

**SUPPLEMENTAL
ENVIRONMENTAL ASSESSMENT**

National Radar Cross Section Test Facility
Survivability Test Stand Construction and Operation
White Sands Missile Range, New Mexico

January 2026

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DRAFT FINDING OF NO SIGNIFICANT IMPACT

Name of the Proposed Action: Supplemental Environmental Assessment for National Radar Cross Section Test Facility Survivability Test Stand Construction and Operation White Sands Missile Range, New Mexico

Description of the Proposed Action: The Arnold Engineering Development Complex (AEDC) U.S. Air Force 704th Test Group proposes to construct and operate an outdoor test stand on the campus of the existing National Radar Cross Section Test Facility (NRTF) on White Sands Missile Range (WSMR) land. The new outdoor test stand capability would provide the ability to rotate jet engine test articles and measure electromagnetic scattering or radar cross section (RCS), infrared (IR), and acoustic factors. The test stand would provide the ability to rotate 180 degrees on the horizontal plane and measure aircraft survivability unobstructed 360-degrees around the test article.

Purpose and Need: The purpose of the proposed action is to construct and operate an outdoor test capability that measures jet engine test article survivability.

Currently, the Air Force does not have the capability to acquire outdoor measurements of survivability while running aircraft engines, nor the infrastructure to facilitate acquisition various measurements. The proposed action is needed to meet Air Force standards.

Environmental Consequences: Land use, air quality, soils, erosion control, natural and water resources, traffic and transportation, and utilities/infrastructure were evaluated, while evaluation of other valued environmental components was incorporated by reference. The proposed activities could lead to the loss of vegetation near the test stand during testing events. Indirect effects of groundwater contaminated from stormwater runoff or water used to rinse the test stand tarmac were evaluated as it could eventually reach Salt Creek, which provides habitat for White Sands pupfish. Further NEPA analysis will be needed to assess potential impacts associated with future operational energy requirements.

Conclusion: The Action Alternative is the preferred alternative. This alternative would install and operate a survivability test stand at NRTF. Based on the analysis in this supplemental environmental assessment and consideration of the mitigation measures listed in Section 3.9, and in accordance with the guidelines for determining the significance of proposed federal actions (DoD NEPA Implementing Procedures, 2025), WSMR has concluded that installation and operation of the survivability test stand will not result in a significant effect on the environment. Mitigation measures include:

- Complete burrowing owl surveys by a qualified biologist before construction;
- Conduct bird surveys, if vegetation removal occurs during migratory bird nesting season; and
- Retain stormwater runoff on site

WSMR has determined that an Environmental Impact Statement pursuant to the National Environmental Policy Act is not required, and this Finding of No Significant Impact is hereby submitted.

Draft Availability and Points of Contact:

The environmental analysis will be provided on the WSMR Garrison Directorate of Public Works Environmental Documentation and Information website:

<https://home.army.mil/wsmr/index.php/about/garrison/directorate-public-works-dpw/environmental>.

The draft finding of no significant impact will be published in the Las Cruces Sun News and the Alamogordo Daily News newspapers. Printed copies will be sent to the Thomas Branigan Memorial Library (200 E Picacho Avenue Las Cruces, NM 88001), and the Alamogordo Public Library (920 Oregon Avenue Alamogordo, NM 88310). A hard copy of the document may be sent by physical mail upon request.

Written comments concerning the proposed action should be directed to Customer Support (U.S. Army Directorate of Public Works-Environmental Division) at White Sands Missile Range, .. Comments must be postmarked and received within 30 days after the draft document is published. Comments can be sent to the following address:

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14. ABSTRACT This environmental assessment (EA) evaluates possible environmental effects on the human and natural environment associated with constructing and operating an outdoor test capability that measures engine test article survivability at the NRTF facility. Impacts on the affected environment (including land use, air quality, soils, biological resources, water resources, traffic, energy demand, and hazardous materials and waste) were investigated. No significant impacts to the environment have been identified for implementation of the preferred alternative.					
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Acronyms and Abbreviations

AAQS	Ambient Air Quality Standard	NESHAP	National Emissions Standards for Hazardous Air Pollutants
AEDC	Arnold Engineering Development Complex	NMAC	New Mexico Administrative Code
AFB	Air Force Base	NMBGMR	New Mexico Bureau of Geology and Mineral Resources
AR	Army Regulation	NMDGF	New Mexico Department of Game and Fish
BMP	Best management practice	NMERT	New Mexico Environmental Review Tool
C	Candidate	NO₂	Nitrogen dioxide
CAA	Clean Air Act	NRCS	Natural Resources Conservation Service
CFR	Code of Federal Regulations	NRTF	National RCS Test Facility
CO	Carbon monoxide	O₃	Ozone
DoD	Department of Defense	O&M	Operations and maintenance
DPW-E	Directorate of Public Works Environmental Division	Pb	Lead
E	Endangered		Particulate matter with an aerodynamic diameter of 2.5 microns or less
EIS	Environmental impact statement	PM_{2.5}	Particulate matter with an aerodynamic diameter of 10 microns or less
EISA	Energy Independence and Security Act	PM₁₀	Prevention of Significant Deterioration Proposed
EPA	Environmental Protection Agency	PSD	threatened
EXPN	Experimental	PT	Potential to Emit
F3	Fluoride free foam	PTE	RATSCAT Advanced Measurement System
FEIS	Final environmental impact statement	RAMS	Radar Target Scatter
FNSI	Finding of No Significant Impact	RATSCAT	Resource Conservation and Recovery Act
Ft	Foot/feet	RCRA	Radar cross section
H₂S	Hydrogens sulfide	RCS	Research, development, test, and evaluation
H	High	RDT&E	Research, Diagnostic, and Integration
HAFB	Holloman Air Force Base	ReDI	Radiofrequency
HAP	Hazardous air pollutant	RF	Region of influence
HVAC	Heating, ventilation, and air conditioning	ROI	Vulnerable
ICD	Intelligence Community Directive	S3	Supplemental Environmental Assessment
ICRMP	Integrated Cultural Resources Management Plan	SEA	Species of greatest conservation need
INRMP	Integrated Natural Resources Management Plan	SGCN	Sulfur dioxide
IpaC	Information for Planning and Consultation	SO₂	Species of Concern
IR	Infrared	SOC	Survivability Test Stand
Km	Kilometer	STS	Threatened
L	Low	T	Test Group
M	Meter	TG	Tons per year
MBTA	Migratory Bird Treaty Act	tpy	United States Code
M	Medium	USC	United States Department of Agriculture
mt/year	Metric tons/year	USDA	Valued environmental component
MDL	Mobile diagnostic lab	VEC	Very high
MILSPEC	Military Specification	VH	Very low
NEP	Nonessential experimental population	VL	White Sands Missile Range
NEPA	National Environmental Policy Act	WSMR	

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TABLE OF CONTENTS

Draft Finding of No Significant Impact.....	iii
Acronyms and Abbreviations	viii
Table of Contents.....	x
Chapter 1 Introduction	1-1
1.1 Background	1-1
1.2 Project Location	1-1
1.3 DECISIONS TO BE MADE.....	1-2
1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION.....	1-2
1.5 Related Environmental Documentation	1-5
Chapter 2 Proposed Action and Alternatives.....	2-7
2.1 Screening Criteria for Alternatives	2-7
2.2 The No-Action Alternative.....	2-7
2.3 Action Alternative – The Proposed Action.....	2-7
2.3.1.1 Outdoor Test Stand.....	2-8
2.3.1.2 Support Facilities.....	2-8
2.3.2 Operation of the STS at NRTF	2-9
2.3.3 Routine Maintenance and Repairs	2-10
2.4 Alternatives Considered but Not Carried Forward	2-10
2.4.1 Installation of STS at the RAMS Range.....	2-10
2.4.2 Installation of an STS at the NRTF ReDI Range with MDL.....	2-10
2.4.3 Installation of STS at Edwards Air Force Base	2-10
Chapter 3 Affected Environment and Environmental Consequences.....	3-1
3.0 Valued Environmental Components	3-1
3.1 Land Use	3-3
3.1.1 Affected Environment.....	3-3
3.1.2 Environmental Consequences.....	3-3
3.1.2.1 The No-Action Alternative.....	3-3
3.1.2.2 Action Alternative – The Proposed Action	3-3
3.1.3 Best Management Practices and Mitigations.....	3-3

3.2	Air Quality.....	3-4
3.2.1	Affected Environment.....	3-6
3.2.1.1	Attainment Status	3-6
3.2.1.2	Area Meteorology.....	3-6
3.2.2	Environmental Consequences.....	3-7
3.2.2.1	The No-Action Alternative.....	3-7
3.2.2.2	Action Alternative – The Proposed Action	3-7
3.2.3	Best Management Practices and Mitigations.....	3-9
3.3	Soils, Geology, and Topography.....	3-11
3.3.1	Affected Environment.....	3-11
3.3.1.1	Soils	3-11
3.3.1.1	Geology	3-11
3.3.1.2	Topography.....	3-12
3.3.2	Environmental Consequences.....	3-12
3.3.2.1	The No-Action Alternative.....	3-12
3.3.2.2	Action Alternative – The Proposed Action	3-12
3.3.3	Best Management Practices and Mitigations.....	3-13
3.4	Biological Resources.....	3-14
3.4.1	Affected Environment.....	3-14
3.4.1.1	Vegetative Community.....	3-14
3.4.1.2	Wildlife.....	3-15
3.4.1.3	Threatened and Endangered Species and At-Risk Species	3-16
3.4.2	Environmental Consequences.....	3-23
3.4.2.1	The No-Action Alternative.....	3-23
3.4.2.2	Action Alternative – The Proposed Action	3-23
3.4.3	Best Management Practices and Mitigations.....	3-25
3.5	Water Resources.....	3-26
3.5.1	Affected Environment.....	3-26
3.5.1.1	Groundwater Resources.....	3-26
3.5.1.2	Surface Water Resources.....	3-26
3.5.1.3	Wetlands	3-26

3.5.1.4	Floodplains	3-26
3.5.1	Environmental Consequences	3-27
3.5.1.1	The No-Action Alternative	3-27
3.5.1.2	Action Alternative – The Proposed Action	3-27
3.5.2	Best Management Practices	3-28
3.6	Traffic and Transportation	3-30
3.6.1	Affected Environment.....	3-30
3.6.2	Environmental Consequences	3-30
3.6.2.1	The No-Action Alternative	3-30
3.6.2.2	Action Alternative – The Proposed Action	3-30
3.6.3	Best Management Practices and Mitigations	3-30
3.7	Energy Demand, Generation, Transmission, and Use	3-32
3.7.1	Affected Environment.....	3-32
3.7.2	Environmental Consequences	3-32
3.7.2.1	The No-Action Alternative	3-32
3.7.2.2	Action Alternative – The Proposed Action	3-32
3.7.3	Best Management Practices and Mitigations	3-32
3.8	Hazardous Materials and Hazardous Waste Management.....	3-34
3.8.1	Affected Environment.....	3-34
3.8.2	Environmental Consequences	3-35
3.8.2.1	The No-Action Alternative	3-35
3.8.2.2	Action Alternative –The Proposed Action	3-35
3.8.3	Best Management Practices and Mitigations	3-36
3.9	Summary of Potential Impacts and Mitigations	3-37
Chapter 4	Reasonably Foreseeable Effects	4-1
4.1	Land Use	4-2
4.2	Air Quality.....	4-2
4.3	Soils, Geology, and Topography	4-2
4.4	Biological Resources	4-2
4.5	Water Resources.....	4-3
4.6	Traffic and Transportation	4-3

4.7	Energy Demand, Generation, Transmission, and Use	4-3
4.8	Hazardous Materials and Hazardous Waste Management	4-4
	Chapter 5 References	5-1
	Chapter 6 List of Preparers	6-1
	Chapter 7 Agencies and Consultations	7-1
APPENDIX A	Glossary of Terms and Radio-Frequency Bands Table.....	A-1
A.1	Glossary of Terms	A-1
A.2	Radar and Radiofrequency Primer	A-3
APPENDIX B	Air Pollutant Emission Calculations	B-1
	General Conformity	B-1
	Potential to Emit Analysis	B-3

List of Figures

Figure 1-1	NRTF Location within WSMR.....	1-3
Figure 1-2	Existing NRTF Infrastructure	1-4
Figure 3-1	Special Flood Hazard Area (Zone A) Near ReDI Range	3-27

LIST OF TABLES

Table 3-1	Valued Environmental Components Considered in this EA	3-2
Table 3-2	National and State of New Mexico Ambient Air Quality Standards	3-5
Table 3-3	NRTF Climate Summary.....	3-7
Table 3-4	Criteria Air Pollutant Emissions – PTE Scenario.....	3-7
Table 3-5	Hazardous Air Pollutant Emissions – PTE Scenario.....	3-8
Table 3-6	Total Emissions (tons/year) – Proposed Action	3-9
Table 3-7	Soil Erodibility by Type	3-12
Table 3-8	Flora Observed During Survey.....	3-15
Table 3-9	Fauna Observed During Survey	3-16
Table 3-10	Protected Species Potentially Occurring at WSMR and within the Project Area.....	3-17
Table 3-11	Environmental Effects Summary	3-38
Table 4-1	Reasonably Foreseeable Actions within the Region of Influence.....	4-2

1 CHAPTER 1 INTRODUCTION

2 This supplemental environmental assessment (SEA) evaluates possible environmental effects on
3 the human and natural environment associated with the construction of support facilities and
4 operation of an aircraft engine test stand capable of providing radar cross section (RCS) and
5 infrared (IR) measurements. This SEA represents an expansion of the scope of the Final
6 Environmental Assessment for the Radar Cross-Section Advanced Measurement Comprehensive
7 Project at White Sands Missile Range, NM (HAFB 2005).

8 The proposed action would occur at the National RCS Test Facility (NRTF), located on White
9 Sands Missile Range (WSMR), New Mexico. This SEA has been prepared to fulfill the
10 requirements of the National Environmental Policy Act (NEPA) in accordance with Department
11 of Defense NEPA Implementing Procedures (30 June 2025).

12 1.1 BACKGROUND

13 The Arnold Engineering Development Complex (AEDC), headquartered at Arnold Air Force Base
14 (AFB), Tennessee, operates more than 90 facilities dedicated to aerospace system development
15 (USAF 2024). One of those facilities includes NRTF, which is located on WSMR and operated by
16 the U.S. Air Force 704th Test Group (TG).

17 Beginning in 1963, the NRTF began measuring radar scattering at the Radar Target Scatter
18 (RATSCAT) site and later expanded operations to the RATSCAT Advanced Measurement
19 Systems (RAMS) site in 1984. Since then, the NRTF has successfully tested radar cross sections
20 for hundreds of programs. This testing capacity has provided timely, accurate, secure, and cost-
21 effective static radar cross sections and antenna pattern measurements for the Department of
22 Defense (DoD), creating the foremost test and evaluation capability at a single location for outdoor
23 ranges for stealth technology (HAFB 2024).

24 1.2 PROJECT LOCATION

25 WSMR is in south-central New Mexico, encompassing over 2,000,000 acres (809,000 hectares)
26 in the five counties of Doña Ana, Socorro, Lincoln, Otero, and Sierra. The Main Post area is
27 approximately 45 miles (72 kilometers [km]) north of El Paso, Texas, and 20 miles (32 km) east-
28 northeast of Las Cruces, New Mexico. U.S. Highway 70 crosses WSMR from east to west and
29 serves as the main access route to the Main Post area (Figure 1-1).

30 The NRTF is located mid-range of the WSMR installation near the base of the San Andres
31 Mountains approximately 60 miles north of the Main Post area. The NRTF site includes two
32 outdoor test beds: the RAMS and the Research, Diagnostic and Integration (ReDI) Ranges using
33 ground and field environmental qualities to test survivability. The ReDI range is a spur range to

1 the NRTF main range, approximately 1,600 feet ([ft]; 490 meters [m]) in length and is paved with
2 asphalt millings (Figure 1-2).

3 **1.3 DECISIONS TO BE MADE**

4 The 704th TG is the project proponent for the Proposed Action, which reports to the AEDC. The
5 NRTF is located within WSMR, operating as a mission partner.

6 The U.S. Army Garrison is a landholding agency with jurisdictional responsibility to ensure that
7 laws, regulations, and policies are met on White Sands Missile Range. The development of this
8 SEA followed DoD NEPA Implementing Procedures (30 June 2025). The WSMR Garrison
9 Commander will be the decision maker for approving this action.

10 The decision to be made by WSMR, based on analysis within this SEA, is whether the Proposed
11 Action would result in significant impacts on the environment. If significant impacts are
12 anticipated, WSMR would evaluate mitigations or best management practices (BMPs) to
13 determine if impacts would be reduced below levels of significance.

14 This SEA provides data for analysis and consideration of potential environmental impacts
15 associated with the proposed construction and operation of a Survivability Test Stand (STS)
16 capable of acquiring measurements on running jet engines. Based on an examination of the data
17 generated and an assessment of the magnitude of the potential impacts, a determination would be
18 made indicating if further study is required, via an Environmental Impact Statement (EIS), or if a
19 Finding of No Significant Impact (FNSI) is applicable.

20 **1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION**

21 The purpose of the Proposed Action is to construct and operate an outdoor test capability that
22 measures engine test article survivability at the NRTF facility by providing electromagnetic
23 scattering measurements from aircraft engines operating at various modes.

