DRAFT

ENVIRONMENTAL ASSESSMENT (EA)

FOR

THE WEAPONS STORAGE AND MAINTENANCE FACILITY

AT

F. E. WARREN AIR FORCE BASE, WYOMING

JUNE 2016

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EXECUTIVE SUMMARY

F. E. Warren Air Force Base (FEW) proposes to construct a Weapons Storage and Maintenance Facility (WSMF) to replace the Weapons Storage Area (WSA). The purpose and need for the proposed action is to increase the level of safety and security of U.S. Air Force assets. The proposed WSMF could potentially impact various environmental aspects including air quality, water resources, safety and occupational health, hazardous materials/waste, biological resources, cultural resources, geology and soils. FEW conducted a comprehensive analysis of all environmental aspects in accordance with 32 CFR§989 *Environmental Impact Analysis Process*. FEW determined through this analysis that the proposed action supports a Finding of No Significant Impact on the environment.

1. INTRODUCTION.

Air Force Global Strike Command (AFGSC) and F. E. Warren Air Force Base (FEW) propose to construct a new Weapons Storage and Maintenance Facility (WSMF). The WSMF will provide a safer and more secure facility for the storage of U. S. Air Force (USAF) assets. In addition, the WSMF will reduce personnel requirements and eliminate current facility deficiencies. The FEW Environmental Planning Function (EPF) conducted the Environmental Impact Analysis Process (EIAP) analysis of this proposed action in accordance with 32 CFR §989.

2. PURPOSE AND NEED FOR ACTION.

The purpose of this action is to provide for a WSMF of the future. This new WSMF will replace the current Weapons Storage Area (WSA) with a facility that increases the security and safety of USAF assets. The proposed action will also leverage new technologies to reduce program cost and increase efficiencies that will reduce personnel requirements, eliminate security deviations and address facility deficiencies.

3. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

A description of the proposed action and alternatives includes:

3.1. Construction of WSMF adjacent to current WSA (Alternative A: Preferred Alternative). The proposed WSMF will be a reinforced concrete and earth-covered facility dedicated to the maintenance and storage of weapons. This action includes site improvements on an approximately 84,659 square foot parcel located on FEW. For a complete description of the proposed action refer to the 60% Design Analysis for the FY16 WSMF at FEW, which is incorporated into this document by reference.

3.2. Rehabilitation of the existing Weapons Storage Area (Alternative B). This alternative would rehabilitate the existing WSA within its current footprint. This alternative would not address all of the security issues that plague the current facility. FEW determined that this alternative would require a significant investment, with minimal improvements in the safety and security of USAF assets.

3.3. Construction of WSMF on north side of installation (Alternative C). This alternative would place the WSMF on the north side of the installation. This alternative required extensive upgrades to utilities and other infrastructure and was not only cost prohibitive, but likely represented a significant impact to the quality of the human environment. In light of the significant costs and anticipated environmental impacts, this alternative was not carried forward for detailed analysis.

3.4. No action alternative: This alternative would retain the existing WSA (Alternative D). This action would not address safety and security deficiencies of the current facility.

4. SCOPE OF THE ENVIRONMENTAL ASSESSMENT.

This Environmental Assessment (EA) is required by the Air Force Environmental Impact Analysis Process (32 CFR §989), the National Environmental Policy Act (Public Law 91-190) and Council on Environmental Quality (CEQ) Regulations (40 CFR §1500-1508). This EA identifies, describes, and evaluates the potential direct, indirect, and cumulative environmental impacts that could result from the construction of the proposed action.

During the scoping process the EPF determined that the proposed action has the potential to affect Air Quality, Water Resources, Safety & Occupational Health, Hazardous Material/Waste, Biological Resources, Cultural Resources and Socioeconomic. The construction and operation of a new facility that handles hazardous assets also has potential to cause accidents that may threaten the quality of the human environment.

5. AFFECTED ENVIRONMENT.

5.1. Air Quality:

5.1.1. Non-Radiological Emissions: The proposed action includes the addition of one diesel generator. FEW operates under threshold ceilings for air quality established by the Wyoming Department of Environmental Quality (DEQ) and detailed in Permit MD-1287. FEW is currently within the limits established by this permit.

5.1.2. Radiological Emissions: The proposed action has the potential to produce radiological emissions. The existing facility currently produces radiological emissions that have the potential to affect both occupants of the facility as well as those in the surrounding area. Humans are exposed to radiation every day from natural and manmade sources. The sources for everyday exposure include cosmic and terrestrial. Cosmic radiation originates from solar sources while terrestrial radiation originates from radioactive materials that occur naturally in soils.

5.2. Water Resources: For the purposes of this proposed action, water resources include ground water and the known trichloroethylene (TCE) plumes located on base. TCE vapors could enter buildings and create a threat to building occupants.

5.3. Safety & Occupational Health: The operation of the current facility represents a risk to the safety and occupational health of base employees.

5.4. Hazardous Material/Waste: The current facility generates small amounts of hazardous waste. This waste is disposed of in accordance with all applicable federal regulations governing the disposal of hazardous waste.

5.5. Biological resources: The proposed action has the potential to impact biological resources located at FEW. Two threatened or endangered species are currently found at FEW, the Colorado Butterfly Plant (Gaura neomexicana ssp. coloradensis) and the Preble's Meadow Jumping Mouse (Zapus hudsonius preblei). Neither of these species have been observed at the site location of the preferred alternative nor is this area designated as critical habitat for either of these species in the FEW Integrated Cultural Resources Management Plan.

