USEIA, 2024). The proposed net increase in population would increase the electrical use by approximately 16,768 megawatt hours per year. This increase would have little effect on the power supply limit from Tucson Electric Power, and the overall long-term impacts would not be significant.

During scoping, the NPS submitted comments stating that the NPS is mandated to protect dark night skies from anthropogenic light. To mitigate sky glow, where possible, the DAF would provide minimum lighting where and when the lighting of various areas is necessary, use recessed and fully shielded fixtures, and use LED lights in warm colors where possible.

3.8.2.2.5 Natural Gas System

The natural gas system is supplied by Southwest Gas Corporation and has a delivery capacity of 3.4 MCF per day. The current demand is approximately 0.36 MCF per day. An approximate 14 percent net increase in population (1,317 personnel) over interim conditions would have little effect on the natural gas supply limit and the overall long-term impacts would not be significant.

3.8.2.2.6 Solid Waste Management

Solid waste would continue to be managed in accordance with AFI 32-7002 and the ISWMP with the implementation of the Proposed Action Alternative. Using methodology developed by the USEPA (USEPA, 2009), it is estimated that implementation of the Proposed Action Alternative would generate approximately 5,246 tons of C&D debris for recycling or removal to landfills. Application of the 60 percent target diversion rate (Davis-Monthan AFB, 2022) for C&D debris would result in approximately 3,147 tons being reused or recycled, and approximately 2,098 tons being placed in a permitted construction debris landfill in the region. C&D debris is the responsibility of the contractor performing the work, and contract documents require disposal in a permitted construction debris landfill (Davis-Monthan AFB, 2022).

Implementation of the Proposed Action Alternative would result in a net increase of 1,317 personnel and their associated dependents, resulting in an increase in municipal solid waste generation having little effect on the municipal solid program (collection, disposal, etc.). The City of Tucson Los Reales Landfill has an estimated life span of 43 years and would continue to accommodate the municipal solid waste from Davis-Monthan AFB (Davis-Monthan AFB, 2022). The overall short- and long-term impacts would not be significant.

Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the base. C&D debris, including debris contaminated with hazardous waste, asbestos-containing materials, lead-based paint, or other hazardous components, would be managed in accordance with AFI 32-7002 and the installation's ISWMP.

3.8.2.2.7 Transportation

Implementation of the Proposed Action Alternative would not alter traffic circulation on the base or outside of the base. Haul routes related to C&D have not been established, but would be routed to avoid base housing areas, low-income/minority and children communities, residential areas (i.e., daycare centers, schools, and/or playgrounds), and other noise-sensitive areas as much as practicable. Truck traffic could lead to the degradation of road surfaces over an extended period of use. Construction truck traffic and construction workers commuting to the project sites would generate minor increases in vehicle trips per day on base roadways and increase congestion at the gates. However, these minor increases would be temporary and only during the construction period.

At project sites on the installation, temporary lane closures could be necessary during C&D activities. Appropriate signage and detour to maintain access would be provided. A short section of Picacho Street could be realigned to provide access into the 492 SOW West Campus and would result in long-term improvements to traffic circulation on the base. These impacts would be short term and temporary, occurring only for the duration of the construction period.

The net addition of 1,317 people and associated vehicles under the Proposed Action Alternative is not anticipated to result in long-term impacts to gate access or on- and off-installation traffic and transportation systems during peak use times. The recent main gate (Craycroft Road Gate) improvements and the South Wilmot Gate improvements currently under construction will further improve on- and off-installation traffic flow and reduce queue times during peak use.

During scoping, a member of the public submitted a comment regarding Golf Links Road. The comment stated that, according to the Tucson Police Department, Golf Links Road is one of the most dangerous roads and the commenter wanted to know how this mission would impact traffic circulation. As

described above, the DAF recently completed improvements to the main gate at Craycroft Road to reduce traffic backing up onto Golf Links Road.

3.8.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Populations on military bases are constantly in flux as deployments and mission personnel changes are assigned. There are currently no major mission changes planned during the time period analyzed in this EIS for reasonably foreseeable future actions. Population and infrastructure utilization in the ROI would continue to increase and construction projects such as those described in the IDP EA and district plans would continue to result in minor short-term impacts, upgrades, and improvements to the infrastructure systems. No significant long-term impacts to the infrastructure systems are anticipated to result from implementation of the Proposed Action Alternative when combined with reasonably foreseeable future actions and environmental trends.

3.8.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

To mitigate sky glow, where possible, the DAF could:

- Provide minimum lighting where and when the lighting of various areas is necessary
- Use recessed and fully shielded fixtures
- Use LED lights in warm colors, where possible

3.9 HAZARDOUS MATERIALS AND HAZARDOUS WASTE

3.9.1 Affected Environment

3.9.1.1 Definition of Resource and ROI

The terms “hazardous materials” and “hazardous waste” refer to substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristic, could present substantial danger to public health or the environment when released into the environment.

Products containing hazardous materials that could result in the generation of hazardous waste include aviation fuel, adhesives, sealants, conversion coatings, corrosion-prevention compounds, hydraulic fluids, lubricants, oils, paints, polishes, thinners, and cleaners.

For the purposes of this hazardous materials and waste analysis, the ROI for the Proposed Action and No Action Alternative encompasses areas that could be impacted by 492 SOW Beddown-related changes to hazardous materials usage and management, hazardous waste generation and management, and hazardous waste disposal. Therefore, the ROI is defined as the boundary of the installation.

For environmental restoration sites, the ROI is the footprint of the proposed construction projects described in Chapter 2.0 of this EIS.

3.9.1.2 Base Affected Environment

3.9.1.2.1 Hazardous Materials

Hazardous materials used by the DAF and contractor personnel at Davis-Monthan AFB are managed in accordance with the Hazardous Materials Management Program Plan (Davis-Monthan AFB, 2021b). This plan is written in accordance with and to ensure compliance with Air Force Manual (AFMAN) 32-7002,

Environmental Compliance and Pollution Prevention. Hazardous materials are controlled through the base Hazardous Materials Storage Facility and Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOH-MIS). The purpose of this system is to track the procurement, storage, distribution, use, reuse, recycling, and disposal of hazardous materials at Davis-Monthan AFB.

Aboveground and Underground Storage Tanks. The Davis-Monthan AFB Spill Prevention, Control, and Countermeasures (SPCC) Plan outlines the procedures to prevent, control, and/or mitigate releases of oil and other petroleum substances. Davis-Monthan AFB made a determination under 40 CFR Section 112.20(e), as recorded in the "Certification of Applicability of Substantial Harm Criteria," that the facility does not pose a risk of substantial harm. Therefore, a Facility Response Plan is not required for Davis-Monthan AFB (Davis-Monthan AFB, 2023b). The SPCC Plan and Installation Emergency Management Plan (IEMP) 10-2 address roles, responsibilities, and response actions for all major spills (Davis-Monthan AFB, 2017).

Davis-Monthan AFB has 11 aboveground storage tanks (ASTs) with capacities greater than 10,000 gallons. These ASTs are located throughout the installation and are used to store Jet-A, diesel, oil, and used oil. Davis-Monthan AFB also manages 39 underground storage tanks (USTs). The total Jet-A storage capacity at Davis-Monthan AFB is approximately 8.8 million gallons. Davis-Monthan AFB used an average of approximately 20,525,000 gallons of Jet-A per year over the last 3 years. Davis-Monthan AFB receives fuel through a 6-inch commercial pipeline or by commercial tank trucks if the pipeline is inoperative. Jet-A is delivered to the flightline via a Type III hydrant system with nine outlets/pits for refueling aircraft and two loading racks used for issuing fuel to refueling trucks (Davis-Monthan AFB, 2023b).

Toxic Substances. The Asbestos Management and Operations Plan establishes the responsibilities and procedures for properly managing facilities with asbestos-containing material (ACM) at Davis-Monthan AFB (Davis-Monthan AFB, 2021a). This plan provides documentation for all asbestos management efforts, the procedures for carrying out the asbestos management program, and the organizational responsibilities and procedures for ensuring base compliance with applicable USEPA and Occupational Safety and Health Administration requirements. The Civil Engineering Squadron maintains a permanent file documenting the amount, status, and condition of ACM in base facilities. Based on these plans, all proposed facility demolition and renovation projects must be reviewed by a USEPA-certified accredited asbestos building inspector to identify the presence of ACM prior to work beginning. PDEQ requires a permit for any demolition of buildings that are 100 square feet or greater, as well as for the removal of ACM. Work on all ACM abatement for renovation or demolition projects would only be performed by contractor personnel who will follow all local, state, and federal laws concerning asbestos removal and abatement. ACM waste is removed by the contractor performing the work and handled and disposed of in accordance with federal, state, and local regulations at a waste disposal site authorized to accept such waste.

The Davis-Monthan AFB Lead-Based Paint Management and Operations Plan (Davis-Monthan AFB 2007) provides guidance and establishes procedures for the management of lead-based paint (LBP) and the implementation of the LBP program. This plan also defines management and organizational responsibilities and procedures for ensuring that personnel at Davis-Monthan AFB are not exposed to lead poisoning. The Civil Engineering Squadron maintains an LBP Survey database to document the location of LBP. This database is updated after each abatement project. The design of building alteration projects and requests for self-help projects are reviewed to determine if lead-containing materials are present in the proposed work area. For every project on Davis-Monthan AFB, LBP waste is removed by

the contractor and disposed of in accordance with state and federal regulations at a permitted off-base landfill.

The electrical systems (transformers, light ballasts, etc.) at Davis-Monthan AFB are polychlorinated biphenyl (PCB)-free (Shore, 2018). However, transistors from old aircraft at AMARG are routinely found and disposed of in accordance with the Hazardous Waste Management Plan (HWMP) (Davis-Monthan AFB, 2019a) and federal and state laws and regulations.

3.9.1.2.2 Hazardous Waste Management

Davis-Monthan AFB is classified as a Large Quantity Generator. Hazardous waste generated, stored, transported, or disposed of by Davis-Monthan AFB is regulated by the State of Arizona under authority granted to the state by the USEPA. Typical hazardous waste generated during operations and maintenance (O&M) activities include flammable solvents, contaminated fuels and lubricants, paint/coating, stripping chemicals, waste oils, blast media, waste paint-related materials, and other miscellaneous waste.

Hazardous waste at Davis-Monthan AFB is managed in accordance with the HWMP (Davis-Monthan AFB, 2019a). This plan covers the management of hazardous waste from the point the material becomes a hazardous waste to the point of ultimate disposal, as required by federal and state laws and regulations. In 2019, the base generated approximately 45 pounds of hazardous waste, which was disposed of at off-base permitted disposal facilities (DAF, 2024a).

3.9.1.2.3 Environmental Restoration Program

There are 64 Environmental Restoration Program (ERP) sites at Davis-Monthan AFB. Of the 64 sites, 7 are active sites and 57 sites are closed or are deemed to require no further response action. Environmental response actions at Davis-Monthan AFB are planned and executed under the ERP in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and other applicable laws. Davis-Monthan AFB is not listed on the USEPA's National Priorities List (Davis-Monthan AFB, 2023a).

Perfluorooctane sulfonate/perfluorooctanoic acid (PFOS/PFOA) are members of a family of emerging contaminants known as per- and polyfluoroalkyl substances (PFAS) that are directly related to the former use of Aqueous Film Forming Foam (AFFF), a fire suppressing agent that was used by the DoD. On 10 April 2024, the USEPA issued regulatory limits under the Safe Drinking Water Act for six PFAS chemicals and mixtures containing two or more other chemicals and perfluorobutane sulfonate (which are used to calculate a Hazard Index limit of 1) in drinking water. The preliminary assessment for Davis-Monthan AFB identified 37 potential AFFF release areas, 6 of which were identified for site inspection and the remaining sites were excluded from further investigation as they were determined to either have no historical use of AFFF indicated, to have no releases occurring where AFFF may have been present, or have sampling confirming no PFAS compounds were present. Four of these areas were combined into one site, resulting in three AFFF release areas for site inspection. The DAF is currently in the process of completing Phase 1 of the AFFF remedial investigation and is actively working with state and local regulatory agencies on the investigation and associated documentation. The off-base portion of the Remedial Investigation is expected to be completed June 2026. Due to the preliminary results of the Remedial Investigation for AFFF, as well as initial results from ADEQ's Central Tucson PFAS Project, a Non-Time Critical Removal Action was approved to begin treating the PFAS-impacted drinking water aquifer in Tucson that extends from Davis-Monthan AFB. An Environmental Services Agreement was entered into between the DAF and ADEQ to fund construction, operation, and

maintenance of a demonstration-level PFAS removal facility until the Remedial Investigation is completed.

Davis-Monthan AFB has ceased used of AFFF and is transitioning to the new fluorine-free foam or water-only systems, where appropriate.

3.9.1.2.4 Radon

The USEPA rates Pima County, Arizona, as Radon Zone 2 (USEPA, 2024d). Counties in Radon Zone 2 have a predicted average indoor radon screening level between 2 and 4 picocuries per liter (pCi/L), which is below the USEPA established guidance radon level of 4 pCi/L for indoor air in residences.

3.9.1.3 Analysis Methodology

The qualitative and quantitative assessment of impacts from hazardous materials and waste management focuses on how (context) and to what degree (intensity) each location could affect hazardous materials usage and management, hazardous waste generation and management, and hazardous waste disposal. Potential impacts related to hazardous materials and waste were analyzed for the following five effects:

1. Generation of hazardous material/waste types or quantities that could not be accommodated by the current management system
2. Increased likelihood of an uncontrolled release of hazardous materials that could contaminate the soil, surface water, groundwater, or air
3. Noncompliance with applicable federal and state regulations as a result of the Proposed Action
4. Disturbance or creation of contaminated sites, resulting in adverse effects on human health and/or the environment
5. Established management policies, procedures, and handling capacities that could not accommodate the Proposed Action

3.9.2 Environmental Consequences

3.9.2.1 No Action Alternative Consequences

Under the No Action Alternative, the 492 SOW Beddown would not occur and there would be no new 492 SOW Beddown-related construction, demolition, or renovation. The annually planned demolition, construction, renovation, and maintenance activities would continue to occur. Under the No Action Alternative, the planned Phase 2 of the A-10 retirement would occur, resulting in a net decrease in in the use of hazardous materials and the generation of hazardous waste.

3.9.2.2 Proposed Action Alternative Environmental Consequences

3.9.2.2.1 Hazardous Materials Management

The types of hazardous materials and waste that would be used and generated by the proposed 492 SOW Beddown are consistent with those currently used and generated by existing missions on the installation. Substantial reductions in the use of hazardous materials and the generation of hazardous waste are anticipated to result from the planned Phase 2 A-10 retirement. Implementation of the proposed

492 SOW Beddown would not require the use of any new or different hazardous materials and would not result in the generation of any new types of hazardous waste.

Existing procedures for the centralized management of the storage, distribution, use, reuse, recycling, and disposal of hazardous materials through the base Hazardous Materials Storage Facility and EESOH-MIS are adequate to accommodate the changes anticipated to result from the 492 SOW Beddown.

The DAF is actively attempting to reduce the quantities and types of hazardous materials needed for the maintenance of new aircraft. No adverse impacts are anticipated to result from implementation of the 492 SOW Beddown at Davis-Monthan AFB. Long-term environmental benefits from the reduced use of hazardous materials are anticipated.

Aboveground and Underground Storage Tanks. New and remodeled facilities would require the addition of new ASTs to support generators, as well as new hazardous material and waste containers. The new and remodeled facilities would be constructed with berms and drains leading to OWSs, if required, to contain potential uncontrolled releases of petroleum products. No ASTs or USTs would be removed with the proposed construction, demolition, or renovation projects. However, one plugged OWS would be removed with the proposed demolition of Building 4809 to make way for the construction of the new 2-Bay MC-130J Hangar. The Davis-Monthan AFB SPCC Plan and IEMP 10-2 would subsequently need to be revised to incorporate any changes in facility design, construction, operation, or maintenance that materially affects the potential for an uncontrolled release of petroleum products (Davis-Monthan AFB, 2017; Davis-Monthan AFB, 2023b).