24 Currently, the NRTF does not have the capability to acquire outdoor measurements from a running
25 aircraft engine, nor does it have the infrastructure to facilitate acquisition of IR signature
26 measurements or acoustic survey measurements. The Proposed Action is needed to meet
27 operational requirements at the NRTF facility for testing jet engine survivability.

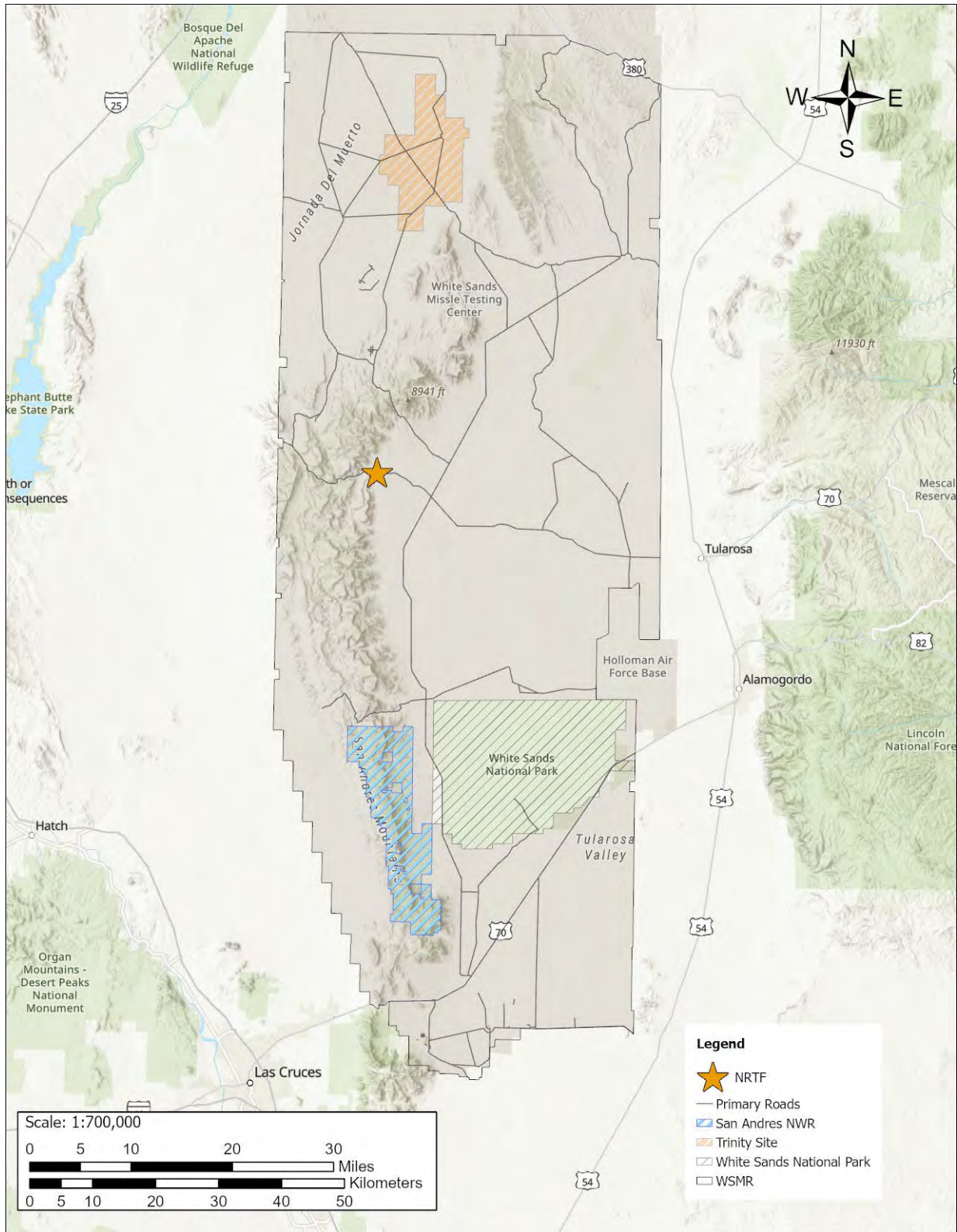


Figure 1-1. NRTF Location within WSMR

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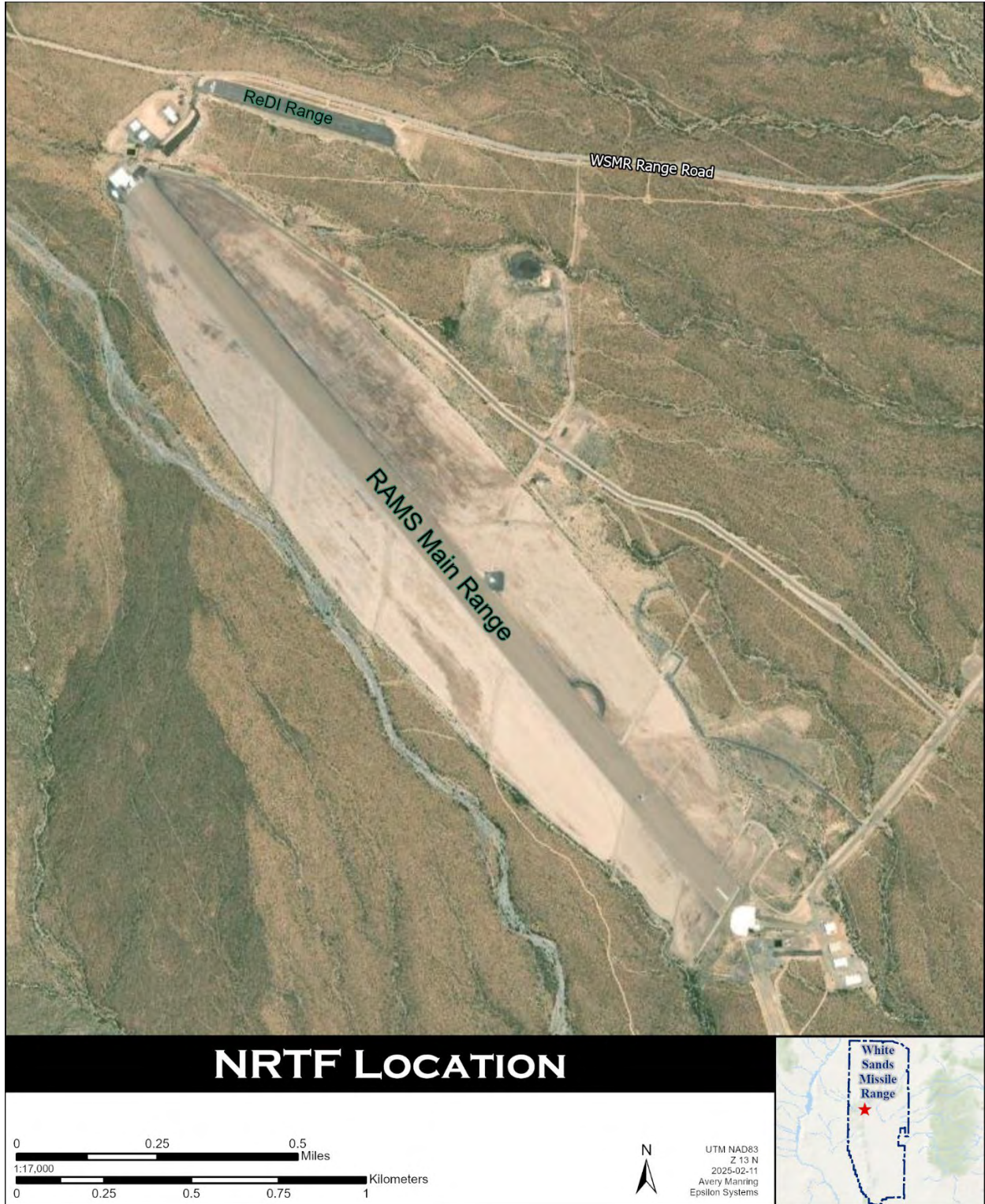


Figure 1-2. Existing NRTF Infrastructure

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1.5 RELATED ENVIRONMENTAL DOCUMENTATION

Existing and relevant environmental documents have been reviewed. As permitted through DoD NEPA Implementing Procedures (30 June 2025), the analysis completed has been incorporated to keep the document brief. Incorporation of previous analysis eliminates repetitive discussions of the same issues while focusing on the key issues of this action. Documents that have been reviewed and incorporated by reference include:

1. Final Environmental Impact Statement for Development and Implementation of Range-Wide Mission and Major Capabilities at White Sands Missile Range, New Mexico (WSMR FEIS; WSMR 2010).

This analysis examines the environmental effects of developing new test and training capabilities to meet mission requirements. The FEIS was reviewed for material relevant to the description and analysis of resource areas considered in this EA.

<https://home.army.mil/wsmr/index.php/about/garrison/directorate-public-works-dpw/environmental>

2. White Sands Missile Range Integrated Cultural Resources Management Plan and Environmental Assessment 2025-2029 ([ICRMP], WSMR 2025).

This plan is a guide for how WSMR will manage cultural resources in a way that supports and sustains the operational military mission of WSMR. The plan was reviewed for information relevant to the description of existing conditions of resource areas addressed in the EA.

<https://home.army.mil/wsmr/index.php/about/garrison/directorate-public-works-dpw/environmental>

3. White Sands Missile Range Integrated Natural Resources Management Plan (2023-2027) ([INRMP], WSMR 2023).

This plan describes the installation and its surrounding environments and presents various management practices designed to mitigate negative impacts of the installation's mission on regional ecosystems. It is a practical guide for the management, sustainment, and stewardship of natural resources in an effort to ensure no net loss in mission capabilities.

<https://home.army.mil/wsmr/index.php/about/garrison/directorate-public-works-dpw/environmental>

4. Final Environmental Assessment – Radar Cross-Section Advanced Measurement Site Comprehensive Project at White Sands Missile Range, NM (HAFB 2005).

This document investigates the potential impacts associated with the expansion of operations at the RAMS site on WSMR. The purpose of the project was to expand, upgrade, and modernize the RAMS site to meet its current workload. The requirements were needed to match national testing goals.

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CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 SCREENING CRITERIA FOR ALTERNATIVES

The range of reasonable alternatives considered in this SEA has been constrained to those that would meet the purpose and need for the Proposed Action as described in Section 1.4. Alternatives must consider the degree of the effects as appropriate to the specific action to include long- and short-term, beneficial and adverse, on public health and safety, economic and quality of life of the American people.

For this SEA, the following selection criteria were developed and applied to assist in determining suitable locations, engineered solutions, and other important factors.

- Alternatives **must satisfy the purpose and need**.
- The alternative(s) **must comply with all** local, state, and federal laws.
- The alternative(s) **shall not have any direct or indirect adverse impacts on health and safety of the human environment**
- The alternative(s) should **allow mission flexibility at the NRTF**. Operations at the planned STS should minimally impact the existing infrastructure at NRTF, so that operations can continue without damage to the testing equipment, tarmac, and structures without significant delay in schedule.
- Proposed activity **would not adversely impact the current mission** and proposed operation(s) within the established project area.
- Sites **must meet anti-terrorism setbacks and other safety criteria** (e.g., height restrictions, airfield clear zones, surface danger zones).
- The alternative(s) **should have minimal RF frequency interference** from outside sources, and the planned STS should pose minimal RF frequency interference on military and civilian systems.

2.2 THE NO-ACTION ALTERNATIVE

Under the No-Action Alternative, there would be no STS construction or operation at WSMR, Edwards AFB, or any other location. AEDC would not conduct RCS measurements on full-scale or large test articles at the NRTF facility. As a result, AEDC would have to locate another site for developing the capability to perform outdoor static RCS, IR, and acoustics measurements from testing jet engines. AEDC may not be able to determine operational failures through incrementally stepping into more realistic testing environments.

2.3 ACTION ALTERNATIVE – THE PROPOSED ACTION

AEDC proposes to address the outdoor static test capability gap by constructing and operating a facility at the WSMR-located NRTF site. The new outdoor test stand capability would incorporate a means of rotating engine test articles while measuring RCS, IR, and acoustic factors having the

1 ability to rotate a test article horizontally 180 degrees and while allowing sensors to measure
2 aspects 360 degrees around the test article.

3 The NRTF has no existing infrastructure to support an engine survivability testing regime.
4 Equipment and test infrastructure are required to support operation of the outdoor test stand.

5 2.3.1.1 Outdoor Test Stand

6 An outdoor test stand would be constructed for acquisition of high-fidelity outdoor measurements
7 while performing tests with the ability to:

- 8 • Pivot test articles for 360-degree;
- 9 • Use a variety of sensors and instrumentation;
- 10 • Vary the test environment with modular equipment; and
- 11 • Elevate the engine test-article at variable heights.

12 For ease of transport, the outdoor test stand and other structures built would be accessible to truck
13 trailers.

14 2.3.1.2 Support Facilities

15 The following support facilities and infrastructure would be required:

- 16 • Administrative;
- 17 • Secure preparation and storage;
- 18 • Secure test equipment storage;
- 19 • Transportation and handling systems;
- 20 • Fuel storage tanks;
- 21 • Water storage tanks; and
- 22 • Fire suppression systems.

23 The administration building will include a secure operation control room, offices and, a central
24 space where personnel can safely operate tests activities without hearing protection.

25 The test-article preparation and storage facility would have a floor space of 5,000 square ft [(sq
26 ft), 465 square m [sq m)], with heating, ventilation, and air conditioning (HVAC) systems for
27 climate control. The facility would include a high-bay with 30-ton (27-metric ton [mt]) gantry
28 crane and bay doors wide enough to facilitate test article transportation. The test article prep and
29 storage facility will be built to meet sensitive compartmented information facility standards (NSCS
30 2022).

31 The test equipment storage facility would be approximately 3,000 sq ft (279 sq m) in size and will
32 be built with an HVAC system. Heavy duty shelving, bay doors, and a 10-ton (9.1-mt) gantry crane
33 would be installed. Mobile cranes, fork trucks, and transportation trailers will be required to assist

1 in handling and transportation of test articles and equipment. Access controls would be provided
2 for physical security.

3 A 30,000-gallon (113,600-liter) fuel storage tank would be installed near the existing RAMS site
4 fuel tanks, with piping connecting the tank to the ReDI Range STS. Water storage tanks for fire
5 suppression and equipment cooling would be installed near the ReDI Range administrative
6 buildings.

7 Implementation of the Proposed Action would include installation of code-compliant fire
8 protection systems for all test-control, test-preparation, and equipment storage facilities. Fire
9 suppression would also be provided at the outdoor test stand site and at the fuel storage tanks.

10 **2.3.2 Operation of the STS at NRTF**

11 Once operational, the STS on the ReDI Range at the NRTF would conduct up to four test
12 campaigns annually. Each test campaign would take approximately two to four weeks to complete,
13 with additional time for preparations and safety planning processes prior to each event. Adding
14 the STS capability at NRTF would require five government personnel to support test and safety
15 planning, test execution, and oversight of the operations and maintenance (O&M) contractor.
16 During test campaigns, up to 10 additional O&M contractor personnel would be needed at the
17 NRTF.

18 Material handling and transportation equipment would be required to support the operations.
19 Mobile cranes, fork trucks, and transport trailers would be used for recurring test article preparation
20 and mobilization procedures. Jet fuel would be transported to the NRTF prior to each test
21 campaign, utilizing trucks with double-walled tanks. The mobile tanks would be placed at safe
22 distances from the outdoor test stand. Fuel tanks will meet New Mexico Petroleum Storage Tank
23 regulations New Mexico Administrative Code (NMAC 20.5), Hazardous Waste Act (74-4 NMSA)
24 and Ground Water Protection Act (74-6B NMSA).

25 Under the Proposed Action, radar equipment would be utilized to conduct tests using a series of
26 radar frequencies. The equipment would be set up on one side of the ReDI Range to take
27 measurements of the test article on the turntable on the opposite side of the test stand.

28 Cameras would be used to measure IR wavelengths and surface temperatures. These cameras
29 would be set up in an arc around the turntable assembly prior to each test campaign and then
30 removed and stored following each campaign.

31 To accomplish acoustic measurement acquisition, a free-field microphone array would be set up,
32 including placement of between 10 to 20 microphones in the array with support stands, cabling,
33 and recording equipment.

2.3.3 Routine Maintenance and Repairs

Routine maintenance and repairs would be conducted in between test events by O&M staff. The work would entail maintenance of the radar system, corrective inspection and servicing, parts replacements, and calibration. Damaged or unserviceable parts would be disposed of at a designated solid waste facility with proper handling of any materials considered hazardous.

Maintenance and repairs would be conducted on the IR and acoustic measurement systems and ReDI Range tarmac, as needed. A retention pond would be designed and constructed on the southeastern end, near the outdoor test stand to collect stormwater. Water would be pumped and transported to a licensed treatment facility for disposal.

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

2.4.1 Installation of STS at the RAMS Range

Under this alternative, the STS would be installed at the eastern side of the RAMS Range. This alternative would meet the purpose and need for the Proposed Action; however, implementation would result in increased maintenance costs. NRTF would be required to reseal and resurface the RAMS range more frequently, as hot exhaust gases and debris from jet engine tests would disintegrate the tarmac. This alternative does not meet the screening criteria provided in Section 2.1.