5.6. Cultural Resources: The proposed action has the potential to impact Cultural Resources, specifically archaeological resources. FEW is also the home of the Fort D. A.

Russell National Historic Landmark District (NHLD) and other properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP).

5.7. Geology and Soils: Soil within the vicinity may be contaminated with TCE from an underground plume in the vicinity of the proposed project site. TCE was used in the United States primarily for industrial degreasing operations. Acute (short-term) and chronic (long-term) inhalation exposure to TEC can affect the human central nervous system (CNS), with symptoms such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness. Liver, kidney, immunological, endocrine, and developmental effects have also been reported in humans. A recent analysis of available epidemiological studies reports TCE exposure to be associated with several types of cancers in humans, especially kidney, liver, cervix, and lymphatic system. Animal studies have reported increases in lung, liver, kidney, and testicular tumors and lymphoma. The Environmental Protection Agency is currently reassessing the cancer classification of TCE.

5.8. Socioeconomic: The existence of the WSA presents a potential safety hazard to residents both on and off the installation. Procedures and regulations developed and followed through close coordination with the NRC and the DoE ensure that the handling of USAF assets is done in a manner that is safe secure.

5.9. Accidents, Events or Threats (Other Potential Impacts Not Addressed): The maintenance and storage of USAF assets include specific risks. Accidents include any potential for mishandling of assets. Events consist of phenomena of nature and other abnormal events including lightning, tornados, earthquakes, facility power surges, power outages, etc. Threats are primarily grouped into three categories and include Forced Entry (FE), Vehicle Borne Improvised Explosive Device (VBIED) threats and site specific ballistic threats.

6. ENVIRONMENTAL IMPACTS.

Consideration of impacts include direct, indirect and cumulative.

6.1. Construction of New WSMF Adjacent to Current Location (Preferred Alternative):

6.1.1. Air Quality

6.1.1.1. Non-Radiological Emissions: The proposed action includes the addition of one diesel generator. FEW operates under threshold ceilings for air quality established by the Wyoming Department of Environmental Quality (DEQ) and detailed in Permit MD-1287. FEW is currently within the limits established by this permit. If the size of the generator exceeds 650 kilowatts then FEW shall, in accordance with its current permit, consult with the DEQ to obtain approval.

6.1.1.2. Radiological Emissions: FEW completed a study in order to determine the baseline radiological emissions of the current Facility. This baseline established any possible radiological emissions during normal operating conditions. This study observed and recorded radiological readings at various locations on FEW. All readings taken, regardless of their proximity to the WSA, did not indicate any levels above what is considered background levels. The new design will exceed the existing design and it is anticipated that radiological emissions will not change.

The new facility features a number of enhanced design features that ensures continued protection for FEW and adjacent communities. The new system features a number of controls that continually provide filtered, make-up air to the interior of the building. Radiological sensors will continuously monitor air quality within the facility. Triggering these sensors automatically close fast acting valves to prevent conveyance of airborne particulate matter or radiological tainted air outside of the facility.

In Addition, the new design incorporates contamination-protected zones within the facility equipped with a smoke exhaust system. The smoke exhaust system provides dedicated exhaust to specific areas of the facility including the maintenance bays and the general storage area. If sensors detect smoke in any one of these areas, that area is exhausted, while the corridor becomes pressurized to provide a protected egress path for building occupants. These sensors also facilitate smoke exhaust using fast-acting air-operated dampers. Blast protected transfer air openings provide pressurized air to pass between the corridor and the contaminated space. The smoke exhaust passes through a moisture separator, pre-filter and two consecutive stages of HEPA filtration before being exhausted to the atmosphere. The inlet and discharge are both monitored for radiological detection. The HEPA filtration functions to remove any radioactive particulate in the exhaust stream before it discharges outdoors. The design innovations of the new facility dramatically improve upon previous standards for radiation mitigation.

6.1.2. Water Resources: The construction of the WMSF may impact a TCE plume in the vicinity. The concern with impacting the plume is that it TCE vapors could enter the building and pose a threat to occupants. FEW determined that the current footprint will avoid the plume.

6.1.3. Safety & Occupational Health: The USAF, through coordination with the Department of Defense developed numerous standards, protocols and programs to ensure safe handling of assets. One of the most significant of these is the Air Force Mishap Prevention Program. The goal of this program is to minimize the loss of USAF resources and protect USAF personnel from death, injuries or occupational illnesses by managing risks on- and off-duty. This program is aligned and framed using the Air Force Safety Management System (AFSMS) as the core structure and applies to all USAF organizations. For a list of relevant safety standards see Section 8.0 References.

6.1.4. Hazardous Material and Waste: The new facility will continue to comply with all regulations regarding the safe handling and disposal of all hazardous material and waste. For a list of applicable regulations see Section 8.0 References.

6.1.5. Biological Resources: There are a number of species and habitat within the vicinity of the proposed WMSF. FEW consulted with the U.S. Fish and Wildlife Service on the proposed action. The U.S. Fish and Wildlife did not raise any concerns regarding the proposed action (See Appendix B: Correspondence)

6.1.6. Cultural Resources: The proposed action has the potential to impact cultural resources, specifically archaeological resources located at the site and the viewshed of the NHLD. FEW consulted with the Wyoming State Historic Preservation Office (WYSHPO) in accordance with 36 CFR 800 *Protection of Historic Properties*. The

WYSHPO concurred with FEW's determination that the proposed undertaking would have "no adverse effect" to cultural resources (See Appendix B: Correspondence).

6.1.7. