



B-21 Main Operating Base 1 (MOB 1) Beddown at Dyess AFB, Texas or Ellsworth AFB, South Dakota

Final Environmental Impact Statement EXECUTIVE SUMMARY

March 2021



This Executive Summary of the *Final Environmental Impact Statement for B-21 Main Operating Base 1 (MOB 1) Beddown at Dyess AFB, Texas or Ellsworth AFB, South Dakota* (the “Final EIS”) provides an overview of the in-depth analysis of the Proposed Action that is presented in the full Final EIS.

A CD containing the Final EIS and this Executive Summary is provided inside the back cover of this Executive Summary. The Final EIS is available at each of the public libraries listed below. In addition, an electronic copy of the Final EIS is available online at www.B21EIS.com.

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The EIAP provides an opportunity for public input on Air Force decision-making, allows the public to offer inputs on alternative ways for the Air Force to accomplish what it is proposing, and solicits comments on the Air Force's analysis of environmental effects.

Public commenting received on the Draft EIS allowed the Air Force to make better informed decisions. Letters or other written or oral comments provided may be published in the EIS. As required by law, comments provided have been addressed in the EIS and made available to the public. Providing personal information is voluntary. Any personal information provided was used only to identify a desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EIS or associated documents. Private addresses were compiled to develop a mailing list for those requesting copies of the EIS. However, only the names of the individuals making comments and specific comments are disclosed. Personal home addresses and phone numbers are not published in the Final EIS.

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Please direct any requests for information or other inquiries to:
Dyess AFB Public Affairs, (325) 696-4820 or after hours (325) 268-6554,
7bwpa@us.af.mil
or
Ellsworth AFB Public Affairs, (605) 385-5056 or after hours (605) 391-7436,
28bw.public.affairs@us.af.mil

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AGE	Aerospace Ground Equipment
AMU	Aircraft Maintenance Unit
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
BMP	best management practice
BOS	Base Operating Support
C&D	construction and demolition
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
dB	decibels
DNL	day-night average sound level
DoD	Department of Defense
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERP	Environmental Restoration Program
ESP	Explosive Site Plan
FAA	Federal Aviation Administration
FTU	Formal Training Unit
HAZMART	Hazardous Materials Pharmacy
INRMP	Integrated Natural Resources Management Plan
L_{dnmr}	onset-rate adjusted monthly day-night average sound level
MOA	Military Operating Area
MOB	Main Operating Base
MSA	Metropolitan Statistical Area
MSW	municipal solid waste
NA	not available
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
Ops	Operations
PFAS	per- and polyfluoroalkyl substances
POL	petroleum, oil, and lubricant
POV	Privately Owned Vehicle
PRIDE Hangar	Professional Results in Daily Efforts Hangar
PRTC	Powder River Training Complex
QD	quantity-distance
ROD	Record of Decision
ROI	region of influence
SHPO	State Historic Preservation Officer
SPCC	Spill Prevention, Control, and Countermeasures
SUA	Special Use Airspace
SWPPP	Storm Water Pollution Prevention Plan
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
WGF	Weapons Generation Facility

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EXECUTIVE SUMMARY

ES.1. INTRODUCTION (Final EIS Section 1.1)

The Department of Defense (DoD) is developing a new bomber aircraft, the B-21 “Raider,” which will eventually replace existing B-1 and B-2 bomber aircraft. The beddown of the B-21 will take place through a series of three Main Operating Bases (MOBs), referred to as MOB 1, MOB 2, and MOB 3. In this Environmental Impact Statement (EIS), the United States (U.S.) Air Force (USAF) is evaluating the proposed MOB 1 beddown of the B-21, which includes B-21 Operational Squadrons, a B-21 Formal Training Unit (FTU), and a Weapons Generation Facility (WGF). Decision-making associated with MOBs 2 and 3 will occur after a decision is made regarding MOB 1 and will be the subject of separate analysis in accordance with the National Environmental Policy Act (NEPA).

Through the USAF’s Strategic Basing Process (Air Force Instruction 10-503, *Strategic Basing*), the USAF determined the three MOB locations would be Dyess Air Force Base (AFB) in Texas, Ellsworth AFB in South Dakota, and Whiteman AFB in Missouri. Subsequently, the Secretary of the Air Force announced that the preferred strategic basing alternative for MOB 1 would be Ellsworth AFB. In accordance with NEPA, the USAF also identified Dyess AFB as a reasonable alternative for the MOB 1 beddown analyzed in this Final EIS. Refer to Section 2.2.1 (Screening Criteria Process for MOB 1) in the Final EIS for details on how the USAF chose Dyess AFB and Ellsworth AFB to be the alternative locations for MOB 1.

ES.2. PURPOSE OF AND NEED FOR THE PROPOSED ACTION (Final EIS Section 1.3)

The purpose of the Proposed Action is to implement the goals of the 2018 National Defense Strategy (DoD, 2018a) by modernizing the U.S. bomber fleet capabilities. The B-21 Raider is being developed to carry conventional payloads and to support the nuclear triad by providing a visible and flexible nuclear deterrent capability that will assure allies and partners through the United States’ commitment to international treaties.

The need for the Proposed Action is to support deterrence capabilities by basing the B-21 at an installation that can support USAF Global Strike Command’s MOB 1 mission. The B-21 will provide the only stealth bomber capability and capacity needed to deter, and if necessary, defeat our adversaries in an era of renewed great power competition. The installation will support training of crewmembers and personnel in the operation and maintenance of the B-21 aircraft in an appropriate geographic location that can provide sufficient airfield, facilities, infrastructure, and airspace to support the B-21 training and operations.

ES.3. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (Final EIS Chapter 2)

The Proposed Action is for the USAF to implement the beddown of the B-21 MOB 1. This beddown would include establishing B-21 Operations Squadrons and a B-21 FTU, constructing a WGF, developing new infrastructure, and increasing numbers of personnel to support and conduct B-21 aircraft operations.

The Final EIS considers two alternative locations for the MOB 1 beddown of the B-21 and evaluates impacts where training and operational activities would occur. Additionally, the No Action Alternative is evaluated.

ES.3.1 Commonalities (Final EIS Section 2.3)

The Proposed Action includes common elements that the B-21 would bring to, or require at, both candidate bases that would make them operationally ready. These commonalities are associated with personnel, airfield operations, airspace and range utilization, and the WGF.

ES.3.1.1 Personnel (Final EIS Section 2.3.1)

The full B-21 mission personnel complement required to execute the proposed B-21 mission would include pilot instructors, maintenance instructors, and contractor support personnel. Table ES-1 presents the estimated maximum number of personnel associated with establishing the B-21 mission at the MOB 1 installation. Since the B-21 MOB 1 proposal would eventually displace the personnel and aircraft associated with the B-1 mission, 3,747 personnel at Dyess AFB and 4,553 personnel at Ellsworth AFB would no longer be at each base. Therefore, the analysis of potential impacts from changes in end-state populations at each MOB 1 location considers both the incoming B-21 mission and personnel as well as the retiring B-1 mission and associated personnel.

Table ES-1. Personnel Associated With the Incoming B-21 Mission and End-State Personnel

Personnel	Number of Individuals for B-21 Mission under the Proposed Action	End-State Personnel at Dyess AFB	End-State Personnel at Ellsworth AFB
Military	3,500	6,014	4,860
Civilian	NA	665	930
Contractor	NA	NA	139
Spouses ¹	1,925	3,674	3,261
Children ²	2,275	3,745	4,553
Total	7,700	14,098	13,743

AFB = Air Force Base; NA = not available; USAF = U.S. Air Force

Notes:

1. Based on statistics in the 2018 Demographics Profile of the Military Community (DoD, 2018b), 55 percent of the USAF is married.
2. The number of children was estimated by assuming there are 1.2 dependents for each military family. The number of married USAF personnel was multiplied by 1.2 to get the total number of dependents (4,200). The number of spouses was subtracted from the total dependents to obtain the estimated number of children.

ES.3.1.2 Airfield Operations (Final EIS Section 2.3.2)

The annual estimated number of total aircraft operations is approximately 9,120 per year for all the squadrons (Operations and FTU), based on 94.5 sorties per month. Twenty percent of all sorties would be conducted between 10:00 p.m. and 7:00 a.m.

On average, approximately 3.15 sorties would be conducted per day, of which approximately 50 percent would be flown by students within the FTU and the other 50 percent by the Operations Squadrons.

ES.3.1.3 Airspace and Range Utilization (Final EIS Section 2.3.3)

The Final EIS also addresses the B-21 training mission (Figure ES-1). There are no plans to modify any of the airspace as a result of the Proposed Action. For any military aircraft flying out of Ellsworth AFB, the Powder River Training Complex (PRTC) airspace is the most cost-effective and convenient training area. For military aircraft flying out of Dyess AFB, the Lancer Military Operating Area (MOA) and the Pecos MOA and all associated Air Traffic Control Assigned Airspaces (ATCAAs) are the most cost-effective and convenient training areas to use. Dyess AFB-based aircraft would utilize the PRTC and the Brownwood MOA as supplemental training airspaces.

ES.3.1.4 Weapons Generation Facility (Final EIS Section 2.3.4)

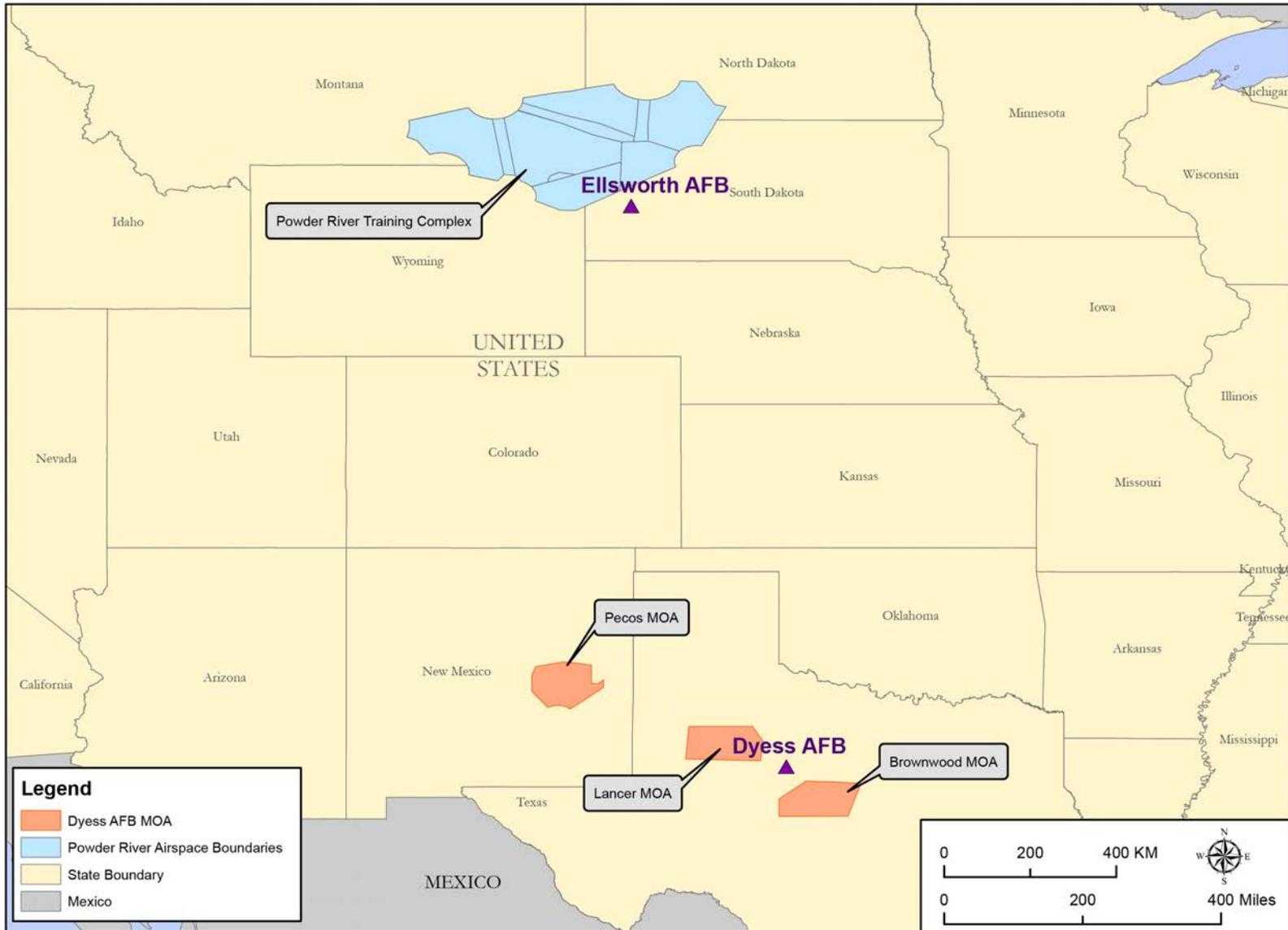
The WGF is a facility that is unique and would require new construction at the selected base. The WGF will provide a safe and secure location for the storage of USAF nuclear munitions. The WGF will require a construction footprint of approximately 35 acres, with an approximately 52,000-square-foot building as well as a 17,600 square-foot munitions maintenance building. Due to national security implications, the details regarding the infrastructure associated with the WGF is not releasable. It should be noted that the munitions storage areas for each of the candidate bases have adequate capacity for conventional USAF assets.

ES.3.2 Dyess AFB Alternative (Final EIS Section 2.4)

The Dyess AFB Alternative would establish MOB 1 at Dyess AFB (Figure ES-2), which includes all common elements described above in Section ES.3.1 (Commonalities) plus the construction of the facilities, infrastructure, and the WGF.

ES.3.2.1 Facilities and Infrastructure (Final EIS Section 2.4.2)

The proposed facilities and infrastructure required to support the B-21 MOB 1 beddown at Dyess AFB are presented in Table 2.4-1 of the Final EIS. In summary, there would be approximately 2.8 million square feet of new construction projects, 46,000 square feet of renovation projects, and 72,000 square feet of demolition projects. Due to operational security concerns, the specific locations of each facility and infrastructure project cannot be illustrated. However, USAF planners evaluated land use limitations and identified the general planned area of construction, or construction footprint, shown in Figure ES-3. Construction associated with each of these facilities and infrastructure projects would allow both initial operational flying and flight training activities associated with both the Operations and FTU squadrons.