2.4.2 Installation of an STS at the NRTF ReDI Range with MDL

AEDC considered an alternative that would have a stationary (non-rotating) test stand built on the ReDI Range using a mobile diagnostic lab (MDL) for measuring RCS, IR, and acoustic signatures. Under this alternative, the MDL would be placed at multiple locations around the test stand to obtain measurements. This alternative could be the quickest to build but requires the acquisition of an MDL.

The limitation of using MDL is the inability for optimal data collection on the ReDI Range. Moving the MDL would increase the risk of damaging the sensitive equipment and increasing O&M costs.

2.4.3 Installation of STS at Edwards Air Force Base

Installation of an STS at Edwards AFB, California, was considered by AEDC. However, this alternative was eliminated from further consideration due to the following:

- A new facility would need to be constructed at Edwards AFB, and AEDC determined it would be cost prohibitive and take too long.
- Acquisition of operable frequencies at Edwards AFB is limited.
- Edwards AFB has a noisier radio frequency environment compared to the NRTF.

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter provides a summary of the valued environmental components (VECs), a description of the environmental conditions potentially affected by the Proposed Action, and an analysis of potential impacts associated with the Proposed Action.

3.0 VALUED ENVIRONMENTAL COMPONENTS

A VEC analysis was conducted to identify environmental resource areas potentially impacted by executing the Proposed Action. This analysis considered natural and human environmental resources which are applicable to WSMR and can be impacted by combinations of past, present, and reasonably foreseeable future actions. NEPA documents prepared by WSMR and Holloman AFB (HAFB) were reviewed to identify relevant and applicable analysis already completed for regional issues, or impacts. In addition to actions and impacts, useful references, best management practices, and mitigation measures were identified. Based on this approach, the relationships between agency actions and their impacts on regionally important VECs were identified. The regionally important VECs at WSMR, as characterized from the NEPA documents, were ranked as to the likelihood of impact from the Proposed Action. Each of the VEC categories described in the Army NEPA Guidance Manual were assigned one of five impact potential rankings:

- Very Low (VL) – No impact or minor impacts are anticipated;
- Low (L) – Minor impact anticipated;
- Medium (M) – Moderate impact anticipated (less than significant);
- High (H) – Significant impact potential anticipated (likely to be mitigated to less than significant); and
- Very High (VH) – Significant adverse impact anticipated (mitigation would be applied to minimize adverse effects).

In support of this SEA, a VEC analysis was conducted in accordance with The U.S. Army Environmental Command NEPA Analysis Guidance Manual (Army 2007). Table 3-1 provides a summary of the results. Components rated moderate are evaluated further and include:

- Land use;
- Air quality;
- Soil erosion effects;
- Biological resources;
- Water resources;
- Traffic and transportation;
- Energy demand, generation, transmission, and use; and
- Hazardous material and waste.

1 These are the VEC evaluated further in this analysis. VECs not discussed can be referenced in
2 documents mentioned in Section, 1.5 Related Environmental Documentation, and in some cases
3 best management practices are provided in Table 3-11. Descriptions of the affected environment
4 as well as potential effects due to implementation of the Proposed Action area provided in this
5 chapter.

6 **Table 3-1. Valued Environmental Components Considered in this EA**

VEC	Ranking	Rationale
Land Use	M	Proposed activities would be within an existing footprint of the RAMS campus. The Proposed Action would affect travel on Range Road 6 during test events when road closures would be required. Range Road 6 is an important east-west transportation corridor. The new STS would disrupt movement for other range users.
Visual Aesthetics	L	This area is not visible to the public.
Air Quality	M	Construction and operations is site specific and will be examined further in this SEA.
Noise (soundscape)	L	The proposed STS is remote, with no nearby human receptors. Noise may temporarily disturb wildlife communities that could be impacted and will be addressed in the biological resources sections of this SEA.
Soil Erosion Effects	M	Construction and maintenance activities would remove vegetation and change soil properties resulting in increased erosion and sedimentation.
Cultural Resources	L	Cultural surveys were completed in 2005, in support of the Radar Cross-Section Advanced Measurement Site Comprehensive Project EA, which has been incorporated into this SEA by reference.
Biological Resources	M	Construction and testing activities have the potential to impact wildlife
Water Resources	M	Stormwater runoff and ground water quality required further analysis.
Wetlands	L	A pedestrian survey of the area determined that there are no wetlands present in the project area. There is an artificial concrete lined pond that retains a small amount of water.
Human Health and Safety	L	Occupational Safety and Health Administration standards and practices would be followed.
Traffic and Transportation	M	No new roads would be built. Traffic on Range Road 6, an important feeder road between arterial roads mid-range could be diverted during NRTF operations. Potential impacts to range activities are discussed further.
Airspace Management	L	The proposed project would not change airspace use.
Facilities	L	Implementation of the proposed action would result in the construction of new facilities within a disturbed footprint at the NRTF Site. Potential impacts were not identified.
Energy Demand, Generation, Transmission, and Use	M	Existing power is not sufficient. Addition of a new test stand would increase power demands. Power generation will be evaluated. Backup power is required and is addressed under Air Quality.
Hazardous Material and Waste	M	Construction would produce non-hazardous solid wastes. Operations would create waste products that require proper handling and disposal according to state and federal requirements.

7

1 **3.1 LAND USE**

2 **3.1.1 Affected Environment**

3 For planning purposes, the Range-wide (2010) EIS classified land uses. The classifications reflect
4 the administrative status of land areas and airspace with associated limitations of use.

5 Figure 2.3-1 of the FEIS (WSMR 2010) provides an overview of the Land Use Classifications.
6 The project areas associated with the proposed action fall under Land Use Classification I,
7 Dedicated Use Area. The NRTF is managed and operated by the 704th TG. All proposed activities
8 would be consistent with WSMR’s Land Use and Airspace Strategy Plan (Appendix B, WSMR
9 2010) and would follow the Garrison Master Planning real property siting and review process.

10 Access to NRTF is controlled and restricted to specific military operations.

11 **3.1.2 Environmental Consequences**

12 3.1.2.1 The No-Action Alternative

13 Implementation of the No-Action Alternative would not change the land use status of the project
14 area. No impact on land use would be anticipated.

15 3.1.2.2 Action Alternative – The Proposed Action

16 The Proposed Action would involve construction within an established footprint and would not
17 affect the land use status of the project area. During the operational phase, other WSMR Range
18 users would be restricted from passing by while STS testing scenarios at the ReDI Range played
19 out. This restriction does not change land use but does inhibit periodic uses of Range Road 6.

20 **3.1.3 Best Management Practices and Mitigations**

21 As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has
22 the responsibility of ensuring that all BMPs or mitigation measures are implemented. The
23 following BMPs would be applied to reduce land use impacts:

- 24 • NRTF will use WSMR Range Control to schedule test activities; and
25 • NRTF personnel should remove roadblock indicators (i.e., gates or cones) when testing is
26 complete, so other range users can travel along Range Road 6.

27

3.2 AIR QUALITY

The principal framework of national, state, and local efforts to protect air quality in the U.S. is the Clean Air Act (42 USC § 7401 et seq., [CAA]). Under the CAA, the U.S. Environmental Protection Agency (EPA) has set health-based standards known as National Ambient Air Quality Standards (NAAQS) for six criteria pollutants considered to be key indicators of air quality: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), lead (Pb), and two categories of particulate matter—namely particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) and particulate matter with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}) (40 CFR Part 50).

The primary NAAQS define levels of air quality, with an adequate margin of safety that sets limits to protect the public health (i.e., “health-based”). The secondary NAAQS define levels of air quality judged necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (i.e., “welfare-based”).

The EPA is responsible for ensuring that all air quality standards are met or attained in cooperation with state, tribal, and local governments through national strategies to control air pollutant emissions. Under the CAA, state and local agencies may establish state Ambient Air Quality Standards (AAQS) of their own, provided these are at least as stringent as the federal requirements. Pertinent State regulations are found in Title 20, Chapter 2, Part 3 of the NMAC 20.2.3.1 to 20.2.3.11 issued by the Environmental Improvement Board on September 6, 2006. Federal NAAQS and the State of New Mexico AAQS are shown in Table 3-2.

For facilities that do not fit a list of 28 industrial processes, Prevention of Significant Deterioration (PSD) major source thresholds are set at 250 tons per year (tpy), 227 metric tons/year (mt/year), as defined by U.S. Environmental Protection Agency (EPA), for all criteria pollutants except for lead. The PSD major source threshold for lead is 25 tpy (22.7 mt/year). For actual operations and regulatory purposes, the PSD major source thresholds only apply to stationary sources; however, they are applied in this analysis to both stationary and mobile sources as a surrogate indicator of significance in an attainment area. If a proposed action’s emissions are below these threshold levels, the proposed action’s impacts on air quality are presumed to be less than significant.

The EPA has set National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for emissions of hazardous air pollutants (HAPs) (also known as air toxics) not covered by NAAQS which may cause an increase in fatalities or in serious, irreversible, or incapacitating illness (40 CFR Part 61). EPA currently lists 188 compounds to be controlled as HAPs, the majority of which are volatile organic compounds (VOCs). The CAA, Section 112, requires the control of HAPs from specific area and major source categories. A major source emits more than 10 tpy (9.1 mt/year) of any one HAP and over 25 tpy (22.7 mt/year) of all HAPs. Additionally, New Mexico has set guidelines (NMAC 20.2.72.402), and emission concentrations and levels (NMAC

1 20.2.72.502) to determine whether a new or modified source emitting a HAP (toxic air pollutant)
2 may require air quality permitting.

3 WSMR is a major source under Title V and PSD regulations. The installation has a Title V
4 Operating Air Permit, which specifies allowable emissions of criteria pollutants and hazardous air
5 pollutants from stationary sources. Stationary sources of emissions included in the permit are
6 aggregate processing, concrete production, fuel storage and dispensing, and internal combustion
7 engines (e.g., generators).

8 **Table 3-2. National and State of New Mexico Ambient Air Quality Standards**

Pollutant	NAAQS		New Mexico State AAQS
	Standard	Type ¹	
Carbon monoxide (CO)			
8-hour average ²	9 ppm	Primary	8.7 ppm
1-hour average ²	35 ppm	Primary	13.1 ppm
Nitrogen dioxide (NO₂)			
Annual arithmetic mean	0.053 ppm	Primary & Secondary	0.05 ppm
24-hour average	None	None	0.10 ppm
Ozone (O₃)			
8-hour average ³	0.075 ppm	Primary & Secondary	None ⁴
Lead (Pb)			
Quarterly average	1.5 µg/m ³	Primary & Secondary	None ⁴
Fine particulate matter (PM_{2.5})			
Annual arithmetic mean ⁵	15 µg/m ³	Primary & Secondary	None ⁴
24-hour average ⁶	35 µg/m ³	Primary & Secondary	None ⁴
Particulate matter (PM₁₀)			
24-hour average ⁷	150 µg/m ³	Primary & Secondary	None ⁴
Sulfur Dioxide (SO₂)			
Annual arithmetic mean	0.03 ppm	Primary	0.02 ppm ⁸
24-hour average	0.14 ppm	Primary	0.10 ppm ⁸
3-hour average	0.50 ppm	Secondary	None ⁴
Hydrogen Sulfide (H₂S)			
1-hour average ⁹	None	None	0.10 ppm
Total Reduced Sulfur			
Half-hour average ¹⁰	None	None	0.003 ppm

- 9 1. Primary Standards are “health-based,” and Secondary Standards are “welfare-based.”
10 2. Not to be exceeded more than once per year.
11 3. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each
12 monitor within an area over each year must not exceed 0.075 ppm.
13 4. When no state AAQS exists, the NAAQS applies.
14 5. To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented
15 monitors must not exceed 15.0 µg/m³.
16 6. To attain this standard, the 3-hour average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within
17 an area must not exceed 35 µg/m³.
18 7. Not to be exceeded more than once per year on average over three years.
19 8. For the entire State of New Mexico except for the area within 3.5 miles of the Chino Mines Company smelter furnace stack near Hurley
20 where higher levels (same as NAAQS) apply.
21 9. 1-hour average not to be exceeded more than once a year. For the entire State of New Mexico, except for those parts of the Pecos-
22 Permian Basin Intrastate Air Quality Control Region where higher levels apply.
23 10. Total reduced sulfur does not include H₂S. Applies to the entire State of New Mexico except for those parts of the Pecos- Permian Basin
24 Intrastate Air Quality Control Region where higher levels are in effect.
25 Sources: 40 CFR Part 50, NMAC 20.2.3.1 to 20.2.3.11
26

1 Army Regulation (AR) 200-1, part 1-24, Environmental Protection and Enhancement, states (in
2 part) that Garrison Commanders will: “Comply with applicable federal, state, and local
3 environmental laws, regulations, internal directives and goals, EOs, and overseas Foreign
4 Governing Standards.” To that end, the Environmental Asset section of AR 200-1 lists the
5 following air quality policies and program goals:

- 6 • Comply with applicable federal, state, and local air quality regulations, permit
7 requirements, and overseas Final Governing Standards;
- 8 • Identify and implement cost-effective pollution prevention measures that will reduce toxic
9 or criteria air emissions;
- 10 • Eliminate dependency on ozone-depleting substances; and
- 11 • Achieve and maintain air quality standards to protect human health and the environment
12 while minimizing mission impacts.

13 **3.2.1 Affected Environment**

14 3.2.1.1 Attainment Status

15 The lands within WSMR’s boundaries are in attainment for all criteria pollutants. The nearest
16 nonattainment area to WSMR lies 17 miles (27.4 km) south of the southernmost boundary of
17 WSMR at Anthony in Doña Ana County, classified as moderate nonattainment for PM₁₀. Sunland
18 Park, New Mexico, is located approximately 39 miles (62.8 km) south of WSMR and is in
19 nonattainment for ozone.

20 3.2.1.2 Area Meteorology

21 Air quality is closely intertwined with day-to-day meteorological weather conditions and the
22 influences of longer-term climate. Concentrations of atmospheric air pollutant gases/species can
23 be influenced by meteorological variables (e.g., wind speed) which affect the dispersion of
24 particulates from soils; wind direction and speed which affects transportation; mixing depths and
25 stability which affect dispersion; and temperature, humidity, sunlight, and cloud water which can
26 play a role in the chemical formation of certain air pollutants.

27 WSMR encompasses the Tularosa Basin in southern New Mexico, which lies between the
28 Sacramento Mountains to the east, the San Andres and Oscura mountains to the west, and the
29 Jornada del Muerto Basin in the northwestern portion of the range. The climate of the Tularosa
30 and Jornada del Muerto basins is typical of the arid regions of the state at lower altitudes. Table 3-
31 3 provides a summary of climate conditions at the NRTF.

32 Monsoonal flows generate significant rains between the months of June and October, with peak
33 rains usually falling during the month of August.

34

Table 3-3. NRTF Climate Summary

Averages	Month												Annual
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Max Temp ¹	57.2	62.9	70.5	79.5	88.1	97.0	97.2	94.6	89.9	78.9	66.0	56.7	78.1
Min Temp ¹	22.2	25.7	31.4	39.6	48.6	58.6	64.1	61.8	54.2	41.1	28.0	21.7	41.4
Precipitation ²	0.50	0.38	0.28	0.30	0.38	0.73	1.35	1.77	1.29	0.93	0.43	0.66	9.01
Snow fall ²	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	2.5

1. In degrees Fahrenheit
 2. In inches
- Source: WRCC 2024.

3.2.2 Environmental Consequences

3.2.2.1 The No-Action Alternative

Under the No-Action Alternative, an STS would not be constructed and operated at the ReDI Range, and there would be no jet engine tests performed. There would be no change in air pollutant emission sources at NRTF.

3.2.2.2 Action Alternative – The Proposed Action

To determine if the STS at NRTF would require a PSD permit, a Potential to Emit (PTE) analysis was performed. For this analysis, it was assumed that a running jet engine would operate non-stop for one year, or 8,760 hours. It was assumed that the running jet engine would represent all stationary air pollutant emissions associated with the Proposed Action. All other supporting activities (e.g., fuel loading, loading/unloading of test engine, sensor installation, etc.) would be considered non-stationary sources, as defined by the EPA, and would not be subject to a PSD permit.

Potential to Emit Evaluation

For the PTE analysis, it was assumed that the jet engine throttle settings would have the same proportion of engine run modes (i.e., have the same jet engine power settings) as a single jet engine testing event extended over a yearlong (i.e., 8,760 hours of continuous service). Table 3-4 summarizes criteria air pollutant emissions for the PTE scenario and Table 3-5 provides a summary of HAPs emissions for the same PTE scenario.

Table 3-4. Criteria Air Pollutant Emissions – PTE Scenario

Operational Mode	Hours	NO _x	SO _x	CO	VOC	PM ₁₀	PM _{2.5}
Idle	164.69	682	242.6	10,919	379	548.8	399.1
Intermediate	4,760.18	596,755	48,458	102,988	1,444	67376	52,457
Military	3,834.25	1,413,702	76,358	53,522	714	79,927	69,222
Total (lb)		2,011,140	125,060	167,430	2,536	147,851	122,078
Total (ton)		1,005	62.53	83.71	1.27	73.93	61.03
Exceeds threshold?		Yes	No	No	No	No	No

1 As provided in Table 3-4, non-stop yearlong operation of the STS at NRTF result 1,005 tons of
2 NO_x, which would represent a major source. There would be no HAP emissions over the 10 tpy
3 threshold.

4 Even though the STS at NRTF would exceed NO_x emissions under the PTE scenario, such
5 yearlong operations are not feasible due to administrative and engineered controls that would be
6 applied. These controls are as follows:

- 7 • **Administrative control** – Testing of running jet engines would be limited to four test
8 events annually. Each event would require approximately 4 hours and 36 minutes of jet
9 engine run time, for an annual total run time of 18.4 hours.
- 10 • **Engineered control** – Jet fuel will be trucked in from HAFB prior to each test event and
11 loaded into a 30,000-gallon (113,600-liter) run-tank that will hold all fuel used during the
12 test event. Once the fuel is consumed, the test event is complete, as fuel loading during a
13 test event would not be allowed due to safety concerns. The 30,000-gallon tank (113,600-
14 liter) would hold just enough fuel to complete a 4.6-hour test of a notionally large test
15 engine.

16 By administratively restricting the STS at NRTF to four test events per year and physically
17 restricting test events to 30,000 gallons (113,600 liters), the STS at NRTF would qualify as a
18 synthetic minor source, which would not require a PSD permit. To maintain the synthetic minor
19 source status, the 704th TG will be coordinated with the WSMR Environmental Division (DPW-
20 E) to ensure storage of fuel and generator use meets legal requirements.

21 **Table 3.5. Hazardous Air Pollutant Emissions – PTE Scenario**

HAP	Operational Mode			Total (lb)	Total (ton)
	Idle	Intermediate	Military		
Acetaldehyde	25.17	125.6	59.45	210.2	0.11
Acrolein	8.16	0.00	0.00	8.16	0.00
Benzene	24.04	33.01	34.83	91.88	0.05
1,3-Butadiene	11.32	20.55	0.00	31.87	0.02
Ethylbenzene	3.72	24.01	9.56	37.30	0.02
Formaldehyde	225.6	1,174	540.9	1,941	0.97
Naphthalene	0.00	0.00	0.00	0.00	0.00
Phenol	0.00	0.00	0.00	0.00	0.00
Propanal	3.63	47.07	29.26	79.95	0.04
Styrene	7.08	0.00	0.00	0.00	0.00
Toluene	14.45	0.00	0.00	14.45	0.01
Xylenes (mixed isomers)	15.22	23.53	26.90	65.65	0.03

22

Air Pollutant Emissions due to Construction and Operation of an STS at NRTF

Criteria pollutant emissions resulting from proposed construction and operation of an STS at NRTF have been evaluated for the Proposed Action. Air quality impacts would be significant if emissions associated with the Proposed Action would: 1) increase ambient air pollution concentrations above the NAAQS; 2) contribute to an existing violation of the NAAQS; 3) interfere with or delay timely attainment of the NAAQS; or 4) impair visibility within federally mandated Prevention of Significant Deterioration Class I areas. Additionally, a conformity analysis would be required before initiating any action that may lead to nonconformance with a State Implementation Plan, an exceedance of *de minimis* criteria pollutant thresholds, or contribution to a violation of the NAAQS.

Since WSMR is considered in attainment/unclassified for the NAAQS, the provisions of the General Conformity Rule do not apply. However, emission estimates for the Proposed Action have been compared to *de minimis* thresholds of a basic nonattainment area for planning purposes. At WSMR, dust generation and control are of principal concern. In the sections below, fugitive dust is the largest contributor to PM₁₀ emissions.

Total emissions resulting from project activities have been estimated using data presented in Chapter 2, and the general air quality assumptions and emission factors are listed in Appendix C. Emission calculations for all project activities are provided in Appendix C. Table 3-6 provides a summary of the criteria pollutant emissions associated with the Proposed Action. The table provides criteria for pollutant emissions associated with both construction and four jet engine test events. It is highly unlikely that these activities would not be completed within one 12-month period, but the values are provided to provide the most conservative (highest emission values) annual emissions data for comparison to *de minimis* values.

Table 3-6. Total Emissions (tons/year) – Proposed Action

Emission Source	VOC	NO _x	CO	SO _x	PM ₁₀
Construction ¹	0.0285	0.139	0.434	0.00115	0.626
Operations ¹	0.003	2.03	0.195	0.127	0.150
<i>de minimis</i> threshold ²	100	100	100	100	100

Notes: ¹Emissions provided in tons/year.

² *de minimis* thresholds do not apply to actions taken on WSMR as it is in attainment/unclassified for the NAAQS. However, emission estimates for the Proposed Action have been compared to *de minimis* thresholds of a basic nonattainment area for planning purposes.

3.2.3 Best Management Practices and Mitigations

As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has the responsibility of ensuring that all BMPs or mitigation measures are implemented. The following BMPs would be applied to reduce impacts to regional air quality:

- Operation of the STS at NRTF would be limited to four test events per year

- 1 • Generators brought on site must be EPA certified and coordinated with DPW-E before
2 delivered and installed
- 3 • To the fullest extent possible fugitive dust will be minimized, especially from unpaved
4 roads and other cleared areas ;
- 5 • Truckloads of dirt would be covered with tarps to reduce dust;
- 6 • All equipment and generators would be properly maintained; and
- 7 • Use of existing roads will be used to the fullest extent possible with avoidance of creating
8 new roads.
- 9

3.3 SOILS, GEOLOGY, AND TOPOGRAPHY

3.3.1 Affected Environment

3.3.1.1 Soils

Soils data for the project area was gathered from the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey. Two soil types were identified for the project area: Stagecoach-Delnorte-Riverwash association, 0-35% slopes complex and the Delnorte-Stagecoach-Turney complex, 0-15% slopes. The Stagecoach-Delnorte-Riverwash association can be found on the ReDI Range (approximately 86% of the total project area), with the Delnorte-Stagecoach-Turney complex at the western end of the project area (approximately 14% of the total project area), near the existing NRTF complex.

Soil erosion from wind, water, and road use is a concern due to its impact on the surrounding plant communities and the resulting cost of maintenance. The NRCS uses several factors to evaluate soil erodibility (NRCS 2024):

- Water Erosion. The erosion factor K indicates the susceptibility of soil on the surface to erode from water. Values of K range from 0.02 to 0.69. The higher value indicates increased susceptible to erosion by water.
- Wind Erosion. Soils with similar properties are grouped into 8 categories indicating a gradient of wind erosion susceptibility. Soils assigned to group 1 are the most susceptible while those assigned to group 8 are the least susceptible to wind erosion.
- Erosion Hazards. Erosion hazard ratings are based on soil erosion factor K, slope, and content of rock fragments from manmade linear features such as roads and trails.

A rating of “slight” indicates that little or no erosion is likely. “Moderate” indicates that some erosion is likely, and that the roads or trails may require periodic maintenance. “Severe” indicates that significant erosion is expected that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed. Table 3-7 provides a summary of the soil erodibility for the predominant soil types present on the project area. All soils within the project area are well drained (NRCS 2024).

3.3.1.1 Geology

The project area is entirely within the Chihuahuan Desert ecoregion and the Rio Grande Rift physiographic province. The Major Land Resource Area developed by the NRCS defines the area as in the Southern Rio Grande Rift as part of the larger southern desertic basin, plains, and mountains, that is within the Western Range and Irrigated Region (USDA 2021).

The underlying geologic formations are from the quaternary and are classified by the New Mexico Bureau of Geology and Mineral Resources (NMBGMR) as Piedmont alluvial deposits (Holocene to Lower Pleistocene) that includes deposits of higher gradient tributaries bordering major stream

1 valleys, alluvial veneers of the piedmont slope, and alluvial fans. Localized areas may include
 2 uppermost Pliocene deposits (NMBGMR 2003).

3 **Table 3-7. Soil Erodibility by Type**

Map Unit Name	Erosion Hazard (Road, Trail)	Wind Erodibility Group	K factor, Whole Soil
Stagecoach-Delnorte-Riverwash association, 0-35% slopes complex	Severe Poorly suited for roads	Moderate 6	Low 0.20
Delnorte-Stagecoach-Turney complex, 0-15% slopes	Slight Little or no erosion is likely	Moderate 5	Moderate 0.43

4 *Source: NRCS 2024.*

5 3.3.1.2 Topography

6 WSMR is primarily located within the Tularosa Basin, a graben basin bounded by the Organ, San
 7 Andres, and Oscura mountains to the west and the Sacramento Mountains to the east. The San
 8 Andres and Oscura mountains form a natural boundary that divides the North Range of WSMR
 9 from its Middle and South Range areas. The San Andres Mountains run north-south and rise
 10 approximately 5,000 ft (1,525 m) above the Tularosa Basin's lowest point, which is approximately
 11 3,875 ft (1,180 m). Small canyons run east-west off of eastern and western slopes of the mountain
 12 range, forming a topographic mosaic of piedmont bajadas and basin bottom dissected by arroyos.

13 The NRTF is on the western margin of the Tularosa Basin on the lower piedmont (bajada) of the
 14 San Andres Mountains, on a small portion of the wide alluvial fan where Rhodes Canyon
 15 transitions into the Tularosa Basin. This is a flat area past the toe of an alluvial fan with elevations
 16 ranging from approximately 4,545-4,630 ft (1,385-1,410 m). There is relatively little relief across
 17 the project area. Much of the project area has been graded from previous activities.

18 **3.3.2 Environmental Consequences**

19 3.3.2.1 The No-Action Alternative

20 Under the No-Action Alternative, an STS would not be constructed and operated at the ReDI
 21 Range. There would be no new ground disturbance to increase soil erosion effects.

22 3.3.2.2 Action Alternative – The Proposed Action

23 Installation of the STS would occur on the existing ReDI Range. Construction would disturb some
 24 new ground on the northern portion of the project area (Figure 1-2). Direct impact to soil would
 25 occur due to excavation. Such ground disturbance includes removal of vegetation; temporary soil
 26 piling; compaction or rutting from heavy equipment; or preparation of temporary work areas.
 27 Ground that has been cleared of vegetation becomes more susceptible to erosion the more it is
 28 churned. Typically, non-native plant species establish after disturbance subsides. Ground
 29 compaction could degrade the physical soil structure and water absorption capabilities.

1 Although the project is outside a documented floodplain (Section 3.5.1.4) and is relatively flat, an
2 erosion and sedimentation control plan would be developed to reduce downstream effects, as this
3 area is in the upper watershed for the White Sands pupfish. This plan will describe specific control
4 measures to be employed as well as provide a sequence of construction events to minimize erosion
5 and sedimentation. Through this action, coupled with BMPs provided in Section 3.3.3, the
6 Proposed Action would not pose significant impacts on soils, geology, or topography.

7 **3.3.3 Best Management Practices and Mitigations**

8 As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has
9 the responsibility of ensuring that all BMPs or mitigation measures are implemented. The
10 following BMPs would be applied to reduce impacts to soils, geology, and topography:

- 11 • Construction activities would be restricted to an approved building envelope for the ReDI
12 Range (Figure 1-2);
- 13 • To the fullest extent possible, construction would occur during the dry season when rainfall
14 and runoff potential are low; and
- 15 • An erosion and sedimentation control plan would be developed for the planned
16 construction activities.
- 17 • The construction contractor will submit a cable locate request to the White Sands Test
18 Center Range Operations – Information Management prior to any excavation.

19

3.4 BIOLOGICAL RESOURCES

Native or naturalized vegetation, wildlife and their associated habitats are collectively referred to as biological resources. Existing information on plant and animal species and habitat types in the vicinity of the proposed sites were reviewed, with particular emphasis on the presence of any species listed as threatened or endangered by federal or state agencies, to assess their sensitivity to the effects of the Proposed Action. For this EA, biological resources are divided into three areas: vegetation communities, wildlife communities, and protected species. Species with protective status are protected based on regulations such as those listed below:

- Threatened or endangered under the federal Endangered Species Act of 1973 ([ESA], 16 USC § 1531 et seq.) by the USFWS;
- Threatened or endangered wildlife species under the New Mexico Wildlife Conservation Act (17-2-40.1 New Mexico Statutes Annotated [1978]) by the New Mexico Department of Game and Fish (NMDGF);
- Rare and endangered plants species by the New Mexico State Forestry Division's Endangered Plant Program;
- Protected species under the Migratory Bird Treaty Act ([MBTA] 16 USC §§ 703-712 [2004]); and
- Bald and golden eagles, as protected under the Bald and Golden Eagle Protection Act ([Eagle Act], 16 USC § 668 [1972]).

3.4.1 Affected Environment

A pedestrian survey for biological resources in the vicinity of the project area was conducted on 15 August 2024. Conditions during the survey were sunny, with light to no winds and temperatures in the mid-70 to mid-90-degrees Fahrenheit (21-32 degrees Celsius) range. Seasonal conditions promoted active growth of many flowers and grasses aiding in the ability to identify plants for the biological survey. The survey was used in tandem with desktop resources, conservations with personnel of the DPW-E, other general site visits, and known historical conditions of the vicinity of NRTF.

3.4.1.1 Vegetative Community

A wide diversity of vegetation types occurs on WSMR lands, ranging from desert shrublands of basin floors to ponderosa pine (*Pinus ponderosa*) forests of mountaintops. A model for describing the vegetation communities of WSMR, called vegetation map units, was developed by Muldavin et al. (2000). The composition and structures of the various cover types presented by Muldavin were largely confirmed in the field. The dominant vegetation cover type for the project area is creosote bush shrubland, but the combined categories of road disturbance and military disturbance (representing the NRTF facility) are nearly equal in size to the creosote bush shrubland map unit. Of note, a significant portion of the project area footprint has little to no vegetation as it has already been developed. More detailed descriptions of the vegetative communities present in and around

1 the project area are provided in the biological assessment for the proposed project (Epsilon 2025).
2 Table 3-8 summarizes the plant species observed during the survey.

3 Noxious Weeds

4 The Noxious Weed Management Act directs the New Mexico Department of Agriculture (NMDA)
5 to develop a noxious weed list for the state, identify methods of control for designated species, and
6 educate the public about noxious weeds. NMDA coordinates weed management among local,
7 state, and federal land managers and private landowners (NMDA 2020). DPW-E has developed
8 an Integrated Pest Management Plan for the range. This plan outlines the resources necessary to
9 identify, survey, manage, and the environmental and personnel requirements to control pests
10 (Rodden 2021).

11 No noxious weeds were discovered during the pedestrian survey of the proposed project area.

12 **Table 3-8. Identified Flora**

Common Name	Scientific Name	Abundance
Alkali sacaton	<i>Sporobolus airoides</i>	Common
Banana yucca	<i>Yucca baccata</i>	Rare
Black grama	<i>Bouteloua eriopoda</i>	Frequent
Bush muhly	<i>Muhlenbergia porteri</i>	Common
Englemann’s prickly pear	<i>Opuntia engelmannii</i>	Occasional
Creosote bush	<i>Larrea tridentata</i>	Abundant
Desert Christmas cactus	<i>Cylindropuntia leptocaulis</i>	Common
Desert willow	<i>Chilopsis linearis</i>	Rare
Honey mesquite	<i>Prosopis glandulosa</i>	Abundant
Claret cup cactus	<i>Echinocereus triglochidiatus</i>	Frequent
Mesa dropseed	<i>Sporobolus flexuosus</i>	Occasional
New Mexico feathergrass	<i>Hesperostipa neomexicana</i>	Abundant
Ocotillo	<i>Fouquieria splendens</i>	Abundant (only on west side)
One-seed juniper	<i>Juniperus monosperma</i>	Very rare (pond only)
Purple pricklypear	<i>Opuntia macrocentra</i>	Rare
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	Rare
Soaptree yucca	<i>Yucca elata</i>	Rare
Strawberry hedgehog cactus	<i>Echinocereus stramineus</i>	Very rare
Tree cholla	<i>Cylindropuntia Imbricata</i>	Rare

13

14 3.4.1.2 Wildlife

15 Table 3-9 summarizes the wildlife species observed during the 15 August 2024 survey. Wildlife
16 observations may have been affected by the site condition, active operations occurring nearby, and
17 the time of day. Further, the pedestrian survey was designed to gather basic site characteristics and
18 identify any species or habitat of interest. A literature review and subject matter expert interviews
19 with DPW-E, staff also helped identify potential occurrence or habitat presence. Visual
20 observations during the survey yielded seven species or their signs. Evidence of wildlife, especially
21 via tracks and scat, was observed throughout the project area. No federal- or state-listed threatened
22 or endangered wildlife species were observed during the survey.

1

Table 3-9. Fauna Observed During Survey

Common Name	Scientific Name	Abundance
Collared dove	<i>Streptopelia decaocto</i>	Rare (at pond)
Cow dung	<i>Bos spp.</i>	Rare
Cricket	<i>Grylloidea spp.</i>	Abundant
Desert cottontail	<i>Sylvilagus audubonii</i>	Rare
Dragonfly	<i>Anisoptera spp.</i>	Common (around pond)
Unknown tadpole species		Abundant (in pond)
Mole/vole	<i>Ellobius spp.</i>	Common

2 Of note, various burrows were observed and were investigated for signs of burrowing owls (*Athene*
3 *cunicularia*). None showed typical signs of an active burrow by this species, such as objects and
4 debris at the mouth of the burrow. No official burrowing owl survey was completed. The
5 burrowing owl is not currently listed as an endangered or threatened species but is protected as a
6 migratory bird species. Population monitoring is critical due to habitat loss and other threats
7 associated with land development. They are known to inhabit open, sparsely vegetated areas such
8 as prairies, deserts, and grasslands, which constitute the surrounding landscape of NRTF. While
9 not federally protected, they are protected from “take” by the MBTA and under New Mexico state
10 statute.