Toxic Substances. Several demolition and renovation projects are planned as part of the proposed 492 SOW Beddown. Any construction, demolition, or renovation project proposed at Davis-Monthan AFB would be reviewed to determine if ACM is present. As shown in Table 3-50, several buildings are proposed for modification that could potentially contain ACM. All handling and disposal of ACM waste would be performed in accordance with the Davis-Monthan AFB Asbestos Management and Operations Plan (Davis-Monthan AFB, 2021a) and in compliance with federal, state, and local regulations. Before initiating any demolition or ACM work, required notifications to the PDEQ would be completed. This notification must be submitted 10 working days before the planned work start date with an Asbestos National Emission Standards for Hazardous Air Pollutants Activity Permit Application and Notification of Demolition and Renovation (if applicable). A PDEQ Activity Permit must be received before work begins.

Table 3-50. Toxic Substances Associated with Projects for the 492 SOW Beddown at Davis-Monthan AFB

Project	Year Constructed	ACM	LBP	PCBs
Demolition				
Building 4809	1971	*a*	*b*	*c*
Building 4826	1988	N/A	N/A	c
Renovation				
Building 183, Administrative/Maintenance Facility	1956	*a*	*b*	*c*
Building 257, Aircraft Maintenance and Storage	2006	N/A	N/A	c
Building 2350, Convert to Headquarters Building	1968	*a*	*b*	*c*
Building 4201, Convert to Detachment 2 Administrative Building	1953	*a*	*b*	*c*
Building 4400, Convert to Squadron Operations Facility	2009	N/A	N/A	*c*
Building 4413, Convert to Simulator Facility	1981	N/A	N/A	*c*
Building 4414, Convert to Simulator Facility	1972	*a*	*b*	*c*
Building 4710, Aerospace Ground Equipment Maintenance and Storage	1967/1992	*a*	*b*	*c*
Building 4800, Squadron Operations	1953	*a*	*b*	*c*

Table 3-50. Toxic Substances Associated with Projects for the 492 SOW Beddown at Davis-Monthan (continued)

Project	Year Constructed	ACM	LBP	PCBs
Building 4845, Renovate for Interim Crash Damaged or Disabled Aircraft Recovery Storage	1995	N/A	N/A	[c]
Building 4859, Renovate for a Small Arms Vault	1986	N/A	N/A	[c]
Building 4884, Renovate for Aerospace Ground Equipment	UNK	[a]	[b]	[c]
Building 4885, Renovate for Storage	2013	N/A	N/A	[c]
Building 4887, Refurbish for Wash Rack	2018	N/A	N/A	[c]
Building 4889, Mobility Readiness Spares Package and Classified Storage Vault	2014	N/A	N/A	[c]
Building 4891, Refurbish to Fuel Cell Facility	2015	N/A	N/A	[c]
Building 5045, Refurbish Aircraft Structural Repair	1960	[a]	[b]	[c]
Building 5230, Refurbish for Engine Shop	2005	N/A	N/A	[c]
Building 5245. Refurbish for Maintenance Backshops	1970	[a]	[b]	[c]
Building 5247, Convert to Squadron Operations	1953	[a]	[b]	[c]
Building 5251, Convert to Hangar/Maintenance Facility	1971	[a]	[b]	[c]
Building 5254, Interim Fiberglass Repair	1992	N/A	N/A	[c]
Building 5255. Addition/Alteration for Corrosion Control	1958	[a]	[b]	[c]
Building 5416, Wash Rack	2006	N/A	N/A	[c]
Building 5420, Renovate for ACC	1953	[a]	[b]	[c]
Building 5430, Weapons Load Training	1984	N/A	N/A	[c]
Building 5600, Convert to Squadron Operations Facility	1953	[a]	[b]	[c]
Building 5605, Aircraft Parts Storage and Decentralized Materials Support	1966	[a]	[b]	[c]

[a] Buildings constructed before 1980 are assumed to potentially have ACM (thermal system insulation and asphalt and vinyl flooring materials) (AFI 32-1001).

[b] Buildings constructed before 1980 are assumed to have LBP.

[c] The electrical systems (transformers, light ballasts, etc.) at Davis-Monthan AFB are PCB-free (Shore, 2018). However, transistors from old aircraft at AMARG are routinely found and disposed of in accordance with the HWMP (Davis-Monthan AFB, 2019a) and federal and state laws and regulations.

Key: 492 SOW = 492nd Special Operations Wing; ACC = Air Combat Command; ACM = asbestos-containing materials; AFB = Air Force Base; AFI = Air Force Instruction; AMARG = Aerospace Maintenance and Regeneration Group; HWMP = Hazardous Waste Management Plan; IS = Intelligence Squadron; LBP = lead-based paint; N/A = not applicable; PCB = polychlorinated biphenyl.

Work on ACM projects would only be conducted by contractor personnel who follow all local, state, and federal laws concerning asbestos removal and abatement. All ACM waste would be disposed of at an approved landfill.

All construction, demolition, and renovation projects proposed at Davis-Monthan AFB would be reviewed to determine if LBP or lead containing materials are present, and whether such materials would be disturbed. To the extent possible, the presence of lead within the work area would be identified prior to work beginning. Table 3-50 contains a list of buildings proposed for modification that have the potential to contain LBP or lead-containing material. If the presence of lead-containing material in the project work area is unknown, the shop and real property records would be reviewed to determine the presence of lead. If the presence of lead-containing material in the work area is still unknown, sampling and analysis for lead would be conducted. The handling and disposal of lead waste would be conducted in accordance with the Davis-Monthan AFB Lead-Based Paint Management and Operations Plan and HWMP (Davis-Monthan AFB, 2019a) and in compliance with federal, state, and local requirements and regulations.

Although minor increases in the management requirements for ACM and LBP removal are anticipated, no adverse impacts are anticipated to result from implementation of the 492 SOW Beddown at Davis-Monthan AFB. Long-term environmental benefits from removal of toxic substances are anticipated.

3.9.2.2.2 Hazardous Waste Management

Davis-Monthan AFB would continue to operate as a Large Quantity Generator and would generate hazardous waste during various O&M activities associated with the proposed 492 SOW Beddown. Waste-associated maintenance materials include adhesives, sealants, conversion coatings, corrosion prevention compounds, hydraulic fluids, lubricants, oils, paints, polishes, thinners, cleaners, strippers, tapes, and wipes. No new hazardous materials would be added that exceed the base's current hazardous waste processes. The Davis-Monthan AFB HWMP (Davis-Monthan AFB, 2019a) would be updated to reflect any changes in disposal procedures or hazardous waste generators and waste accumulation points.

The retirement of the remaining A-10s from Davis-Monthan would substantially decrease the volume and types of hazardous waste and waste streams generated because O&M involving the use of hazardous materials and various heavy metals would be greatly reduced. All hazardous waste would be handled and managed in accordance with federal, state, and local regulations.

3.9.2.2.3 Environmental Restoration Program

There are 64 ERP sites at Davis-Monthan AFB. Environmental response actions at these sites are planned and executed under the ERP in a manner consistent with CERCLA, RCRA, and other applicable laws. None of the proposed construction, demolition, or renovation projects associated with the proposed 492 SOW Beddown are on or directly adjacent to active ERP sites.

During scoping, the USEPA submitted a letter that included a comment regarding remediation sites on the base. The comment stated that the Draft EIS should evaluate remediation sites that are in proximity to the proposed development and that the Draft EIS should explain how the proposed development would interface with cleanup remedies. The USEPA also requested that the Draft EIS provide an update on the remedial investigation of the nature and extent of PFOS and PFOA in soils.

The areas proposed for the construction, demolition, or renovation projects were all evaluated relative to the proximity of hazardous contaminants and remediation sites including PFOS and PFOA sites. Although the proposed site for the new two-bay hangar (existing Building 4809) is located near a former remediation site (ST-036), this site has been closed by the ADEQ with a determination of no further action resulting in unlimited use/unrestricted exposure. None of the other proposed construction/renovation or demolition sites are located on or directly adjacent to active remediation sites or near any of the PFOA and PFOS investigation sites on Davis-Monthan AFB.

During the initial site investigation for PFOA/PFOS, Davis-Monthan AFB identified three AFFF PFAS release areas for site inspection on base. The DAF is currently in the process of completing Phase 1 of the AFFF remedial investigation and is actively working with state and local regulatory agencies on the investigation and associated documentation.

Davis-Monthan AFB will comply with Air Force Guidance Memorandum (AFGM) 2019-32-01, *AFFF-Related Waste Management Implementation Guidance*, to manage waste streams containing PFAS. The AFGM will be updated as needed to address changes in regulatory requirements, DoD determinations of risk, or development of new technologies. If PFOS/PFOA attributable to DoD actions is found in drinking water at levels that exceed USEPA's Lifetime Health Advisory, the DoD takes immediate action to stop human exposure by providing alternate drinking water sources.

Although the 492 SOW construction activities are not anticipated to affect any of the known restoration sites on the installation, there is the possibility that undocumented contaminated soils and/or groundwater from historical fuel spills could be present. If encountered during construction-related excavations/activities, the removal/storage/transport and disposal of contaminated groundwater/soils would be conducted in accordance with applicable federal, state, and local regulations; AFIs; and base policies. In addition, health and safety precautions, including worker awareness training, would be required.

3.9.2.2.4 Radon

Long-term, negligible, adverse impacts from radon are possible, but not likely, from construction, demolition, and renovation at Davis-Monthan AFB. A low potential for elevated indoor radon levels exists in Pima County; therefore, it is not likely the new and renovated buildings would have indoor radon screening levels greater than 4 pCi/L. Radon management measures, such as installing ventilation systems to remove radon that has already entered the building, could be installed should any building test higher than 4 pCi/L after construction is complete.

3.9.2.3 Reasonably Foreseeable Future Actions and Environmental Trends

Current and ongoing missions at Davis-Monthan AFB would continue during the same time as the 492 SOW Beddown. In addition, ongoing and future facility projects (e.g., IDP projects) would also occur during the same time period. Construction, renovation, and demolition projects have been and will continue to be a regular occurrence on and near Davis-Monthan AFB. These missions and projects all have the potential to use hazardous materials and generate hazardous waste. However, the plans, policies and procedures that the installation currently has in place would minimize the potential for significant cumulative impacts to result from implementation of the Proposed Action Alternative in conjunction with the reasonably foreseeable future actions.

3.9.2.4 Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

No additional resource-specific mitigations and management actions would be required with implementation of the Proposed Action Alternative.

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APPENDIX A PUBLIC OUTREACH

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A.1 Scoping Comments

"Scoping" identifies potential issues and alternatives early in the National Environmental Policy Act development process. Table A-1 provides a summary of key public scoping activities. Additionally, the Department of the Air Force notified local, state, and federal agencies and tribes in writing of the intent to prepare an Environmental Impact Statement (EIS) and host public scoping meetings. A total of 11 individuals, organizations, and agencies submitted comments during the scoping period. From the 11 different comment forms, 30 substantive comments were received during the scoping period. The substantive scoping comments are summarized in Table A-2.

Table A-1. Key Public Scoping Activity Dates

Activity	Dates
Notice of Intent	May 9, 2024 (89 Federal Register 39605)
Public Scoping Period	May 9, 2024, through June 14, 2024
Public Scoping Comment Due Date	June 14, 2024 (to be considered in Draft Environmental Impact Statement)
Newspaper Advertisements	May 16, 2024: *Indian County Today* May 17, 2024: *Hidalgo Herald* May 19, 2024: *Arizona Daily Star* (English and Spanish); *Arizona Republic* May 23, 2024: *Tucson Weekly* (English and Spanish) May 26, 2024: *Arizona Daily Star* (English); *Arizona Republic*
Public Scoping Meetings	May 30, 2024: Tucson Convention Center June 4, 2024: Virtual via Zoom Webinar

Table A-2. Substantive Scoping Comments Summary

Topic	Summary of Substantive Comments
NEPA	As part of their standard process for commenting on other federal agencies' EIS documents, the USEPA submitted a five-page comment letter that included substantive comments on a variety of resource areas. One of the comments stated that, relative to the Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona EIS, care must be taken to ensure the impacts from both actions are presented to avoid NEPA segmentation. Regarding alternatives, the USEPA also recommended that one or more locations that could meet the purpose and need be considered so that the DAF is fully informed of options that might meet the purpose and need. The USEPA also commented on cumulative impacts to local air quality and transportation impacts from the IDP and other developmental projects.
Air Quality	The USEPA submitted a comment regarding climate change adaptation for facilities; a comment regarding plans for extreme heat; and a comment regarding greenhouse gas mitigation, carbon-pollution-free electricity generation, and zero-emissions buildings.
Noise	One commenter indicated that the change is substantial enough to cue an update/examination of the Pima County Joint Land Use Study Plan and asked if those noise contours could be adjusted. Another commenter requested that the DAF address the number of flights in and out of the base and recommended that any changes in flight patterns be described in the Draft EIS. The National Park Service submitted a four-page comment letter regarding potential noise impacts to National Historic Landmarks, wilderness areas, and wildlife species in national parks. Several comments expressed concern about aircraft operations occurring at night. One commenter requested that the Draft EIS include an evaluation of the proposed OA-1K and MC-130J aircraft noise relative to the noise from aircraft currently operating at the base.
Hazardous Materials and Hazardous Waste	One of the comments in the USEPA letter stated that the Draft EIS should evaluate remediation sites that are in proximity to the proposed development. This comment stated that the Draft EIS should explain how the proposed development would interface with cleanup remedies. The USEPA also requested that the Draft EIS provide an update on the remedial investigation of the nature and extent of PFOS and PFOA in soils.

Table A-2. Substantive Scoping Comments Summary (continued)

Topic	Summary of Substantive Comments
Soils and Water	One of the comments in the USEPA letter stated that the DAF should avoid development in floodplains. Another comment from the USEPA requested that the Draft EIS include a plan for increased intensity of storms, stormwater management, and Low Impact Development.
Infrastructure	One of the National Park Service comments was related to impacts from anthropogenic light and the mitigation of sky glow. The USEPA submitted a comment regarding the facilities proposed for construction in the IDP Environmental Assessment and the facilities proposed for construction in this EIS and asked if any of the construction will be the same.
Traffic and Transportation	During scoping, a member of the public submitted a comment regarding Golf Links Road. The comment stated that, according to the Tucson Police Department, Golf Links Road is one of the most dangerous roads, and the commenter wanted to know how this mission would impact traffic circulation.
Reconnaissance Concerns	A member of the public submitted a comment regarding the reconnaissance technology that would be used on the new aircraft and if there would be collaboration between the Tucson Police Department and the Department of Homeland Security.
Environmental Justice	The USEPA submitted comments about environmental justice and recommended that the Draft EIS evaluate the trucking and transportation routes that could impact sensitive receptors.
Biological Resources	The Arizona Department of Agriculture submitted a comment regarding the list of native plant species that warrant protection under the Arizona Native Plant Law.
Airspace	The USEPA letter included a comment regarding the Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona EIS and how this EIS would relate to that EIS. The USEPA recommended that the Draft EIS should evaluate impacts at Davis-Monthan Air Force Base, as well as explain how impacts would reflect any special use airspace changes as a result of the decision made under the Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona EIS.

Key: DAF = Department of the Air Force; EIS = Environmental Impact Statement; IDP = Installation Development Plan; NEPA = National Environmental Policy Act; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonic acid; USEPA = United States Environmental Protection Agency.

A.2 Draft Environmental Impact Statement Public Review and Comment Period

The 45-day public review and comment period began when the United States Environmental Protection Agency (USEPA) published the Notice of Availability (NOA) in the Federal Register on October 25, 2024. During the 45-day Draft EIS public review and comment period, the Department of the Air Force (DAF) hosted two public hearings. The first public hearing was held at the Tucson Convention Center on November 13, 2024, from 5:30 to 7:30 P.M. local time. The second hearing was a virtual public hearing held via Zoom Webinar on November 19, 2024. The 45-day public review and comment period ended on December 9, 2024. The virtual public hearing was held to ensure maximum participation from interested parties not able to attend the first in-person public hearing. The hearings provided agency representatives as well as interested and affected citizens an opportunity to provide verbal comments on the content of the Draft EIS. A Hearing Officer (military judge) presided over the public hearings. During the public comment portion of each hearing, a court reporter transcribed oral comments verbatim.

Paid advertisements were published in both local and regional news media to announce the in-person and virtual public hearing dates, times and locations. In each market, the advertisement was published at least two times. The first round appeared on or near the date the NOA was published in the Federal Register. The paid newspaper ads included the dates, times, and locations of the public hearings and a link to the project website to register for a public hearing. In addition, Davis-Monthan Air Force Base Public Affairs distributed press releases to various media outlets along with the delivery of public service announcements (PSAs) to the local radio and television stations. Table A-3 identifies the schedule for the newspaper advertisements, press releases, and PSAs.

Table A-3. Public Hearing Newspaper Advertisements

Outlet	Address	Distribution Frequency	Target Circulation	Run Dates
Davis-Monthan AFB				
Davis-Monthan AFB/PA distributed media release and PSA to local media outlets	N/A	N/A	Tucson, AZ	October 25, 2024 November 1, 2024 November 5, 2024 November 12, 2024
Newspapers				
Indian County Today	555 N Central Avenue, Suite 500 Phoenix, AZ 85004	Weekly, Thursdays	Nationwide Tribal Paper	October 31, 2024
Hidalgo Herald	212 E. Motel Drive, Suite B Lordsburg, NM 88045	Weekly, Fridays	NM	October 25, 2024
Arizona Daily Star (English Advertisement)	PO Box 26887 Tucson, AZ 85726-6887	Daily	Tucson, AZ	October 25, 2024
Arizona Daily Star (Spanish Advertisement)	PO Box 26887 Tucson, AZ 85726- 6887	Daily	Tucson, AZ	October 25, 2024
Arizona Republic	200 East Van Burren Phoenix, AZ 85004	Daily	Phoenix, AZ	October 27, 2024 October 30, 2024 November 1, 2024
Tucson Weekly (English Advertisement)	3275 W Ina Road Suite 160 Tucson, AZ 85741	Weekly, Thursdays	Tucson, AZ	October 31, 2024
Tucson Weekly (Spanish Advertisement)	3275 W Ina Road Suite 160 Tucson, AZ 85741	Weekly, Thursdays	Tucson, AZ	October 31, 2024

Key: AFB = Air Force Base**;** AZ = Arizona; N/A = not applicable; NM = New Mexico; PA = Public Affairs; PSA = public service announcement.

The NOA that was published in the Federal Register, public hearing materials and Draft EIS documents were made available on the project website at www.492sow-beddown-eis.com. The project website served as the primary hub for all information related to the Draft EIS and public outreach.

A.2.1 Public Hearings

Public hearings served as the formal setting for the DAF to gather public comments on the Draft EIS. The public hearings on the Draft EIS were arranged to facilitate an understanding of the alternatives and associated potential impacts as well as allow time for the actual hearing, where members of the public had an opportunity to provide formal verbal or written comments. The public hearings took place at the dates, times, and locations shown in Table A-4. Table A-4 outlines the statistics from each public hearing.

Table A-4. Dates, Times, and Locations of the Public Hearings

Hearing Date	Location	Total Registrants	Total Verbal Submittals	Total Attendees
Wednesday, November 13, 2024 Near Davis-Monthan Air Force Base 5:30 to 7:30 P.M. local time	Tucson Convention Center 260 S Church Avenue Tucson, Arizona 85701	18	3	18
Tuesday, November 19, 2024 Virtual via Zoom 5:30 to 7:30 P.M. local time	Zoom Webinar	21	3	17

A.2.2 Draft EIS Public/Agency Comments

The Draft EIS public review and comment period ended on December 9, 2024. The DAF received the following:

Verbal Comment Submittals: 6

Written Comment Form Submittals: 1

Email Comment Submittals: 2

Written Comment Submittals: 2

Electronic comment Submittals: 8 (via website)

Substantive comments received on the Draft EIS were defined as comments that challenge the Draft EIS as being factually or analytically incorrect, identify impacts not analyzed in the Draft EIS, identify reasonable alternatives not included in the Draft EIS, identify feasible mitigations not previously considered by the DAF in development of the Draft EIS, or offer differences in interpretations of significance and/or scientific and technical conclusions within the Draft EIS. The DAF is obligated to respond to such comments. Non-substantive comments are defined as comments that are generally nonspecific to the proposal (i.e., refer to an action that is separate from and not interconnected to this proposal), agree or disagree with the proposal, provide a vote for or against the proposal, or state a personal preference or opinion. The DAF is not obligated to provide responses to non-substantive comments. All comments received on this proposal will be included in the Administrative Record regardless of when they were received and regardless of their substantive or non-substantive nature.

Of the 19 total comment submittals received, 103 unique, substantive comments requiring responses were identified. Each comment submittal was assigned a unique "Commenter ID" based on the following:

EM = Email comment submittal

PH = Public hearing verbal comment submittal

W = Written comment submittal

WF = Written comment form submittal

WEB = Website comment submittal

NPS/EPA = Comment submittal letter received from the National Park Service or the USEPA

Each substantive comment within a submittal was then assigned a "Response ID" based on the topic of the comment, as outlined in Table A-5.

Each comment submittal was processed by reviewing the submittal, identifying substantive comments, and bracketing substantive comments with a Response ID followed by a number (e.g., AQ1, AQ2) based on the need for a unique response. Non-substantive comments were not identified or bracketed with a Response ID.

Table A-5. Draft EIS Comment Response IDs

Comment Topic	Response ID
Alternatives	AL
Airspace	AS
Air Quality	AQ
Biological Resources	BR
Reasonably Foreseeable	RF
Hazardous Waste	HW
Noise	N
General Comment	GC
Socioeconomics	SO
Water Resources	WR

Key: EIS = Environmental Impact Statement; ID = identification

Table A-6 lists the comment submittals received and provides the Response ID(s) associated with each substantive comment received. The list is organized by last name or name of organization in alphabetical order.

Table A-6. Draft EIS Substantive Comment Submittal and Comment Response IDs

Agency / Last Name	Submittal ID	Response ID(s)
Clevenger	W-1	N1, N2, WQ2
Conroy	PH-1	No substantive comment.
Department of Interior	W-3	NPS2-CR, NPS3-N, NPS4-BR, NPS5-BR, NPS6-N, NPS7-N, NPS8-CR
U.S. EPA	W-2	EPA1-N, EPA-2HW, EPA-3HW, EPA-4HW, EPA-5HW, EPA-6HW
Garrett	PH-2	PH2-CR
Huckaby	WEB-1	No substantive comment.
Inman	WEB-2	No substantive comment.
Johnson	WEB-3	No substantive comment.
Morales	PH-3	No substantive comment.
Pima County	W-4	AQ3 through AQ5
Prather	PH-4	PH2-4RF
Quirk	PH-5	No substantive comment.
Richards	WEB-4	No substantive comment.
Sampson	W-5	N33 through N35
Saremi	EM-1, EM-2, and W-7	AQ6, AS1 through AS4, AS1a, BR2, BR3, GC2, GC2a, HW1, HW2, N3 through N32
Scott	W-6	GC3 through GC7, HW3
Spake	WF-1	AQ1, AQ2, WQ1
Trujilo	PH-6	PH2-6CH2

Key: EIS = Environmental Impact Statement; ID = identification; PH = Public hearing verbal comment; U.S. EPA = United States Environmental Protection Agency; W = Written comment; WEB = Website comment; WF = Written comment form.

Substantive comments requiring responses were then copied verbatim into Table A-7, which provides DAF responses to the relative comments. The comment response table (Table A-7) is arranged by last name or name of organization in alphabetical order. Copies of all processed submittals are included in the Administrative Record.

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Table A-7. Responses to Draft EIS Substantive Comments

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
Clevenger	W-1	The impact of the noise on wildlife needs to be taken into the conversation.	N1	Section 3.5 of the EIS addresses noise impacts to biological resources and wildlife. The impacts of noise on wildlife are further described in Section 1.3.13.2 of the Noise Supporting Document available on the project website. The text in this section describes the existing literature of noise effects (particularly aircraft noise) on animal species. Section 1.3.13.2 is specific to wildlife; Section 1.3.13.3 is specific to birds; Section 1.3.13.4 is specific to fish, reptiles, amphibians, and invertebrates; and Section 1.3.13.5 contains a summary of the noise impacts on wildlife.
Clevenger	W-1	The impact on humans hearing (see article dated Sat., 9 21,2024 by Russ McSpadden).	N2	The impacts of noise on humans are described in Section 1.3 of the Noise Supporting Document available on the project website. This section includes subsections that describe annoyance, land use compatibility, speech interference, sleep disturbance, noise-induced hearing impairment, nonauditory health effects, performance effects, and noise effects on children.
Clevenger	W-1	If you don't care what your planes do to the evironment, what about what you did to our water. The chemicals in the fire fighiting foam. I read the Air Force will not clean it up.	WQ2	The Department of the Air Force (DAF) is currently in the process of completing Phase 1 of the aqueous film-forming foam (AFFF) (firefighting foam) remedial investigation and is actively working with state and local regulatory agencies on the investigation and associated documentation. The Remedial Investigation Report is expected to be completed June 2026. Davis-Monthan Air Force Base (AFB) has transitioned to firefighting foam that meets the Military Specification (MILSPEC) standard for Per- and polyfluoroalkyl substances (PFAS) concentrations. The new fluorine-free foam meets both the MILSPEC requirements for firefighting and the goals of the United States (U.S.) Environmental Protection Agency (USEPA) 2010/2015 PFOA [perfluorooctanoic acid] Stewardship Program. See Sections 3.9.1.2.3 and 3.9.2.2.3 of the DEIS for additional information.
DOI	W-3	**TONTO NATIONAL MONUMENT** Regarding Tonto NM, the Department requests that pilots remain at least 2,000 feet above ground level when performing overflights over sensitive areas in accordance with Federal Aviation Administration (FAA) Advisory Circular 91-36d. The narrow corridor of Cave Canyon at Tonto NM attracts both civilian and military pilots with challenge and scenic beauty; however, the noise and vibration of such low flights, especially when confined in a rocky canyon, threatens the integrity of the two 14th-century Native American cliff dwellings. The Department recommends that pilots remain aware of sensitive areas to help preserve our Nation's natural and cultural heritage.	NPS2-CR	The Tonto National Monument is located approximately 60 miles northeast of Phoenix, Arizona, and north of the Outlaw MOA. This National Monument is located outside of any of the special use airspace (SUA) proposed for use as part of the 492nd Special Operations Wing (492 SOW) Beddown. Although this area could be occasionally overflown by pilots using the combat search and rescue low altitude tactical navigation area, it is unlikely that this area would be overflown on a regular basis.
DOI	W-3	The Department appreciates the thoroughness of the Noise Supporting Documentation, particularly the discussions of supplemental metrics and effects of overflights on wildlife; however, the acoustic analysis does not include NPS units among the evaluated noise-sensitive locations. As briefly recognized in the DEIS, in "quiet setting[s such as Saguaro National Park], non-natural noise sources, such as aircraft noise, are more noticeable" (p. 3-15). The Department is of the view that it is important to account for this in acoustic analyses, by treating NPS units as noise-sensitive locations and using metrics and noise levels appropriate to such quiet settings.	NPS3-N	The Saguaro National Park (NP) is located approximately 9 miles east and approximately 10 miles northwest of the Davis-Monthan AFB runway. Although no noise-sensitive receptors were identified for this area, the noise modeling indicates that noise levels in this area would not be appreciably impacted by the proposed 492 SOW Beddown aircraft operations at Davis-Monthan AFB.
DOI	W-3	NPS units are not included on most maps in the DEIS. Figure 1-1: Regional Location of Davis-Monthan AFB is the only map that includes any public land management designations; however, Saguaro NP and Wilderness Area are not identified. The Department recommends that NPS units and Wilderness Areas are included on Figure 1.1, Figure 2-2: Airspace and Ranges, and Figure 13 in the Noise Supporting Documentation (Existing Low Altitude Tactical Navigation Areas and Military Training Routes Near Davis-Monthan AFB). NPS unit boundaries are readily available in the NPS DataStore (https://irma.nps.gov/DataStore/).	NPS4-BR	Figure 1-1 has been modified to include the Saguaro NP and the Wilderness Area. NPS units have been added to Figure 1-1 and Figure 2-2. Regarding Figure 13 in the Noise Supporting Document, the NPS and other land use features were not added to this figure because the purpose of this figure is to show the boundaries of the combat search and rescue low altitude tactical navigation area. Due to the scale of this figure and the multiple states encompassed by this area, the NPS units and other land use features would not be visible and, therefore, are not shown on this particular map.
DOI	W-3	The Department also recommends that an additional map be added, to indicate typical flight patterns departing from and arriving at the AFB. We have particular concern for Saguaro NP and the Saguaro Wilderness Area, as the park is in an in-between zone, meaning outside of Noise Control District A, yet not under Military Training Routes or Military Operating Area, yet close enough to Davis-Monthan AFB to be affected by noise from departing and arriving flights.	NPS5-BR	Davis-Monthan AFB shares the typical flight patterns departing from and arriving at the installation through the online Mid Air Collision Avoidance (MACA) website at https://aftw.org/wp/wp-content/uploads/2019/09/D-M-MACA-Brief.pdf. AFSOC aircrews would use flight procedures to depart from and arrive to Davis-Monthan AFB that are essentially the same as those being flown by currently based units, which are described in the referenced publicly available brochure. As described in Section 2.2.2, there would be a net reduction in airfield operations at Davis-Monthan AFB relative to Interim Conditions, indicating that aircraft flights traversing Saguaro National Park could generally be expected to become less frequent as a result of ongoing A-10 unit drawdown. Flight paths vary due to weather considerations, ATC guidance, expediency, or other factors. The MACA brochure, on pages 5, 6, and 7, provides typical flight paths at a level of detail that accurately conveys the flight path variability that