AFB = Air Force Base; MOA = Military Operating Area

Figure ES-1. Range and Airspace Boundaries

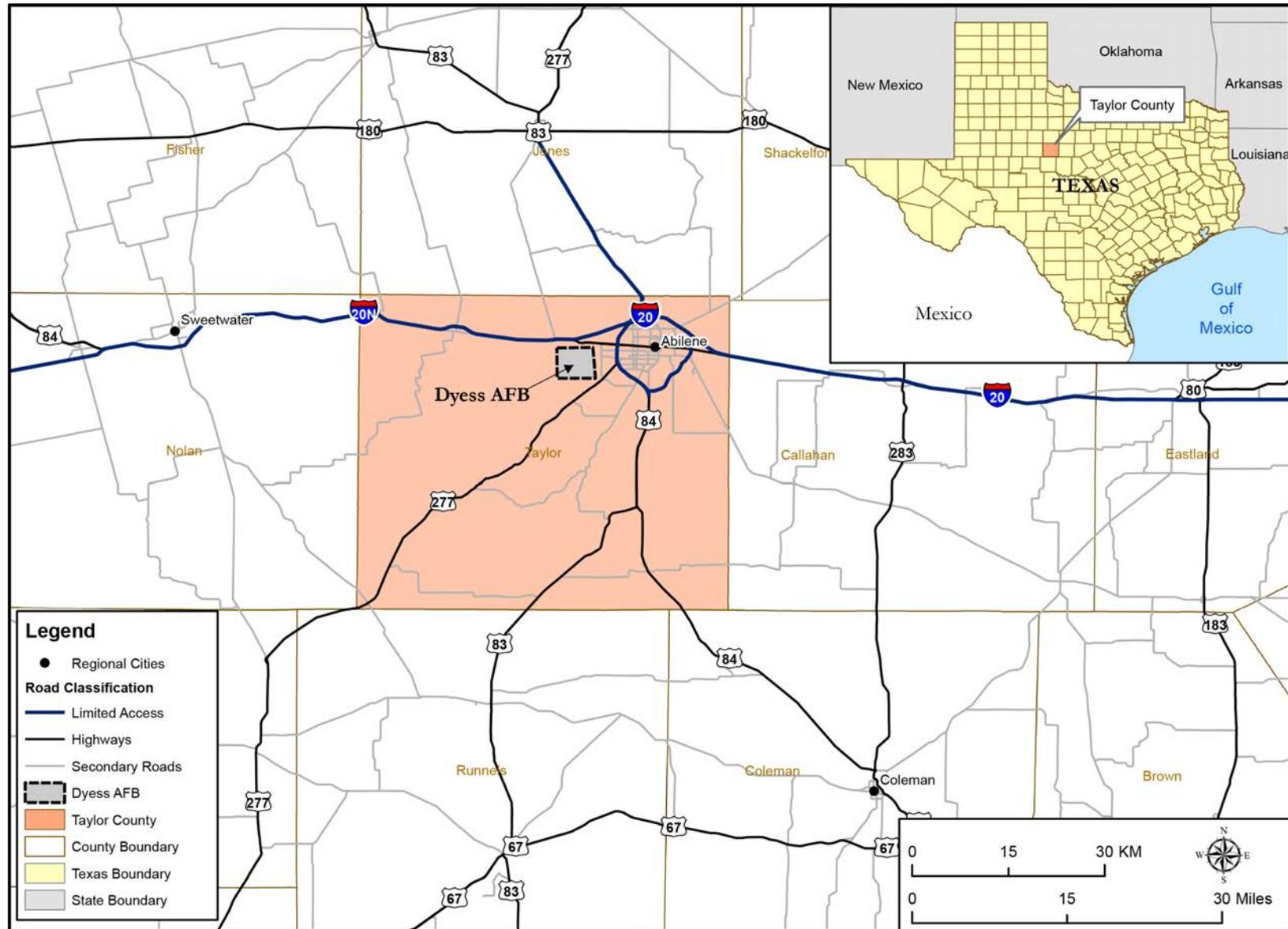


Figure ES-2. Dyess AFB Location

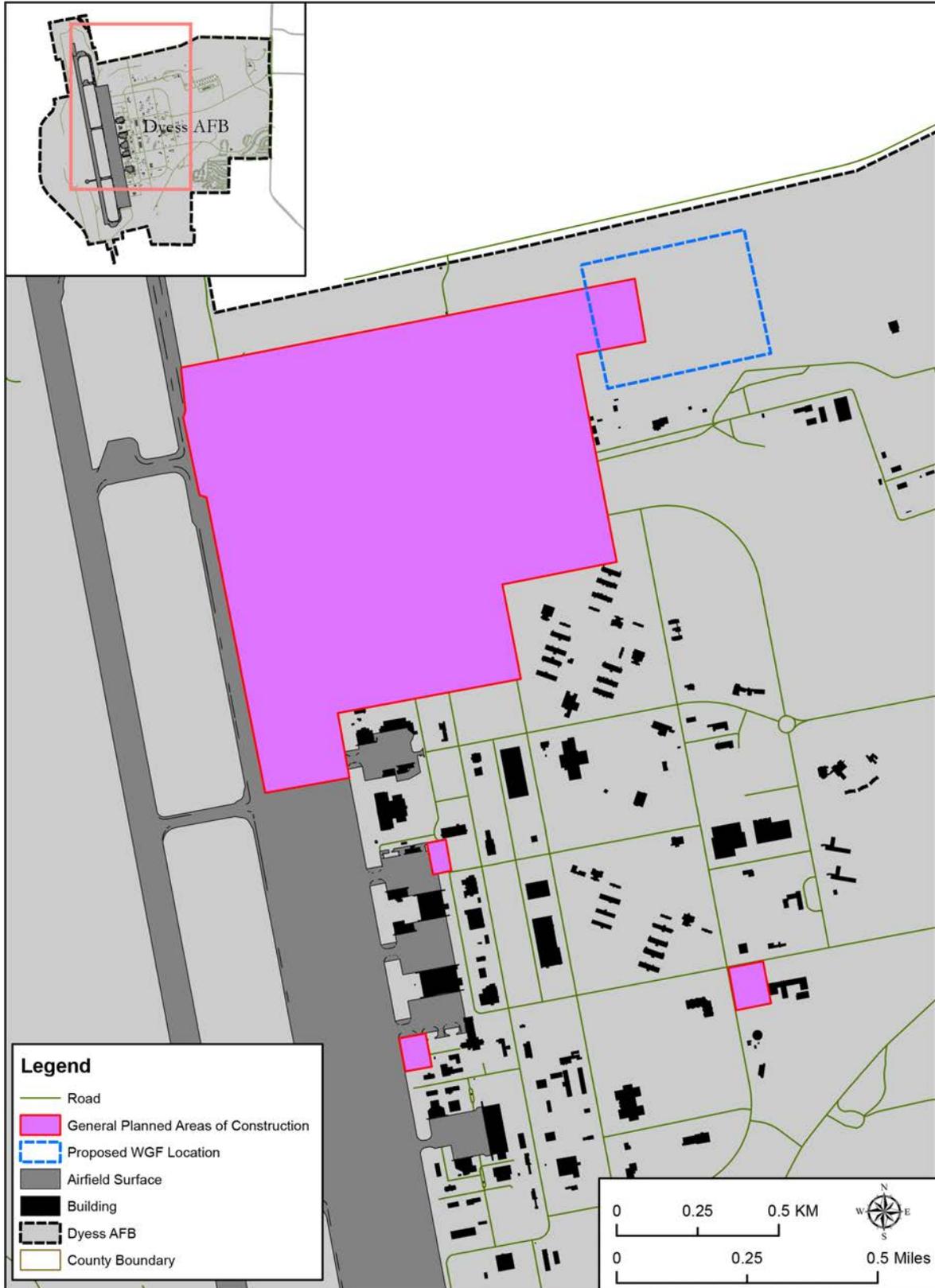


Figure ES-3. Facilities, Infrastructure, and WGF Planned Areas of Construction – Dyess AFB Alternative

ES.3.2.2 Weapons Generation Facility (Final EIS Section 2.4.3)

USAF planners identified five potential locations at Dyess AFB for the WGF. Four locations were eliminated due to the presence of one or more negative site evaluation criteria discussed in Section 2.2.2 (Screening Criteria for Base Infrastructure Development) of the Final EIS. The proposed WGF location on Figure ES-3 satisfies all evaluation criteria that are unique to the WGF and was carried forward in the analysis.

ES.3.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 2.5)

The Ellsworth AFB Alternative would establish MOB 1 at Ellsworth AFB (Figure ES-4), which includes all common elements described above in Section ES.3.1 (Commonalities). The siting of facilities, infrastructure, and the WGF on Ellsworth AFB presented the USAF with a scenario where multiple solutions have been identified for establishing MOB 1 at Ellsworth AFB. As a result, two subalternatives are associated with the Ellsworth AFB Alternative, described below.

Based on the results of the analyses presented in the Draft EIS and consideration of public comments received during the scoping process, the USAF has validated the Ellsworth AFB Alternative as the Preferred Alternative. Comparison of potential impacts from the beddown at Dyess AFB and Ellsworth AFB did not yield a substantial difference between the two locations.

ES.3.3.1 Facilities and Infrastructure (Final EIS Section 2.5.2)

The proposed facilities and infrastructure required to support the B-21 MOB 1 beddown at Ellsworth AFB are presented in Table 2.5-1 of the Final EIS. In summary, there would be approximately 4.3 million square feet of new construction projects, 1.7 million square feet of renovation (re-use and add/alter) projects, and 110,000 square feet of demolition projects. Similar to the Dyess AFB Alternative, due to operational security concerns, the exact locations of the facilities cannot be illustrated. However, Figure ES-5 shows where USAF planners evaluated land use limitations and identified a general planned area of construction, or construction footprint.

ES.3.3.2 Weapons Generation Facility (Final EIS Sections 2.5.3, 2.5.4, and 2.5.5)

USAF planners identified six possible locations at Ellsworth AFB for the WGF. After applying the screening criteria (see Section 2.2.2, Screening Criteria for Base Infrastructure Development, in the Final EIS), USAF planners eliminated four locations. Two locations were selected because they satisfied the site evaluation criteria unique to the WGF: the North WGF Site and the South WGF Site (Figure ES-5). The North WGF Site is located at the north end of the runway, which facilitates operational readiness requirements for the B-21 mission. The South WGF Site occurs in a flat area adjacent to the alert apron on the south side of the base. Similar to the North WGF Site, this location meets operational readiness requirements for the B-21 mission and does not contain any other site constraint features, such as uneven topography or wetlands. Both of these locations were carried forward as subalternatives in the Final EIS.

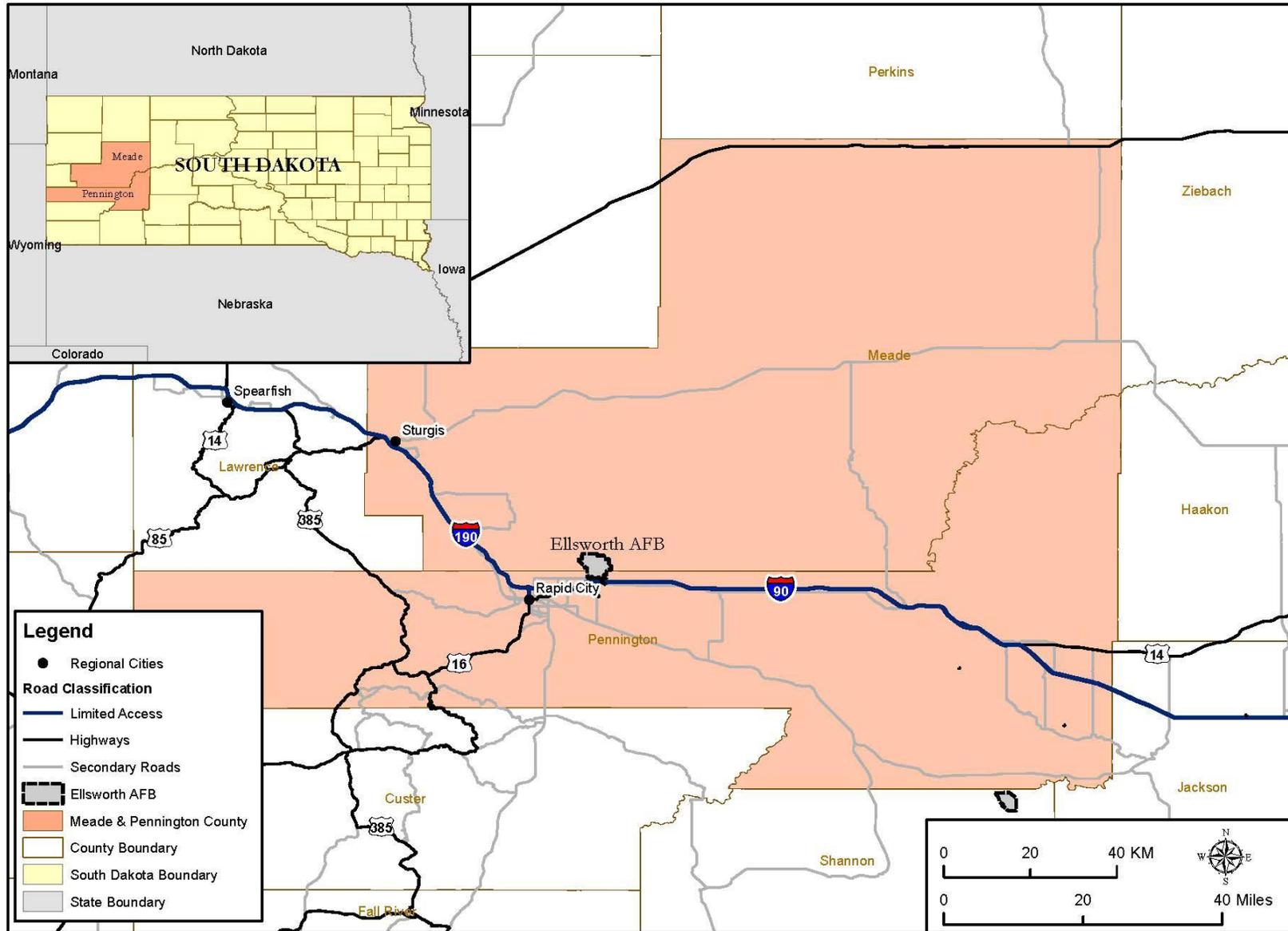


Figure ES-4. Ellsworth AFB Location

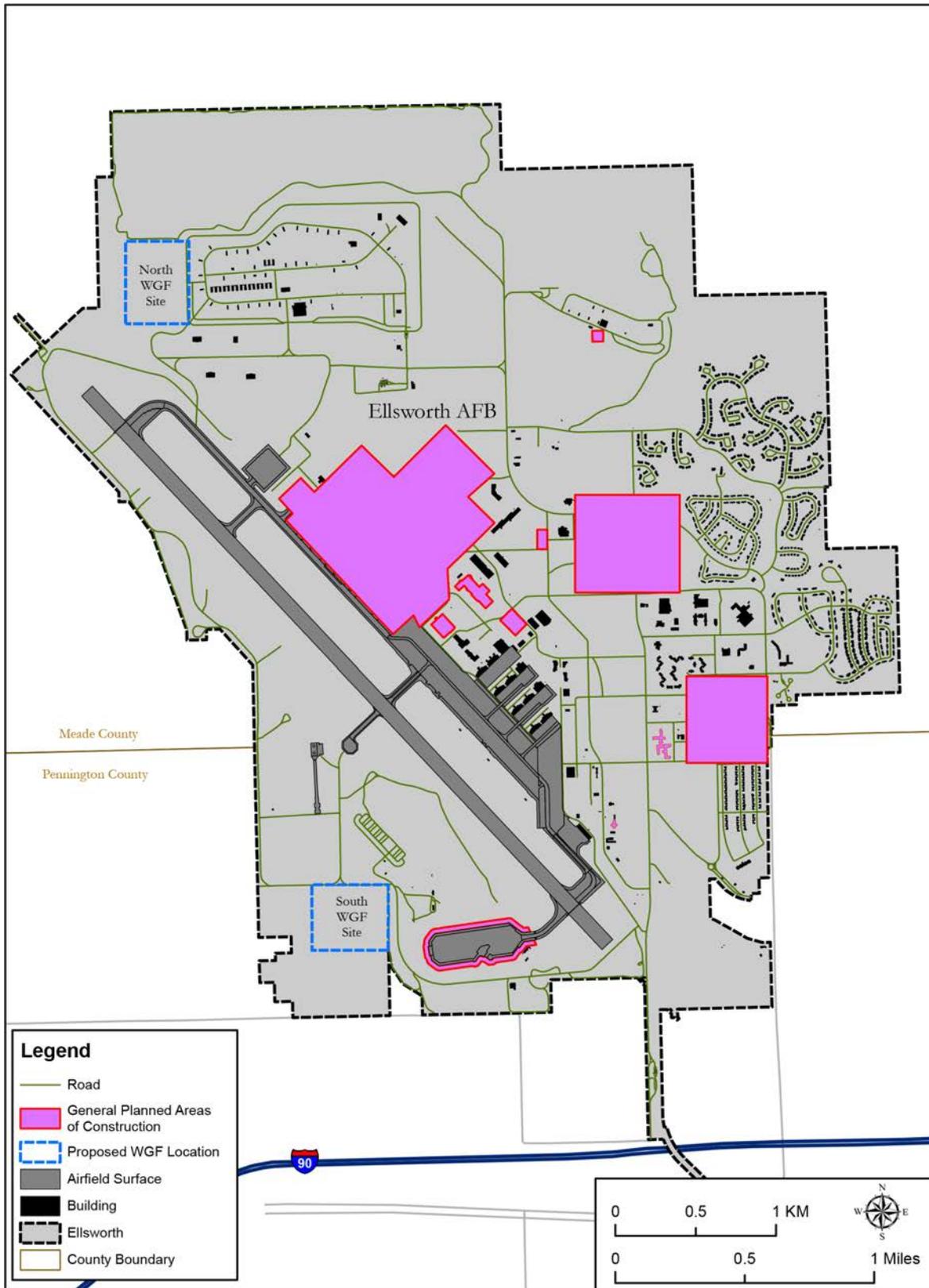


Figure ES-5. Facilities, Infrastructure, and WGF Planned Areas of Construction – Ellsworth AFB Alternative

Upon evaluation of both subalternatives, the USAF selected the South WGF Site as the Preferred Subalternative as part of the Ellsworth AFB Alternative for the B-21 MOB 1 beddown. The South WGF Site's close proximity to the alert apron to meet time-sensitive requirements, favorable topographic conditions, and minimal site constraints made this location the best choice for the WGF. After identifying the South WGF Site Subalternative as the Preferred Subalternative, the USAF recognized the need to provide direct access to the WGF from the alert apron to further facilitate time-sensitive B-21 mission requirements. As a result, the USAF would construct a new bridge connecting the WGF to the alert apron. The bridge would disturb up to 12 acres of land, which includes approximately 1 acre of floodplains and 0.4 acre of wetlands. Discussion of bridge impacts are presented in the environmental consequences sections in Chapter 3 of the Final EIS, where applicable.

ES.3.4 No Action Alternative (Final EIS Section 2.6)

Under the No Action Alternative, the B-21 would not be based at either Dyess AFB or Ellsworth AFB. This would mean that each alternative installation would continue their individual missions at current, or baseline, levels and no personnel, operations, or facilities associated with the B-21 MOB 1 would occur. Table ES-2, Table ES-3, and Table ES-4 provide numbers of personnel and aircraft operations under the No Action Alternative for both installations. While implementation of the No Action Alternative is not likely, the analysis of this alternative provides a baseline against which decision makers can compare the magnitude of potential environmental effects resulting from the action alternatives.

ES.4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES (Final EIS Chapter 3)

ES.4.1 Introduction (Final EIS Section 3.0)

For each environmental resource analyzed in the Final EIS, the No Action Alternative analysis is presented before the action alternatives' analysis, which allows the reader and decision makers to easily compare the consequences from the baseline conditions with consequences of the action alternatives. Additionally, to help illustrate the gradual change from B-1 to B-21 aircraft operations over time, the analyses in the Final EIS incorporated an approximation, or "snapshot" scenario. This "snapshot" assumes there will be a period of time when B-1 and B-21 operations would temporarily overlap, such that personnel levels would be 10 percent higher and flight operations would be 20 percent above those expected at the end state of the Proposed Action, as illustrated in Table ES-2, Table ES-3, and Table ES-4. (The "end state" reflects the point in time when all B-21s are in place and all B-1s have been removed.) Only the resources that would be impacted by overlapping B-1 and B-21 operations present potential impacts for the "snapshot" scenario. Table ES-5 indicates whether a given resource area section includes a "snapshot" analysis in the Final EIS.

Table ES-2. Summary of Personnel at Dyess AFB with Snapshot Scenario

Personnel ^a	No Action Alternative Individuals	B-1 Mission Individuals	B-21 Mission Individuals	Snapshot Analysis ^g			End State Personnel	End State Change Over No Action
				10% B-1 Individuals	B-21 + 10% B-1 Individuals	Total Snapshot		
Active Military	4,369	1,855	3,500	186	3,686	6,200	6,014	1,645
Civilian ^b	665	NA	NA	NA	NA	665	665	0
Contractor	NA	NA	NA	NA	200 ^h	200 ^h	NA	NA
Spouses	2,769 ^c	1,020 ^d	1,925 ^e	102	2,027	3,776	3,674	905
Children	2,342 ^c	872 ^d	2,275 ^f	87	2,362	3,832	3,745	1,403
Total	10,145	3,747	7,700	375	8,275	14,673	14,098	3,953 (39%)

Source: (Dyess AFB, 2018a)

AFB = Air Force Base; NA = not available

Notes:

- a. Does not include private businesses on base (branch banks/credit union) or retirees
- b. Includes appropriated and non-appropriated fund civilians
- c. Numbers of spouses and children were extrapolated from the total dependent number of 5,111, assuming 55 percent of military and civilian personnel are married and the remaining dependents are children.
- d. The number of spouses and children at Dyess AFB associated with the B-1 mission was derived by calculating the ratio of actual dependents to total active military and civilian personnel. This resulted in ratios of 0.55 spouses and 0.47 children per active military personnel. These ratios were multiplied by 1,855 to obtain numbers of spouses and children associated with the B-1 mission at Dyess AFB.
- e. Based on statistics in the 2018 Demographics Profile of the Military Community (DoD, 2018b), 55 percent of the Air Force is married. The number of spouses was calculated by multiplying B-21 active military personnel by 55 percent.
- f. Based on statistics in the 2018 Demographics Profile of the Military Community (DoD, 2018b), there are 1.2 dependents for each active duty Air Force member, for a total of 4,200 dependents for the B-21 mission. The number of children was estimated by subtracting the number of spouses (1,925) from the total dependents (4,200).
- g. Snapshot analysis considers overlap between B-21 and B-1 transition. Assumes all B-21 personnel and 10 percent of B-1 personnel are present on the base at the same time along with temporary contractor support. Snapshot personnel number = Baseline population – B-1 personnel + B-21 personnel + 10% B-1 personnel + temporary contractor support.
- h. Dependents were not calculated for temporary contractors (200 personnel) associated with supporting the B-21 and B-1 transition depicted in the snapshot analysis.

Table ES-3. Summary of Personnel at Ellsworth AFB with Snapshot Scenario

Personnel ^a	No Action Alternative Individuals	B-1 Mission Individuals	B-21 Mission Individuals	Snapshot Analysis ^g			End State Personnel	End State Change Over No Action
				10% B-1 Individuals	B-21 + 10% B-1 Individuals	Total Snapshot		
Active Military	3,196	1,836	3,500	184	3,684	5,044	4,860	1,664
Civilian ^b	930	NA	NA	NA	NA	930	930	0
Contractor	139	NA	NA	NA	200 ^h	339 ^h	139	0
Spouses	2,346 ^c	1,010 ^d	1,925 ^e	101	2,026	3,362	3,261	915
Children	3,985 ^c	1,707 ^d	2,275 ^f	172	2,447	4,724	4,553	568
Total	10,596	4,553	7,700	457	8,357	14,398	13,743	3,147 (30%)

Source: (Ellsworth AFB, 2016a)

AFB = Air Force Base; NA = not available

Notes:

a. Does not include private businesses on base (branch banks/credit union): 26 personnel

b. Includes appropriated and non-appropriated fund civilians

c. Numbers of spouses and children were extrapolated from the total dependent number of 6,331, assuming 55 percent of military, civilian, and contractor personnel are married and the remaining dependents are children.

d. The number of spouses and children at Ellsworth AFB associated with the B-1 mission was derived by calculating the ratio of actual dependents to total active military, civilian, and contractor personnel. This resulted in ratios of 0.55 spouses and 0.93 children per active military personnel. These ratios were multiplied by 1,836 to obtain numbers of spouses and children associated with the B-1 mission at Ellsworth AFB.

e. Based on statistics in the 2018 Demographics Profile of the Military Community (DoD, 2018b), 55 percent of the Air Force is married. The number of spouses was calculated by multiplying B-21 active military personnel by 55 percent.

f. Based on statistics in the 2018 Demographics Profile of the Military Community (DoD, 2018b), there are 1.2 dependents for each active duty Air Force member, for a total of 4,200 dependents for the B-21 mission. The number of children was estimated by subtracting the number of spouses (1,925) from the total dependents (4,200).

g. Snapshot analysis considers overlap between B-21 and B-1 transition. Assumes all B-21 personnel and 10 percent of B-1 personnel are present on the base at the same time along with temporary contractor support. Snapshot personnel number = Baseline population – B-1 personnel + B-21 personnel + 10% B-1 personnel + temporary contractor support.

h. Dependents were not calculated for temporary contractors (200 personnel) associated with supporting the B-21 and B-1 transition depicted in the snapshot analysis.

Table ES-4. Summary of Operations at Both Bases with Snapshot Scenario

Airfield/Airspace	No Action ^a Alternative	Proposed Action ^b	Airfield Operations Change from No Action Alternative	Snapshot ^c	Snapshot Change from No Action Alternative
Dyess AFB Alternative					
Dyess AFB Airfield	48,940	48,394	-546	50,327	1,387
PRTC	2,778	2,760	-18	2,834	56
Brownwood MOA	2,467	2,454	-13	2,461	-6
Lancer MOA	1,376	1,132	-244	1,301	-75
Pecos MOA	2,425	2,781	356	2,799	374
Ellsworth AFB Alternative					
Ellsworth AFB Airfield	8,910	10,318	1,408	11,860	2,950
PRTC	2,778	3,921	1,143	4,203	1,425

AFB = Air Force Base; MOA = Military Operating Area; PRTC = Powder River Training Complex

Notes:

a. Current flight operations data provided and validated by Dyess AFB personnel, HAF/SAF, and the Air Force Civil Engineer Center.

b. The Proposed Action flight operations represent the end-state operations removing the B-1 operations and adding B-21 operations, maintaining existing operations for other Primary Assigned Aircraft and transient aircraft.

c. The Snapshot flight operations represent a transitional condition in which approximately 20 percent of current B-1 operations would potentially occur simultaneous with proposed B-21 operations, maintaining existing operations for other Primary Assigned Aircraft and transient aircraft.

Table ES-5. Snapshot Analysis – Affected Resources

EIS Section	Resource Area	Snapshot Analysis Included	
		Personnel	Operations
Section 3.1	Airspace	No	Yes
Section 3.2	Noise	No	Yes
Section 3.3	Air Quality	Yes	Yes
Section 3.4	Land Use	No	No
Section 3.5	Socioeconomics	Yes	No
Section 3.6	Environmental Justice	No	Yes
Section 3.7	Biological Resources	No	No
Section 3.8	Cultural Resources	No	No
Section 3.9	Physical Resources	No	No
Section 3.10	Hazardous Materials and Hazardous and Solid Wastes	No	No
Section 3.11	Health and Safety	No	No
Section 3.12	Transportation	Yes	No
Section 3.13	Utilities and Infrastructure	Yes	No

EIS = Environmental Impact Statement

In the analysis of anticipated impacts, the USAF has done its best to accurately predict potential impacts and anticipate future conditions using the best available information and tools for the EIS analysis, including the “snapshot” scenario. As a new aircraft under development, B-21 data for noise, air quality, and safety analyses are currently incomplete or unavailable. While the costs to obtain complete data for these purposes are not exorbitant, those data cannot be obtained at this time due to 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 a flight safety record (40 Code of Federal Regulations [CFR] 1502.22(b) and 1502.22(b)(1)).¹ The Council on Environmental Quality (CEQ) regulations implementing NEPA recognize that such a situation may occur. Agencies manage such situations in accordance with 40 CFR 1502.22, *Incomplete or Unavailable Information*. Detailed guidance to address incomplete or unavailable information is included in Section 3.0 of the Final EIS.

This Executive Summary presents the Affected Environment and Environmental Consequences associated with only the end state of the Proposed Action. Chapter 3 in the Final EIS presents more detailed descriptions of each affected resource and associated consequences, including analyses of impacts under the snapshot scenario, where applicable. In summary, impacts to airspace, noise, air quality, and environmental justice from increased aircraft operations under the snapshot scenario would not be significant. Similarly, increased personnel under the snapshot scenario would not result in significant impacts to air quality, socioeconomics, transportation, and utilities and infrastructure. Furthermore, the potential impacts to the affected resources from increases in aircraft operations and personnel under the snapshot scenario would be temporary, until end state conditions of the Proposed Action are in place.

¹ This EIS was ongoing prior to the September 14, 2020, effective date of the CEQ’s final rule updating its regulations for implementing the procedural provisions of NEPA. Accordingly, the new regulations were not used for this action, pursuant to 40 CFR 1506.13.

ES.4.2 Airspace (Final EIS Section 3.1)

Special Use Airspace (SUA) is airspace where military airborne activities must be confined because of their nature and/or where limitations may be imposed on aircraft operations that are not part of those activities. An SUA has defined dimensions that are associated with an area on the surface of the earth. With the exception of Controlled Firing Areas, SUA is depicted on aeronautical charts. SUA includes the following types of charted airspace: MOAs, Restricted Areas, Warning Areas, Alert Areas, Prohibited Areas, and National Security Areas. Controlled Firing Areas are uncharted. The MOAs are the primary type of SUA of concern in this document.

ES.4.2.1 Affected Environment (Final EIS Section 3.1.1)

ES.4.2.1.1 Dyess AFB (Final EIS Section 3.1.1.2.1)

Figure ES-6 shows the airspace associated with the three MOAs that would be used by the B-21 if Dyess AFB is selected as the location for MOB 1. The airspace associated with the PRTC, which includes all associated MOAs and ATCAAs, was described in the 2014 PRTC EIS and its associated ROD (USAF, 2014a; USAF, 2015) and is shown in Figure ES-7.

ES.4.2.1.2 Ellsworth AFB (Final EIS Section 3.1.1.2.2)

If Ellsworth AFB is selected as the MOB 1 location, the PRTC airspace would be the primary training area for aircraft operations (Figure ES-7).

ES.4.2.2 Environmental Consequences (Final EIS Section 3.1.2)

Airspace would not be affected by construction activities under any of the Alternatives and is therefore not discussed further for this resource area.

ES.4.2.2.1 No Action Alternative Consequences (Final EIS Section 3.1.2.1)

Table ES-4 in Section ES.4.1 (Introduction) presents aircraft operations in the proposed airspace units under the No Action Alternative and the Proposed Action. Airspace utilization under the No Action Alternative would be comparable to current conditions and would not contribute to air traffic controller workload or congestion in the airspace areas.

ES.4.2.2.2 Dyess AFB Alternative (Final EIS Section 3.1.2.2)

Air operations (takeoffs, landings, and closed patterns) at Dyess AFB would decrease by 1.12 percent from baseline levels. Flight operations would decrease across all SUAs with the exception of the Pecos MOA, which would increase by approximately 15 percent; this could lead to increased congestion and/or scheduling impacts. However, because the B-21 would tend to use a range of higher altitudes, airspace would not likely be adversely impacted. Furthermore, as the program develops, MOA usage and distribution may be adapted to better accommodate the B-21 training mission. For instance, the Lancer MOA, where operations would be decreased by nearly 18 percent, could be utilized more extensively to alleviate any strains in the Pecos MOA.

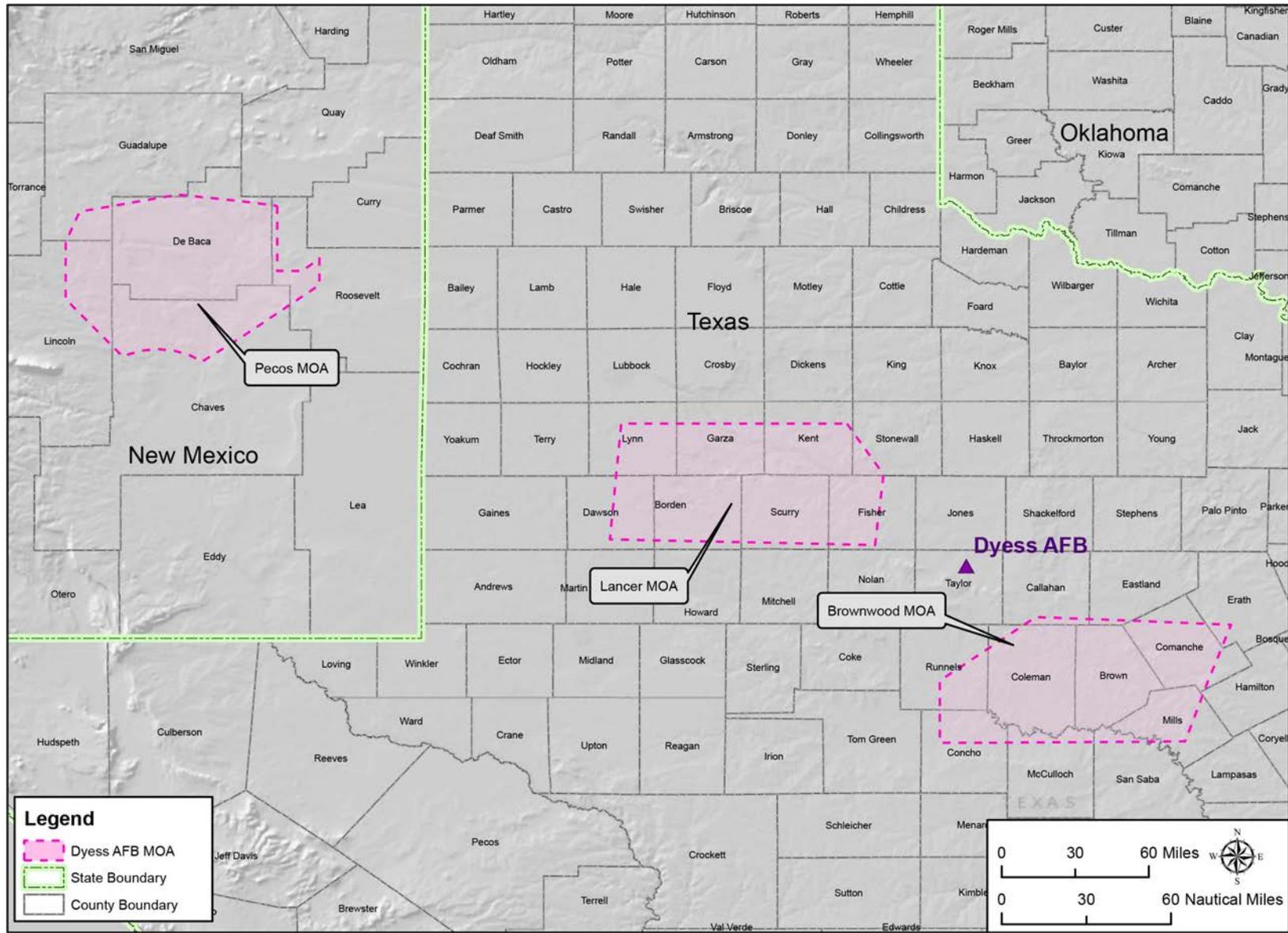


Figure ES-6. Brownwood, Lancer, and Pecos MOAs Airspace

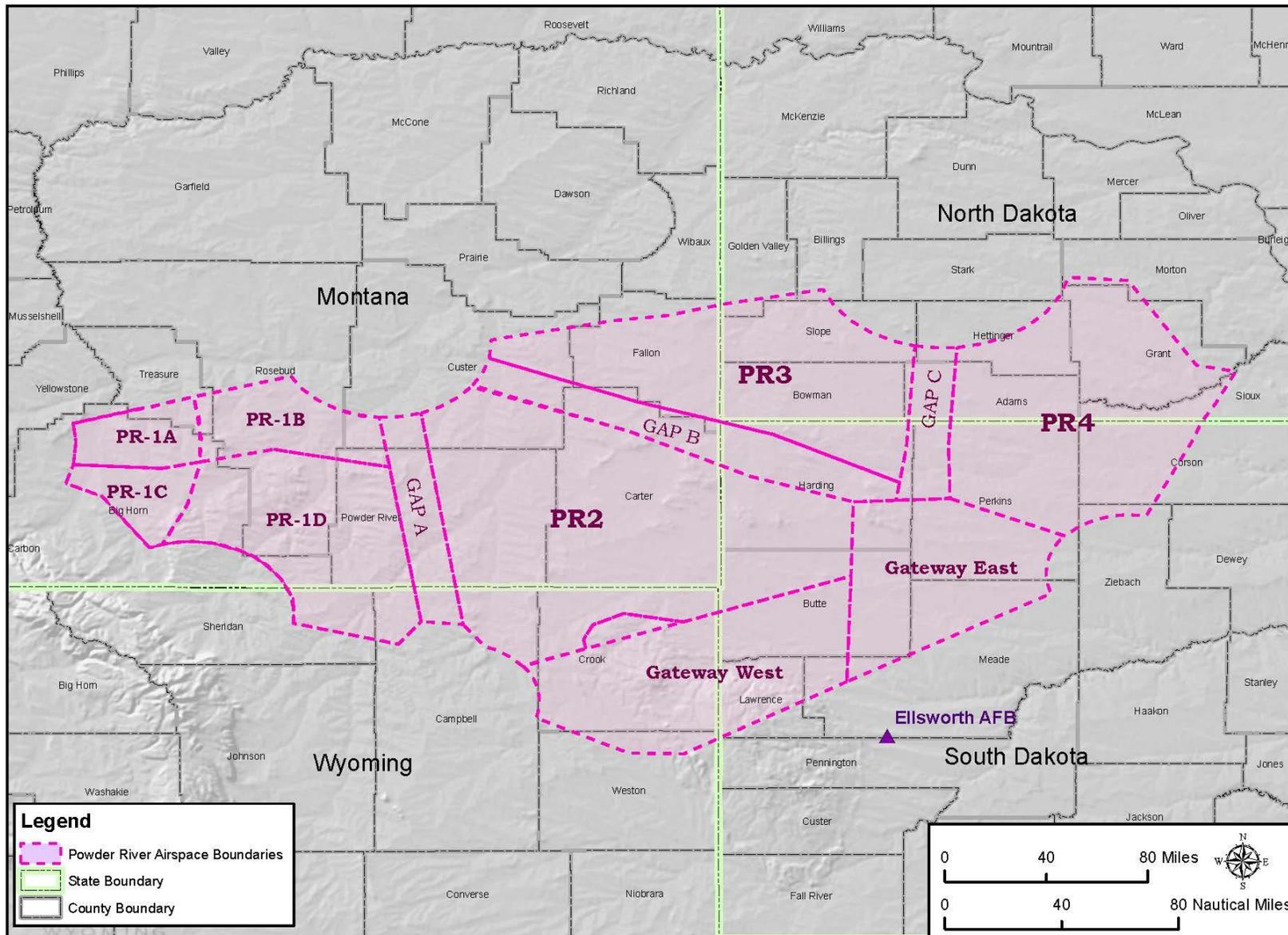


Figure ES-7. Powder River Training Complex Airspace

ES.4.2.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.1.2.3)

Aircraft operations would increase by up to 15.8 percent at Ellsworth AFB. Total flight operations at the PRTC would increase by 41.1 percent. This could lead to increased congestion and/or scheduling impacts. However, because the B-21 would tend to use a range of higher altitudes, airspace would not likely be adversely impacted. Additionally, as the program develops, SUA usage and distribution may be adapted to better accommodate the B-21 training mission.

ES.4.3 Noise (Final EIS Section 3.2)

Noise is defined as unwanted sound. Potential noise impacts are dependent on characteristics of the noise such as sound level, pitch, and duration. Noise impacts are also strongly influenced by characteristics of the noise receiver (i.e., persons, animals, or objects that hear or are affected by noise). Noise analysis considers potential impacts that could result in annoyance, speech interference, sleep disturbance, human health effects (auditory and nonauditory), wildlife impacts, and structural damage.

ES.4.3.1 Affected Environment (Final EIS Section 3.2.1)

The region of influence (ROI) for noise includes Dyess AFB, Ellsworth AFB, and the areas surrounding each installation, as well as land areas included under the airspace units where B-21 flight operations and training would occur. The ROI for noise also includes lands under and near the PRTC MOAs/ATCAAs, Lancer MOA, Brownwood MOA, and Pecos MOA.

ES.4.3.2 Environmental Consequences (Final EIS Section 3.2.2)

The number of personnel at Dyess AFB and Ellsworth AFB would not appreciably contribute to noise in these areas. Personnel would continue to commute on established roads and the relatively minor increases in personnel and traffic overall would not result in adverse noise impacts. Therefore, changes in personnel under any of the alternatives are not discussed further for this resource area. Additionally, there are no proposed construction, demolition, or renovation projects under the No Action Alternative at either location. However, there are likely to be future construction, demolition, and/or renovation projects occurring at these installations as part of other actions. At distances greater than 600 feet, noise levels would be below 65 decibels (dB) day-night average sound level (DNL) and would not be likely to significantly impact public annoyance. The temporary and localized noise generated by construction and demolition (C&D) activities at either installation could be disruptive and annoying but would not be significant.

ES.4.3.2.1 No Action Alternative Consequences (Final EIS Section 3.2.2.1)

ES.4.3.2.1.1 No Action at Dyess AFB (Final EIS Section 3.2.2.1.1)

Noise modeling was conducted to reflect current baseline aircraft operations under the No Action Alternative at Dyess AFB (Figure ES-8). Model results indicate that 11,497 acres and an estimated 1,419 persons could be exposed to noise levels exceeding 65 dB DNL near Dyess AFB. Noise modeling was also conducted to assess baseline aircraft noise in the SUAs used by Dyess AFB for training. Noise levels across the PRTC and Brownwood, Pecos, and Lancer MOAs would be well below the 65 dB DNL level that would potentially impact land use, so there would be no adverse noise impacts.

ES.4.3.2.1.2 No Action at Ellsworth AFB (Final EIS Section 3.2.2.1.2)

Noise model results for the No Action Alternative at Ellsworth AFB (Figure ES-9) indicate that 5,834 acres and an estimated 1,985 persons could be exposed to noise levels exceeding 65 dB DNL near Ellsworth AFB. Baseline aircraft noise in the PRTC would be less than 46.1 dB onset-rate adjusted monthly DNL (L_{dnmr}) across the PRTC.

ES.4.3.2.2 Dyess AFB Alternative (Final EIS Section 3.2.2.2)

Under the Dyess AFB Alternative, 4,355 acres and an estimated 496 persons could be exposed to noise levels exceeding 65 dB DNL near Dyess AFB. This is a decrease of 7,142 acres and 923 persons overall from the No Action Alternative (Figure ES-10). Noise levels in all the airspace areas would either decrease or remain the same compared to the No Action Alternative. There would be no adverse impacts to noise beneath the SUAs under the Dyess AFB Alternative.

ES.4.3.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.2.2.3)

Under the Ellsworth AFB Alternative, 1,610 acres and an estimated 358 persons could be exposed to noise levels exceeding 65 dB DNL near Ellsworth AFB. This is a decrease of 4,224 acres and 1,627 persons from the No Action Alternative (Figure ES-11). Noise in the PRTC would decrease or remain below 35 dB L_{dnmr} across the board. There would be no adverse impacts to noise beneath the SUAs under the Ellsworth AFB Alternative. The South WGF Site (Preferred Subalternative) is closer to the residential community of Box Elder, but is still over 1,000 feet away from the nearest residence. Therefore, noise levels during construction and operation would be below 65 dB; annoyance would still be minor and temporary and would not adversely affect noise on or outside Ellsworth AFB.

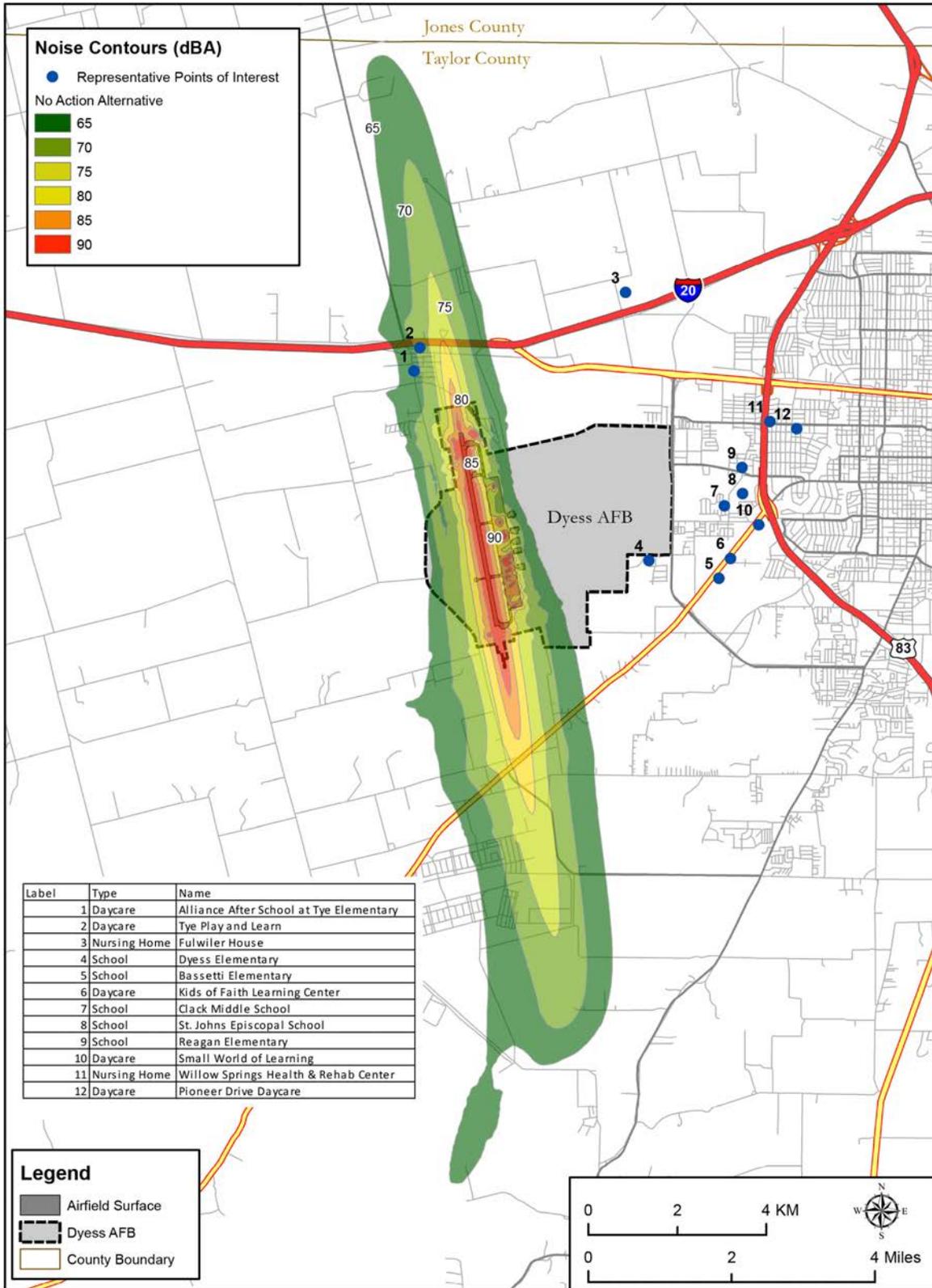


Figure ES-8. Noise Contours at Dyess AFB Under the No Action Alternative

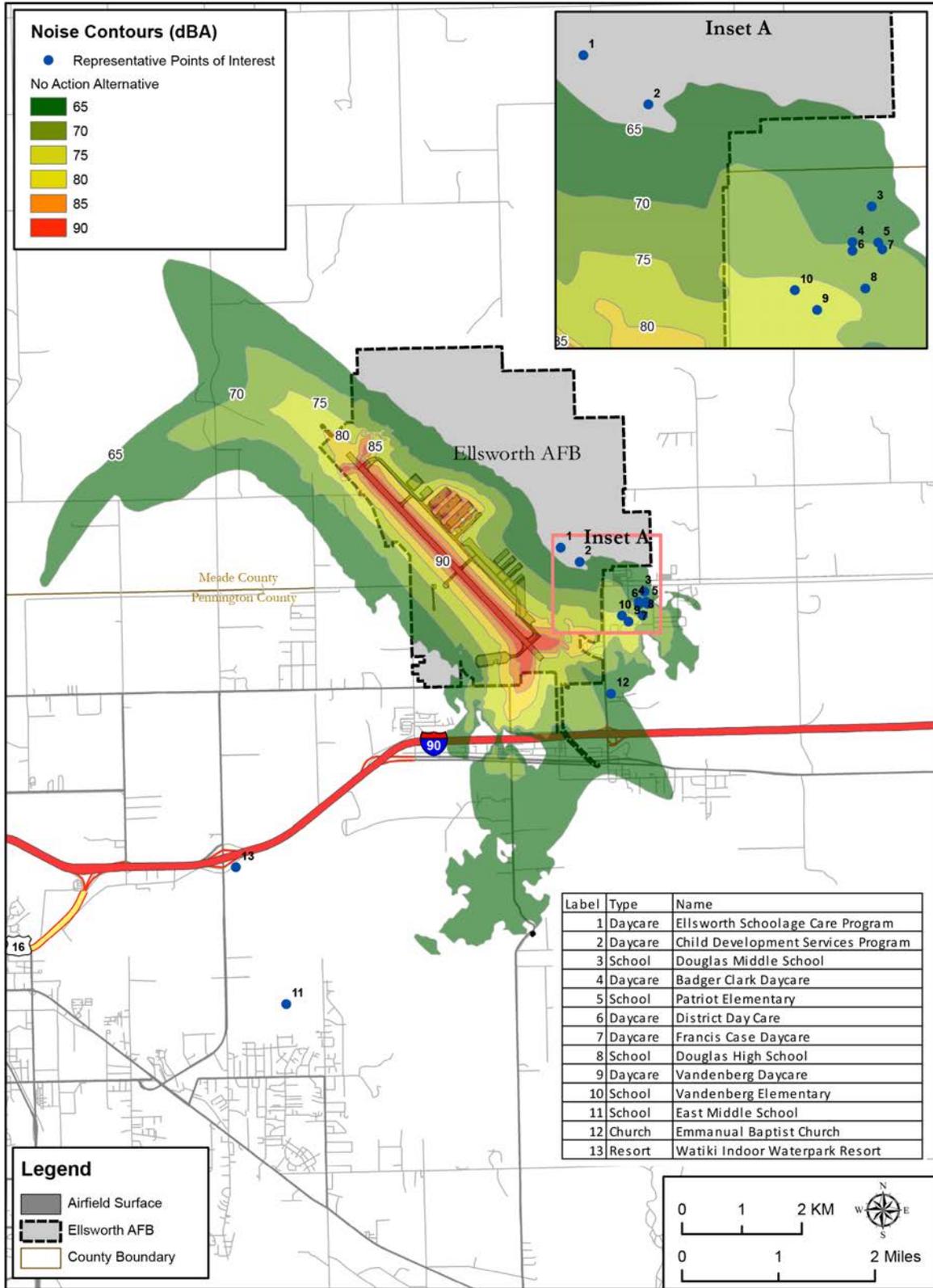


Figure ES-9. Noise Contours at Ellsworth AFB Under the No Action Alternative

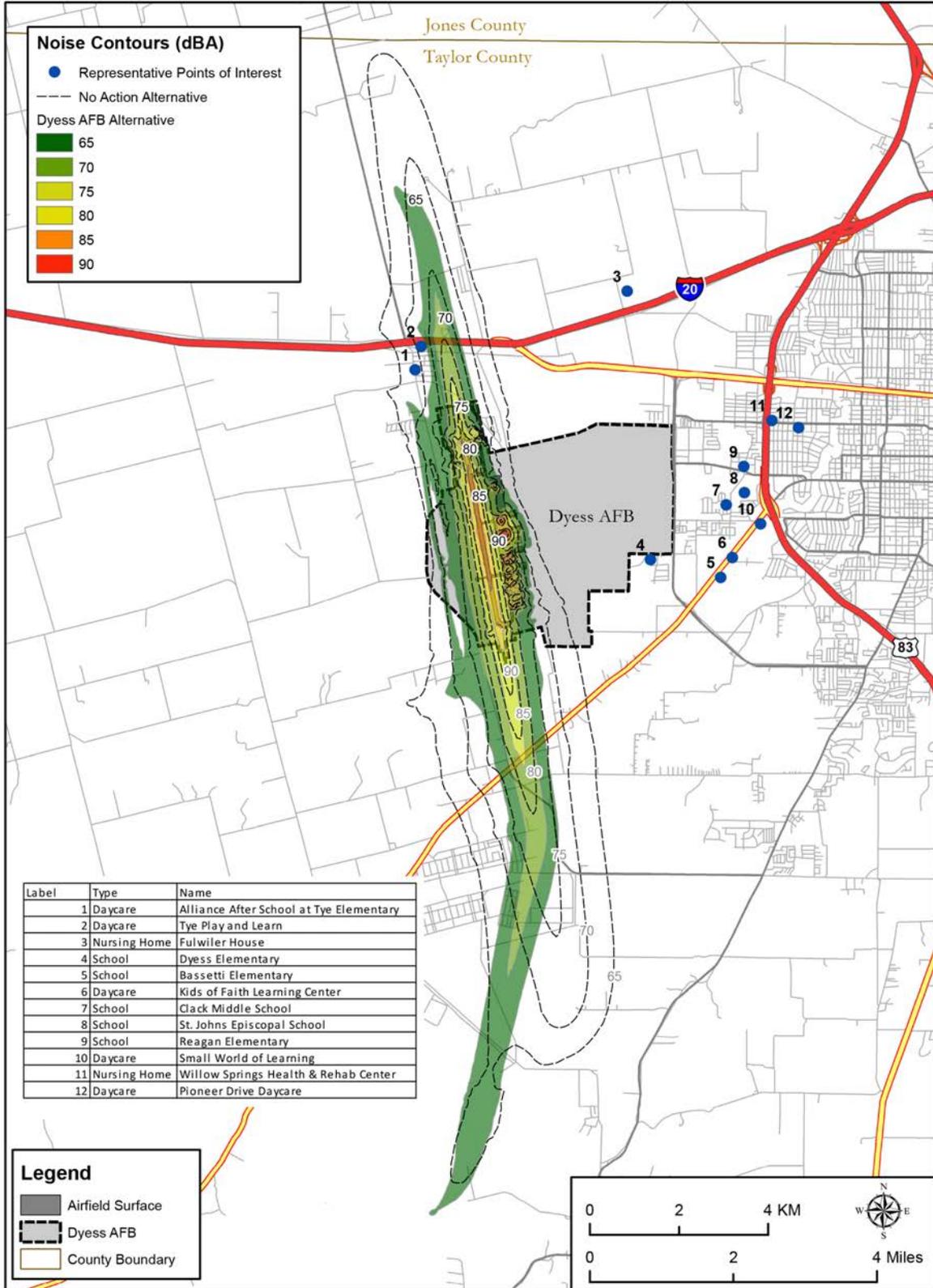


Figure ES-10. Noise Contours at Dyess AFB Under the Dyess AFB Alternative Compared with the No Action Alternative

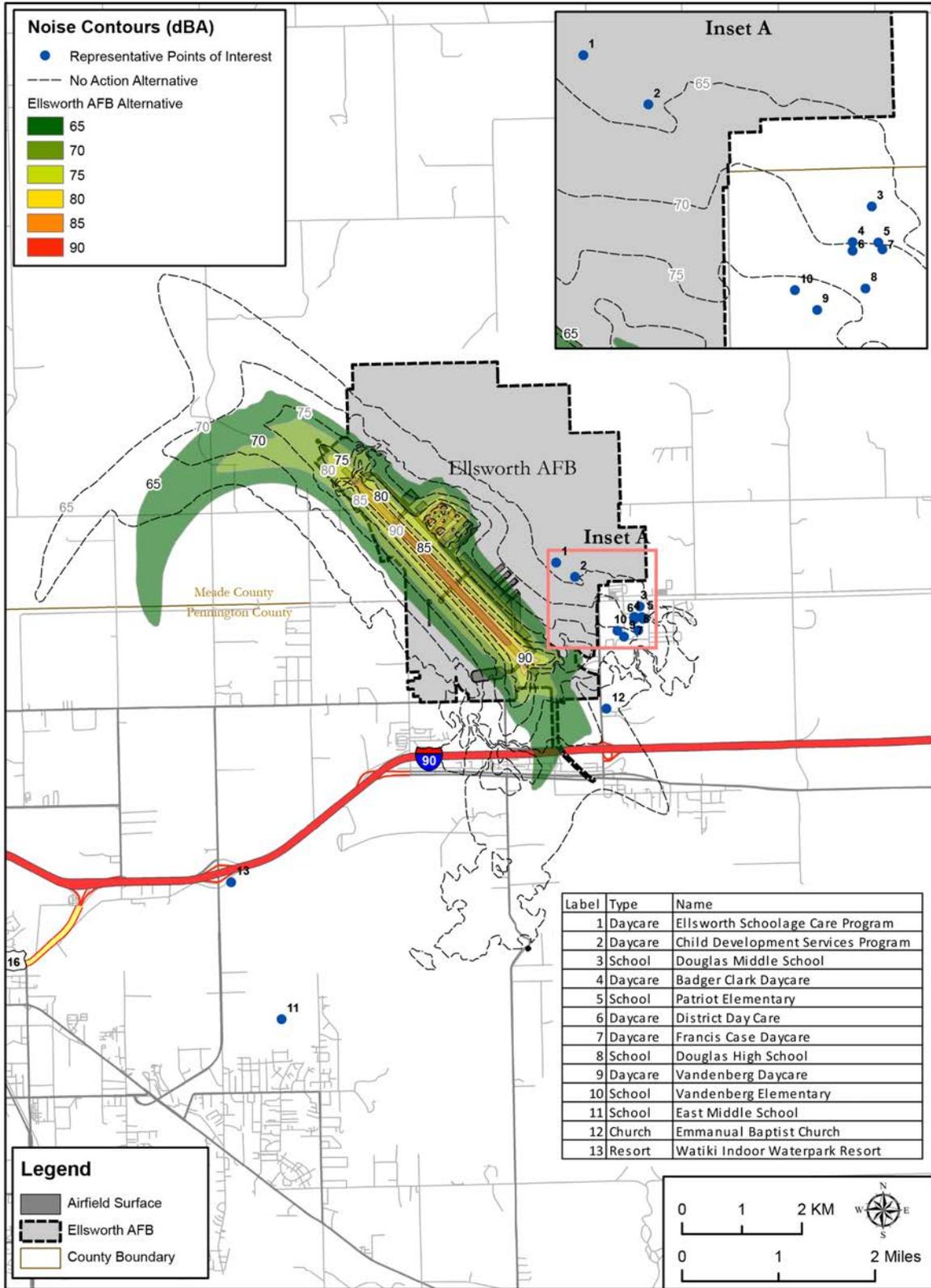


Figure ES-11. Noise Contours at Ellsworth AFB Under the Ellsworth AFB Alternative Compared with the No Action Alternative

ES.4.4 Air Quality (Final EIS Section 3.3)

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of parts per million or micrograms per cubic meter. The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards and state air quality standards established under the Clean Air Act of 1990. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. The National Ambient Air Quality Standards provide both short- and long-term standards for the following criteria pollutants: carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, particulate matter with a diameter of less than or equal to 10 microns or 2.5 microns, ozone, and lead.

In order to evaluate air emissions and their impact on the overall ROI, the emissions associated with the Proposed Action activities were compared with the total emissions on a pollutant-by-pollutant basis for the ROI's 2017 National Emissions Inventory data, which is the most recent version that has been finalized. To provide a more conservative analysis, counties associated with each alternative were selected as the ROI instead of the U.S. Environmental Protection Agency (EPA)-designated Air Quality Control Region, which is a much larger area.

ES.4.4.1 Affected Environment (Final EIS Section 3.3.1)

Dyess AFB is located in Taylor County. According to EPA, Taylor County is in attainment for all criteria pollutants (EPA, 2019a). Ellsworth AFB is located in Meade and Pennington Counties, South Dakota. Meade and Pennington Counties, like all of South Dakota, are also in attainment for all pollutants (EPA, 2019b). The PRTC airspace covers all or part of 10 counties in North Dakota, 8 in South Dakota, 7 in Montana, and 4 in Wyoming. The entire states of North and South Dakota are in attainment for all criteria pollutants. All counties in the PRTC ROI over Montana are in attainment for all pollutants, except for Rosebud County, part of which is in moderate nonattainment for particulate matter with a diameter of less than or equal to 10 microns (1987 standard) (EPA, 2020c). In Wyoming, Campbell and Crook Counties are in attainment for all pollutants. All the counties under Lancer MOA, Brownwood MOA, and Pecos MOA airspace are in attainment for all criteria pollutants, so General Conformity is not applicable (EPA, 2020f; EPA, 2020g).

ES.4.4.2 Environmental Consequences (Final EIS Section 3.3.2)

Under both MOB 1 alternatives, B-21 flight operations in the SUAs would typically occur higher than the B-1 currently, so emissions in the SUAs would decrease or remain nominal. Therefore, there would be no adverse impacts to regional air quality from aircraft operations within the SUAs. Air quality impacts from construction/demolition/renovation activities would be minor and temporary. Particulate matter impacts could be reduced through the use of best management practices (BMPs), such as spraying with water and

covering of haul loads. Additionally, construction would likely be phased, which would serve to further minimize impacts over the length of the construction timeframe.

ES.4.4.2.1 No Action Alternative Consequences (Final EIS Section 3.3.2.1)

Under the No Action Alternative, there would be no changes to operations and the emissions would remain at baseline levels. In addition, there would be no new construction. Therefore, regional air quality would not be adversely impacted.

ES.4.4.2.2 Dyess AFB Alternative (Final EIS Section 3.3.2.2)

Under the Dyess AFB Alternative, air emissions at Dyess AFB due to increased personnel and training operations would increase from the ROI baseline. However, emissions of all criteria pollutants other than CO would increase by less than 3.5 percent. CO emissions would decrease under the Dyess AFB Alternative. B-21 flight operations in the SUAs would typically occur higher than the B-1 currently, so emissions in the SUAs would decrease or remain nominal. Therefore, there would be no adverse impacts to regional air quality.

Summary of Dyess AFB Alternative Air Quality Environmental Consequences

Table ES-6 summarizes the estimated annual emissions for personnel, aircraft, and construction under the Dyess AFB Alternative and compares them with the emissions estimated for the No Action Alternative at Dyess AFB.

Table ES-6. Summary of Dyess AFB Alternative Emissions

Source	Pollutants (tons/year)						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC	CO _{2e}
Dyess AFB Alternative Personnel Emissions	161.03	11.66	0.29	0.25	0.10	13.67	14,740
Dyess AFB Alternative Aircraft Emissions	191.56	431.35	55.59	45.75	30.61	48.26	92,527
Dyess AFB Alternative Facilities Construction and Demolition Emissions	16.64	22.16	684.36	0.86	0.06	36.05	5,886
Dyess AFB Alternative WGF Construction Emissions	3.92	3.69	12.57	0.15	0.01	1.20	944
Total Dyess AFB Alternative Emissions	373.15	468.86	752.81	47.01	30.78	99.18	114,097
Total Dyess AFB No Action Alternative Emissions	389.91	277.18	46.04	31.77	29.35	60.37	99,584
Net Change from No Action Alternative	-16.76	191.68	706.77	15.24	1.43	38.81	14,514
ROI Baseline ¹	14,298	4,626	6,598	1,250	50.30	8,477	1,243,235
Net Change as Percentage of ROI	-0.12%	4.14%	10.71%	1.22%	2.84%	0.46%	1.17%

Source: (EPA, 2020b)

- = minus; % = percent; AFB = Air Force Base; CO = carbon monoxide; CO_{2e} = carbon dioxide equivalent; NO_x = nitrogen oxides; PM₁₀ or PM_{2.5} = particulate matter with a diameter less than or equal to 10 or 2.5 microns, respectively; ROI = region of influence; SO_x = sulfur oxides; VOC = volatile organic compound; WGF = Weapons Generation Facility

Note:

1. The ROI for Dyess AFB emissions is Taylor County, Texas. See Table 3.3-2 and Table 3.3-3 in the EIS.

ES.4.4.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.3.2.3)

Under the Ellsworth AFB Alternative, air emissions at Ellsworth AFB due to increased personnel and training operations would decrease from the ROI baseline for all criteria pollutants except for nitrogen oxides emissions, which would increase by approximately 1.6 percent. The B-21 would typically fly higher than the B-1 currently, so emissions in the PRTC would decrease for all criteria pollutants. Emissions of all criteria pollutants associated with airfield operations would decrease from the baseline levels except for nitrogen oxides, which would increase by 131.55 tons per year. This represents only 1.54 percent of the ROI baseline for Meade and Pennington Counties. Therefore, there would be no adverse impacts to regional air quality.

Summary of Ellsworth AFB Alternative Air Quality Environmental Consequences

Table ES-7 summarizes the estimated annual emissions for personnel, aircraft, and construction under the Ellsworth AFB Alternative and compares them with the emissions estimated for the No Action Alternative at Ellsworth AFB.

Table ES-7. Summary of Ellsworth AFB Alternative Emissions

Source	Pollutants (tons/year)						
	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC	CO ₂ e
Ellsworth AFB Alternative Personnel Emissions	160.71	12.45	0.41	0.36	0.09	14.21	12,606
Ellsworth AFB Alternative Aircraft Emissions	144.57	322.87	42.6	31.2	20.07	2.56	60,682
Ellsworth AFB Alternative Facilities Construction and Demolition Emissions	18.08	25.49	806.37	0.91	0.06	41.43	6,266
Ellsworth AFB Alternative WGF Construction Emissions	11.62	11.18	42.67	0.46	0.03	2.39	2,810
Total Ellsworth AFB Alternative Emissions	334.97	372.00	892.06	32.93	20.25	60.58	82,363
Total Ellsworth AFB No Action Alternative Emissions	336.45	200.28	49.76	35.74	21.17	14.49	72,881
Net Change from No Action Alternative	-1.48	171.72	842.30	-2.81	-0.92	46.09	9,483
ROI Baseline ¹	43,459	8,523	13,201	3,856	614	33,439	2,264,313
Net Change as Percentage of ROI	0.00%	2.01%	6.38%	-0.07%	-0.15%	0.14%	0.42%

Source: (EPA, 2020b)

% = percent; - = minus; AFB = Air Force Base; CO = carbon monoxide; CO₂e = carbon dioxide equivalent; NO_x = nitrogen oxides; PM₁₀ or PM_{2.5} = particulate matter with a diameter less than or equal to 10 or 2.5 microns, respectively; ROI = region of influence; SO_x = sulfur oxides; VOC = volatile organic compound; WGF = Weapons Generation Facility

Note:

1. The ROI for Ellsworth AFB emissions includes Meade and Pennington Counties in South Dakota. See Table 3.3-4 and Table 3.3-5 in the EIS.

ES.4.5 Land Use (Final EIS Section 3.4)

Land use refers to the management and use of land by people. Attributes of land use include general land use patterns, land ownership, land management plans, and special use areas. Typical land uses include residential, commercial, industrial, agricultural, transportation, communication/utilities, military, public/institutional, and recreational. Land use also includes areas set aside for preservation or protection of natural resources or unique features.

ES.4.5.1 Affected Environment (Final EIS Section 3.4.1)

The ROI for land use includes all existing areas within the alternative MOB 1 locations (Dyess AFB and Ellsworth AFB), as well as adjacent off-base land areas that would potentially be affected by noise and safety risks associated with B-21 operations. The ROI also includes all land areas under the airspace of the PRTC and the Brownwood, Lancer, and Pecos MOAs.

ES.4.5.2 Environmental Consequences (Final EIS Section 3.4.2)

On-base development at either installation resulting from the beddown would occur in accordance with the established tiering system and with guidance in the base's Installation Development Plan, Joint Land Use Study, Air Installation Compatible Use Zone study, Installation Complex Encroachment Management Action Plan, and future land use plan. There would be no change to existing land use designations, and there would be an overall decrease of on-base and off-base areas encompassed by noise levels greater than 65 dB DNL. Due to the overall reduction in on-base and off-base noise levels, there would be no adverse impacts to land use resulting from the B-21 beddown at either location. Potentially, there would be beneficial impacts in the context of land use compatibility at both locations.

ES.4.5.2.1 No Action Alternative Consequences (Final EIS Section 3.4.2.1)

There would be no change to existing noise zones or accident potential zones resulting from aircraft operations. Incompatible land use would continue, but impacts would be less than significant due to the relatively small area affected. There are no known USAF initiatives that would result in ground-disturbing activities that would cause changes to land use under the PRTC, Lancer MOA, Brownwood MOA, or Pecos MOA airspace. Aircraft operations would continue at current levels because the B-21 MOB 1 beddown would not occur. On-base development at Dyess AFB or Ellsworth AFB would continue to adhere to existing land use planning procedures and requirements. Any future development projects would be subject to project-specific environmental review. There would be no significant impacts to land use under the No Action Alternative.

ES.4.5.2.2 Dyess AFB Alternative (Final EIS Section 3.4.2.2)

Noise levels under the airspace of the PRTC and the Lancer, Brownwood, and Pecos MOAs would either decrease or remain the same relative to the No Action Alternative and

would be well below 65 dB DNL. There would be no significant impacts to land use due to airspace and range utilization under the Dyess AFB Alternative.

ES.4.5.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.4.2.3)

Noise levels under the PRTC airspace would decrease from the No Action Alternative and there would be no significant impacts to land use due to airspace and range utilization under the Ellsworth AFB Alternative.

ES.4.6 Socioeconomics (Final EIS Section 3.5)

Socioeconomic resources are defined as the basic attributes associated with human activities. Of particular interest are the population characteristics; economic factors including employment and income; and public services including schools, law enforcement, and emergency services. Actions that impact these socioeconomic indicators may have effects on other socioeconomic factors such as housing availability.

ES.4.6.1 Affected Environment (Final EIS Section 3.5.1)

The ROI for the socioeconomics analysis focuses on the area most affected by the action alternative. Dyess AFB is located immediately west of Abilene, Texas. The ROI for Dyess AFB is the Abilene Metropolitan Statistical Area (MSA), which includes Taylor, Jones, and Callahan Counties. Ellsworth AFB is located in Meade and Pennington Counties in South Dakota. These two counties comprise the ROI for Ellsworth AFB. The ROI also includes areas under the Lancer MOA, Pecos MOA, Brownwood MOA, and the PRTC.

ES.4.6.2 Environmental Consequences (Final EIS Section 3.5.2)

Construction, demolition, and renovations for base facilities, infrastructure, and the WGF under the beddown at either location would result in near-term economic benefits to the respective ROI, driven by an increase in construction spending.

Noise levels in the Lancer MOA, Pecos MOA, and Brownwood MOA, and the PRTC would either decrease or not change from the No Action Alternative under either MOB 1 alternative. These noise levels are well below the EPA threshold of 55 dB DNL below which no effects to public health and welfare would occur (EPA, 1974; USAF, 2006); therefore, no significant impacts are anticipated from aircraft operations.

ES.4.6.2.1 No Action Alternative Consequences (Final EIS Section 3.5.2.1)

Under the No Action Alternative, there would be no personnel changes. Population, employment, housing, education, and public services in the ROI would continue to follow existing trends and grow at average annual growth rates similar to those experienced over the last several years. Additionally, there would be no new construction, demolition, or renovation activities required, and no socioeconomic effects would result.

ES.4.6.2.2 Dyess AFB Alternative (Final EIS Section 3.5.2.2)

Under the Dyess AFB Alternative, there would be an estimated increase of approximately 3,953 more people in the ROI than under the No Action Alternative. There would be an estimated increase in dependents of approximately 2,308 over the No Action Alternative with an approximate increase of 727 enrollments in the Abilene Independent School District within the ROI. An increase in active military and civilian USAF employees would have an impact of an estimated additional 1,645 direct jobs, 477 indirect jobs, and a \$19,945,461 value from compared to the No Action Alternative. The increase in active military personnel would also result in the need for an additional 1,170 housing units above what would be demanded under the No Action Alternative. There would be greater demand for public service professionals in the Abilene MSA ROI, with an estimated need for an additional 6 medical professionals, 7 career firefighters, 24 volunteer firefighters, and 11 law enforcement personnel to keep the level of service similar to the national average. A greater number of public service professionals may be required during construction activities. There would be an approximate decrease of 922 people residing within noise level contours of 65 dB DNL or greater as compared to the No Action Alternative. The number of homes whose property values are adversely impacted by aircraft noise would also decrease under this alternative.

ES.4.6.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.5.2.3)

Under the Ellsworth AFB Alternative, there would be approximately 3,147 more people in the ROI than under the No Action Alternative. There would be an estimated increase in dependents of approximately 1,464 more than under the No Action Alternative, with an additional 284 estimated enrollments in the local school districts within the ROI. At end state, the increase in active military and civilian USAF employees would result in approximately 1,664 more direct jobs, 582 indirect jobs, and \$23,878,400 value compared to the No Action Alternative. Additional active military personnel would result in an increased need of 1,011 units above what would be demanded under the No Action Alternative. There would be greater demand for public service professionals in Meade and Pennington Counties, with an estimated need for an additional 5 medical professionals, 6 career firefighters, 19 volunteer firefighters, and 9 law enforcement personnel to keep the level of service similar to the national average. A greater number of public service professionals may be required during construction activities. There would be an approximate decrease of 1,627 estimated persons residing within noise levels of 65 dB DNL or greater as compared to the No Action Alternative. The number of homes whose property values are adversely impacted by aircraft noise would also decrease under this alternative.

ES.4.7 Environmental Justice (Final EIS Section 3.6)

Environmental justice addresses impacts to minority and low-income populations. If there is a potential for the Proposed Action to result in adverse impacts to resource areas that may affect human populations, analysis is conducted to determine whether environmental

justice Communities of Comparison would be disproportionately impacted. This analysis focuses on increased aircraft noise resulting from the Proposed Action as the primary impact to these populations. Noise from construction activities is not applicable because all construction would occur within installation boundaries and noise would be intermittent and temporary. Per USAF guidelines for environmental justice analysis, census data (i.e., percentages of populations identifying themselves as minority, low-income, etc.) was used to determine potential impacts to these populations. The guidelines also address youth (under 18) and elderly (65 and older) as additional sensitive populations. The analysis is completed to determine if implementation of the Proposed Action would result in disproportionate noise impacts to environmental justice populations (i.e., DNL of 65 dB or greater).

ES.4.7.1 Affected Environment (Final EIS Section 3.6.1)

Environmental justice analysis overlays the 65 dB DNL contour on the census data polygons. For Dyess AFB, there are five census tracts containing six block groups, which are partially or wholly exposed to DNL of 65 dB or greater under baseline conditions. For Ellsworth AFB, there are seven census tracts containing 11 block groups, which are partially or wholly exposed to DNL of 65 dB or greater under baseline conditions.

No adverse impacts to environmental justice or sensitive populations are anticipated from the use of the PRTC or the Brownwood MOA, Lancer MOA, and Pecos MOA airspace and ranges by the B-21 aircraft, so those areas are not further discussed for this resource area.

ES.4.7.2 Environmental Consequences (Final EIS Section 3.6.2)

ES.4.7.2.1 No Action Alternative Consequences (Final EIS Section 3.6.2.1)

Under the No Action Alternative, residents within the Dyess AFB and Ellsworth AFB ROI would continue to be exposed to noise levels described under baseline conditions. Table ES-8 identifies the number of environmental justice and sensitive populations currently impacted under the No Action Alternative.

Table ES-8. Number of Residents Exposed to Aircraft Noise in the Region of Influence Under Existing Conditions (No Action – Dyess AFB)

Average Noise Levels	Total Affected Off-Base Population	Minority	Low-Income	Youth	Elderly
65–69 dB	700	202	49	189	94
70–74 dB	448	142	28	122	60
75–79 dB	180	76	8	49	24
80–84 dB	64	28	2	17	8
85+ dB	27	12	1	8	3
Total >65 dB DNL¹	1,419	460	88	385	189

Source: (U.S. Census Bureau, 2018d; U.S. Census Bureau, 2018e) Block group data used.

> = greater than; AFB = Air Force Base; dB = decibel; DNL = day-night average sound level

Note:

1. During data analysis, numbers were rounded and then totaled.

Table ES-9 identifies the number of environmental justice and sensitive populations currently impacted under the No Action Alternative.

Table ES-9. Number of Residents Exposed to Aircraft Noise in the Region of Influence Under Existing Conditions (No Action – Ellsworth AFB)

Average Noise Levels	Total Affected Off-Base Population	Minority	Low-Income	Youth	Elderly
65–69 dB	1,313	186	166	418	114
70–74 dB	391	75	59	136	28
75–79 dB	190	43	39	79	12
80–84 dB	78	10	15	29	6
85+ dB	13	4	3	6	1
Total >65 dB DNL¹	1,985	318	282	668	161

Source: (U.S. Census Bureau, 2018d; U.S. Census Bureau, 2018e) Block group data used.

> = greater than; AFB = Air Force Base; dB = decibel; DNL = day-night average sound level

Note:

1. During data analysis, numbers were rounded and then totaled.

ES.4.7.2.2 Dyess AFB Alternative (Final EIS Section 3.6.2.2)

Implementation of the Dyess AFB Alternative would result in a 65 percent decrease in total residents exposed to noise levels greater than 65 dB once all B-21 aircraft have replaced the B-1. Environmental justice and sensitive populations exposed to noise levels greater than 65 dB would also decrease. Minority and low-income residents would decrease by 63 and 73 percent, respectively; youth and elderly residents would decrease by 70 and 66 percent, respectively, under the Dyess AFB Alternative. Therefore, positive impacts to environmental justice and sensitive populations would occur, due to decreased noise levels in the ROI.

ES.4.7.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.6.2.3)

Implementation of the Ellsworth AFB Alternative would result in an 82 percent decrease in total residents exposed to noise once all B-21 aircraft have replaced the B-1. Environmental justice and sensitive populations exposed to noise levels greater than 65 dB would also decrease. Minority and low-income residents would decrease by 86 and 82 percent, respectively; youth and elderly residents would decrease by 83 and 81 percent, respectively, under the Ellsworth AFB Alternative. Therefore, positive impacts to environmental justice and sensitive populations would occur, due to decreased noise levels in the ROI.

ES.4.8 Biological Resources (Final EIS Section 3.7)

Biological resources include the plant and animal species, habitats, and ecological relationships of the land and water areas within the ROI, which is defined as the area directly or indirectly affected by the Proposed Action. Particular consideration is given to sensitive species, which are those species protected under federal or state law, including threatened and endangered plant and animal species, migratory birds, and bald and golden eagles.

ES.4.8.1 Affected Environment (Final EIS Section 3.7.1)

The EIS uses the Integrated Natural Resources Management Plan for each installation, other USAF NEPA documents, and U.S. Fish and Wildlife Service (USFWS) geographic information system data, and consultation with regulatory agencies to identify and describe biological resources in the ROI. No federally listed plant or animal species or designated critical habitat are known to occur on Dyess AFB or Ellsworth AFB (Laurence, 2020; Dyess AFB, 2017a; USFWS, 2020a; USFWS, 2020b; Ellsworth AFB, 2020a).

Four bird and three mammal species federally listed as threatened or endangered have the potential to occur under the PRTC, but there is no designated critical habitat. There are four federally listed bird species with the potential to occur under the Lancer MOA, five federally listed bird species with the potential to occur under the Brownwood MOA, and five federally listed bird and two mammal species (one endangered and one candidate) with the potential to occur under the Pecos MOA. Only the Pecos MOA has designated critical habitat for a fish species, which was excluded from analysis because no ground disturbance would occur under the existing airspace.

ES.4.8.2 Environmental Consequences (Final EIS Section 3.7.2)

Changes to personnel would not impact biological resources and therefore are not discussed further for this resource area. Noise levels under either action alternative would decrease from the baseline conditions analyzed under the No Action Alternative. Because the B-21 is projected to be generally quieter and tends to fly higher than the B-1, the noise in the area, the number of acres, and wildlife exposed would decrease overall as a result of establishing the B-21 MOB 1 beddown at either location.

Under both action alternatives, the annual estimated number of total aircraft operations would vary by airspace units and in some instances may increase or decrease. Any increase in operations would potentially increase the potential for bird/wildlife aircraft strikes. Adherence to the existing bird/wildlife-aircraft strike hazard program and the USFWS-issued Depredation Permit conditions would minimize the risk of bird-aircraft strikes within airspace utilized, including those for migratory birds (including Birds of Conservation Concern) and special status bird species, to negligible levels.

ES.4.8.2.1 No Action Alternative Consequences (Final EIS Section 3.7.2.1)

On-base biological resources at Dyess AFB and Ellsworth AFB would continue to be managed through each of the installations' Integrated Natural Resources Management Plan programs. Aircraft operations and airspace use under current operational parameters would continue at baseline levels. Previous NEPA analyses generally concluded that aircraft operations within the training areas would not significantly impact any biological resources. Baseline noise levels in the airspace are well below the 65 dB level that would potentially affect listed noise-sensitive wildlife species. Potential bird-aircraft strikes could occur where migratory flyways converge.

ES.4.8.2.2 Dyess AFB Alternative (Final EIS Section 3.7.2.2)

Activities associated with construction, renovation, and demolition projects would occur in previously developed, turf, or landscaped areas. These areas do not provide high quality habitat for wildlife species. However, to the extent practicable, Dyess AFB would avoid tree removal during migratory bird nesting season (March through August). No significant impacts to vegetation, wildlife, or special status would result from implementation of the Dyess AFB Alternative.

ES.4.8.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.7.2.3)

Activities associated with construction, renovation, and demolition projects would occur in previously developed, turf, or landscaped areas. Neither the North WGF Site nor the South WGF Site (Preferred Subalternative) provide high quality habitat for wildlife species. A reduction in low-quality habitat is not considered significant and would not result in population level effects to wildlife species that occur on the base. No significant impacts to vegetation, wildlife, or special status would result from implementation of the Ellsworth AFB Alternative.

ES.4.9 Cultural Resources (Final EIS Section 3.8)

Cultural resources consist of prehistoric and historic sites, structures, artifacts, and any other physical or traditional evidence of human activity considered relevant to a particular culture or community for scientific, traditional, religious, or other reasons. For regulatory purposes, cultural resources are assessed to determine if they are significant and exhibit integrity, in accordance with the National Register criteria (36 CFR 63) to qualify for listing in the National Register of Historic Places.

ES.4.9.1 Affected Environment (Final EIS Section 3.8.1)

This section describes known historic properties within the affected areas that are eligible for listing in the National Register of Historic Places. As the affected environment is limited to areas already used by the USAF for current bomber operations, information is drawn from existing studies, cultural resource management plans, and previous environmental documents. The USAF initiated government-to-government consultation with Native American tribes with potential interest in the Proposed Action and engaged the appropriate State Historic Preservation Officers (SHPOs) and other consulting parties in accordance with Section 106 of the National Historic Preservation Act (NHPA).

The Area of Potential Effects to historic properties is the ROI for cultural resources in the Final EIS. The Area of Potential Effects for this Proposed Action includes areas directly or indirectly affected by construction and implementation of the proposed B-21 MOB 1 beddown at Dyess AFB or Ellsworth AFB, as well as areas beneath the airspace to be utilized for B-21 training operations.

ES.4.9.2 Environmental Consequences (Final EIS Section 3.8.2)

Noise contours for both MOB 1 alternatives show that noise received by each of the historic properties at either installation would decrease. In all cases, these noise levels are well below the thresholds that might cause damage to structures. Noise levels within utilized airspace under either beddown alternative would either remain the same or decrease from the No Action Alternative. Since the B-21 flies higher than the B-1, the visibility of the aircraft from historic properties below these airspaces would decrease. Additionally, the USAF would continue to adhere to stipulations in the 2014 PRTC Programmatic Agreement until the new agreement is renegotiated. The new agreement is expected to contain similar stipulations as the 2014 PRTC Programmatic Agreement, which are expected to minimize potential adverse effects to historic properties under the airspace and guide ongoing coordination with the tribes and other stakeholders. All PRTC-related air operations would adhere to the legal descriptions for the PRTC MOAs published in the National Flight Data Digest (effective date: September 17, 2015). Therefore, no adverse impacts to cultural resources would occur from aircraft operations under either MOB 1 alternative.

ES.4.9.2.1 No Action Alternative Consequences (Final EIS Section 3.8.2.1)

Under the No Action Alternative, cultural resources at Dyess AFB and Ellsworth AFB would continue to be managed in accordance with the Integrated Cultural Resources Management Plan. No historic properties would be affected because the B-21 would not beddown at either location. Aircraft from Dyess AFB would continue to utilize the PRTC and the Lancer, Brownwood, and Pecos MOAs and aircraft from Ellsworth AFB would continue to utilize the PRTC for training operations. Operations would not exceed levels or parameters currently authorized for these training areas.

ES.4.9.2.2 Dyess AFB Alternative (Final EIS Section 3.8.2.2)

Construction, demolition, and renovation activities would not directly impact any historic properties at Dyess AFB.

ES.4.9.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.8.2.3)

The development of facilities and infrastructure for the Ellsworth AFB Alternative would require the demolition of three historic properties and renovation of a fourth historic property. The USAF consulted with the South Dakota SHPO regarding the renovation of the Professional Results in Daily Efforts Hangar (PRIDE Hangar), and on February 4, 2020, received concurrence that the project would result in no adverse effect. The demolition of Buildings 7258, 7260, and 7262 would result in an adverse effect to these historic properties. The USAF initiated consultation with the South Dakota SHPO and the Advisory Council on Historic Preservation to resolve this adverse effect. The South Dakota SHPO concurred that the demolition of these buildings would result in an adverse effect, and the Advisory Council on Historic Preservation declined to participate in the Section 106 consultation process. The adverse effects caused by the demolition to

Buildings 7258, 7260, and 7262 have been mitigated via a Memorandum of Agreement between Ellsworth AFB and the South Dakota SHPO signed on February 16, 2021, as required by the NHPA Section 106 (Appendix F, Cultural Resources).

No historic properties occur within the North WGF Site location or South WGF Site location. However, after initiating NHPA Section 106 consultation with the South Dakota SHPO, it was determined that the South WGF Site Subalternative (Preferred Subalternative) location required an archaeological survey because the USAF acquired this land after the 1994 archaeological survey was conducted. An archaeological inventory conducted in late 2020 in the South WGF Site Subalternative (Preferred Subalternative) location did not encounter any newly identified cultural resources; therefore, no avoidance or further work was recommended. The South Dakota SHPO reviewed these findings and concurred with the USAF determinations on January 22, 2021 (see Appendix F, Cultural Resources).

ES.4.10 Physical Resources (Final EIS Section 3.9)

Physical resources analyzed in the Final EIS include topography, soils, and water. Section 3.9.1.1 of the Final EIS provides detailed definitions of each of these features.

ES.4.10.1 Affected Environment (Final EIS Section 3.9.1)

The ROI for physical resources consists of areas within and adjacent to Dyess AFB and Ellsworth AFB where soil and water resources may be directly or indirectly affected by components of the Proposed Action (e.g., construction activities). Aircraft operations within the proposed airspace would not affect physical resources at the PRTC, or the Brownwood, Lancer, or Pecos MOAs. Therefore, these areas are not discussed further for this resource area.

ES.4.10.2 Environmental Consequences (Final EIS Section 3.9.2)

At both locations, coverage under a construction general permit would be required for land disturbance greater than 1 acre. Additionally, the Civil Engineering Squadron Environmental Group reviews all projects and requires erosion and sediment control measures be implemented for construction projects. Continuing implementation of Environmental Impact Analysis Process reviews, the erosion control program, the stormwater inspection program, and associating permitting procedures would prevent significant impacts on soils at either location under both MOB 1 alternatives and the No Action Alternative. Additionally, by continuing implementation of each installation's Storm Water Pollution Prevention Plan (SWPPP), Spill Prevention, Control, and Countermeasures (SPCC) Plan, and associated BMPs, significant impacts on water resources would not occur.

Increased runoff associated with increased impervious surfaces can be addressed through design of stormwater conveyances using established engineering standards. Increased runoff can be managed by stormwater features that treat, store, and promote infiltration of stormwater before it can impact surface waters. Stormwater management

controls would be implemented in accordance with requirements in Section 438 of the Energy Independence and Security Act.

B-21 operations would not result in impacts to water quality if personnel adhere to operational requirements specified in the SWPPP, SPCC Plan, and requirements specified by the base Hazardous Material Management and Hazardous Waste Disposal Programs. At Ellsworth AFB it is particularly important that personnel recover aircraft deicing residuals from aprons as soon as practicable.

Additional petroleum, oil, and lubricant (POL) use and storage associated with the B-21 MOB would increase the potential for spills, but this potential would be reduced through the application of industry standards in designing the POL storage facilities and adherence to the base SPCC Plan. Water resources could potentially be impacted by inadvertent releases of hazardous chemicals that may occur during airfield operations and from leaking fuel storage tanks. The volume of fuels and hazardous chemicals used and volume of hazardous waste generated are not expected to change under any alternative. With continued implementation of hazardous material and hazardous waste management actions, as well as spill prevention and response plans, significant impacts would not be expected under any alternative.

ES.4.10.2.1 No Action Alternative Consequences (Final EIS Section 3.9.2.1)

Under the No Action Alternative, new impacts to physical resources on Dyess AFB and Ellsworth AFB would not occur because the B-21 would not beddown at either location. However, demolition, construction, and maintenance would continue as part of normal operations and installation development, and these activities may affect physical resources. Potential impacts would be mitigated or avoided via implementation of the previously discussed processes.

ES.4.10.2.2 Dyess AFB Alternative (Final EIS Section 3.9.2.2)

Overall, no significant impacts to physical resources would occur under the Dyess AFB Alternative. There would be low potential for soil erosion from land disturbance during construction, due to flat topography. The SWPPP includes BMPs for erosion and sediment control.

Buildings would be sited to avoid the 100-year floodplain, where feasible, which is present in a limited area within the planned primary area of construction. The existing aircraft parking apron would need to be expanded, impacting a portion of the Northern Diversion Ditch and approximately 2 acres of floodplain delineated within the ditch (an already disturbed environment). The proposed extension of the ramp to the north would require extending the existing 10-foot by 10-foot concrete box culvert that runs west to east under the main runway, maintaining similar flow capacity and discharging to the existing lined culvert of the diversion ditch. The hydrological properties of the floodplain would not be impacted. If the Dyess AFB Alternative is chosen, a Finding of No Practicable Alternative would be included in the Record of Decision.

ES.4.10.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.9.2.3)

Overall, no significant impacts would be expected under the Ellsworth AFB Alternative. There would be moderate to high soil erosion potential in areas with moderate to steep topography. The base recognizes the presence of erosion-prone areas and has included erosion and sediment control measures for moderate to steep slopes in the base SWPPP.

Buildings would be sited to avoid 100-year floodplains, where feasible. Some of the planned construction areas and the North WGF Site include 100-year floodplains. Additionally, construction of a bridge between the alert apron and the South WGF Site (Preferred Subalternative) would be constructed over approximately 1 acre of floodplains and 0.4 acre of jurisdictional wetlands that occur between these two areas. Placement of the bridge would avoid directly impacting these wetlands to the maximum extent practicable, and implementation of sediment control measures during construction activities would minimize potential indirect impacts. However, if construction activities cannot avoid impacting floodplains and wetlands, Ellsworth AFB would coordinate with the U.S. Army Corps of Engineers to obtain a permit under Section 404 of the Clean Water Act. The USAF would prepare a Finding of No Practicable Alternative as part of the Record of Decision.

ES.4.11 Hazardous Materials and Hazardous and Solid Wastes (Final EIS Section 3.10)

This resource area evaluates hazardous material usage and hazardous waste generation and storage. Affected resources include Environmental Restoration Program (ERP) sites as well as the potential presence of toxic substances such as asbestos in building materials and lead in paints. This resource area also evaluates impacts associated with solid waste disposal from proposed activities such as C&D debris and municipal and solid waste.

ES.4.11.1 Affected Environment (Final EIS Section 3.10.1)

The ROI consists of installation boundaries where hazardous materials are used; where hazardous and solid wastes are generated; on-base contamination areas (i.e., ERP sites); off-base areas potentially impacted by contamination; and off-base landfills where solid wastes are disposed of. Training operations at the PRTC, and the Lancer MOA, Brownwood MOA, and Pecos MOA would have no impact on the affected environment for hazardous materials, hazardous or solid wastes, or ERP sites; consequently, these are not discussed further for this resource area.

ES.4.11.2 Environmental Consequences (Final EIS Section 3.10.2)

Management of toxic substances and hazardous wastes would be accomplished in accordance with all regulatory requirements regardless of alternative selected. Hazardous and nonhazardous waste generated from aircraft maintenance would also be managed according to established procedures. No change to permits, hazardous waste

generator status, or management procedures would be required and no adverse environmental impacts are anticipated. No significant impacts related to hazardous materials would occur under any alternative.

Municipal solid waste would be generated as a result of new personnel assigned to either location. The combined quantity of C&D debris and municipal solid waste generated under the MOB 1 alternatives would not result in significant impacts to landfill capacity. Implementation of appropriate waste recycling, diversion, and management measures would further minimize any potential impacts.

ES.4.11.2.1 No Action Alternative Consequences (Final EIS Section 3.10.2.1)

Under the No Action Alternative, the B-21 would not beddown at either Dyess AFB or Ellsworth AFB and there would be no change in the storage or use of hazardous materials or the generation of solid or hazardous wastes. Ongoing activities related to the management of ERP sites would continue. As such, implementation of the No Action Alternative would not result in significant impacts at either Dyess AFB or Ellsworth AFB.

ES.4.11.2.2 Dyess AFB Alternative (Final EIS Section 3.10.2.2)

The general planned areas of construction would overlap areas associated with five ERP sites on Dyess AFB; construction activities would also avoid identified per- and polyfluoroalkyl substances (PFAS) sites. Development on or near any ERP or PFAS sites would be coordinated with the state regulatory agency and other relevant stakeholders, as applicable. No significant impacts related to ERP issues are anticipated.

ES.4.11.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.10.2.3)

The general planned areas of construction would only overlap areas associated with one ERP site on Ellsworth AFB. Development on or near any ERP or PFAS sites would be coordinated with the state regulatory agency and other relevant stakeholders, as applicable. No significant impacts related to ERP issues are anticipated.

ES.4.12 Health and Safety (Final EIS Section 3.11)

The health and safety resource area addresses the following concerns: flight safety, including the potential for aircraft mishaps; hazards related to day-to-day operations and construction activities; and potential impacts associated with munitions storage and explosive safety.

ES.4.12.1 Affected Environment (Final EIS Section 3.11.1)

The affected environment for flight safety and mishap risks would be the same as under those discussed for Dyess AFB for Lancer, Brownwood, and Pecos MOAs and Ellsworth AFB for the PRTC. Airspace and range utilization would have no impact on the affected

environment for explosive or construction safety; consequently, these are not discussed further for this resource area.

ES.4.12.2 Environmental Consequences (Final EIS Section 3.11.2)

There would be no specific or unique health and safety impacts to changes in personnel or airspace and range utilization. Therefore, these components of the Proposed Action are not discussed further for this resource area. Potential impacts to health and safety from airfield operations at Dyess AFB and Ellsworth AFB would be associated with flight safety and mishap prevention. Regardless of alternative selected, all actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable USAF safety requirements, approved technical data, and Air Force Occupational and Environmental Safety, Fire Protection, and Health standards; consequently, no significant impacts would occur.

ES.4.12.2.1 No Action Alternative Consequences (Final EIS Section 3.11.2.1)

Under the No Action Alternative, Dyess AFB and Ellsworth AFB would continue current operations using the B-1 aircraft. Established procedures would continue for flight safety and mishap prevention and for weapons safety. Ground operations and ongoing reconstruction activities would continue to be conducted using the same safety processes and procedures as under current operations.

ES.4.12.2.2 Dyess AFB Alternative (Final EIS Section 3.11.2.2)

Facilities and Infrastructure (Final EIS Section 3.11.2.2.4)

Quantity-distance (QD) arcs for aircraft parking would move from the south end of the parking apron to the north end. Additionally, general planned areas of construction located near the center and north portions of the flightline would fall within existing QD arcs. Proposed structures in these areas would undergo an explosive safety review to ensure occupancy and land uses would be compatible with these locations. Based on that review, Dyess AFB may implement compensatory measures, such as identifying which buildings need to be evacuated when munitions are loaded on certain areas of the flightline. As part of this process, existing explosive safety plans (e.g., Explosive Site Plan [ESPs] or Aircraft Parking Plans) would be updated accordingly. With implementation of these measures, there would be no adverse impacts related to explosive safety.

Weapons Generation Facility (Final EIS Section 3.11.2.2.5)

The footprint for the WGF would fall within the existing QD arcs at the munitions storage area. The WGF would be used to maintain nuclear ordnance carried on the B-21. This ordnance contains nuclear components as well as components employing small quantities of conventional explosives. The WGF would be purpose-built to ensure that nuclear material and conventional explosives would be stored separately. Additionally, building design (i.e., reinforced concrete construction, interior layout, blast resistant walls), combined with would incorporate dedicated explosive safety and fire suppression

systems to eliminate risks to the public. The facility would also be subject to the ESP process to ensure that appropriate QD arcs are established and adjoining land uses are compatible; consequently, there would be no adverse impacts related to explosives safety.

ES.4.12.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.11.2.3)

Facilities and Infrastructure (Final EIS Section 3.11.2.3.4)

General planned areas of construction would be located within existing QD arcs at munitions storage area, near the center the flightline, and near the south end of the runway. Potential impacts and associated measures would be the same as those described for the Dyess AFB Alternative.

Weapons Generation Facility (Final EIS Section 3.11.2.3.5)

The footprint for the North WGF Site Subalternative would fall within existing QD arcs, but the South WGF Site Subalternative (Preferred Subalternative) would not. The WGF would be purpose-built to store B-21 ordnance and would employ dedicated explosives safety and fire suppression systems to eliminate any risk to the public. The facility would also be subject to the ESP process to ensure that appropriate QD arcs are established and adjoining land uses are compatible; consequently, there would be no adverse impacts related to explosive safety.

ES.4.13 Transportation (Final EIS Section 3.12)

ES.4.13.1 Affected Environment (Final EIS Section 3.12.1)

Transportation resources evaluated in the Final EIS consist of the infrastructure components, such as public roadways and associated features (e.g., intersections, roundabouts, entry/exit points) that provide access to Dyess AFB or Ellsworth AFB, as well as the road network and associated features within the boundaries of Dyess and Ellsworth AFBs.

ES.4.13.2 Environmental Consequences (Final EIS Section 3.12.2)

ES.4.13.2.1 No Action Alternative Consequences (Final EIS Section 3.12.2.1)

Under the No Action Alternative, the B-21 beddown would not take place at Dyess AFB or Ellsworth AFB, and there would be no associated construction, demolition, or renovation activities. Additionally, there would be no personnel changes or associated effects to traffic operations on or adjacent to the installations. Transportation projects not associated with the B-21 beddown would continue with a project-specific environmental review. Traffic operations on and outside the bases would continue as under existing conditions. The on-base road systems would continue to function as they do currently. Although off-base transportation service levels would be low at some times and locations,

activities at Dyess AFB and Ellsworth AFB would have little effect on operations, and impacts would be less than significant.

ES.4.13.2.2 Dyess AFB Alternative and Ellsworth AFB Alternative (Final EIS Sections 3.12.2.2 and 3.12.2.3)

Airfield operations would not affect transportation at either Dyess AFB or Ellsworth AFB. Additionally, airspace and range utilization would not affect transportation at the PRTC or the Brownwood, Lancer, or Pecos MOAs. Therefore, these components of the Proposed Action are not carried forward in the transportation analysis.

An increase in personnel associated with the B-21 beddown would result in increased on-base and off-base traffic operations at both locations. In at least some areas of the installations, higher traffic volume would likely increase traffic congestion and decrease road segment or intersection service levels, and could possibly cause some segments to operate near capacity. Increased off-base traffic operations, would potentially cause a substantial increase in congestion and queuing near base gates during peak hours. In the absence of management actions, additional personnel would potentially cause a significant increase in congestion and queuing near installation gates.

Construction, renovation, and demolition projects at either location could potentially result in traffic congestion and reduced service levels, particularly during peak hours. Unaffected roads could potentially accommodate rerouted traffic, and level of service would not likely be affected substantially on most parts of the base. Delivery and removal of materials and debris, as well as base access by construction crews, would result in a small increase in off-base traffic. However, the number of vehicles involved would be small, and activities would potentially occur throughout the work day. The effects of these actions would be temporary and would cease with completion of the projects. No significant impacts would result from implementation of either MOB 1 alternative.

ES.4.14 Utilities and Infrastructure (Final EIS Section 3.13)

The utilities described and analyzed for potential impact resulting from the beddown of the B-21 MOB 1 include potable water, wastewater, electricity, and natural gas.

ES.4.14.1 Affected Environment (Final EIS Section 3.13.1)

The description of each utility in Section 3.13.1.1 of the Final EIS focuses on the existing infrastructure, current utility use, and any pre-defined capacity or limitations as set forth in permits or regulations. Airfield operations at each base and airspace and range utilization associated with the B-21 MOB 1 beddown would not directly impact utilities and infrastructure and are not discussed further in this section.

ES.4.14.2 Environmental Consequences (Final EIS Section 3.13.2)

Under both MOB 1 alternatives, potable water usage, wastewater discharge, usage of electricity, and natural gas would be expected to increase based on the projected

personnel increase. The current water supply capacity, wastewater discharge permit limits, electrical system capacity, and natural gas system capacity at both locations is more than sufficient to support the increased growth associated with the B-21 MOB 1 beddown. Overall, utility usage would not exceed any permitted/allowed usage capacity limits and there would be no significant impacts on utilities under either MOB 1 alternative.

ES.4.14.2.1 No Action Alternative Consequences (Final EIS Section 3.13.2.1)

Under the No Action Alternative, the B-21 would not beddown at Dyess AFB or Ellsworth AFB and would not require the use of existing utilities or the establishment of new utilities in areas on base currently without utilities. The existing conditions for potable water, wastewater, electricity and natural gas at each base would continue under the No Action Alternative and serve as a baseline for the analysis under the Proposed Action.

ES.4.14.2.2 Dyess AFB Alternative (Final EIS Section 3.13.2.2)

The general construction footprint for facilities and infrastructure would occur in areas where existing utilities systems are already established. Therefore, impacts to utilities would be in relation to the number of personnel, discussed above. Extension of the natural gas, potable water, and wastewater systems may be required for the proposed WGF location. There is ample available capacity in regards to potable water, wastewater, electricity, and natural gas systems at Dyess AFB to support the new WGF.

ES.4.14.2.3 Ellsworth AFB Alternative (Preferred Alternative) (Final EIS Section 3.13.2.3)

Impacts to utilities from the proposed facilities and infrastructure would only be in relation to the increased personnel described above. There is ample available capacity in regards to potable water, wastewater, electricity, and natural gas systems to support the WGF at either the North WGF Site Subalternative or the South WGF Site Subalternative (Preferred Subalternative). The North WGF Site Subalternative may require extension of the electrical, natural gas, potable water, and wastewater systems while the South WGF Site Subalternative (Preferred Subalternative) may require extension of the wastewater system.

ES.5. MITIGATION (Final EIS Section 2.9)

Specified mitigation measures have been identified and will be carried forward, to the extent practicable, in implementing the selected alternative and will be defined in the Record of Decision. Chapter 3 (Environmental Consequences) in the Final EIS includes and analyzes mitigations for impacts identified or required by regulation or agency guidance for each affected resource.

ES.5.1 Mitigation Measures (Final EIS Sections 2.9.1 and 2.9.2)

The mitigations discussed in an EIS cover a range of issues. Generally mitigations may be applied in the development of the proposed action or alternatives (i.e., mitigation by avoidance) or applied during the impact analysis. Mitigation measures may also be considered for impacts that, by themselves, would not be considered “adverse.” The proposed action is considered as a whole to address specific effects on the environment (regardless of the level of the impacts), and mitigations are developed where it is feasible to do so.

CEQ regulations (at 40 CFR 1508.20) define mitigation in the following five ways:

1. **Avoiding** the impact altogether by not taking a certain action or parts of an action
2. **Minimizing** impacts by limiting the degree or magnitude of the action, and its implementation
3. **Rectifying** the impact by repairing, rehabilitating, or restoring the affected environment
4. **Reducing or eliminating** the impact over time by preservation and maintenance operations during the life of the action
5. **Compensating** for the impact by replacing or providing substitute resources or environments

A mitigation plan will be developed in accordance with 32 CFR 989.22(d) to address specific mitigations selected in the Record of Decision. The mitigation plan, for example, will also include a SWPPP and a SPCC Plan or updates to these plans specific to the alternative selected. These plans are in addition to and complement any permits that may be issued to implement mission actions at the chosen alternative.

NEPA imposes a continuing duty to supplement (40 CFR 1502.9(c)) existing NEPA documents when substantial changes are made that are relevant to environmental concerns or in response to the identification of “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR 1502.9(c)(1)(ii)). The USAF is responsible for monitoring the predictions (e.g., impact, mitigations) made in its completed NEPA documentation (40 CFR 1505.3, 1505.2(c)). If substantial changes are recognized that are relevant to environmental concerns or that bear on a proposed action or its impacts, the USAF would reevaluate for potential impacts related to those changes.

Table ES-10 provides a list of resource-specific mitigations and management actions associated with the B-21 MOB 1 beddown.

Table ES-10. Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

Resource Area	Dyess AFB Alternative	Ellsworth AFB Alternative (Preferred Alternative)
Noise	Based on the noise analysis in this EIS, no mitigations would be necessary. However, the USAF is responsible for monitoring the predictions (e.g., impact, mitigations) made in its completed NEPA documentation (40 CFR 1505.3, 1505.2(c)). If substantial changes are recognized that are relevant to environmental concerns or that bear on a proposed action or its impacts, the USAF will reevaluate for potential impacts related to those changes. This would include monitoring noise and public noise complaints and developing potential mitigation measures that could be implemented based on USAF monitoring.	
Air Quality	Construction activities would employ standard management measures for construction such as watering of graded areas, covering of soil stockpiles, and contour grading (if necessary), to minimize temporary generation of dust and particulate matter. This would serve to minimize air emissions associated with the elements of the Proposed Action.	
Socioeconomics	The USAF would work with the local community to assist in any way possible with the planning for the increased population and increased requirements for support.	
Cultural Resources	No mitigations would be necessary.	<p>The adverse effects caused by the demolition to Buildings 7258, 7260, and 7262 have been mitigated via a Memorandum of Agreement between Ellsworth AFB and the South Dakota SHPO, as required by the NHPA Section 106 (54 U.S.C. 306108). The MOA was signed on February 16, 2021 (Appendix F, Cultural Resources) and includes the following stipulations to be carried out prior to demolition:</p> <ul style="list-style-type: none"> • The USAF must take photographic documentation of the buildings for the South Dakota SHPO to approve for inclusion in the South Dakota State Archives. • The USAF must conduct a search for any existing reports, photographs, drawings, plans, or similar documents related to Buildings 7258, 7260, and 7262. The USAF will submit a letter to the South Dakota SHPO documenting what repositories or files were searched. The South Dakota SHPO will make submitted documents available for public use and reproduction through the South Dakota State Archives.
Physical Resources	Construction-related impacts on soil and surface water quality can be reduced through implementation of erosion and sediment control measures. Examples of controls include minimization of earth-moving activities during wet weather/conditions, covering soil stockpiles, installation of silt fencing	Construction-related impacts on soil and surface water quality can be reduced through implementation of erosion and sediment control measures. If possible, buildings should be sited in areas with moderate slopes and avoid disturbing areas with steep slopes, specifically at the North WGF Site.

Table ES-10. Proposed Resource-Specific Mitigations and Management Actions to Reduce the Potential for Environmental Impacts

Resource Area	Dyess AFB Alternative	Ellsworth AFB Alternative (Preferred Alternative)
	<p>and sediment traps, and revegetation of disturbed areas with native plants as soon as possible to contain and prevent off-site migration of sediment or eroded soils from the project areas.</p> <p>Site drainage around the new facilities should be designed to manage the anticipated increase in runoff from increased impervious surfaces through properly sized stormwater conveyance structures and incorporating stormwater management features such as porous pavements and infiltration basins that treat, store, and infiltrate runoff onsite before it can affect downstream water bodies (EPA, 2020a).</p> <p>Building sites should be located to avoid the 100-year floodplain areas, if possible.</p>	<p>Site drainage around the new facilities should be designed to manage the anticipated increased runoff from the increased impervious surface through properly sized stormwater conveyance structures, and by incorporating stormwater management features such as porous pavements and infiltration basins that treat, store, and infiltrate runoff onsite before it can affect downstream water bodies (EPA, 2020a).</p> <p>Facilities and structures where military operations would involve handling of hazardous chemicals or fueling operations would be best placed where spill control valves serve as physical barriers that could prevent releases from flowing into the ponds and offsite streams.</p> <p>Building sites should be located to avoid the 100-year floodplain areas. These areas are present in some planned construction areas but are limited in areal extent and could be easily avoided. Additionally, jurisdictional wetlands occur in the area between the alert apron and the South WGF Site (Preferred Subalternative), where a bridge would be constructed. If construction activities cannot avoid impacting floodplains and wetlands, Ellsworth AFB would coordinate with the U.S. Army Corps of Engineers to obtain a permit under Section 404 of the Clean Water Act. In general, actions resulting in loss of wetland functions may require compensatory mitigation measures.</p>
<p>Hazardous Materials and Solid Wastes</p>	<p>There is a potential that construction sites could be impacted by PFOS/PFOA or other contaminants (e.g., fuels, solvents). The base would comply with USAF guidance to manage PFAS impacted soils and other waste streams containing PFAS. No other mitigation measures or additional management actions other than those described in the Commonalities section would be necessary to reduce impacts to below significant levels for hazardous materials and hazardous and solid waste as no significant impacts are anticipated.</p>	
<p>Transportation</p>	<p>During construction, demolition, and renovation activities, consider scheduling commercial deliveries outside peak traffic hours and requiring all construction crews to use the commercial gate.</p> <p>During project planning, include measures to ensure proper emergency response ability is maintained during construction activities and after project completion.</p>	

AFB = Air Force Base; CFR = Code of Federal Regulations; EIS = Environmental Impact Statement; EPA = U.S. Environmental Protection Agency; NEPA = National Environmental Policy Act; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonate; SHPO = State Historic Preservation Officer; USAF = U.S. Air Force; U.S.C. = United States Code; WGF = Weapons Generation Facility

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