11 A pond located on the NRTF campus showed signs of wildlife activity, including dragonflies and
12 tadpoles. Game trails are well established, leading in all directions from the pond.

13 **3.4.1.3 Threatened and Endangered Species and At-Risk Species**

14 The Endangered Species Act ([ESA] 16 USC § 2331 et seq.) provides authority to the U.S. Fish
15 and Wildlife Service (USFWS) to designate endangered and threatened species and identify
16 critical habitat to support such species. New Mexico state-listed endangered and threatened species
17 are managed by the New Mexico Department of Game and Fish (NMDGF), under the New Mexico
18 Wildlife Conservation Act.

19 Under the New Mexico Endangered Plant Species Act of 1985, the New Mexico Endangered Plant
20 Program, Energy Minerals, and Natural Resources Department Forestry Division has statutory
21 responsibility for the State Endangered Plant Species List. Section 75-6-1 of the New Mexico
22 Statutes Annotated (NMSA) 1978 directed the Division to investigate all plant species in the state
23 for the purpose of establishing a list of endangered plant species.

24 Table 3-10 lists federal and state threatened or endangered listed plants and wildlife that occur or
25 have the potential to occur within WSMR boundaries, and the proposed project area, including the
26 various buffered areas (described in detail in Chapter 3). The list was generated using the USFWS
27 Information for Planning and Consultation (IPaC; USFWS 2024), the New Mexico Environmental
28 Review Tool (NMERT; NMDGF 2024), and discussions with DPW-E staff. Results from the
29 pedestrian surveys were used in tandem with the potential occurrences based on past
30 documentation of each species within the vicinity of the project areas and on the suitability of

1 habitat within the region of a particular species. The results from each tool are provided in the
 2 biological assessment for this project (Epsilon 2025).

3 In addition to the federal and state threatened or endangered plant species, there are three plant
 4 species listed as New Mexico endangered, and an additional 14 species have a New Mexico State
 5 Natural Heritage ranking. Two of the five species of rattlesnakes occurring on WSMR are listed
 6 by NMDGF as species of greatest conservation need (SGCN). There are 27 species of Birds of
 7 Conservation of Concern identified by the USFWS that may occur on WSMR. Of these 27 species,
 8 14 are the focus of current management interest on WSMR, and 13 species may become future
 9 species of interest for WSMR. Two NMDGF-listed threatened mammal species are documented
 10 on WSMR, including the spotted bat and Colorado chipmunk. Descriptions of these species can
 11 be found in the WSMR INRMP (WSMR 2023). While these species are noted to exist across
 12 WSMR, habitat associations within and adjacent to the project area and its buffered area are not
 13 conducive to these species, and none have been documented or observed in the project area.
 14 Therefore, they were not included further in the analysis.

15 **Table 3-10. Protected Species Potentially Occurring at WSMR and within the Project Area**

Species	Status		Habitat Description	Determination of effects and rationale
	Federal	State		
<i>Flowering Plants</i>				
<i>Hedeoma Todsensii</i> Todsens's pennyroyal	E	E	A habitat specialist found in the gypseous-limestone soils associated with the Yeso formation on the north-facing slopes of the San Andres and Sacramento mountains. Populations typically occur in pinyon-juniper woodlands ranging in elevation from 6,263-7,404 ft (1,909-2,257 m). There are known populations that occur in the San Andres Mountains and the western side of the Sacramento Mountains. Critical habitat is designated in the San Andres Mountains but is outside the project area.	The project area lacks suitable habitat. No effect.

Species	Status		Habitat Description	Determination of effects and rationale
	Federal	State		
<p><i>Escobaria sandbergii</i></p> <p>Sandberg's pincushion cactus</p>	--	E	<p>The Sandberg's pincushion cactus is native to the Chihuahuan Desert region of New Mexico, specifically in the San Andres Mountains. Typically, this species grows in rocky, gravelly benches or rocks on limestone or igneous soils. It is found at altitudes ranging from 4,200-7,400 ft (1,300-2,300 m). This cactus is typically found in desert scrub and open oak and piñon-juniper woodlands among Chaparral vegetation in the interior of mountain ranges.</p> <p>Importantly, the New Mexico Rare Plant Technical Council (NMRPTC) notes that currently there are no known threats to populations at this time, and when present this species is common in its area of distribution (NMRPTC 1999).</p>	<p>The project area lacks suitable habitat.</p> <p>No individuals were noted in the pedestrian survey No Effect.</p>
Birds				
<p><i>Strix occidentalis lucida</i></p> <p>Mexican spotted owl</p>	T	--	<p>Mexican spotted owl habitat is limited in distribution to forested and rocky canyon environments. They often use mixed conifer forests for nesting and roosting. Nesting typically occurs in forests with complex structures or rocky canyons. Within forested areas, nests are often found in Douglas-fir trees in dwarf- mistletoe-induced witches' broom. Mexican spotted owls nest and roost in closed-canopy forests with old-growth stands or rocky canyons. They nest and roost in closed-canopy forests with old-growth stands and may migrate to more open habitats at lower elevations during winter.</p> <p>There are no known confirmed Mexican spotted owls occurring on WSMR (WSMR 2010). A WSMR 2003 survey concluded there was no suitable habitat for breeding, but there was some potential habitat for wintering or a vagrant between fall and spring (WSMR 2010). There is no specific conservation practice for this species as they have not been documented and are not expected to reside on WSMR.</p>	<p>The project area lacks suitable habitat. No Effect.</p>

Species	Status		Habitat Description	Determination of effects and rationale
	Federal	State		
<p><i>Falco femoralis septentrionalis</i></p> <p>Northern Aplomado falcon</p>	NEP	E	<p>Northern Aplomado falcons are strongly associated with Chihuahuan desert grasslands containing scattered tall yuccas and mesquite (Keddy-Hector 2000). Small trees and large shrubs must be widely spaced, and dense lightly or ungrazed grasslands are preferred. Preferred habitat often contains tobosa swales and dominant grasses including blue, black, and sideoats grama (Montoya and Zwank 1995).</p> <p>The Northern Aplomado Falcon has been observed within WSMR, and it is probable that the Northern Aplomado Falcon was formerly a breeder on WSMR (WSMR 2023).</p> <p>Predictive modeling conducted by Young et al. (2005) estimated that roughly 10% of WSMR consisted of moderate to highly suitable habitat. The majority of habitat in these two categories was predicted to occur within the Stallion Range in northwestern WSMR.</p> <p>Primary threats noted in the Endangered Species Management Plan for the Northern Aplomado Falcon does not mention roads, vehicles, or other construction related activities. It does consider habitat alterations and loss is the presumed greatest threat.</p>	<p>The project site lacks suitable habitat.</p> <p>No effect.</p>
<p><i>Empidonax traillii extimus</i></p> <p>Southwestern willow flycatcher</p>	E	E	<p>Southwestern willow flycatchers are associated with moist microclimates and dense riparian vegetation near surface water. Wet conditions are uniformly required, but the vegetative structure and composition can vary widely by region and availability. This species typically avoids narrow, linear patches of habitat less than 10 m wide.</p> <p>Habitat for the southwestern willow flycatcher was delineated by Sadoti et al. (2003), and they concluded that the breeding habitat is marginal and widely dispersed, and the migratory habitat is also widely dispersed and limited (WSMR 2023). The known area of suitable habitat and where an individual was documented is near the Davies Tank on the southeastern portion of WSMR.</p>	<p>The project area lacks suitable habitat.</p> <p>No effect.</p>

Species	Status		Habitat Description	Determination of effects and rationale
	Federal	State		
<i>Coccyzus americanus</i> Yellow-billed cuckoo	T	--	<p>Yellow-billed cuckoos are associated with wooded, dense cover and water nearby. They prefer mature or late-successional cottonwood/willow associations with a dense understory. Western populations will often place nests in willows along streams, with adjacent cottonwoods serving as foraging sites.</p> <p>Surveys were performed on WSMR in 2005, resulting in three willow flycatcher detections at Davis Tank and a single yellow-billed cuckoo detection in each of two successive surveys at a Salt Creek site (Meyers 2006). However, there was no evidence that any of these birds were territorial or breeding on WSMR. (Meyers 2006). Since 2006, Davies tank, an artificial wetted area dried out and suitable vegetation declined.</p>	<p>The project site lacks suitable habitat. No effect.</p>
<i>Buteogallus anthracinus</i> Common black hawk	--	T	<p>The common black hawk has a distinct preference for riparian zones, which are the areas adjacent to rivers and streams. They prefer habitats with dense vegetation and large trees, particularly with water present.</p>	<p>The project area lacks suitable habitat. No effect.</p>
<i>Vireo vicinior</i> Gray vireo	--	T	<p>The gray vireo typically is associated with open pinyon-juniper woodland or juniper savannah with a shrub component. In southern New Mexico, they are mostly associated with oak, madrone, or desert scrub species. This species arrives in New Mexico from mid- to late April and usually departs by mid-August.</p> <p>Management for gray vireos in New Mexico should focus on the protection of existing healthy pinyon-juniper woodlands to minimize the impacts of the recent and ongoing loss of this habitat to drought and beetle infestation. Areas containing only juniper and a shrub component may provide suitable habitat for gray vireos and should be conserved. WSMR has established Avoidance and Minimization Standards for this species where it occurs.</p>	<p>The project area lacks suitable habitat. No effect.</p>
<i>Falco peregrinus</i> Peregrine falcon	--	T	<p>In New Mexico, almost all nests are constructed on ledges on relatively tall cliffs, in remote areas with minimal human disturbance.</p> <p>The greatest threat to peregrine falcon breeding in New Mexico is human disturbance. Falcons typically occupy fairly remote locations for breeding. Even fairly low levels of human disturbance may sometimes cause nest and territory abandonment.</p>	<p>The project area lacks suitable habitat. No effect.</p>

Species	Status		Habitat Description	Determination of effects and rationale
	Federal	State		
Fish				
<i>Hybognathus amarus</i> Rio Grande silvery minnow	E	E	The Rio Grande silvery minnow habitat on the WSMR is generally part of the broader Middle Rio Grande ecosystem. This species prefers large streams with slow to moderate currents flowing over silt or silt/sand substrates. They typically occupy areas where water depths are less than 15.75 inches (40 cm) and have low to moderate velocity (USFWS 2024). They are often found in eddies formed by debris piles, pools, backwaters, embankments, shorelines, and areas with submerged vegetation (USFWS 2024.)	The project area lacks suitable habitat. No effect.
Amphibians				
<i>Rana chiricahuensis</i> Chiricahua leopard frog	T	--	This frog requires permanent waters from ponds, tanks, cienegas, or small streams in montane and river valleys that is free from non-native predators (e.g., American Bullfrog; USFWS 2007). If permanent water is not available adults may persist, but reproduction is unlikely.	The project area lacks suitable habitat. No effect.
<i>Sistrurus tergeminus</i> Western massasauga rattlesnake	--	S3	This snake is typically found in flat grasslands, open woodland edges, or rocky hillsides. A 2021 WSMR working group conducted surveys across seven routes in 2020 and 2021. Where individuals were captured, it was noted that the habitat had deep, sandy soils with mixed desert shrub basin grassland vegetation. Elevations for capture occurred between 4,700 and 4,900 ft (1,432-1,494 m). It was further noted that all the individuals detected were found within the Brazito-Noum soil complex (Burkett 2021). The working group further noted that the home range of this snake is rather small.	Previous surveys indicate that it is unlikely for this species to be in the project area. The project area does not provide suitable habitat. No effect.
Mammal				
<i>Euderma maculatum</i> Spotted bat	--	T	This species can inhabit a wide variety of habitats, including riparian communities, pinyon-juniper woodlands, and ponderosa pine and spruce-fir forests. In New Mexico, this species prefers subalpine coniferous forests (Frey 1995). They require cracks and crevices in cliff faces to roost, and it is suggested that caves are used for hibernacula (Findley et al. 1975).	The project area lacks suitable habitat. No effect.

1 E = endangered, T = threatened, EXPN = experimental, C = candidate, NEP = nonessential experimental population, PT = proposed
2 threatened, SOC = species of concern, SGCN = species of greatest conservation need, S3 = vulnerable, and -- = no listing,
3 Source = IPaC 2023, NMERT 2024.

1 As proposed, there is no critical habitat for any sensitive, threatened, or endangered species within
2 the proposed project area or its vicinity (USFWS 2024).

3 White Sands pupfish (*Cyprinodon tularosa*) is a species at risk and a candidate for listing as a
4 federally protected species. It is endemic to the Tularosa Basin, where it is known, from Mound
5 Spring, Salt Creek, and Malpais Spring. A fourth population occurs in Lost River on HAFB. Salt
6 Creek and Malpais Spring populations are native while South Mound Spring, North Mound Spring,
7 Mound Spring, and Lost River populations were established through translocation. The population
8 of pupfish at Mound Spring was established sometime between 1967 and 1973, and the Lost River
9 population was established in 1970. The extremely limited distribution and geographic range of
10 White Sands pupfish makes it vulnerable to extinction from natural and anthropogenic causes. To
11 protect viable populations, WSMR has entered into a cooperative agreement that delineates an
12 effective and cooperative working relationship between its signatories in protecting and
13 maintaining viable populations of the White Sands pupfish in its habitats on WSMR, HAFB, and
14 White Sands National Park (WSMR 2023). The species is listed as threatened under the New
15 Mexico Wildlife Conservation Act and is currently under review for listing under the federal ESA.

16 The White Sands pupfish would not be present in the project area, as there is no direct waterway
17 connection to Salt Creek; however, the species could be affected indirectly via groundwater
18 contamination and siltation. The project area is within the upper watershed of Salt Creek. Wetted
19 surface water is over 7 miles away, thus best management practices for ground water monitoring,
20 leak detection and coordination with DPW-E on legal requirements are important.

21 Migratory Birds

22 The Migratory Bird Treaty Act (MBTA) protects migratory birds and prohibits the taking, killing,
23 possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except
24 with a federal permit (16 U.S.C. 703; 50 CFR 21; 50 CFR 10). Under the MBTA, “take” is defined
25 as “to pursue, hunt, shoot, shoot at, wound, kill, trap, capture, or collect, or attempt to pursue, hunt,
26 shoot, wound, kill, trap, capture, or collect.” Most actions that result in taking or permanently or
27 temporarily possessing a protected species or nests containing eggs or young constitute violations
28 of the MBTA, and the MBTA has no specific provision for authorizing incidental take.

29 Protocols and procedures for the protection of migratory birds on WSMR are discussed in the
30 WSMR INRMP (WSMR 2023). The project areas associated with the proposed action can loosely
31 be defined as grasslands.

32 Migratory species common on WSMR that are likely to breed or hunt over grasslands that
33 represent the project area include, but are not limited to: McCown’s longspur (*Calcarius*
34 *mccownii*) (nonbreeding), prairie falcon (*Falco peregrinus*), scaled quail (*Callipepla squamata*),
35 Baird’s sparrow (nonbreeding), Say’s phoebe (*Sayornis saya*), and Chihuahuan raven (*Corvus*
36 *cryptoleucus*) (WSMR 2023). The burrowing owl (*Athene cunicularia*) is a confirmed grassland
37 habitat breeder on WSMR, and highly probable breeders are the lesser nighthawk (*Chordeiles*

1 *acutipennis*) and common nighthawk (*Chordeiles minor*). The IPaC does not specifically designate
2 any migratory birds of conservation concern expected to occur at the project area; however, the
3 NMERT does note the possible presence of the burrowing owl.

4 Raptors

5 The Eagle Act makes it illegal to import, export, take (which includes molest or disturb), sell,
6 purchase, or barter any bald eagle or golden eagle or parts thereof. Under the Eagle Act (72 Federal
7 Register [FR] 31132, June 5, 2007), “take” is defined as to “pursue, shoot, shoot at, poison, wound,
8 kill, capture, trap, collect, destroy, molest or disturb.” “Disturb” is defined as “to agitate or bother
9 a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific
10 information available: (1) injury to an eagle, (2) a decrease in its productivity, by substantially
11 interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by
12 substantially interfering with normal breeding, feeding, or sheltering behavior” (72 FR 31132,
13 June 5, 2007).

14 Golden eagles are the largest bird of prey in North America and use a wide variety of habitats for
15 foraging and breeding. Golden eagles may either be permanent residents or migrants throughout
16 New Mexico, and nesting pairs are known to exist on WSMR, primarily in the San Andres
17 Mountain. They often nest on cliffs in this area. Nests are built out of sticks shaped to create a flat
18 or bowl-shaped platform. A breeding pair can lay two to four eggs a year. Surveys between 2013
19 and 2014 documented 32 territories on WSMR lands (WSMR 2023). Golden eagles are protected
20 under several federal statutes, which include the Eagle Act, the MBTA, Executive Order 13186 -
21 Responsibilities of Federal Agencies to Protect Migratory Birds, and Tribal Trust Coordination.

22 As proposed, the project area would be outside the habitat and noted buffers for nesting activities
23 related to bald and golden eagles, as described in the Golden Eagle Avoidance and Impact
24 Minimization Standards.

25 **3.4.2 Environmental Consequences**

26 3.4.2.1 The No-Action Alternative

27 Under the No-Action Alternative, the STS would not be built at the NRTF and there would be no
28 RCS, IR, and acoustic measurement of running jet engines. As a result, there would be no impact
29 on the biological resources of WSMR and the surrounding area.

30 3.4.2.2 Action Alternative – The Proposed Action

31 Vegetative Community

32 Direct and temporary effects on vegetation are expected as a result of implementing the Action
33 Alternative. Construction impacts on vegetation from the proposed project are expected to be
34 minimal and short-term because of the previously disturbed nature of the project area.

1 During jet engine testing operations, some vegetation would be killed due to the high temperatures
2 involved, and some vegetation may burn. These impacts would mainly affect grasses and low-
3 profile shrubs growing near the ReDI Range. No threatened or endangered plant species are present
4 in the immediate area. No significant impacts to the vegetative community are anticipated due to
5 implementation of the Proposed Action.

6 Wildlife

7 There would be no loss of wildlife habitat during construction as disturbance would be conducted
8 entirely within a previously disturbed area. During construction and operations at the ReDI Range,
9 wildlife would avoid the project area due to noise and human presence at the site. Through
10 implementation of the BMPs and mitigation measures provided in Section 3.4.3; the Proposed
11 Action would not adversely affect wildlife habitat or populations.

12 Threatened and Endangered Species

13 There are no known populations of federally or state-listed threatened or endangered species or
14 critical habitats present within the proposed project area, as the site lacks suitable habitat for any
15 species that could potentially occur on White Sands Missile Range. The WSMR INRMP provides
16 details, avoidance and management practices for these potential species

17 White Sands pupfish is a candidate for listing as a federally protected species. Essential habitat is
18 over 7 miles away. Groundwater contamination is possible from stormwater runoff or water used
19 to rinse the ReDI Range enters Salt Creek, however, the 7-mile distance will help prevent any
20 direct impacts. Stormwater will be directed into a retention pond. Water and sediment would be
21 removed and disposed of as needed.

22 Migratory Birds

23 Environmental consequences for migratory birds at the construction site would be direct if work
24 occurs during the nesting season and nesting birds are present. Direct effects include possible noise
25 and visual disturbance to adjacent nesting birds and potential harm to nesting birds and their young
26 that might occur in proposed project construction areas that require removal of vegetation.

27 It is recommended that construction and testing activities be conducted outside of the migratory
28 bird nesting season which is typically between mid-March through the end of August for most
29 species, but variations occur based on bird species (e.g., eagles or owls) and climate conditions.

30 Before any ground-disturbing activities occur, it is recommended that a preliminary migratory bird
31 survey to include burrowing owl be conducted by a qualified biologist using approved survey
32 standards by DPW-E. There were no observed active nests or burrows during the survey, then
33 construction can proceed; however, if active nests or burrows are found, then all construction
34 activities in the immediate area should cease, and a qualified biologist from DPW-E should be
35 consulted regarding the best way to proceed.

1 Raptors

2 There are no known golden eagle nests within planning buffer zones adjacent to the project area,
3 and the eagles are not anticipated to be located within the vicinity of the project area. As such, no
4 effect to raptor species is expected.

5 **3.4.3 Best Management Practices and Mitigations**

6 As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has
7 the responsibility of ensuring that all BMPs and mitigation measures are implemented. The
8 following BMPs and mitigation measures would be applied to minimize impacts to biological
9 resources:

10 BMPs:

- 11 • Vegetation removal must be conducted outside of nesting season, March through August.
12 When this cannot happen, then an active nest and burrow survey must be conducted using
13 approved methods by qualified biologists and coordinated with DPW-E;
- 14 • All openings inside and out of buildings and structures that allow wildlife (e.g., rodents,
15 birds, snakes, etc.) entry would be blocked;
- 16 • Trash and uneaten food would be removed from project areas and stored in secure
17 receptacles to prevent attracting wildlife;
- 18 • All piping, conduits, and associated equipment would be protected to prevent rodents and
19 other small mammals from entering or destroying vinyl coated wires;
- 20 • Personnel will not harass, collect, possess, harm, disturb, or destroy wildlife or their parts
21 to include but not limited to snakes, bats, birds, nests, eggs, or nestlings;
- 22 • Design to prevent and monitor retention pond for wildlife entrapment issues.
- 23 • Report to DPW-E any injured or dead birds or active nests with eggs or nestlings
24 discovered at the project sites;
- 25 • No plant or wildlife species would be added to the existing pond or the retention pond to
26 be built; and
- 27 • DPW-E would be contacted regarding any issues regarding migratory birds, raptors,
28 lizards, snakes, or other wildlife species of concern.

29 Mitigation Measures

- 30 • A preliminary burrowing owl survey would be conducted by a qualified biologist using the
31 NMDGF burrowing owl survey protocol prior to initiating construction activities;
- 32 • Surveys for migratory birds would be conducted seven days before construction activities
33 during nesting season (mid-March through end of August);
- 34 • A lined, monitored, and maintained retention pond would be constructed to collect
35 stormwater and rinse water from the ReDI Range tarmac; and
- 36 • DPW-E would consult with the USFWS regarding MBTA and ESA issues.

1 **3.5 WATER RESOURCES**

2 **3.5.1 Affected Environment**

3 White Sands Missile Range facilities are uniquely located and do not drain into the waters of the
4 United States, WSMR is not governed by the New Mexico groundwater regulations because
5 congress has not waived sovereign immunity for New Mexico. Stormwater pollution prevention
6 planning is used as a BMP and should be submitted to DPW-E.

7 3.5.1.1 Groundwater Resources

8 The project area is underlain by the Tularosa Basin, which is an elongate, north trending
9 intermontane basin of the greater Rio Grande Rift system, occupying approximately 6,500 square
10 miles (16,800 square km) in south-central New Mexico. The basin is bordered by Sierra Blanca
11 and the Sacramento mountains to the east; and the San Andres, Organ, and Franklin mountains to
12 the west. The basin merges to the south with the Hueco Bolson, extending into west Texas.
13 Extensive fault systems with several thousand ft of vertical displacement separate the basin from
14 the east and west-flanking uplift. As regional uplift progressed, concurrent erosion of the
15 surrounding highlands has resulted in deposition of more than 6,000 ft (1,830 m) of alluvial basin-
16 fill material (Land 2016). Depth to groundwater at the NRTF is approximately 710 ft (216 m)
17 below ground surface (USGS 2024).

18 3.5.1.2 Surface Water Resources

19 The NRTF is located on a small portion of the wide alluvial fan where Rhodes Canyon transitions
20 into the Tularosa Basin. No major rivers flow through the Tularosa Basin, and the only available
21 surface water supplies are from springs, small streams, and artificial reservoirs in the Sacramento
22 Mountains (Land 2016). Although other large drainage systems such as Rhodes Canyon flow to
23 the basin, these only flow after intense precipitation events.

24 One perennial stream, Salt Creek, is located in the northern portion of WSMR. The water source
25 for Salt Creek is snow melt and precipitation runoff originating from the Organ Mountain range
26 located in the western portion of WSMR. Drainage from Rhodes Canyon feeds into Salt Creek.
27 NRTF is in the upper watershed for Salt Creek, which provides habitat for White Sands pupfish.

28 3.5.1.3 Wetlands

29 A search of the National Wetlands Inventory indicates that no wetlands are present in the project
30 area (FWS 2024). This was confirmed during a site survey conducted on August 15, 2024. As
31 such, this resource area is not discussed further in this EA.

32 3.5.1.4 Floodplains

33 The project area is near the transition of Rhodes Canyon into the Tularosa Basin. Drainage from
34 the San Andres Mountains flows through Rhodes Canyon. Much of the NRTF is within Zone A,
35 or areas of 100-year flood; base flood elevations and flood hazards not determined, as provided,

1 dated June 3, 1986 (FEMA 1986). The ReDI Range is outside the 100-year floodplain; however,
2 it is assumed that portions of the planned construction would take place in the Zone A special flood
3 hazard area.

4 3.5.1 Environmental Consequences

5 3.5.1.1 The No-Action Alternative

6 Under the No-Action Alternative, the STS would not be built at the NRTF and there would be no
7 jet engine testing. As a result, there would be no new construction or operations conducted that
8 could affect water resources or floodplains. There would be no impact on water resources through
9 implementation of the No-Action Alternative.



10
11 **Figure 3-1. Special Flood Hazard Area (Zone A) Near ReDI Range**

12 3.5.1.2 Action Alternative – The Proposed Action

13 Groundwater Resources

14 Construction activities associated with the Proposed Action would consume water due to activities
15 such as concrete mixing and dust suppression. The water used would be trucked to the project area
16 from wells located outside the project area. The increased water demand would be temporary in
17 nature and would not significantly impact area groundwater resources for consumption.

18 In the operational phase, runoff from the ReDI Range and its vicinity would be collected in a lined
19 retention pond that would be built during the construction phase. When needed, the collected water

1 would be removed and transported to a licensed facility for treatment and disposal. No significant
2 impacts to groundwater resources are anticipated.

3 Surface Water Resources

4 Surface water resources in the project area are limited to ephemeral washes and arroyo. To
5 minimize potential effects, a temporary erosion and sediment control plan (TESCP) would be
6 developed and implemented to prevent soil erosion and sediment runoff during construction.

7 A lined retention pond would be built to collect runoff during the operational phase. Monitoring
8 and maintenance would be required. This would reduce effects to downstream resources including
9 Salt Creek. Through implementation of these measures, impacts to groundwater resources would
10 not be significant.

11 Disposal of wastewater and sludge will adhere to NMAC requirements for the New Mexico Water
12 Quality Standards. The proposed retention pond will need to be monitored frequently to ensure the
13 liner is functional. Silt and wastewater will need to be disposed properly through coordination with
14 DPW-E.

15 Floodplains

16 It is assumed that a portion of the planned construction would occur within a 100-year floodplain.
17 Direct impacts would occur where construction occurs in the floodplain, by increasing
18 obstructions.

19 Section 438 of the Energy Independence and Security Act (EISA) requires all federal development
20 projects with a footprint that exceeds 5,000 sq ft conform with federal stormwater design
21 requirements to maintain the pre-development hydrology and protect downstream receiving
22 waters. To counter these impacts, construction would be conducted in accordance with low impact
23 development and runoff controls provided in Section 438 of EISA. Although meant to be applied
24 as a measure to increase energy independence and national security, provisions in EISA support
25 floodplain management by ensuring that infrastructure in floodplains is resilient to disruptions
26 caused by floods. By implementing these EISA provisions and BMPs provided in Section 3.5.2,
27 no significant impact to floodplains would occur. However, if construction shifts into a floodplain,
28 then a finding of no practical alternative would need to be completed prior to execution.

29 **3.5.2 Best Management Practices**

30 As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has
31 the responsibility of ensuring that all BMPs or mitigation measures are implemented. The
32 following BMPs would be applied to reduce impacts to water resources:

- 33 • To minimize ground disturbance, construction activities would be restricted to previously
34 disturbed areas;

- 1 • To the fullest extent possible, construction would occur during the dry season when rainfall
2 and runoff potential are low;
- 3 • A TESCP would be developed and implemented to prevent soil erosion and sediment
4 runoff during construction;
- 5 • The new facilities will be constructed in accordance with low impact development and
6 runoff controls provided in Section 438 of EISA;
- 7 • A lined, monitored and maintained retention pond would be constructed to collect water
8 runoff from the ReDI Range and its vicinity;
- 9 • The retention pond will be monitored to prevent excessive sediment deposition and erosion
10 of neighboring soils;
- 11 • Disposal of wastewater and sludge would comply with NMAC standards;
- 12 • All tanks containing fuel, oil, hydraulic fluid, lubricants, and other petrochemicals would
13 have a secondary containment system to prevent spills;
- 14 • Appropriate spill clean-up materials, such as absorbent pads, would be available on-site at
15 all times during ground-disturbing and construction activities to address potential spills;
16 and
- 17 • All spills would be immediately reported to NMED by DPW-E, as required by New
18 Mexico Water Quality Control Commission regulations.

3.6 TRAFFIC AND TRANSPORTATION

3.6.1 Affected Environment

The NRTF is located on the western side of WSMR's North Range. Access to NRTF requires entry into the missile range using major arterial roads from north, east or southern access points. From the northern access gate, NRTF is about 56 miles [90 km] south. From the southern access point, it is about 50 miles (80 km) north.

Personnel, supplies and equipment can access NRTF from HAFB and Tularosa from the east through the Tulie Gate. Access to NRTF is via Range Road 6, which leads to NRTF approximately 31 miles (49.9 km) west of the gate.

Range Road 6 is a feeder road running east to west, connecting to main arterial roads. This road is frequently used as a thorough fair for personnel needing to drive around mission related roadblocks or as an emergency egress. Test stand activities will require this road to be blocked for safety reasons.

3.6.2 Environmental Consequences

3.6.2.1 The No-Action Alternative

There would be no construction and operation of an STS at the NRTF under the No-Action Alternative. As such, there would be no increase in traffic restrictions on WSMR roads, thus no impact to traffic flow mid-range.

3.6.2.2 Action Alternative – The Proposed Action

During construction, there would be an increase in traffic on Range Roads 6 and 7. Contractors entering WSMR gates and traveling through main arterial roads would temporarily increase. Mission roadblocks might create more of an impact on construction at the test stand.

During operations, there would be a temporary and minor increase in WSMR traffic as equipment and supplies are transported to the NRTF.

There would be up to four events annually, resulting in WSMR closing roads in the vicinity. These closures would be temporary in nature. To minimize impacts to transportation, NRTF will attempt to restrict closure time to least amount of time practicable. No significant impacts are anticipated.

3.6.3 Best Management Practices and Mitigations

As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has the responsibility of ensuring that all BMPs or mitigation measures are implemented. The following BMPs would be applied to reduce impacts on land use and infrastructure:

- Cars and trucks used for personnel and delivery transport to the project area would follow all posted speed limits;

- 1 • All personnel will follow safety protocols associated with Range closures; and
- 2 • NRTF personnel need to remove roadblock indicators (i.e., gates or cones) when testing is
- 3 complete, so other personnel can travel along Range Road 6.

4

3.7 ENERGY DEMAND, GENERATION, TRANSMISSION, AND USE

3.7.1 Affected Environment

Electricity is supplied to WSMR from local commercial utilities which generate power offsite. The WSMR distribution systems are comprised of 4 circuit miles of 115-kilovolt overhead transmissions lines, 153 circuit miles (246 km) of overhead distribution lines, 11 circuit miles (17.7 km) of underground utility lines, and 12 circuit miles (19.3 km) of overhead and underground street lighting circuits (WSMR 2024).

NRTF operates with an annual allotment of 3 megawatts (MW). This allotment is needed to conduct the current operations, and more power will be needed to perform the RCS, IR and acoustic measurements associated with the Proposed Action (Sherman 2025). At the time of this writing, the power demands of the Proposed Action are not known but are being evaluated by members of the 704th TG.

3.7.2 Environmental Consequences

3.7.2.1 The No-Action Alternative

Under the No-Action Alternative, there would be no construction or operation of an STS for the RCS, IR, and acoustic measurement of jet engines. The NRTF would continue to operate within their 3-MW electrical supply allotment. There would be no new demand on the WSMR electrical power system, and no impacts on energy demand, generation, transmission, and use would occur.

3.7.2.2 Action Alternative – The Proposed Action

An increase in electrical capacity at the NRTF would be needed to achieve the Proposed Action. Installation of new electrical distribution lines, overhead or underground, may be required to connect the to-be-constructed STS to the electrical grid and allow for the influx of electrical consumption. Interruptions to the electrical system may occur during construction and installation.

The increase in electrical power would need to come from reallocation of existing WSMR resources or establishing new power generation. Not enough information was available at the time of this writing. Therefore, the action of bringing on more electrical power at the NRTF would require additional environmental analysis.

3.7.3 Best Management Practices and Mitigations

As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has the responsibility of ensuring that all BMPs or mitigation measures are implemented. The following BMP would be applied to reduce impacts on energy demand, generation, distribution, and use:

- Further NEPA review and analysis would be conducted to assess potential impacts associated with the to-be-determined power source, once identified and secured.

- 1 • Coordinate backup power generation with DPW-E to determine air quality requirements
- 2 and ensure EPA standards are met.

3.8 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

Hazardous materials are defined by 49 CFR § 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR § 172.101), and materials that meet the defining criteria for hazard classes and divisions” in 49 CFR Part 173. Transportation of hazardous materials is regulated by U.S. Department of Transportation regulations at 49 CFR §§ 105–180.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) in 42 U.S.C. § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous waste are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes, and their associated regulatory requirements are specified in 40 CFR § 273. Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances.

Above ground storage tanks with capacities between 1,320 and 55,000 gallons (4,997 and 208,200 liters) are subject to the state’s petroleum storage tank regulations found in NMAC 20.5. These regulations require owners to maintain strict operations, maintenance and safety standards. Required measures include monthly visual inspections, implementation of leak detection systems, corrosion protection for metal components, and appropriate closure procedures. All releases must be reported.

3.8.1 Affected Environment

Hazardous waste commonly generated at WSMR include waste paint, solvent waste, solder waste, used fuel filters, rags and absorbents, and laboratory waste. WSMR is a RCRA Large Quantity Generator (USEPA identification number NM2750211235). RCRA Large Quantity Generators generate more than 1,000 kilograms (kg, [2,200 pounds {lb}]) of non-acute hazardous waste or more than 1 kg (2.2 lb) of acute hazardous waste per calendar month. Hazardous waste generating activities on WSMR include research, development, testing, and evaluation support; vehicle, equipment, and facility maintenance; fabrication shop and photographic operations; and environmental restoration activities. Additionally, WSMR is a large quantity handler of universal waste. A large quantity handler of universal waste accumulates 5,000 kg (11,000 lb) or more total of universal waste at any time. Universal waste generated at WSMR include used batteries, mercury-containing equipment, and spent fluorescent bulbs. WSMR has implemented specific procedures to manage and track hazardous waste on the installation. These procedures ensure that hazardous waste is properly managed and tracked from the time it is generated until it leaves the Hazardous Waste Storage Facility for disposal (WSMR 2006). The need for additional Satellite

1 Accumulation Points (SAP) for hazardous waste generated during STS operations is anticipated.
2 Storage and disposal of hazardous waste would comply with state and federal requirements and
3 regulations.

4 Wastes generated from the proposed STS at NRTF during tests involving running jet engines could
5 include hazardous components, such as petroleum, products of petroleum combustion, solvents,
6 and materials used in fire suppression. Jet fuel and its combustion products would deposit on the
7 ReDI Range tarmac and its surroundings during test events. Silt and water collected in a retention
8 pond could also contain hazardous waste materials that require proper disposal and monitoring.
9 These materials could contain hazardous components, toxic chemicals, and heavy metals.

10 **3.8.2 Environmental Consequences**

11 3.8.2.1 The No-Action Alternative

12 Under the No-Action Alternative, there would be no construction and operation of an STS at the
13 NRTF. As such, no testing of jet engines would occur, and no additional hazardous materials (i.e.,
14 heavy metals, combustion products) would deposit on the ReDI Range. There would be no
15 hazardous materials or waste impacts associated with the No-Action Alternative.

16 3.8.2.2 Action Alternative –The Proposed Action

17 The Proposed Action would involve deposition of potentially hazardous components during
18 testing events. These would include heavy metals, hazardous materials, and toxic chemicals. To
19 minimize offsite water and soil contamination, a lined stormwater collection and retention system
20 would be installed. The pond will be designed to collect stormwater and rinse water from post-
21 event cleaning. When needed, the collected water and sediments would be tested, removed, and
22 transported to a licensed facility for treatment and disposal. Monitoring and maintenance would
23 be programmed into annual facility requirements.

24 Jet fuel will be stored in a 30,000-gallon tank (113,600-liter) that would be filled prior to each
25 testing event via trailer truck delivery. This would require three oil tanker truck deliveries between
26 HAFB and NRTF. Drivers will hold and maintain the Hazardous Materials endorsement which
27 requires completion of the federal Entry-Level Driving Training, passing a Transportation Security
28 Administration background check, and passing the New Mexico Motor Vehicle Department
29 written exam.

30 Personnel conducting fuel loading procedures would follow all state and federal regulations to
31 minimize spills and other exposures to the environment. With these measures applied, there would
32 be no significant impacts due to hazardous material and waste management associated with the
33 Proposed Action.

1 **3.8.3 Best Management Practices and Mitigations**

2 As specified in DoD NEPA Implementing Procedures (30 June 2025), the project proponent has
3 the responsibility of ensuring that all BMPs or mitigation measures are implemented. The
4 following BMPs would be applied to reduce hazardous materials and waste management impacts:

- 5 • A lined, monitored and maintained stormwater collection and retention system
6 would be installed to collect stormwater and rinse water runoff from the ReDI
7 Range;
- 8 • Liquid and solid waste from the retention pond would be sampled and tested before
9 removal and transportation to a licensed facility for treatment and disposal;
- 10 • Jet fuel shipments would be performed by drivers with the Hazardous Material
11 endorsement;
- 12 • All fuel loading operations would be conducted in accordance to state and federal
13 standards; and
- 14 • NRTF will coordinate with DPW-E for compliance with all state and federal
15 standards.

1 **3.9 SUMMARY OF POTENTIAL IMPACTS AND MITIGATIONS**

2 BMPs are standard practices that are implemented as part of the Proposed Action to minimize or
3 avoid adverse impacts. Additional mitigation measures are proposed to rectify or compensate for
4 unavoidable adverse environmental effects that could be significant without mitigation. Table 3-
5 11 provides a summary of the potential impacts associated with the Proposed Action alternative,
6 as well as the proposed BMPs and mitigation measures.

7 The No-Action Alternative would represent no change in the current operational environment of
8 WSMR. Therefore, no impacts to the resource areas analyzed would be expected.

1

Table 3-11. Environmental Effects Summary

Impacts of the Proposed Action Alternatives	Proposed Best Management Practices and Mitigation Measures
Land Use	
<p>No significant impact.</p> <ul style="list-style-type: none"> All proposed construction and operations within an existing disturbed footprint. The Proposed Action is consistent with all applicable land use management plants. Some WSMR facilities would have to shelter in place during jet engine testing events. 	<p>BMPs</p> <ul style="list-style-type: none"> NRTF will use WSMR Range Control to schedule test activities; and NRTF personnel should remove roadblock indicators (i.e., gates or cones) when testing is complete, so other range users can travel along Range Road 6.
Air Quality	
<p>No significant impact.</p> <ul style="list-style-type: none"> WSMR is in attainment for all criteria air pollutants. PTE analysis indicates that the STS would be a major source if yearlong uninterrupted service were to occur; however, administrative and engineered controls would reduce this status to a synthetic minor source. 	<p>BMPs</p> <ul style="list-style-type: none"> Operation of the STS at NRTF would be limited to four test events per year Generators brought on site must be EPA certified and coordinated with DPW-E before delivered and installed To the fullest extent possible fugitive dust will be minimized, especially from unpaved roads and other cleared areas ; Truckloads of dirt would be covered with tarps to reduce dust; All equipment and generators would be properly maintained; and Use of existing roads will be used to the fullest extent possible with avoidance of creating new roads.
Soils, Geology, Topography	
<p>No significant impact.</p> <ul style="list-style-type: none"> Direct impact to soils would occur due to excavation and other ground disturbance. Facility and support structure construction would involve new ground disturbance within the northern portion of the project area. Installation of the outdoor test stand would be performed on the previously disturbed ReDI Range tarmac. The project area is adjacent to a 100-year floodplain. 	<p>BMPs</p> <ul style="list-style-type: none"> Construction activities would be restricted to an approved building envelope for the ReDI Range (Figure 1-2); To the fullest extent possible, construction would occur during the dry season when rainfall and runoff potential are low; and An erosion and sedimentation control plan would be developed for the planned construction activities. The construction contractor will submit a cable locate request to the White Sands Test Center Range Operations – Information Management prior to any excavation.
Cultural Resources	
<p>No significant impact.</p> <ul style="list-style-type: none"> The project would be conducted within a previously disturbed area. 	<p>BMP</p> <ul style="list-style-type: none"> Work would halt if inadvertent discovery of artifacts and cultural resources were found and DPW-E would be contacted for further guidance.

Impacts of the Proposed Action Alternatives	Proposed Best Management Practices and Mitigation Measures
<ul style="list-style-type: none"> Previous cultural surveys did not discover cultural resources. 	
Biological Resources	
<p>May affect, but not adversely affect</p> <ul style="list-style-type: none"> Some vegetation would be killed due to the high temperatures involved, and some vegetation may burn. There would be no loss of wildlife habitat during construction as disturbance would be conducted entirely within a previously disturbed area. Indirect effects to White Sands pupfish could occur if groundwater contaminated with stormwater runoff or water used to rinse the ReDI Range enters Salt Creek. 	<p>BMPs</p> <ul style="list-style-type: none"> Vegetation removal must be conducted outside of nesting season, March through August. When this cannot happen, then an active nest and burrow survey must be conducted using approved methods by qualified biologists and coordinated with DPW-E; All openings inside and out of buildings and structures that allow wildlife (e.g., rodents, birds, snakes, etc.) entry would be blocked; Trash and uneaten food would be removed from project areas and stored in secure receptacles to prevent attracting wildlife; All piping, conduits, and associated equipment would be protected to prevent rodents and other small mammals from entering or destroying vinyl coated wires; Personnel will not harass, collect, possess, harm, disturb, or destroy wildlife or their parts to include but not limited to snakes, bats, birds, nests, eggs, or nestlings; Design to prevent and monitor retention pond for wildlife entrapment issues. Report to DPW-E any injured or dead birds or active nests with eggs or nestlings discovered at the project sites; No plant or wildlife species would be added to the existing pond or the retention pond to be built; and DPW-E would be contacted regarding any issues regarding migratory birds, raptors, lizards, snakes, or other wildlife species of concern. <p>Mitigation Measures</p> <ul style="list-style-type: none"> A preliminary burrowing owl survey would be conducted by a qualified biologist using the NMDGF burrowing owl survey protocol prior to initiating construction activities; Surveys for migratory birds would be conducted seven days before construction activities during nesting season (mid-March through end of August); A lined retention pond would be constructed to collect stormwater and rinse water from the ReDI Range tarmac; and DPW-E would consult with the USFWS regarding MBTA and ESA issues.
Water Resources	
<p>No significant impacts</p> <ul style="list-style-type: none"> Water for construction would be trucked in. Surface water resources in the project area are limited to ephemeral washes and arroyos. The project area is adjacent to a 100-year floodplain. 	<p>BMPs</p> <ul style="list-style-type: none"> To minimize ground disturbance, construction activities would be restricted to previously disturbed areas; To the fullest extent possible, construction would occur during the dry season when rainfall and runoff potential are low; A TESCO would be developed and implemented to prevent soil erosion and sediment runoff during construction;

Impacts of the Proposed Action Alternatives	Proposed Best Management Practices and Mitigation Measures
	<ul style="list-style-type: none"> • The new facilities will be constructed in accordance with low impact development and runoff controls provided in Section 438 of EISA; • A lined, monitored and maintained retention pond would be constructed to collect water runoff from the ReDI Range and its vicinity; • The retention pond will be monitored to prevent excessive sediment deposition and erosion of neighboring soils; • Disposal of wastewater and sludge would comply with NMAC standards; • All tanks containing fuel, oil, hydraulic fluid, lubricants, and other petrochemicals would have a secondary containment system to prevent spills; • Appropriate spill clean-up materials, such as absorbent pads, would be available on-site at all times during ground-disturbing and construction activities to address potential spills; • All spills would be immediately reported to NMED by DPW-E, as required by New Mexico Water Quality Control Commission regulations;
Traffic and Transportation	
<p>No significant impact.</p> <ul style="list-style-type: none"> • Range Road 6 is the main access road to the NRTF. • Deliveries from HAFB would enter the Tulie Gate and drive down Range Road 6. 	<p>BMPs</p> <ul style="list-style-type: none"> • Cars and trucks used for personnel and delivery transport to the project area would follow all posted speed limits; • All personnel will follow safety protocols associated with Range closures; and • NRTF personnel need to remove roadblock indicators (i.e., gates or cones) when testing is complete, so other personnel can travel along Range Road 6.
Energy Demand, Generation, Distribution, and Use	
<p>No determination of effect at this time.</p> <ul style="list-style-type: none"> • NRTF is connected to the WSMR distribution system and operates with a current allotment of 3 MW. • Current supply does not meet future demand. 	<p>BMP</p> <ul style="list-style-type: none"> • Further NEPA review and analysis would be conducted to assess potential impacts associated with the to-be-determined power source, once identified and secured; and • Coordinate backup power generation with DPW-E to determine air quality requirements and ensure EPA standards are met.
Hazardous Materials and Hazardous Waste Management	
<p>No significant impact.</p> <ul style="list-style-type: none"> • Heavy metals, hazardous materials, and toxic chemicals would be deposited on the tarmac during jet engine tests. 	<p>BMPs</p> <ul style="list-style-type: none"> • A lined, monitored, and maintained stormwater collection and retention system would be installed to collect stormwater and rinse water runoff from the ReDI Range; • Liquid and solid waste from the retention pond would be sampled and tested before removal and transportation to a licensed facility for treatment and disposal; • Jet fuel shipments would be performed by drivers with the Hazardous Material endorsement;

Impacts of the Proposed Action Alternatives	Proposed Best Management Practices and Mitigation Measures
	<ul style="list-style-type: none">• All fuel loading operations would be conducted in accordance with state and federal standards; and• NRTF will coordinate with DPW-E for compliance with all state and federal standards

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1 **CHAPTER 4 REASONABLY FORESEEABLE EFFECTS**

2 When evaluating the environmental impact of an Army action, the analysis must include
3 consideration of reasonably foreseeable future actions that could contribute to aggregated impacts.

4 As defined in DoD Implementing Policy (30 June 2025), “reasonably foreseeable ” means
5 sufficiently likely to occur such that a person of ordinary prudence would take it into account in
6 reaching a decision.

7 Each resource, ecosystem, and human community must be analyzed in terms of its ability to
8 accommodate additional effects based on its own time and space parameters. Therefore,
9 reasonably foreseeable effects analysis will typically encompass a Region of Influence (ROI) or
10 geographic boundaries beyond the immediate area of the Proposed Action and a time frame
11 including past actions and foreseeable future actions, to capture these additional effects.

12 For the Proposed Action to have an accumulating significant impact on an environmental resource,
13 two conditions must be met. First, the combined effects of all identified past, present, and
14 reasonably foreseeable projects, activities, and processes on a resource, including the effects of the
15 Proposed Action, must be significant. Second, the Proposed Action must make a substantial
16 contribution to that significant aggregate impact. To analyze reasonably foreseeable action effects,
17 a ROI must be identified for which effects of the Proposed Action and other past, present, and
18 reasonably foreseeable actions would occur.

19 For purposes of this analysis, the ROI includes projects considered within the vicinity of the
20 Proposed Action and infrastructure that supports the project. For the purposes of this EA, the ROI
21 includes the NRTF campus, as well as roads and utilities that support the NRTF. This analysis
22 depends on the availability of data and the relevance of effects of past, present, and future actions.
23 Although certain data (e.g., extent of forest cover) may be available for extensive periods in the
24 past (i.e., decades), other data (e.g., water quality) may be available for much shorter periods.
25 Because specific information and data on past projects and actions are usually scarce, the analysis
26 of past effects for this EA is qualitative.

27 Table 4-1 lists the past, present, and reasonably foreseeable future actions within the ROI that have
28 had, continue to have, or would be expected to have some impact on the natural and human
29 environment. The projects in this table are limited to those implemented in the last five years or
30 those with ongoing contributions to environmental effects. Projects with measurable contributions
31 to impacts within the ROI for a resource area were included in the reasonably foreseeable action
32 analysis.

4.1 LAND USE

The Proposed Action is consistent with all applicable land use plans and would not impact the status of any reasonably foreseeable projects at WSMR. The Proposed Action in conjunction with other past, present, and foreseeable activities, would not result in cumulative land use impacts.

4.2 AIR QUALITY

The Proposed Action would lead to criteria air pollutant emissions below de minimis thresholds and would not trigger a conformity determination under Section 176(c) of the CAA. Moreover, these negligible impacts, when added to the other reasonably foreseeable projects and activities, would account for a small percentage increase of overall air emissions for the region. As a result, the emissions associated with the Proposed Action would not be expected to have a cumulative impact on air quality.

Table 4.1. Reasonably Foreseeable Actions within the Region of Influence

Project Title	Project Description	Past	Present	Future
Holloman Air Force Base High Speed Test Track Extension	The U.S. Air Force proposes to extend the existing High Speed Test Track beyond the current HAFB limits.			✓
Joint Directed Energy Test Center	The Joint Directed Energy Test Center Program performs developmental testing and operational testing of directed energy weapon systems at facilities on Salinas Peak.	✓	✓	✓
Directorate of Emergency Services Fire Station and Access Control Point Modernization	This program would demolish and replace four existing fire stations on WSMR as well as construct a new fire station. The two main access control points (e.g., Las Cruces and El Paso gates) would also be demolished and replaced with new facilities.			✓

4.3 SOILS, GEOLOGY, AND TOPOGRAPHY

The Proposed Action would have soil erosion effects, limited to the project area. Such effects are limited to ground disturbance during construction and operation of the STS at NRTF. Considering the nature of the past, ongoing, and proposed future projects listed in Table 4-1, the regional activities are not expected to significantly affect geology and soils.

4.4 BIOLOGICAL RESOURCES

Vegetation removal associated with the Proposed Action would have small-scale impacts to vegetation communities but would not impact the ability to maintain plant populations. When possible, work would be done outside nesting season to minimize impacts on migratory birds. The proposed project area does not contain critical habitat. When combined with the effects of other past, present, and foreseeable project activities, implementation of the Proposed Action is unlikely to have any additional cumulative effect on regional plant and animal populations, including threatened and endangered species and Army Species at Risk.

1 **4.5 WATER RESOURCES**

2 Construction activities associated with the Proposed Action would consume water due to activities
3 such as concrete mixing and dust suppression. The water used would be trucked to the project area
4 from wells located outside the project area. The increased water demand would be temporary in
5 nature and would not significantly impact area groundwater resources for consumption.

6 Siltation and water runoff from the STS into a retention pond will require the proponent to monitor
7 the effectiveness of any added liners, ensure wildlife is not trapped, and there is proper disposal of
8 accumulated waste and the liner.

9 There are no perennial surface water sources in the project area. However, there are numerous
10 arroyos and washes adjacent to the project area. The project area is also adjacent to a 100-year
11 floodplain. The construction contractor will implement an erosion and sedimentation control plan
12 to protect these resources. When combined with the effects of other past, present, and foreseeable
13 project activities, implementation of the Proposed Action is unlikely to have any additional
14 cumulative effect on surface and groundwater resources.

15 **4.6 TRAFFIC AND TRANSPORTATION**

16 Nearby roads would be closed during jet engine tests. These road closures would be temporary
17 (i.e., roughly 2 hours) and would occur a maximum of four times per year, yielding less than
18 significant impacts on traffic and transportation systems at WSMR.

19 Extension of the HAFB high-speed test track would cross Range Road 6, the main route for
20 delivery of jet engines, fuel, and equipment from HAFB. As a result, deliveries to NRTF would
21 be rerouted through the Holloman Gate, adding approximately 8 miles (12.87 km) to the delivery
22 route. This new route would involve use of roads crossing the WSMR. Each roundtrip delivery
23 between HAFB would increase by over 15 miles (24.1 km), increasing traffic on a local highway
24 and WSMR roads. Air pollutant emissions due to vehicle use would increase, as would the risk of
25 transportation accidents.

26 The fire station modernization program would construct a new fire station to service the middle
27 and north range areas of WSMR. The new station would likely be located closer to NRTF than the
28 existing fire station at Stallion Range. As a result, emergency response times at NRTF could
29 decrease.

30 **4.7 ENERGY DEMAND, GENERATION, TRANSMISSION, AND USE**

31 The Proposed Action would require an increase in electrical power supply to NRTF. At the time
32 of this writing, it is unclear whether the additional electrical power would come from the
33 reallocation of existing resources or if new generating capacity will be required. Further
34 investigation is needed to determine effects on current and reasonably foreseeable projects and
35 activities at WSMR.

1 The reasonably foreseeable projects provided in Table 4-1 would result in power demand at
2 WSMR. Each of these projects will be responsible for acquiring and maintaining the power
3 allotments needed. Some of the needed power allotments could come from the planned expansion
4 of solar power generation at WSMR.

5 **4.8 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT**

6 The Proposed Action would involve deposition of potentially hazardous components during
7 testing events. These would include heavy metals, hazardous materials, and toxic chemicals. To
8 minimize offsite water and soil contamination, a lined stormwater collection and retention system
9 would be installed. The pond will be designed to collect stormwater and rinse water from post-
10 event cleaning. When needed, the collected water and sediments would be tested, removed, and
11 transported to a licensed facility for treatment and disposal. Implementing these measures would
12 minimize hazardous materials or waste impacts outside the boundaries of NRTF.

13 Hazardous waste could be generated during operations, and each project would manage, transport,
14 and dispose of wastes in accordance with the policies and procedures provided in WSMR
15 Regulation 200-1, minimizing impacts or exposure between these projects.

16

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APPENDIX A GLOSSARY OF TERMS AND RADIO-FREQUENCY BANDS TABLE

A.1 GLOSSARY OF TERMS

acoustics – the science concerned with the production, control, transmission, reception, and effects of sound (Source: Britannica 2024).

acoustic measurement – a set of methods used to determine acoustic parameters, such as sound intensity, noise level, and vibration (Source: Svantek 2024).

antenna – a device that transmits or receives electromagnetic (EM) energy in a way suitable for a specific application (Source: MVG 2024).

azimuth – the angle of a radar beam relative to north. It is measured clockwise on an azimuth circle, which is 360 degrees.

band – a small contiguous section of the radio spectrum frequencies, in which channels are usually used or set aside for use. For example, broadcasting, mobile radio, or navigation devices, will be allocated in non-overlapping ranges of frequencies (Source: TeraSense 2024).

electromagnetic (EM) spectrum – the entire distribution of electromagnetic radiation according to frequency or wavelength. Although all electromagnetic waves travel at the speed of light in a vacuum, they do so at a wide range of frequencies, wavelengths, and photon energies. The electromagnetic spectrum comprises the span of all electromagnetic radiation and consists of many subranges, commonly referred to as portions, such as visible light or ultraviolet radiation (Source: Britannica 2024).

hertz – unit of frequency. The number of hertz (abbreviated Hz) equals the number of cycles per second. The frequency of any phenomenon with regular periodic variations can be expressed in hertz, but the term is used most frequently in connection with alternating electric currents, electromagnetic waves (light, radar, etc.), and sound (Source: Britannica 2024).

infrared (IR) – the portion of the EM spectrum that extends from the long wavelength, or red, end of the visible-light range to the microwave range. Invisible to the eye, it can be detected as a sensation of warmth on the skin (Source: Britannica 2024).

radar – an electromagnetic sensor used for detecting, locating, tracking, and recognizing objects of various kinds at considerable distances (Brittanica 2024). “Radar” is an acronym for radio detection and ranging.”

radar cross section (RCS) – a measure of how much energy an object reflects back towards a radar, and is a crucial characteristic for determining how easily an object can be detected. It is the

equivalent area that a radar sees, and is dependent on factors such as aspect angle, frequency, and polarization (Source: Meyers 2003).

radiofrequency (RF) – any of the electromagnetic wave frequencies that lie in a range extending from below 3 kilohertz to about 300 gigahertz and that include the frequencies used for communications signals (as for radio and television broadcasting and cell-phone transmissions) or radar signals (Source: Merriam-Webster 2024).

DRAFT

A.2 RADAR AND RADIOFREQUENCY PRIMER

The radio spectrum (also known as radiofrequency or RF) is one of such parts of the electromagnetic spectrum that overlaps the sub-terahertz range at its lower end. Accordingly, electromagnetic waves in this frequency range are called RF bands. These bands spread in the range between 3 kHz and 300 GHz. All known transmission systems are operated in the RF spectrum range including analogue radio, aircraft navigation, marine radio, amateur radio, TV broadcasting, mobile networks and satellite systems.

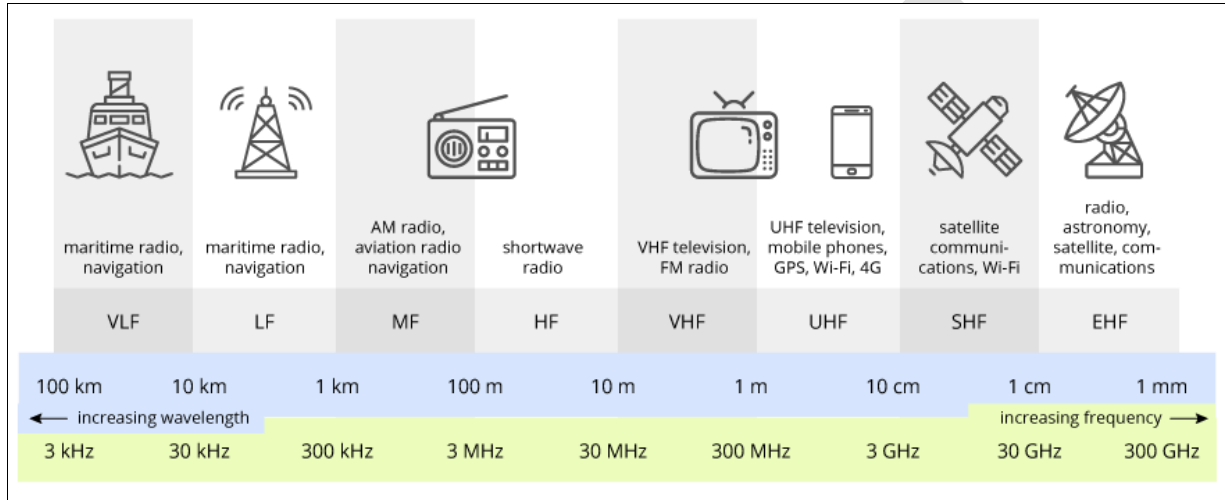


Figure A-1. The Radiofrequency Spectrum

Table A-1 provides an overview of the RF bands within the RF spectrum. Band designations, frequency ranges, and some uses of the RF bands are summarized in the table.

Table A-1. Radiofrequency Bands

Band Designation	Frequency Range	Definition of Acronym	Applications
HF	0.003 to 0.03 GHz	High Frequency	Wireless communications, satellite communications, radar and microwave ovens
VHF	0.03 to 0.3 GHz	Very High Frequency	Line of sight radio communications, maritime and aviation communications
UHF	0.3 to 1 GHz	Ultra-High Frequency	Broadcast television, ship and aircraft navigation, police communications
L	1 to 2 GHz	Long Wave	Satellite communication, mobile communication,

Band Designation	Frequency Range	Definition of Acronym	Applications
			global positioning systems (GPS) navigation
S	2 to 4 GHz	Short Wave	Radar systems, satellite communication, weather radar
C	4 to 8 GHz	Compromise between S and X	Satellite communication, weather radar, terrestrial microwave communication
X	8 to 12 GHz	X for cross, Exotic	Radar systems, satellite communication, terrestrial microwave communication
Ku	12 to 18 GHz	Kurz-under	Satellite communication, broadcasting, radar systems.
K	18 to 27 GHz	Kurz (German for “short”)	High-resolution radar, short-range communication systems (e.g., vehicular speed detection and weather monitoring)
Ka	27 to 40 GHz	Kurz-above	Satellite communication, terrestrial microwave communication, radar systems
V	40 to 75 GHz	“Very High” Frequency Band (not to be confused with VHF)	Satellite communications, short range wireless internet, wireless broadband service
W	75 to 110 GHz	W follows V in the alphabet	Radar detection of small objects, non-destructive testing, satellite communications, mobile communication
mm or G	110 to 300 GHz	Millimeter wave	Radio astronomy, remote sensing

Source: IEEE 2002.

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APPENDIX B AIR POLLUTANT EMISSION CALCULATIONS

GENERAL CONFORMITY

The U.S. Environmental Protection Agency (EPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule*, in the Federal Register on 30 November 1993 (40 CFR Parts 6, 51, and 93). EPA published *Revisions to the General Conformity Regulations; Final Rule*, in the Federal Register on 5 April 2010 (40 CFR Parts 51 and 93). These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements. Regulations within the General Conformity Rule state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the federal agency to determine whether a federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1 51.850[a]).

The General Conformity Rule applies to federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants. Former non-attainment areas that have attained a NAAQS are designated as maintenance areas. Emissions of pollutants for which an area is in attainment are exempt from conformity analyses.

The proposed action would occur at White Sands Missile Range (WSMR), New Mexico, which is in attainment for all criteria pollutants; therefore, the provisions of the General Conformity Rule and *de minimis* thresholds do not apply. The nearest nonattainment area to WSMR lies 17 miles south of the southernmost boundary of WSMR at Anthony in Doña Ana County, classified as moderate nonattainment for PM₁₀. Sunland Park, New Mexico is located approximately 39 miles south of WSMR and is in nonattainment for ozone. The greater part of WSMR within parts of Doña Ana, Otero, Sierra, and Lincoln counties, is encompassed by the New Mexico portion of the El Paso-Las Cruces-Alamogordo Interstate Air Quality Control Region 153. The northernmost portion of the installation that lies in Socorro County is within the Southwestern Mountains-Augustine Plains Intrastate Air Quality Control Region 156.

Criteria pollutant emissions resulting from proposed construction and operation of an STS at NRTF have been evaluated for the Proposed Action. Air quality impacts would be significant if emissions associated with the Proposed Action would: 1) increase ambient air pollution concentrations above the NAAQS; 2) contribute to an existing violation of the NAAQS; 3) interfere with or delay timely attainment of the NAAQS; or 4) impair visibility within federally mandated Prevention of Significant Deterioration Class I areas. Additionally, a conformity analysis would be required before initiating any action that may lead to nonconformance with a State Implementation Plan, an exceedance of *de minimis* criteria pollutant thresholds, or contribution to a violation of the NAAQS.

Since WSMR is considered in attainment/unclassified for the NAAQS, the provisions of the General Conformity Rule do not apply. However, emission estimates for the Proposed Action have been compared to *de minimis* thresholds of a basic nonattainment area for planning purposes. At WSMR, dust generation and control are of principal concern.

PROPOSED ACTION

Action Proponent: National RCS Test Facility (NRTF).

Location: White Sands Missile Range, New Mexico.

Proposed Action Name: Survivability Test Stand Construction and Operation.

Proposed Action Summary:

NRTF proposes to construct and operate an RCS testing facility at the existing ReDI Range. The new outdoor test stand capability would incorporate a means of rotation engine test articles while measuring RCS, IR, and acoustic factors and would provide the ability to rotate 180 degrees on the horizontal plane (i.e., +/- 180-degree azimuth adjustment). This capability will allow NRTF to install sensors in a manner that can monitor engine test articles over a complete 360-degree field of regard.

Air Emissions Summary: Total emissions resulting from project activities have been estimated using data presented in Chapter 2. Table 1 provides a summary of the criteria pollutant emissions associated with the Proposed Action. Please note that the table provides criteria pollutant emissions associated with both construction and four jet engine test events. It is highly unlikely that these activities would not be completed within one 12-month period, but the values are provided to provide the most conservative (highest emission values) annual emissions data for comparison to *de minimis* values.

Table 1. Total Emissions (tons/year) – Proposed Action

Emission Source	VOC	NO_x	CO	SO_x	PM₁₀
Construction ¹	0.028	0.139	0.434	0.0011	0.626
Operations ¹	0.003	2.03	0.195	0.127	0.150
<i>de minimis</i> threshold ²	100	100	100	100	100

Notes: ¹Emissions provided in tons/year.

² *de minimis* thresholds do not apply to actions taken on WSMR as it is in attainment/unclassified for the NAAQS. However, emission estimates for the Proposed Action have been compared to *de minimis* thresholds of a basic nonattainment area for planning purposes.

POTENTIAL TO EMIT ANALYSIS

To determine if the STS at NRTF would require a Prevention of Significant Deterioration (PSD) permit, a Potential to Emit (PTE) analysis was performed. For this analysis, it was assumed that a running jet engine would operate non-stop for one year, or 8,760 hours. It was assumed that the running jet engine would represent all stationary air pollutant emissions associated with the Proposed Action. All other supporting activities (e.g., fuel loading, loading/unloading of test engine, sensor installation, etc.) would be considered non-stationary sources, as defined by the EPA, and would not be subject to a PSD permit.

For the PTE analysis, it was assumed that the jet engine throttle settings would have the same proportion of engine run modes (i.e., have the same jet engine power settings) as a single jet engine testing event extended over a yearlong (i.e., 8,760 hours of continuous service). Table 3-4 summarizes criteria air pollutant emissions for the PTE scenario and Table 2 provides a summary of HAPs emissions for the same PTE scenario.

Table 2. Criteria Air Pollutant Emissions – PTE Scenario

Operational Mode	Hours	NO _x	SO _x	CO	VOC	PM ₁₀	PM _{2.5}
Idle	164.69	682	242.6	10,919	379	548.8	399.1
Intermediate	4,760.18	59,6755	48,458	102,988	1,444	67376	52,457
Military	3,834.25	1,413,702	76,358	53,522	714	79927	69,222
Total (lb)		2,011,140	125,060	167,430	2,536	147,851	122,078
Total (ton)		1,005	62.53	83.71	1.27	73.93	61.03
Exceeds threshold?		Yes	No	No	No	No	No

As provided in Table 2, non-stop yearlong operation of the STS at NRTF result 1,005 tons of NO_x, which would represent a major source. There would be no HAP emissions over the 10 tpy threshold.

Even though the STS at NRTF would exceed NO_x emissions under the PTE scenario, such yearlong operations are not feasible due to administrative and engineered controls that would be applied. These controls are as follows:

- **Administrative control** – Testing of running jet engines would be limited to four test events annually. Each event would require approximately 4 hours and 36 minutes of jet engine run time, for an annual total run time of 18.4 hours.
- **Engineered control** – Jet fuel will be trucked in from HAFB prior to each test event and loaded into a 30,000-gallon run-tank (113,600-liter) that will hold all fuel used during the test event. Once the fuel is consumed, the test event is complete, as fuel loading during a test event would not be allowed due to safety concerns. The 30,000-gallon tank (113,600-

liter) would hold just enough fuel to complete a 4.6-hour test of a notionally large test engine.

By administratively restricting the STS at NRTF to four test events per year and physically restricting test events to 30,000 gallons (113,600 liters), the STS at NRTF would qualify as a synthetic minor source, which would not require a PSD permit. To maintain the synthetic minor source status, the 704th TG will monitor and document emission sources at the NRTF. Semiannual reports would be filed with the EPA.

Table 3.5. Hazardous Air Pollutant Emissions – PTE Scenario

HAP	Operational Mode			Total (lb)	Total (ton)
	Idle	Intermediate	Military		
Acetaldehyde	25.17	125.6	59.45	210.2	0.11
Acrolein	8.16	0.00	0.00	8.16	0.00
Benzene	24.04	33.01	34.83	91.88	0.05
1,3-Butadiene	11.32	20.55	0.00	31.87	0.02
Ethylbenzene	3.72	24.01	9.56	37.30	0.02
Formaldehyde	225.6	1,174	540.9	1,941	0.97
Naphthalene	0.00	0.00	0.00	0.00	0.00
Phenol	0.00	0.00	0.00	0.00	0.00
Propanal	3.63	47.07	29.26	79.95	0.04
Styrene	7.08	0.00	0.00	0.00	0.00
Toluene	14.45	0.00	0.00	14.45	0.01
Xylenes (mixed isomers)	15.22	23.53	26.90	65.65	0.03