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
				exists farther from the base. No additional changes beyond this comment response were added to the Final EIS.
DOI	W-3	While the noise analyses suggest that in general, noise levels will be reduced under both the Proposed Action Alternative and the No Action Alternative compared to Interim Conditions (given fewer airfield operations and noise profiles that are lower for the OA-1K and MC-130J aircraft than A-10s), the analyses do not provide enough information for the Department to determine whether and by how much noise levels would decrease over NPS units. To this end, the Department requests that noise models be extended to consider estimated changes to the DNL (day-night average sound level), maximum Ldnmr (onset rate-adjusted day-night average sound level), and time above key sound thresholds (35 dBA, 40 dBA, 52 dBA, and 60 dBA) at representative locations within Saguaro NP under the Proposed Alternative and No Action Alternative. For locations within Saguaro NP, the Department recommends any or all of the four acoustic monitoring sites--North Coyote Wash, Discovery Trail, Tanque Verde Ridge Trail, or Steel Tank (Job 2016)--the Rincon Mountain Visitor Center, Red Hills Visitor Center, or any or all of the 6 designated campgrounds in the Saguaro Wilderness Area. The time above thresholds are recommended for the following reasons: • 35 dB: American National Standards Institute (ANSI) standard for quiet settings where outdoor sound levels exceeding 35 dB degrade the experience of outdoor performance venues (ANSI, 2007); indicator of quality for the acoustic environment for visitors experience in national parks (Pilcher et al., 2009; Watts et al., 2020). • 40 dBA (decibels, A-weighted to account for human hearing): Level at which terrestrial wildlife begin to respond to environmental noise (Shannon et al., 2016). • 52 dB LAeq: Level at which noise interferes with raised-voice communication at 10 meters (EPA 1974), such as interpretive programs at NPS units. • 60 dB LAeq: Level at which noise interrupts normal conversation (EPA 1974), such as between visitors at an NPS unit.	NPS6-N	The Draft Environmental Impact Statement (DEIS) states on page 3-15 that the ambient noise levels are low in geographically remote areas and references low measured noise levels in the *Saguaro National Park Acoustic Monitoring Report* (Job 2016) as examples. The DEIS acknowledges that in extraordinarily quiet acoustic settings such as these, nonnatural sounds, such as aircraft noise, are more noticeable. As noted in DEIS Section 3.2.2.2, there would be no change to noise levels (decibels [dB] onset rate-adjusted day-night average sound level [L_{dnmr}]) beneath airspace units that overlie the Saguaro NP under the Proposed Action. As noted in Section 3.2.1, the L_{dnmr} metric is a version of day-night average sound level (DNL) that has been modified to account for the nature of flying operations in training airspace (e.g., adding a penalty of up to 11 dB to account for potential startle effects). DNL values are not additionally listed in the DEIS for airspace because L_{dnmr}, which is higher than DNL in all circumstances, is considered a more accurate predictor of impacts beneath training airspace than DNL. The "time above" threshold dB supplemental metric, which is also recommended in the NPS comment, is not supported by the current version of the DAF-approved airspace noise model (MRNMAP) and is not included in the DEIS. The DEIS does state the estimated numbers of aircraft noise events exceeding 50 dB maximum noise level (L_{max}) per average day beneath each training airspace unit. These values would also not change under the Proposed Action. As noted in the comment, the planned retirement of the remaining A-10 aircraft currently based at Davis-Monthan AFB and the noise levels generated by OA-1K and C-130J aircraft are factors affecting calculated noise levels beneath training airspaces. Given the lack of indications of noise impacts using the primary noise metric (L_{dnmr}) and supplemental noise metric (average number of events exceeding 50 dB), no further analyses will be conducted.
DOI	W-3	Given the quiet setting within Saguaro NP, where natural sounds dominate and anthropogenic noise is especially noticeable and disruptive to people and wildlife, the Department requests that the USAF consider including mitigation measures to reduce or eliminate the effects of noise on the park's acoustic environment. If it is impossible or impractical to completely avoid airspace over the park, the Department recommends setting a minimum altitude of 2,000 feet Above Ground Level in accordance with FAA Advisory Circular 91-36d for operations needing to fly over park units.	NPS7-N	Aircrews operating from Davis-Monthan AFB currently follow Federal Aviation Administration [FAA] Advisory Circular 91-36D, and this would also be the case for 492 SOW aircrews under the Proposed Action. As noted in the DEIS Section 2.2.2, operations flown by 492 SOW aircrews would be similar to operations flown by pilots of aircraft currently based at the installation. Existing local flight procedures, which include standard aircraft routing and several defined avoidance areas, would be used by 492 SOW aircrews. Local flight procedures have been developed in consideration of several factors and are reconsidered on a regular basis, as described in DEIS Section 3.2.2.4. The suggested flight restriction limiting all overflights of NPS units to a minimum altitude of 2,000 feet AGL would not be compatible with effectively meeting training requirements and could potentially result in safety of flight issues. Under the Proposed Action, aircrews would continue to comply with the voluntary practices described in FAA Advisory Circular 91-36D, which includes the following: "Pilots operating noise producing aircraft (fixed-wing, rotary-wing and hot air balloons) over noise-sensitive areas should make every effort to fly not less than 2,000 feet above ground level (AGL), weather permitting."
DOI	W-3	**NIGHT SKIES** Chiricahua NM and Tumacácori NHP are certified as International Dark Sky Parks, while Saguaro NP is certified as an Urban Night Sky Place (DarkSky International, 2019). Given the importance of night skies to this region, for all proposed modifications of existing facilities and construction of new facilities at Davis-Monthan AFB, the Department requests that the USAF strive to mitigate sky glow by integrating the following Sustainable Outdoor Lighting Principles: • Ensure the Lighting is Necessary • Light Only When and Where Needed • Use Recessed and Fully Shielded Fixtures • Use Timers and Dimmers • Use the Minimum Light Level Necessary • Use LEDs in Warm Colors	NPS8-CR	Both the Chiricahua National Monument and Tumacácori National Historical Park are located more than 40 miles from Davis-Monthan AFB and would not be affected by lighting at the installation. The DAF is committed to minimizing light impacts to areas outside of the installation, including the Saguaro NP. As described in Section 3.5.2.4.2 of the DEIS, impacts from lighting would be mitigated through the following measures: (1) use special light-emitting diode (LED) bulbs designed to ensure no increase in ambient light conditions; (2) minimize the number of lights used; (3) place lights on poles pointed down toward the ground, with shields on lights to prevent light from going up into sky, or out laterally into landscape; and (4) selectively place lights so they are directed away from all native vegetative communities.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
USEPA	W-2	While the DEIS predicts noise levels will eventually decrease after the interim period, we continue to recommend, in the FEIS and future documents, use of the updated National Curve, located in the Noise Supporting Documentation in Table 5, to better disclose the expected annoyance from the noise levels of the proposed action.	EPA1-N	The 492 SOW Beddown DEIS Section 3.2.1.1 states that studies of community annoyance in response to numerous types of environmental noise show that there is a positive correlation between DNL and the percent of the population that can be expected to be highly annoyed by the noise. The text then refers readers to the Noise Supporting Document, which provides a lengthy description of several studies on annoyance, including the FAA Neighborhood Environmental Survey (i.e., "National Curve"). The results of the Neighborhood Environmental Survey suggests that people are currently more likely to represent themselves as being highly annoyed than was indicated in older social surveys when exposed to the same aircraft DNL. To date, DAF and FAA guidelines regarding land use compatibility have not been revised based on the results of the Neighborhood Environmental Survey. As stated in Section 3.2.2.4, measures adopted by Davis-Monthan AFB to reduce noise impacts would also apply to the 492 SOW Beddown and no additional noise mitigation measures are proposed at this time.
USEPA	W-2	Regarding hazardous materials, we appreciate the USAF citing to our scoping comments for hazardous waste, and we believe the FEIS would be improved by including a map showing the locations of the proposed project in relation to the environmental restoration program sites and the PFOA and PFAS investigation sites, to provide a comprehensive view of the existing affected environment.	EPA2-HW	Figure 2-3 has been revised to include the Environmental Restoration Sites.
USEPA	W-2	We also recommend the USAF disclose why only 6 sites of the 37 potentially PFAS contaminated areas were sampled for the site investigation.	EPA3-HW	Based on the results of the Preliminary Assessment and the Site Inspection, the sites excluded from further investigation were determined to either have no historical use of AFFF indicated, to have no releases occurring where AFFF may have been present, or have sampling confirming no PFAS compounds were present. This information has been added to Section 3.9.1.2.3.
USEPA	W-2	Additionally, the EPA recommends the USAF utilize the March 2024 Safe Drinking Water Act Maximum Contaminant Level to determine the safe levels of PFAS for drinking water, rather than the former EPA Lifetime Health Advisory limit.	EPA4-HW	The Department of Defense (DoD) is working to integrate the maximum contaminant level (MCL) values into the PFAS cleanup process. MCLs are currently being used by the DAF for use as Risk Screening Levels during Remedial Investigations as a trigger level to take interim actions by prioritizing level of risk based on concentrations on an installation-by-installation basis. Please see the memorandum from the Office of the Deputy Assistant Secretary of Defense (ODASD) titled "Prioritization of Department of Defense Cleanup Actions to Implement the Federal Drinking Water Standards for Per-and Polyfluoroalkyl Substances Under the Defense Environmental Restoration Program," dated September 4, 2024.
USEPA	W-2	Furthermore, the EPA recommends the USAF investigate the potential PFAS contamination sites proximate to proposed construction sites prior to construction activities to determine if contamination is present.	EPA5-HW	The DAF has policies in place for construction contractors on the installation if contamination is anticipated near a construction site or if contamination is detected during excavation, including the potential presence of PFAS. All construction activities require a Form 332 (Base Civil Engineer Request) be processed which includes coordination with base environmental to evaluate and comment on the activities and location of the proposal. As part of that process, a form 813 (Request for Environmental Impact Analysis) is initiated to include Restoration assessment of the area. The site is compared to known or suspected sites of contamination or environmental impacts, and this information is submitted for the engineering team to include the possible contaminants in the scope of work for the contractors to include sampling and possibly manage/dispose of wastes generated from impacted sites as it relates to the construction areas. In addition, the contractor's manual provides some guidance when working in areas of no known or suspected contamination and the response required if contamination is encountered during construction activities. This would trigger additional assessment of the area to locate the cause of the suspected contamination, and possibly modification of contract.
USEPA	W-2	Finally, the EPA recommends the USAF disclose that they are engaged in an Environmental Service Agreement with the Arizona Department of Environmental Quality to construct and operate a PFAS treatment system.	EPA6-HW	The following text was added to Section 3.9.1.2.3 "Due to the preliminary results of the Remedial Investigation for AFFF, as well as initial results from Arizona Department of Environmental Quality (ADEQ's) Central Tucson PFAS Project (CTPP), a Non-Time Critical Removal Action was approved to begin treating the PFAS-impacted drinking water aquifer in Tucson that extends from Davis-Monthan AFB. An Environmental Services Agreement was entered into between the DAF and ADEQ to fund construction, operation, and maintenance of a demonstration-level PFAS removal facility until the Remedial Investigation is completed."

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
Garrett	PH-2	I, and many of us, have noted that you have not held any public comment gatherings on any reservations. Please note that the Wi-Fi reception in these areas are oftentimes weak. And I would like to ask that you have some meetings in-person on tribal lands by December 9th or before the final conclusions are made.	PH2-1CR	As discussed in Section 3.6.2.2.1, the DAF coordinates and consults directly with Native American tribes throughout the DEIS process in accordance with federal statutes and regulations, such as Section 106 of the NHPA. Typically, tribes do not regularly participate in public NEPA meetings but can request a separate tribal meeting under the NHPA. In addition to public notifications, such as the NOA in the Federal Register, public service announcements, media releases, newspaper ads (including one nationwide tribal paper – the *Indian County Today*), and community flyers, Davis-Monthan AFB also mailed scoping notification letters and Draft EIS notification letters to Native American tribes with potential interest in the Proposed Action. Additionally, Davis-Monthan AFB initiated Section 106 government-to-government consultation with 32 different Native American tribes. The consultation correspondence included an invitation to participate in the NEPA process and an invitation to consult directly with the Davis-Monthan AFB Commander regarding any comments, concerns, and suggestions. The consultation included various letters, telephone calls, and emails to representatives of each of the tribes. Written communication with tribes is documented as part of the Environmental Impact Statement (EIS) process in the Cultural Resources Supporting Document on the project website. Davis-Monthan AFB will continue to coordinate with interested tribes throughout the EIS process.
Pima County	W-4	Air Conformity Applicability Model Report Record of Air Analysis (ROAA): Air quality criteria pollutants are reviewed to ensure the NAAQS is not exceeded as part of the air quality analysis. An analysis was conducted using the US EPA's Prevention of Significant Deterioration (PSD) permitting threshold. The permitting threshold is intended for stationary sources, not mobile sources. The analysis in which the DAF conducted is not relevant and applicable to compare the PSD permitting threshold to the NAAQS and should be updated to reflect NAAQS thresholds for ambient air time based standards.	AQ3	The project region surrounding Davis-Monthan AFB is in attainment for all National Ambient Air Quality Standards (NAAQS). The DAF uses Prevention of Significant Deterioration (PSD) thresholds as indicators of the insignificance of air emission impacts for areas that are in attainment of a NAAQS; this means that if proposed emissions do not exceed these thresholds, they would not contribute to an exceedance of a NAAQS. This is the case, as the PSD major source thresholds represent levels of concern; exceeding them triggers the requirement for stationary sources under PSD review to demonstrate by dispersion modeling that a project would not contribute to an exceedance of an ambient air quality standard (excluding ozone). Using the PSD thresholds to evaluate mobile sources is a conservative approach, as proposed mobile sources operate over a large area and their emissions would result in much more dispersed ambient pollutant impacts compared to emissions from individual stationary sources. Therefore, this approach is relevant and adequate for NEPA purposes.
Pima County	W-4	ES.4.2.5. Facilities and Infrastructure (EIS Section 2.2.5): 28 facilities would be renovated, 2 demolished, and 9 new facilities would be built. The renovations and demolition at/of the buildings may be subject to Asbestos NESHAP permitting requirements from PDEQ. Any land clearing activities that meet permitting thresholds may also be subject to a fugitive dust activity permit from PDEQ. All dust generating activities must meet Pima County Code Title 17 to ensure fugitive dust emissions are controlled.	AQ4	As stated in Section 3.3.2.2.1 of the DEIS, "Prior to project initiation, the 492 SOW would determine if asbestos-containing materials exist in any facilities proposed for demolition and/or renovation (see Table 3-50) and would comply with the requirements of the PDEQ [Pima County Department of Environmental Quality] Asbestos National Emissions Standards for Hazardous Air Pollutants Notification Activity Permit Application process (PDEQ, 2024)" and "The 492 SOW would implement standard construction practices to comply with the PDEQ Fugitive Dust Activity Permit Program and to minimize fugitive dust emissions generated from the use of construction equipment on exposed soil…" Compliance with the PDEQ Asbestos NESHAP and fugitive dust activity permitting requirements would ensure that dust-generating activities from the project would comply with Pima County Code Title 17.
Pima County	W-4	Station Source Air Quality Permits: With the changes to operations and facilities, there is a potential that the existing stationary source air quality permits that are held by DMAFB would need to be revised due to equipment and emission changes.	AQ5	As stated in DEIS Section 3.3.1.2.1, "The base maintains air permits issued by the PDEQ that limit emissions from several types of stationary sources." Any existing permitted stationary air emission source that results in modified operations as a result of the Proposed Action would undergo review by Davis-Monthan AFB staff as needed, and if required by PDEQ permit rules, would complete the application process for a modified PDEQ permit.
Prather	PH-4	We have some serious concerns with the fact that this DEIS is being released at the same time as the SUA Optimization DEIS. A lot of decision-makers that we're in contact with have no idea that this is even happening -- and I mean members of Congress, the governor's office, et cetera. And we're really wondering how these two proposals interface.And it feels like it's a very deceptive process as -- you know, alluded to with my question about how will unmanned aircrafts and drones and all these different things happen? How do these things interface? And, again, just to get a little more detailed, the two DEIS documents pertinent to both of those proposals and how they inter- -- interface are deceptive and fail to fulfill the responsibilities required for their passage. So we really would like both of those proposals to be redrafted and	PH2-4RF	The DAF conducted substantial interface with the general public, Native American tribes, and elected officials, including members of Congress and the Governor's office regarding both of the EIS projects referenced in this comment. The 492 SOW Beddown at Davis-Monthan AFB has complete independent utility from the EIS for Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona because, if approved by the decision maker, the beddown would proceed regardless of whether any part of the Airspace Optimization proposal occurs, and the same is true for the Airspace Optimization proposal regardless if the 492 SOW

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		resubmitted for public review. We also feel that there is serious research based on public comments made to the Air Force regarding the two DEIS needing immediate clarification on how they relate to, like I had mentioned, the training, development, and operation of next generation AI, including surveillance, targeting, hypersonic drones, and uncrewed aircraft in both Arizona and New Mexico.		Beddown occurs. However, it is anticipated that the 492 SOW would utilize the SUAs as defined in the Airspace Optimization proposal, when and if the proposal is approved and implemented. Implementation of the 492 SOW Beddown would not involve any unmanned aircrafts or drones. Lastly, the 492 SOW Beddown DEIS includes no information about next generation artificial intelligence (AI), surveillance, targeting, hypersonic drones, or uncrewed aircraft in Arizona and New Mexico. Should the DAF consider implementation of any of these activities, separate NEPA analysis would be completed for those actions.
Sampson	W-5	Regarding S.4.2.2 of EIP, there would be significant increase in noise and pollution from operations. While the EIP notes an eventual net decrease of operations by 4,028 operations for a total of 59,940 operations, a non-disclosed interim period of surging operations up to 84,008 from current 63,968 per year is unacceptable.	N33	Section S.4.2.2 of the DEIS does not state that there would be a surge of operations up to 84,008. The expected timeline for A-10 Phase 2 retirement and the proposed 492 SOW Beddown are discussed in several sections of the DEIS, including Section 1.4 and Section 2.2. As stated in Section 1.4, it is assumed for the purposes of the analysis in the DEIS that the Phase 2 A-10 retirement would occur by the end of FY 2026, pending results of the signed fiscal year (FY) 2025 National Defense Authorization Act. As stated in Section 2.2 of the DEIS, construction would be staged to allow some units and aircraft to arrive at Davis-Monthan AFB as early as 2026, while other units would arrive by 2031 or later dependent on congressional-driven changes. Figure 1-3 of the DEIS graphically depicts the expected timeline of the Phase 2 A-10 retirement and the 492 SOW Beddown.
Sampson	W-5	Under the plan, Nighttime operations (between lOp and 7am) and subsequent noise and reduced quality of life would eventually increase from current 1,037 to 1,964 operations. During the non disclosed period of overlapping surge, nighttime operations would be as high as 3,001operations/per year.	N34	See response to Comment N33.
Sampson	W-5	It is shockingly irresponsible and disrespectful to suggest Tucsonans cope with an 46% increase in operations and the resulting noise and pollution to our air and soil during an interim period.	N35	See response to Comment N33.
Saremi	W-7	Other air quality concerns regrading flares: If there was a fire at a chemical plant that houses fluorocarbons, such as Teflon, the neighbors likely would be told to evacuate to avoid the fumes, or be alerted about the potential health ramifications, but when it comes to releasing these fluorocarbons from heating flares it's somehow completely OK and not even remotely considered a health threat—in fact not even acknowledged in the DEIS. Why is this? It's acknowledged that air quality after fireworks is bad, and concern has been raised over this. However, don't the flares or other aspects of the sorties release similar chemicals such as perchlorate, and other potentially toxic substances. Why is that for fireworks that happen only a few times a year the air quality health concerns make the news, but for flares that can happen every day over civilians, there is not really much if any talk about the health impacts and air quality? Why no graphs of particulate matter, organic compounds, VOCs, and metals that might be released? As an example this is a study with a chart on perchlorate release into the environment from fireworks. https://www.sciencedirect.com/science/article/abs/ pii/S0269749119307900 or https://www.sciencedirect.com/science/article/abs/ pii/S1352231010010277 General news even talking about it: https://www.foxweather.com/lifestyle/ america-independence-day-air-pollution-map	AQ6	As a result of the Phase 2 A-10 retirement, there would be a decrease of 55,700 chaff and flare drops per year. The use of flares by project aircraft would only be over the ranges. Section 8.6 of Appendix A in the *Final Programmatic Environmental Assessment* [PEA] *for Testing and Training with Defensive Countermeasures* dated December 2023 addresses the emissions from flare use and states "The burning flare components do not emit measurable toxic constituents. No surface concentration of flare ash would be detectable on the ground under areas where flares were deployed. Flare emissions are not now, nor is it feasible that they could become, a health hazard (Air Force, 1997). Flare ash and flare emissions are not of sufficient quality or concentration to result in measurable air quality or physical effects to the environment."
Saremi	W-7	Also in regard to non-SUA airspace, DEIS pg 3-40 says " OA-1K overflights outside of SUA would occur over large areas such that flight operations would not be concentrated or focused over single locations on the ground. Overflights would be sporadic with noise affecting different ground areas that would vary from one mission to the next." This also takes away from any pursuit of finding a peaceful place to live since the spanning of the noise won't be localized or predictable which would give opportunity to try to move away from it. Does this mean OA-1K will be training outside of SUAs? It sure sounds like it, but there is a lack of transparency and precision about this. I don't ever recall a DEIS providing noise data for flight outside an SUA, so I am going interpreting this as it will be active outside SUAs.	AS1	Noise levels for operations outside the SUA proposed for use by the OA-1K are noted in Section 3.2.2.2.2 of the 492 SOW Beddown DEIS. The DEIS states that OA-1K overflights outside of SUA would occur over large areas such that flight operations would not be concentrated or focused over single locations on the ground. OA-1K aircraft operations outside of SUA would primarily occur at 10,000 feet AGL and at cruise power settings. While operating in this configuration and altitude, the OA-1K would generate approximately 54 dB Lmax. This sound level is comparable to civilian aircraft (e.g., passenger aircraft, general aviation aircraft, and helicopters) that operate in the same areas under interim conditions. The DEIS acknowledges that, in quiet ambient conditions, OA-1K aircraft may be noticeable and could be considered annoying. Noise modeling reflects noise energy at all frequencies. The 492 SOW Beddown DEIS includes estimated numbers of events per average day exceeding 50 dB L_{max} outdoors as an indicator of potential for interference with activities such as conversation. Calculated outdoor values for this supplemental metric, which are higher than values experienced indoors, would not change under the Proposed Action Alternative.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
Saremi	EM-1	On pg 3-40, it says (see attachment) "OA-1K aircraft operations outside of SUA (i.e., outside of MOAs and Restricted Areas) would primarily occur at 10,000 feet AGL and at cruise power settings." Does this mean OA-1K will be training outside of SUAs? I don't ever recall a DEIS providing noise data for flight outside an SUA, so I am going interpreting this as it will be.	AS1a	See response to AS1.
Saremi	W-7	Sorties" terminology is vague Sorties being defined as takeoff, mission, then landing—doesn't give the time- in-flight or flight hours. It could be 1 hour or 6 hours. So it allows hiding of the flight hours, hiding of the number of low passes over a region. It would be more descriptive to mention flight hours of audible noise over any region, and total flight hours, and total number of planes at any given hour. They use "flight hours" in describing each base in Table 1.2-2, but when describing individual MOA impact they do not mention flight hours— instead they Mention number of "sorties.' The issue is that sorties can vary on their impact, on their loudness, on their time length, and on he quality of noise (e.g. C130 that can travel very far, versus low flying pass that might not travel as far) which doesn't allow for a good understanding of the impact.	AS2	The term "sorties" is defined on page 1-10 of the Noise Supporting Document. This term is used by both the FAA and the DAF to identify the numbers of aircraft operations for environmental impact analysis. The DAF has made an effort to be as transparent as possible regarding the potential impacts of noise resulting from the proposed aircraft operations. The number of flight hours by aircraft type is one of the variables used in the noise and air quality modeling processes to determine the potential noise and air quality impacts that could result from the various times aircraft are operating in the airspace proposed for use. Table 3-35 of the DEIS lists the number of noise events exceeding 50 dB L_{max} per average day, which reflects the number of sorties, noise levels generated by various aircraft in commonly used flight configurations, altitude usage patterns, and the sizes of the training airspace units.
Saremi	W-7	Lack of transparency with "Other times by NOTAM" "Other times by NOTAM" hides from the public the amount of activity there will be outside published hours. It's presentation misleads people to think it will be just once-in-a-while. However, I know first hand in Tombstone C MOA that at least most nights after published hours, that is between 21:00-0:600 UTC-7, there is what sounds like military aircraft noise, if not almost every night. So it comes off as just a technique to hide the impact. It's highly likely that if instead you said "24 hours, 7 days/week" then the comments would be much more adversarial toward this project. And so by using this phrase "other times by NOTAM" it causes the public to comment without knowing the real extent of the extended time periods of training. The historical data of "Other times by NOTAM" for the past at least 5 years should be shown, as well as projected future data. Without this data, it's a complete lack of transparency and doesn't give the public any idea what to expect or enough base information to make an informed comment. By data, I mean the all the times of flight outside the published hours, number aircraft, number of flight hours, and number of hours each timespan outside published hours there are flights going on…in each MOA.	AS3	The term, "Other times by NOTAM" is a term that was developed by the FAA. The FAA defines NOTAM as a "Notice to Air Missions," which is a notice that contains information that is essential for flight operations but is not known far enough in advance to be publicized by other means. Prior to and during aircraft operations in the National Airspace System (NAS), the DAF complies with all FAA regulations. The DAF uses NOTAMs to ensure the safety of DAF aircrews and civilian aircrews operating in the NAS. The DAF publications of NOTAMs are conducted to maintain full compliance with all FAA regulations.
Saremi	W-7	Also is the listed number of sorties just for published hours? Or does that include ATCAA and "other times by NOTAM?"	AS4	The listed number of sorties in the 492 SOW Beddown DEIS includes all of the 492 SOW aircraft operations proposed to originate from Davis-Monthan AFB.
Saremi	W-7	Fire-risk with non-fully discharged flares? The fire risk of non-fully discharged flares on the ground should be thoroughly investigated. As an example, wildlife can come in contact with one and cause it to discharge, leading to a fire. Flare burnout rate chart needs a distribution curve. What is the 95% in reference to? What about outliers? Also has empirical data under realistic conditions been used to verify the conjectures made? Can the residue chaff or flare material cause wildfires to spread faster? Flammability tests on both chaff and flare fallout to see if they would accelerate wild fires.	BR2	The *Final Programmatic Environmental Assessment for Testing and Training with Defensive Countermeasures*[a], dated December 2023, addresses the fire risk associated with flare use in Section 8.2 through 8.5, pages A-117 through A-127 of Appendix A. These sections of the PEA note that the potential for a dud flare landing on the surface is small and the potential for striking the surface in such a manner that it would start a fire is even smaller.
Saremi	W-7	Chaff: There should be a thorough investigation into the degradation of chaff into it's constants, such as crystalline silica, or any other potentially harmful compound. If chaff is released at high temperatures, such as with flares or just a hot engine, it would be reasonable to assume it would more easily degrade. So any studies or modeling would have to take details like this into account for accuracy. As chaff floats in the air for a long time— it will be exposed to a lot of direct sunlight, heat, and elements in the air column which can contribute to it's degradation leading to exposing crystalline silica and potentially other harmful substances. There have been reports of people under high concentration of chaff, presumably near the release of it. There should be studies on the health effects of this. The effect of chaff on soil health, such as pH and soil microbiology should be thoroughly investigated.	BR3	As a result of the Phase 2 A-10 retirement, there would be a decrease of 55,700 chaff and flare drops per year. The use of chaff by 492 SOW aircrews would only occur above areas approved for use, none of which are near residential or populated areas. The 492 SOW Beddown DEIS notes that the *Final Programmatic Environmental Assessment for Testing and Training with Defensive Countermeasures*[a], dated December 2023, is incorporated by reference. The PEA addresses the characteristics of chaff and the effect of chaff on the human and natural environment in Sections 4 and 5 of Appendix A. Section 6 presents the conclusion of the analysis, noting that "The chaff projected for use by training aircraft is not expected to result in noticeable quantities of material deposited on the surface. Chaff materials are not projected to result in a discernible impact to ground surface or water areas or to sensitive biological species transiting or occupying ground surface or water areas. Chaff residual materials do not result in impacts on land use, economic activity, or cultural or traditional sites." Although an individual finding a piece of plastic or chaff that did not correctly deploy could be annoyed, there is no health or safety risk from the use of chaff.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
Saremi	W-7	For example, on page 2-2 of the DEIS the rough "unit movements" paths across multiple state lines seem to suggest that military aircraft will fly over non-SUA space in the Gila National Forest and other areas of West Texas, both of which are among the quietest remaining places free from aviation noise pollution remaining in the lower 48 states. In fact there is little remaining space in the lower 48 states without SUAs or civilian-heavy air traffic, and these small remaining spaces are almost entirely in the Southwest US (excluding Alaska) .In effect, these are the only potentially sensory-friendly areas left when it comes to escaping aviation noise pollution and this proposal seems to want to change that with increased aviation noise pollution. The DEIS lacks precise potential trajectory paths for those unit movements and does not disclose the volume of increased flight among those paths, outside of SUA. In fact it shows the planes going over Mexico from Arizona to other states, and while that is preferred to lower noise here, I find that hard to believe, and think specific routes should be disclosed along with volume of flight through those non-SUA routes, if it will be the case.	GC2	The arrows on Figure 2-1 (page 2-2) are one-time organizational people movements and not flight paths. The title of this figure has been changed to the following: “Organizational Unit Movements Associated with the Proposed Action Alternative.” In addition, a footnote has been added to this figure to identify that the arrows on this figure are not flight paths but one-time organizational unit movements.
Saremi	EM-2	Referring to page 2-2 (attached screenshot) of the DEIS, it refers to "unit movements" and shows trajectories across multiple states. Are these flight paths going to be within MOAs or MTRs? Because as drawn, it doesn't look like it. And how often will these unit movements take place? Thank you, Michael Saremi	GC2a	Please see response to Comment GC2.
Saremi	W-7	Various chemical pollutants What are the air concentrations of potential toxic pollutants from the fuel or exhaust, such as perchlorates, other suspect organic compounds, and elements-including but not limited to during unusual events such as fuel dumping or fuel dumping fallout that falls further than usual? Perchlorate in food/water is a concern and already happening: https:// www.usatoday.com/story/news/health/2024/08/15/consumer-reports-rocket- fuel-chemical-perchlorate-food-water/74783445007/ Fluorocarbons/PFAs DEIS does not disclose the levels of fluorocarbons to be released over civilians. It notes that flares contain Teflon and some other fluorocarbon polymer. It also notes that the flares are heated, I believe to 2000F. It’s noted from numerous sources that when Teflon is heated it can convert to PFAs. It’s reasonable to wonder if the heat can also degrade the polymer into monomer units? Given how toxic PFAs are, it’s imperative to conduct real-world tests under the same conductions these flares are released to assess the air levels, soil levels, groundwater levels, and levels in tissues of livestock and wild animals, and compare to areas where flares aren’t released and no other known PFAs contamination nearby. See: https://www.epa.gov/pfas “PA is considering removing from the inert ingredient list the chemical polytetrafluoroethylene (CAS No. 9002-84-0), also known as Teflon®.” https://www.federalregister.gov/documents/2024/02/28/2024-04059/pesticides- proposed-removal-of-polytetrafluoroethylene-from-list-of-approved-inert- ingredients-for#:~:text=EPA%20is%20considering%20removing%20from,to%20no%20longer%20contain%20polytetrafluoroethylene	HW1	The combustion of aviation fuel in aircraft engines would emit toxic pollutants in the form of volatile organic compounds (VOCs), carbon monoxide (CO), nitrogen oxides (NOx), sulfur oxides (SOx), and heavy metals. Organic compounds associated with aircraft emissions (VOCs and those attached to particulates) include pollutants such as benzene, formaldehyde, and chloroform. Due to the intermittent and mobile nature of the proposed aircraft operations, the ambient concentration of these toxic pollutants both at Davis-Monthan AFB and within the proposed airspaces would remain below levels of concern. The vaporization of aviation fuel would emit toxic pollutants such as benzene, ethylbenzene, toluene, and xylene. Regarding the potential for fuel jettison, this would only occur on rare occasions during in-flight emergencies. The DAF has specific policies regarding the altitudes and locations of where fuel jettison is allowed and, due to the low potential for fuel jettison to occur, this was determined to not result in significant air quality impacts. As a result of the Phase 2 A-10 retirement, there would be a decrease of 55,700 chaff and flare drops per year. The use of flares by project aircraft would only be over the ranges. Section 7.3.2 in Appendix A of the *Final Programmatic Environmental Assessment for Testing and Training with Defensive Countermeasures*, dated December 2023, addresses the specific properties of flares containing Teflon. It presents the results of testing that was conducted, noting that the Teflon was totally consumed with the burning of the flare pellet (Winchell et. al., 2021)[a].
Saremi	W-7	Other points: -Specific potentially health impactful pollutants such as PFAs, other fluorocarbons, perchlorate, metals, VOCs, organic compounds (e.g. halogen containing) should be individually identified/disclosed and thoroughly investigated, due to their individual toxicity—as opposed to generalizing the pollution into PM2.5, PM10, VOCs, or other oxides which comparably are not as potentially toxic. Also ultrafine particle concentrations should be given as they have received publicity in the last several year as being potentially very toxic.	HW2	Regarding individual HAPs that would be emitted from the Proposed Action Alternative, see responses to Comments AQ1, AQ2, and AQ4. Regarding health impacts due to HAPs from the Proposed Action Alternative, see responses to Comments AQ1 through AQ5. Regarding ultrafine particles, the main source of these emissions would occur from the combustion of aviation fuel in aircraft. There are no criteria to determine the significance of ultrafine particle emissions from a project. The best surrogate for these materials is emissions of particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$). The analysis in Section 3.3 determined that $PM_{2.5}$ emissions from the Proposed Action Alternative would result in insignificant levels of $PM_{2.5}$ emissions, meaning that these emissions would not contribute to an exceedance of NAAQS for $PM_{2.5}$.
Saremi	W-7	The airspace outside of SUAs, especially those that are relatively low of civilian air traffic, should be protected from even the slightest increase in noise pollution to allow people who want to move to a less noise pollution impacted place to dwell in peace, especially those who move to escape the ever increasing aviation noise pollution, whether civilian or military.	N3	As noted in Section 3.2.2.2.2 of the 492 SOW Beddown DEIS, OA-1K overflights outside of SUA would occur over large areas such that flight operations would not be concentrated or focused over single locations on the ground. OA-1K aircraft operations outside of SUA would

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		The issue is that the DEIS seems to suggest this will bring increased flight noise over these non-SUA regions, but doesn't give transparency as to precisely where and how often the planes will be active outside SUAs.		primarily occur at 10,000 feet AGL and at cruise power settings. While operating in this configuration and altitude, the OA-1K would generate approximately 54 dB L_{max}. This sound level is comparable to civilian aircraft (e.g., passenger aircraft, general aviation aircraft, and helicopters) that operate in the same areas under interim conditions. The DEIS acknowledges that, in quiet ambient conditions, OA-1K aircraft may be noticeable and could be considered annoying. Noise modeling reflects noise energy at all frequencies. The 492 SOW Beddown DEIS includes estimated numbers of events per average day exceeding 50 dB L_{max} outdoors as an indicator of potential for interference with activities such as conversation. Calculated outdoor values for this supplemental metric, which are higher than values experienced indoors, would not change under the Proposed Action Alternative.
Saremi	W-7	Another example in the DEIS comes from page 3-40 where it says, "OA-1K aircraft operations outside of SUA (i.e., outside of MOAs and Restricted Areas) would primarily occur at 10,000 feet AGL and at cruise power settings." and compare to civilian plane noise in a tone suggesting that it is not impactful. However even civilian prop. plane noise is VERY IMPACTFUL. There are nationwide complaints about this noise pollution from civilian flight schools. The sub-100-Hz sound frequencies are impossible to soundproof and easily penetrate walls even when the single engine prop. planes are 5 miles away.	N4	See response to Comment N3.
Saremi	W-7	Noise from modified ammunitions ("blanks"): If there is noise from discharges of ammunition, these are potentially harmful per my comments for the DEIS for SUA optimization -that is my DEIS comments for the proposal at this website https://www.arizonaregionalairspaceeis.com/	N5	As noted in Section 2.2.4 of the 492 SOW Beddown DEIS, training would be conducted at existing ranges where similar munitions are currently being fired. A-10 pilots currently expend a wide variety of inert and high-explosive bombs, missiles, and rockets, in addition to 30-millimeter rounds. There would be a net decrease in air-to-ground munitions use relative to interim conditions. Ground unit munitions training would not result in any exceedances of training range usage and use of new ammunition types or require creation of new ranges at this time. If future changes to the 492 SOW's live-fire range requirements involve major improvements to the Davis-Monthan Combat Arms Training and Maintenance range or the establishment of new ranges, those actions would be addressed in separate NEPA documents.
Saremi	W-7	A new BYU study found discrepancies between empirical noise measurements and noise modeling data. Since this DEIS uses noise modeling data it has the potential to be inaccurate, and when dealing with noise levels that have potential for hearing or vestibular loss, especially where the thresholds for damage could be just plus or minus 1 decibel, it is imperative to have accurate data and that could only be achieved empirically by sound level testing under realistic conditions. For BYU noise study info see: https://myrgv.com/local-news/2024/11/26/study-sonic-booms-from-spacex-launches-could-cause-structural-damage/	N6	The noise study referenced in the comment pertains to rocket noise, and there is no direct relevance of measured rocket noise levels to the noise levels generated by the propeller-driven aircraft operations that would occur under the Proposed Action Alternative. As stated in Section 3.2.1.4 of the 492 SOW Beddown DEIS, noise levels were calculated using the Noisemap suite of computer noise models, in accordance with Air Force Instruction 32-1015. Additional details regarding the approved noise-modeling software and specific methods used in the DEIS calculations are provided in the 492 SOW Beddown DEIS Noise Supporting Document Section 1.4.
Saremi	W-7	**PART II BELOW** This is an extension of my comment for the 492 Beddown DEIS (https://www.492sow-beddown-eis.com/). Please consider the comments herein on matters relevant for the 492 beddown that happen to overlap with the Arizona/New Mexico SUA airspace expansion (https://www.arizonaregionalairspaceeis.com/), such as noise pollution issues (old HA% data, DNL, noise-induced vestibular, chaff, flares, etc.) and chemical pollution issues (e.g. chaff, flares, fluorocarbons/PFAs, perchlorates, halogen containing compounds, ultrafine particles, VOCs, potentially toxic metals, specific particle/gas identification rather that grouping into VOC, PM2.5, PM10, etc.). Below is my already submitted comment for the DEIS at https://www.arizonaregionalairspaceeis.com/, and almost all of the points overlap with the 492 beddown DEIS, EXCEPT there might be a few nuisance differences, such as the page numbers refering to the https://www.arizonaregionalairspaceeis.com/ DEIS, and the 492 beddown provided more percent annoyed data, but still fell short of using the new more thorough FAA 2021 percent annoyed data. However, the overall concepts arguments on the large points mentioned can easily be extracted from this. 492BD DEIS omitted the graph of the newer 2021 data, but acknowledged its existence Arizona SUA expansion DEIS comment below—almost all of it doubles as comment for 492 beddown. See "NOTE" fo more detail. **NOISE** **1) DEIS uses old, very questionable noise data, and OMITS newer more reflective and comprehensive data:** The DEIS used old and questionable noise data from 1992 (pg. 3-28)—regarding percent annoyed at DNL levels. The data	N7	Comment references page numbers and text in a separate and distinct EIS and is not relevant to the 492 SOW Beddown DEIS. Page 3-28 of the 492 SOW Beddown DEIS shows noise contours. The 492 SOW Beddown DEIS states that DNL correlates positively with annoyance, and Noise Supporting Document Section 1.3.1 details several studies on annoyance, including the FAA Neighborhood Environmental Survey. The recent FAA study suggests that people are currently more likely to represent themselves as being highly annoyed than was indicated in older social surveys when exposed to the same aircraft DNL.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		was updated in 2021 using a more comprehensive and aviation-specific study, and found to be insanely more severe—that is insanely higher percent annoyed that data in DEIS. Updated noise data: https://www.gao.gov/assets/gao-21-103933.pdf (pg. 24); Compare to DEIS (pg. 3-28). The data used from 1992 has a number of issues including but not limited to: -Six data sets excluded from five separate studies "because they did not show a significant correlation between da-night average sound level and the percentage of the population reporting to be annoyed (%HA)." -53 of 453 data points removed "This exclusion resulted in a loss of 53 data points (12% of the original data points, leaving 400 data points as the new total." Additionally, was the decision impacted by stopping at the even psychological number of 400? It just seems suspicious that the data removal was stopped at the whole number of 400—because something like the should not influence data analysis. This used multiple times of noise data from a combination of aviation, railway, and traffic whereas the 2021 data was just aviation—suggesting it would be more accurate		
Saremi	W-7	Noted in the Finegold paper: "Noise from an aircraft overflight virtually surrounds a home, entering the living and sleeping areas through the roof and two or more sides of the dwelling, while street traffic noise enters predominantly through only one or two sides of the dwelling. This difference in sound exposure within a home is, typically, not accounted for, or discussed,in social surveys when researchers estimate the noise exposure of subiects." See: https://nwtteis.com/portals/nwtteis/files/references/ Finegold_1993_Community_Annoyance_and_Sleep_Disturbance.pdf	N8	In accordance with standard practices, the 492 SOW Beddown DEIS assesses community reaction (i.e., annoyance) based on calculated outdoor noise levels (see DEIS Section 3.2.2.1), and structural sound attenuation is not relevant to results. Potential speech interference, interference with classroom learning, and sleep disturbance results were calculated assuming 15 dB and 25 dB noise level reduction with windows open and closed, respectively (as stated in DEIS Section 3.2.2.2.1).
Saremi	W-7	While the 2021 data is vastly better, this method of using A-weighted DNL are correlating it to percent annoyed is flawed. This is because as I note below it's reasonable to expect different impacts based on the actual flight volume and flight numbers (1 flight at 114.4 dB vs. 100 flights at 94.4 dB). Additionally, the A-weighing erases a substantial portion of the low frequencies, so if you found a different noise source that lacked lower-frequencies it is likely to get a different percent-annoyed response for same DNL. In summary, this begs for numerous studies to be done to see if A-weighted DNL or even C-weighted DNL are consistent across a wide variety of types of noise, such as machine noises (aviation, vehicles, etc.) and other noise sources such as natural streams and waterfalls. These points need to be studies—observation, asking questions, and hypoheses/predictions, are the first steps of the scientific method, the next steps are experiments and tests—but the public does not have the authority to do such experiments nor the resources—so you should carry them out.	N9	The 492 SOW Beddown DEIS uses DAF-approved models and standard impacts assessment procedures, which are described in DEIS Section 3.2 and Noise Supporting Document Section 1.4. The positive correlation between noise levels and percentage of affected population highly annoyed has been studied extensively, as discussed in the response to Comment N7. As discussed in Noise Supporting Document Section 1.2, various frequency weightings are employed in DAF standard impact assessment methods to predict noise impacts. The prediction of annoyance due to subsonic aircraft operation noise using A-weighted noise levels (i.e., decibels adjusted to reflect frequencies heard most efficiently by human ears) has been standard practice for several decades. Prediction of other categories of noise impacts and/or impacts due to other noise sources is most accurately accomplished using other noise metrics, where appropriate.
Saremi	W-7	**2) DNL metric misleads and grossly misses real-world impacts:** Would you rather have: a) 1 flight at 114.4 DB or b) 100 flights at 94.4 DB? Both are considered the same impact in that they have equal DNL values of of 65 DB. I'd guess most would rather have 1 flight at 114.4 DB, since it impacts you once a day/night period rather than 100 times in a day/night period—constantly waking you up at night or disturbing you during the day… and that one major reason why DNL is such an inaccurate measure of noise impact—it misleads by allowing for dilution of impacts. The DNL data is from page 2 of https://www.gao.gov/assets/gao-21-103933.pdf DNL also allows for dilution of impacts by incorporating short duration high noise events into an area with otherwise lower noise, and gives the impression that the noise impacts aren't as bad as they are. Using DNL, especially for short term noise, is an extraordinary misuse of the metric as it dilutes and hides the short term noise impact, as well as hides potential for both short-term and long-term hearing and vestibular damage—- from the short-term exposures.	N10	As stated in Section 3.2 of the DEIS, the DNL metric is the preferred noise metric of the U.S. Department of Housing and Urban Development, FAA, USEPA, and DoD. The DNL metric is a time-averaged metric, which does not state the noise level at any particular time but instead reflects cumulative exposure to noise over a 24-hour period. Although the DNL metric has been designated the primary metric for assessment of noise impacts by several federal agencies, supplemental noise metrics are also used to provide a more complete picture of acoustic conditions. The 492 SOW Beddown DEIS makes use of supplemental noise metrics that describe levels associated with individual aircraft operations.
Saremi	W-7	**The noise will negate occupational workers adherence to 8-hour shift Recommended Exposure Levels by NIOSH, and thereby increase the odds of noise-induced hearing loss (NIHL).** NOISH's Recommended Exposure Limits (RELs): "The REL is based on exposures at work 5 days per week and **assumes that the individual spends the other 16 hours in the day, as well as weekends, in quieter conditions."** [Citing DNL values in response to this hides the very high level—greater than 85 and 100 dBA values people will be exposed to—which are reasonable to assume will negate their adherence to NIOSH's RELs during their work hours]. **The military aviation noise will not allow these workers to spent the other 16 hours and weekends in quieter conditions.** See: https://blogs.cdc.gov/niosh-science-blog/2016/02/08/noise/ This implies that NIHL is based on cumulative noise per time and has the DEIS addressed that they will substantially increase cumulative noise exposure? I think it's unlikely or if so it's most likely very inadequate. **A**	N11	As stated in Section 3.2.1.1 of the 492 SOW Beddown DEIS, workers in known high-noise exposure locations are required to wear hearing protection devices where applicable in accordance with regulations to minimize hearing loss risk. Per DoD policy, the 80 dB DNL noise contour is used to identify populations most at risk of potential hearing loss. Existing programs would minimize the risk of occupational hearing, and noise levels would remain well below levels at which off-base hearing loss is a concern under the Proposed Action Alternative.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		subset (~8%) of the population is a higher risk for noise-induced-hearing- loss (NIHL): "Occupational noise exposure limits are established to simplify the complex question of risk and protect as many workers as possible from the effects of noise. The NIOSH REL **is not designed to protect all workers from all hearing damage.** When setting this limit, NIOSH acknowledged that approximately **8% of workers could still develop hearing loss**. In order to protect the most sensitive 8% of the population, NIOSH recommends that hearing protection be worn whenever noise levels exceed 85 dB(A) regardless of duration. " [my bold/underline annotation] **Takeaway: Roughly 8% of population could get NIHL much easier than others.** See: https://blogs.cdc.gov/niosh-science-blog/2016/02/08/noise/		
Saremi	W-7	**Noise-induced damage of vestibular organs not covered** Noise-induced vestibular damage not covered in DEIS**:** -Vestibular organs (semicircular canals, utricle, and saccule) are in inner ear near the hearing organ -Studies suggest vestibular organs more sensitive to lower frequency sounds (e.g. aviation). -Numerous newer studies show casual (not correlation, but cause-effect) relationship of noise-induced vestibular damage -Hearing Protection Apparatus did not protect vestibular organs from noise in environment where it protected against hearing loss. -High magnitude impulse noise can damage cochlea and vestibular organs -Single noise exposure can cause vestibular organ damage -One study showed chronic exposure to 70 dB SPL (using weighing curves, this corresponds to 51 dBA) low-frequency noise caused impaired balance in mice. So if this corresponds to DNL 51 dB then for low-frequencies it is likely a health threat. The study also shows frequency-specific health effects of noise at equal dB SPL. The study is the one listed below titled "Chronic Exposure to Low Frequency Noise at Moderate Levels Causes Impaired Balance in Mice"; **Studies (includes brief points):** https://pubmed.ncbi.nlm.nih.gov/36093670/ (70% of workers exposed to occupational noise [which is typically low-frequency] had vestibular alterations ; 100% of control group had normal vestibular assessment) https://pubmed.ncbi.nlm.nih.gov/32074366/ "Exposure to Intense Noise Causes Vestibular Loss" https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3387207/ ("Chronic Exposure to Low Frequency Noise at Moderate Levels Causes Impaired Balance in Mice"; Equal decibel level—low-frequency noise group developed balance issues—high frequency noise group no symptoms) https://pubmed.ncbi.nlm.nih.gov/31576414/ "Here, we show that acute exposure to LFN [low-frequency noise] at 100 Hz, 95 dB, but not at 85 dB or 90 dB, for only 1 h caused imbalance in mice" https://pubmed.ncbi.nlm.nih.gov/31875485/ "Intense noise exposure alters peripheral vestibular structures and physiology" "These data suggest that a single intense noise exposure may impact synaptic function in calyx-only terminals in the striolar region of the sacculus."	N12	As noted in Section 3.2.2 of the 492 SOW Beddown DEIS, the propeller-driven OA-1K and MC-130J aircraft that would bed down at Davis-Monthan AFB under the Proposed Action Alternative would be substantially less loud than several aircraft types currently operating in the local area. For example, OA-1K and MC-130J aircraft are less loud than the A-10 aircraft that are currently based at Davis-Monthan AFB when operating in equivalent configurations at equivalent distances. The intensities and durations of noise generated by OA-1K and MC-130J aircraft would be well below levels and durations at which vestibular effects have been observed. Text discussing the potential for vestibular effects has been added to Section 1.3.6 of the Noise Supporting Document and to Section 3.2.1.1 of the 492 SOW Beddown DEIS.
Saremi	W-7	https://pubmed.ncbi.nlm.nih.gov/32978359/ "Three out of five cases displayed little or no hearing loss, indicating that vestibular function is more at risk than hearing acuity to continuous noise exposure in dental settings." "Exposure to loud noise in dental laboratories severely impacts the functioning of the vestibular system of the inner ear more than the cochlea." [Note: Dental noise is low-frequency] https://pubmed.ncbi.nlm.nih.gov/37203123/ "Noise can lead to damage to both auditory and vestibular functions" https://pubmed.ncbi.nlm.nih.gov/32523903/ "We have documented the possibility of vestibular lesion, along with cochlear damage, related to chronic acoustic trauma." https://pubmed.ncbi.nlm.nih.gov/22568995/ "These findings are consistent with previous studies that suggest that the sacculocollic pathway may be susceptible to noise-related damage" https://pubmed.ncbi.nlm.nih.gov/26970474/ "These results suggest that noise exposure not only causes hearing loss, but also causes substantial damage in the peripheral vestibular system in the absence of immediate clinically measurable vestibular signs. These peripheral deficits, however, may lead to vestibular disorders over time." https://pubmed.ncbi.nlm.nih.gov/36742751/ "Vestibular Hypersensitivity in Patients with Chronic Noise Exposure" https://pubmed.ncbi.nlm.nih.gov/37849955/ "Peripheral vestibular loss in noise- exposed firefighters" https://pubmed.ncbi.nlm.nih.gov/1733458/ "It concludes that the verdict must be "not proven"--that is, although such damage is possible, the evidence is not strong enough to regard it as probable." [1992 review study here, before the emergence of better done studies above, including newer controlled studies above. It's also a subjective opinion Shows the	N13	See response to Comment N12.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		importance of relying on newer studies in acoustic damage, as more evidence has emerged, as the pool studies is limited all together, and especially pre-2000] https://pubmed.ncbi.nlm.nih.gov/34629003/ " This study demonstrated that HPAs [Hearing Protection Apparatus] do not protect the vestibular system but protect the hearing system in the inner ear from the harmful effects of noise." [Since hearing protectors are much less effective at under 125Hz low frequencies, it is reasonable to assume low-frequency noise likely contributed the most to the vestibular loss. Additionally conventional hearing tests only go down to 250Hz,so who knows what effects on hearing this noise has below that.] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7986451/ "The Effect of Noise Exposure on the Vestibular Systems of Dental Technicians" —"All test subjects experienced some form of vestibular impairment, including benign paroxysmal positional vertigo (BPPV), endolymphatic hydrops (Meniere disease), or a combination of both. Three out of five cases displayed little or no hearing loss, indicating that vestibular function is more at risk than hearing acuity to continuous noise exposure in dental settings." https://pubmed.ncbi.nlm.nih.gov/37497526/ "Balance beam crossing times are slower after noise exposure in rats" https://pubmed.ncbi.nlm.nih.gov/29118200/ "Vestibular short-latency evoked potential abolished by low-frequency" https://pubmed.ncbi.nlm.nih.gov/37767687/ "Noise-induced damage in the zebrafish inner ear end organs: evidence for higher acoustic sensitivity of saccular [Saccule is part of the vestibular organs] and lagenar hair cells" https://pubmed.ncbi.nlm.nih.gov/38440558/ "We highlight the importance of assessing the effect of noise exposure on vestibular function, especially among those prone to occupation-related vestibular loss." https://pubmed.ncbi.nlm.nih.gov/30205364/ "Inner Ear Damage by Firecracker Trauma"…."This blast injury simultaneously damaged the cochlea, saccule and utricle [saccule and utricle are vestibular organs], but spared the semicircular canals, indicating that blast exposure potentiates the adverse effect of noise exposure on both cochlear and vestibular partitions." [The cumulation of all these studies and observational data suggest vestibular organs are more sensitive to low-frequency noise, which is characteristic of aviation sonic booms, so I would expect worse damage to the vestibular organs from them.] https://pubmed.ncbi.nlm.nih.gov/23143507/ "Sequence of vestibular deficits in patients with noise-induced hearing loss" https://pubmed.ncbi.nlm.nih.gov/18936359/ "The saccule [saccule is a vestibular organ] can exhibit temporary or permanent functional loss resembling hearing threshold shifts in guinea pigs following noise exposure." https://pubmed.ncbi.nlm.nih.gov/35325777/ "Our study demonstrates not only that noise-induced hearing loss is frequency-dependent but also that the degree of hearing loss is affected by sex in zebrafish, emphasizing the need to consider sex in NIHL studies." "Moreover, the number of hair cells remarkably decreased in the rostral region of the saccule, after exposure to 1 kHz and white noise, whereas zebrafish exposed to 200 Hz noise showed a decrease in hair cells in the caudal region. " https://pubmed.ncbi.nlm.nih.gov/24282646/ "Sound sensitivity of the saccule [saccule is a vestibular organ] for low frequencies in healthy adults" https://pubmed.ncbi.nlm.nih.gov/38961203/. ("Blast wave exposure, a leading cause of hearing loss and balance dysfunction among military personnel, arises primarily from direct mechanical damage to the mechanosensory hair cells and supporting structures or indirectly through excessive oxidative stress.") https://pubmed.ncbi.nlm.nih.gov/38440558/ ("A literature search identified only three studies involving 137 patients (mean age: 44.4). Semicircular canal deficit was found in 50.4% of the included participants, with lateral canal predominantly affected (71%). We highlight the importance of assessing the effect of noise exposure on vestibular function, especially among those prone to occupation-related vestibular loss" https://pubmed.ncbi.nlm.nih.gov/39245964/ ("Self-reported assessment of spatial orientation does not robustly correlate with objective peripheral vestibular function." https://pubmed.ncbi.nlm.nih.gov/30218385/ "Canal deficit was detected in 20 (55.5%) of 36 patients in the noise exposure hearing loss group and was detected in 2 (6.6%) of 30 participants in the control group. There was significant loss of capacity for VOR gain in patients with noise exposure hearing loss." "In the present study we found that exposure to noise can cause vestibular dysfunction. " Regarding exposure time: Following NIOSH and OSHA recommended exposure levels methodology, where NIHL hearing loss is a function of time of exposure and sound level, it is reasonable to assume that similar is true for vestibular		

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		damage (in fact the mice studies point to this showing that 95db for 1 h of low- frequency caused damage, and 1 month of 70 dB SPL low-frequency caused damage—https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3387207/, and https://pubmed.ncbi.nlm.nih.gov/31576414/), so it would be incorrect to disregard these studies on the basis that they don't precisely match the noise exposures the public will face, but it would make more sense to use them as a guide to study your noise amounts and see if they cause vestibular damage— such doing the same type of studies on mice and on people exposed to high levels military aircraft noise.		
Saremi	W-7	**2 New studies listed at end of this PDF file** **Usage of A-weighed decibels hides acoustic impact:** -Potential for ear damage (e.g. vestibular damage) seems to depends on the unweighted acoustic energy according to newer studies listed above. -A-weighted decibels erases portions of the lower-frequencies that contribute to vestibular damage -A-weighted does not accurately reflect the amount of noise, and ease by which noises, enter homes. You can have two noises with the same A-weighted decibel level but the lower-frequency noise will more easily penetrate walls and wake up or disturb occupants. -It should be studied if A-weighted decibels reflect hearing sensitivity for people with vestibular impairment, compared to those without it. And, additionally it should be studied what percentage of the population has vestibular impairments as the studies above suggest a significant portion.	N14	See response to Comment N12.
Saremi	W-7	**Aviation noise is practically impossible to soundproof:** Noise from aviation (sub-100Hz low-frequency) very easily travels for many many miles, easily goes through multiple layers of wall and insulation. C-130s at higher altitude can be heard over 20 miles away indoors under the right conditions allowing noise to travel well beyond the boundary of the MOAs. As a reference, a study on Navy growler jet noise found "Jet noise was heard at depths of 30m (approx. 100 feet) below the sea surface, at noise levels above thresholds known to trigger behavioral changes in fish, seabirds and marine mammals, including orca whales, which are known to inhabit the area." It was also noted " and can be heard deeper underwater than previously estimated." Source: https://www.npca.org/articles/2776-new-studies-find-navy-growler-jet- noise-around-olympic-national-park	N15	Audibility of aircraft on low ambient noise level conditions is discussed in 492 SOW Beddown DEIS Section 3.2.2.2.2. Noise levels underwater, which are the subject of the referenced study, are not relevant to impacts of the Proposed Action Alternative.
Saremi	W-7	The Navy Growler Jets are likely comparable or lower in sound levels that Air Force jets proposed here. So 100 feet of water—think about how much mass that it is and how practically impossible it would be to match that level of mass in trying to build a soundproof home—and still caused effects on the animals! Even the most soundproof places in the world cannot completely block this kind of noise. I've been told first-hand by a well-known anechoic chamber. When I asked if the "chamber was completely soundproof against the noise and vibration from low flying helicopters, louder motorcycles, and all other low- frequency dominant outside noises? " the answer implied that it was not. Chart here shows the huge discrepancy in ability to sound-reduce sub-100Hz noise compared to higher frequencies shown in graphs on this website: https:// www.tmsoundproofing.com/decoupling-explained.html —even with these advanced, extremely expensive, and likely structure-limiting soundproofing techniques (i.e. the mobile homes that are common in rural areas likely cannot accommodate this kind of renovation due to structural limitations.) **Noise pollution affects sleep even if you don't consciously wake up:** "There are people who live on busy roads who say things like, 'I don't even hear the noise.' But even if you don't hear it, or you don't consciously notice it, it's potentially still harmful to your health. I think that was the biggest surprise to me when I started to look into this research." Source: https://www.hsph.harvard.edu/news/features/noise-can-harm-your- health-even-if-you-sleep-through-it/ **Impulse noise/sonic boom effects on ear** Both OSHA and NIOSH have a peak impulse noise limit of 140dB. The sonic booms noise data in the DEIS is not in DB so doesn't allow for the public to cross-reference these values easily. **Source for OSHA:** https://www.osha.gov/laws-regs/regulations/ standardnumber/1910/1910.95	N16	The 492 SOW Beddown DEIS Proposed Action Alternative does not include jet-powered aircraft; this comment is apparently intended for a separate and distinct EIS that proposes changes to jet aircraft operations.
Saremi	W-7	Additionally, there is no analysis of the potential for vestibular organ damage from this noise. See noise-induced vestibular damage study list above where I reference this topic in bold. Also I have highlighted a few of those studies below that are related to intense and/or impulse noise causing noise-induced vestibular damage—including just one exposure. https://pubmed.ncbi.nlm.nih.gov/38961203/. ("Blast wave exposure, a leading cause of hearing loss and balance dysfunction among military personnel, arises primarily from direct mechanical damage to the mechanosensory hair cells	N17	See response to Comment N12 regarding vestibular damage. The 492 SOW Beddown DEIS Proposed Action Alternative does not involve aircraft that have the capability for supersonic flight. The 492 SOW Beddown DEIS does not discuss sonic booms; this comment appears to have been made regarding a separate and distinct EIS.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		and supporting structures or indirectly through excessive oxidative stress.") https://pubmed.ncbi.nlm.nih.gov/30205364/ "Inner Ear Damage by Firecracker Trauma"…."This blast injury simultaneously damaged the cochlea, saccule and utricle [saccule and utricle are vestibular organs], but spared the semicircular canals, indicating that blast exposure potentiates the adverse effect of noise exposure on both cochlear and vestibular partitions." https://pubmed.ncbi.nlm.nih.gov/32074366/ "Exposure to Intense Noise Causes Vestibular Loss" https://pubmed.ncbi.nlm.nih.gov/31875485/ "Intense noise exposure alters peripheral vestibular structures and physiology" "These data suggest that a single intense noise exposure may impact synaptic function in calyx-only terminals in the striolar region of the sacculus." [Saccule is one of the vestibular organs] With the sun's UV rays it's customary to consider the impact on inanimate surfaces, BUT also on the skin. However with sonic boom, noise there seems to be only a consideration of the impact on inanimate objects aside from the use of DNL metrics which dilute away the short-duration massive acoustic energy. **Focused Sonic Booms pose even greater risk for hearing and vestibular damage** It's acknowledged that **focused sonic booms can be 2- 5 times greater overpressure** but there is no mention of the decibel levels. As noted above a single intense exposure can cause damage and these may be above OSHA and NIOSH's impulse noise ceiling. Additionally I will make the reasonable assumption that the sonic boom PSF data given assumes constant acceleration, flight in a straight line, which of course are both unrealistic and inconsistent with real world combat environment training style. The sonic boom PSF noise does not say at what angle the plane is to generate those noise values, as that impact the levels. The data on structures done by the military are bias. Additionally, they are vary vague because the word "structure" can emphases different type of structures and we don't know what kind of structures were used in the testing? Different materials can respond differently to overpressures, and there was a very brief and vague touch on that only rather than an in-depth serious analysis. Also it focuses on 2 PSF cutoff when that is unreasonable to assume for military sonic booms. **It's also unreasonable to assume people's homes especially in these rural communities are in "good condition"—a term that isn't even defined nor told to us what percentage of homes in these rural communities would even fall under that standard?** The rural areas of Cochise County have a lot of unique builds, mobile and portable homes, and the effects could be different but no analysis on that. "Sonic boom intensity varies upward or downward from the values in **Table 7.2-1** for aircraft executing maneuvers while flying at supersonic speeds. Plotkin (1990) noted that aircraft maneuvers may create "focus booms" with overpressures 2 to 5 times the magnitude of steady state sonic booms. Due to the many variables involved in the training use of the existing and proposed MOAs/ATCAAs, it is impossible to predict when and where sonic booms or focus booms may occur. "-DEIS Appendix Sonic boom section		
Saremi	W-7	**Nationwide geographic cumulative impact on availability of quiet places** The existing military airspaces combined with FAA policies for civilian flights leave no where to escape aviation noise pollution, Also, they make it nearly impossible to find areas with low-level civilian aviation noise pollution and simultaneously outside of military training airspace—these areas are largely public land or huge parcels (500+ acres each) owned by corporations (mining, pipelines, etc.), huge agricultural businesses, etc. Effectively, this makes it nearly impossible to find very low aviation pollution noise, and overall noise pollution (i.e. mining companies owning land in those areas) areas to live in. These factors should have and should be considered when devising or altering any airspaces, including military airspace.	N18	Ambient noise levels, including extremely low levels measured within the region of influence (ROI), are discussed in 492 SOW Beddown DEIS Section 3.2.1.3. The potential audibility and effects of aviation noise in low ambient noise level areas are discussed in DEIS Section 3.2.2.2.2.
Saremi	W-7	**The "no change in noise"claims for areas are false** -They don't consider sound frequency it's been shown equal sound frequencies at same db cause vestibular damage at low frequencies (https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC3387207/) . Also if this conclusion was based on DNL it's a false analogy because DNL metric dilutes the impacts. The correct wording would be "no change in DNL" which is markedly different than "no change in noise." I have already provided evidence for how poor DNL is above.	N19	See responses to Comment N10 regarding use of the DNL metric and Comment N12 regarding potential for vestibular effects of aircraft noise.
Saremi	W-7	Increased short-term noise when multiple aircraft flying together: The DEIS needs to disclose the increased noise values under the common occurrence when multiple fighter jets are flying together compared to single alone values which are likely what is in the DEIS.	N20	The 492 SOW Beddown DEIS Proposed Action Alternative does not involve jet-powered aircraft; this comment is apparently intended for a separate and distinct EIS that proposes changes to jet aircraft operations.
Saremi	W-7	**More shortcomings on noise data in DEIS:** -No Spectrum analysis. As I just noted above sound frequency-matters when it comes to noise-induced vestibular damage (https://www.ncbi.nlm.nih.gov/pmc/ articles/PMC3387207/). Additionally sound frequency matters when it comes too soundproofing capability. It also matters when it comes to how far a noise travels and how easily it penetrates structures. -There should be a section to discuss how often the noise will be audible inside a home, particularly the types of homes that are common in the rural areas such as mobile homes. And, to what level the noise will be audible in the home.	N21	See Response to Comment N12.

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		-Given the newer findings on noise-induced vestibular damage, a lot of the older noise studies may not be reliable, especially if they did not do an in-depth analysis of potential vestibular loss. So citing older studies should be scrutinized to a greater degree, and cross-reference with newer science shown in newer studies.		
Saremi	W-7	**Regarding noise and sleep** "There is clear evidence that sleep disturbances are associated with health deterioration, and growing evidence that exposure to noise pollution, around- the-clock, negatively affects health, too." https://pmc.ncbi.nlm.nih.gov/articles/PMC4608916/ And since the noise is very low-frequency it easily pierces walls and is audible inside.	N22	Predicted changes in the likelihood of sleep disturbance were assessed in the 492 SOW Beddown DEIS and results are listed in Section 3.2.2.2.1 for windows-open and windows closed conditions. The description of the results of the analysis includes a statement that the results assume standard values of 15 dB noise level reductions for windows open and 25 dB noise level reductions for windows closed, respectively.
Saremi	W-7	**Increased noise under particular environmental conditions:** Report should cover noise information when clouds, which are common during monsoon season but also existent other times, coupled with humid air, and also under conditions where artificial clouds are created by aircraft releases. These conditions can increase the noise. Same should be done for noise while hiking in canyons. Again this is especially important here since the very high unweighted acoustic energy of these flights have potential to cause ear damage, and simply 1 or 2 decibel differences likely make a significant difference in this potential.	N23	Flights by propeller-driven aircraft, which are a component of the 492 SOW Beddown DEIS Proposed Action Alternative, do not pose a substantial risk of hearing loss, as discussed in Section 3.2.1.1 of the DEIS. Text has been added to 492 SOW Beddown DEIS Noise Supporting Document Section 1.4.1 stating that, in accordance with DAF standard practice, noise levels presented in the 492 SOW Beddown DEIS were calculated for average conditions as measured during the month with acoustically median conditions. Section 1.4.2 of the Noise Supporting Document for the DEIS stated that "The weather conditions for the airfield modeling were assumed to apply to the modeled flight areas."
Saremi	W-7	**Increased noise with multiple aircraft flying together:** I forgot if I already mentioned this, but when there are multiple aircraft flying together, how much does the noise increase? As noted above since we are dealing with dangerous levels of noise knowing these little differences is important as the small marginal differences can be the difference between ear damage or not.	N24	Text has been added to Section 1.4.2 of the Noise Supporting Document discussing noise levels typically experienced during overflight of an aircraft formation. When multiple aircraft fly in formation, they are typically either in-trail or displaced laterally from the flight lead such that the resulting maximum overflight noise level for a formation flight (i.e., L_{max}) does not typically exceed that of single-ship sortie.
Saremi	W-7	-CDNL misleads when used for short-term noise impacts such as sonic booms (e.g. pg. 3-24 of DEIS)) or other short-term subsonic noise. This is because you can take dangerous impulsive supersonic or subsonic noise levels and dilute their impact and health threat by using DNL—it both hides the health impacts and other impacts.	N25	The 492 SOW Beddown DEIS Proposed Action Alternative does not involve aircraft that have the capability for supersonic flight. The 492 SOW Beddown DEIS does not discuss sonic booms; this comment appears to have been made regarding a separate and distinct EIS.
Saremi	W-7	Bottom of pg. 3-24 is incorrect regarding noise-induced hearing loss (NIHL) as it uses DNL. Even NIOSH and OSHA acknowledge via their recommended exposure levels (RELs) for workplace noise, that NIHL is a function of dB level and time, and as result they don't use DNL otherwise it would cover up potentially dangerous noise events that wouldn't adhere to their RELs, which is effectively what the DEIS is doing—covering up the potentially dangerous noise exposures by using DNL based metrics, or other metrics that dilute high amplitude noise exposures. -Another example of noise metrics that downplay the impacts (e.g pg. 3-24) is L50, as it basically allows you to make enormous amounts of noise for 12 hours of the day, and then the other 12 hours the noise can be very low. It doesn't tell you to what degree above the base point noise—you could be 1 dB above or 100dB above, so it's extremely misleading and unsubstantial in its noise information. -Pg. 3-30	N26	Page 3-34 of the 492 SOW Beddown DEIS does not mention noise-induced hearing loss (NIHL). This comment appears to have been made regarding a separate and distinct EIS.
Saremi	W-7	In multiple areas of the DEIS it mentions that experiencing 100 ft. AGL (and possibly other sub-1000'AGL overflights?) overflights would be relatively rare. I don't buy that, because I know in the Douglas, Az countryside there is a C130 that flys very low often and usually around the same vicinity. I've had it fly either directly over or very close to directly over a number of times. This also suggests that if they fly the same routes often that depending on specific locations, some people may experience far greater exposure than others—this should be thoroughly investigated and assessed for noise exposure. This also downplays the health impacts of just one exposure by writing it off as infrequent (alleging).	N27	The 492 SOW Beddown DEIS does not make any references to flights at 100 feet AGL. This comment appears to have been made regarding a separate and distinct EIS.
Saremi	W-7	On page 3-32 the number of very low overflights should be an absolute number not a percentage, because it is the absolute number that determines the noise injury risk and impact. For example if someone has 10,000 flights over them and 8% are 500 ft. Or lower that is still 800 flights at those very extreme noise levels. But if only 1000 flights, then it's 80 flights. So using percentage doesn't tell the noise impact risks. Also are these numbers per sortie or per flight pass? Because one sortie, such as C130 doing circles ,could result in numerous low levels passes and again would be extremely downplaying and misleading if you use sorties rather than the actual amount of flight passes.	N28	Page 3-32 of the 492 SOW Beddown DEIS does not mention low-altitude overflights and does include numbers of potential speech interference events near Davis-Monthan AFB using absolute numbers. This comment appears to have been made regarding a separate and distinct EIS.
Saremi	W-7	The noise data should combine the noise generated from Military Training Routes (MTRs) that overlapping horizontal dimensions (in the sense they are both airspace over the same ground, although have different vertical dimensions) or close to overlapping since the noise travels outside the airspaces. Otherwise it doesn't give the full impact.	N29	As stated in 492 SOW Beddown DEIS Section 3.2.2.2, the occasional use of military training routes would not result in measurable increases in DNL on the ground below these routes. Furthermore, the occasional aircraft operations in the low altitude tactical navigation area would be distributed across a very large area, such that any one location on the ground would rarely be

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
				overflown and operations would not result in appreciable changes in DNL at any point on the ground.
Saremi	W-7	The high amplitude military noise proposed is inharmonious with the remote backcountry wilderness areas in these MOAs. It doesn't make sense to do it here as these levels of noise are higher amplitude and louder than what people in noisy cities are exposed to—and so effectively reduces the space available to move away from high amplitude artificial noise because now both the city/town ares and remote areas have these with the ongoing military training airspaces expanses, as well as presently, but it's just getting worse and worse.	N30	As noted in 492 SOW Beddown DEIS Sections 3.2.2.2.1 and 3.2.2.2.2, the propeller-driven aircraft proposed for beddown (i.e., OA-1K and MC-130J) generate noise levels that are less than or equal to noise levels generated by aircraft currently operating at Davis-Monthan AFB when operating at equivalent distances and configurations. The DEIS acknowledges that aircraft noise could be annoying at times and is more likely to be noticeable in areas where ambient noise levels are very low, as is the case in remote portions of the ROI.
Saremi	W-7	DEIS is arguably inconsistent with it's assertions about DNL. It says on page 3-23 "The DNL is an A-weighted cumulative noise metric that measures noise based on annual average daily aircraft operations. " which can suggest it shouldn't be used for short term high noise events yet the DEIS does use it for short term noise events such as sonic booms (CDNL), and I wouldn't be surprised if for short term subsonic noise events too.	N31	Page 3-23 of the 492 SOW Beddown DEIS does not include description of the DNL metric. This comment appears to have been made regarding a separate and distinct EIS.
Saremi	W-7	There are 2 new additional noise-induced vestibular impairment studies from late 2024 in addition to the list above on page 4 through page 9. https://pubmed.ncbi.nlm.nih.gov/39618903/ "This study provides evidence of the simultaneous occurrence of NIHL and vestibular dysfunction. In other words, the results support the role of noise as a risk factor for the development of vestibular dysfunction in textile workers." and https://pubmed.ncbi.nlm.nih.gov/39597794/ "A relationship between occupational exposure to noise and/or vibrations and the presence of vertigo was observed. Protective and preventive measures could help prevent the occurrence of some diseases involving vertigo."	N32	See response to Comment N12.
Scott	W-6	By compounding, establishing, and consolidating circumstances indexed in these comments, the 492 SOW Beddown would sharply increase risks of adversarial strikes by transnational criminal organizations, domestic and foreign terrorists, and foreign national defense departments, to Davis-Monthan Air Force Base, the Tucson Metro Region, and communities in proximity to the Barry M. Goldwater Range, the Sells Military Operations Area and other regional MOAs.	GC3	The existing security infrastructure at Davis-Monthan AFB would remain in place after the 492 SOW Beddown is complete.
Scott	W-6	In proposing the 492 SOW Beddown at Davis-Monthan AFB, and throughout the attendant DEIS, the DAF fails to take a hard look at the impacts which would be risked by establishing a confluence of the following circumstances: Installation of the 492 SOW, proximal to the U.S./Mexico border and border communities, and in juxtaposition to transnational criminal networks, would establish regional risks related to threatened and contested armed conflict between U.S. Special Operations forces and transnational criminal organizations based in Mexico, which are near-peer competitors to U.S. Special Operations forces – - The incoming appointed U.S. Border Czar, Tom Homan, has made public announcements that the incoming U.S. Federal Administration will use United States Special Operations to eliminate transnational criminal organizations based in Mexico, although Mexico's president Claudia Sheinbaum rejects the plan.	GC4	See response to Comment GC3.
Scott	W-6	For accurate public review and comment, immediate clarification is needed: Does the DAF intend for military aircraft to ever train with AI-enabled surveillance & targeting technology in any of the MOAs proposed for SUA Optimization, and will AI-enabled un-crewed military aircraft ever be operated in any of the MOAs proposed for SUA Optimization?	GC5	The 492 SOW Beddown does not include using military aircraft to train with AI-enabled surveillance and targeting technology in any of the airspace proposed for use. No part of the Proposed Action Alternative for the 492 SOW Beddown includes the operation of AI-enabled uncrewed military aircraft.
Scott	W-6	The 492 SOW Beddown DEIS fails to provide comprehensive assessment of how the 492 SOW Beddown, by compounding, establishing, and consolidating circumstances indexed in these comments, would increase risks of adversarial strikes by transnational criminal organizations, domestic and foreign terrorists, and foreign national defense departments, against and/or affecting Davis-Monthan Air Force Base, the Tucson Metro Region, and communities in proximity to the Barry M. Goldwater Range, the Sells Military Operations Area and other regional MOAs.	GC6	See response to Comment GC3.
Scott	W-6	We request that the DAF revise the 492 SOW Beddown DEIS to provide a comprehensive assessment of impacts substantiated in these public comments, make necessary clarifications for public review, disclose withheld interagency comments for any supporting proposal(s), conduct new in-person hearings in all affected MOAs, and provide additional periods for public comment.	GC7	As part of the EIS process, the DAF has developed responses to substantive comments and included those responses in the Public Outreach appendix (Appendix A). The DAF has made the necessary clarifications and has included substantive interagency comments received during the 45-day DEIS review and comment period. In addition, the DAF hosted two public hearings during the 45-day review period, as discussed in Section A.2.1.
Scott	W-6	The extended-regional precedent of extraordinary contamination by AFSOC is exacerbated by a July 2024 DAF press release announcing that internal DAF research shows at least 93% of DAF installations, including Davis-Monthan AFB, have been contaminated with PFAs and other poisonous chemicals that are federally known to: -impact bone microarchitecture; -disrupt the biosynthesis and secretion of thyroid hormones;	HW3	The DAF is committed to address the risks from PFAS contamination. To date, the DAF has spent more than $2.2 billion to identify and mitigate PFAS contamination. At Davis-Monthan AFB, due to the preliminary results of the Remedial Investigation for AFFF, as well as initial results from ADEQ's CTPP, a Non-Time Critical Removal Action was approved to begin treating the PFAS impacted drinking water aquifer in Tucson that extends from Davis-Monthan

Table A-7. Responses to Draft EIS Substantive Comments (continued)

Submitter Name	Commenter ID	Public/Agency Comment	Response ID	Response
		-persist in the environment and accumulate in organs; -accumulate in the organs of females up to three times more than in the organs of males; -influence development in a sex-specific manner, affecting sex differences in emotional and cognitive behaviors; -impact estrogen, androgen, or glucocorticoid activity; -contaminate endocrine sex by interfering with hormone signaling and reproductive function; -cause developmental and fertility problems, infertility, and hormone-sensitive cancers in both men and women; and -negatively impact the reproductive health of future generations.		AFB. An Environmental Services Agreement was entered into between the DAF and ADEQ to fund construction, operation, and maintenance of a demonstration-level PFAS removal facility until the Remedial Investigation is completed.
Spake	WF-1	How do these emissions break down? Heat (Sun)? Rain? Time?	AQ1	Emissions from aircraft landing and takeoff (LTO) operations would deposit onto the ground or bodies of water, but this effect would decrease with distance from Davis-Monthan AFB, as the atmospheric concentration of these pollutants would decrease with distance from Davis-Monthan AFB. Emissions of gaseous pollutants in the form of VOCs, CO, NOx, and SOx typically marginally deposit onto bodies of water or the ground. NOx and SOx often break down to nitric and sulfuric acid compounds. Some VOCs could evaporate back to the atmosphere, while others could dissolve in water, depending on their solubility and chemical makeup of the water (for example, pH). Microorganisms and sunlight can also degrade some VOCs in water. Minor amounts of pollutants in the form of solid particulates would also deposit onto the ground and surface bodies of water. The main constituents of these particulates include elemental carbon, organic compounds, sulfur, and heavy metals. Other than organic compounds and sulfur, these materials are more stable and would react/transform slowly with other materials in water. The rate of these pollutant transformations would increase with increasing temperature.
Spake	WF-1	What daughter compounds to these emissions break down to? Non-toxic?	AQ2	See response to Comment AQ1.
Spake	WF-1	Will these emissions that land on dirt/terrain break down or will they seep into the groundwater?	WQ1	See responses to Comments AQ1 and AQ2. The atmospheric dispersion and natural degradation of pollutants from aircraft emissions would result in only a small percentage of emissions that potentially could be transported into groundwater. The emissions from the proposed OA-1K and the MC-130J aircraft would be similar to the emissions that currently result from the HC-130J, the A-10s, and other aircraft that currently operate at Davis-Monthan AFB. As stated in Section 3.3.2.1.1 of the DEIS, the emission reductions associated with the Phase 2 A-10 retirement would result in beneficial impacts.
Trujilo	PH-6	I was just curious what Hurlburt – Hurlburt in Florida no longer provides that there's a need to co-late -- co-locate here in Arizona. I saw where you pointed out the A-10 is being retired and that you're consolidating sour- -- resources. So is there something in particular about Hurlburt that no longer meets the Air Force need at this time? Thank you.	PH2-6Ch2	As described in Section 1.3 of the 492 SOW Beddown DEIS, the 492 SOW is currently located at Hurlburt Field with several other AFSOC assets, which presents challenges involving mission support, physical infrastructure, and weather. There is nothing in particular at Hurlburt Field that does not meet the DAF needs. Rather, due to the number of ongoing missions at Hurlburt Field, shared training airspace and ranges often require deconfliction. In addition, facility space is also an issue that could limit the ability of units to deploy. Lastly, AFSOC believes that diversifying their assets and people to different geographical locations reduces the risk that a large weather event could cause at one location.

[a] *Source*: DAF. (2023a). *Final Programmatic Environmental Assessment [PEA] for Testing and Training with Defensive Countermeasures*. Department of the Air Force. December.

[b] *Source*: Winchell, L. J., Ross, J. J., Wells, M. J., Fonoll, X., Norton Jr, J. W., & Bell, K. Y. (2021). Per and Polyfluoroalkyl Substances Thermal Destruction at Water Resource Recovery Facilities. A State of the Science Review. *Water Environment Research*, *93*(6), 826-843.

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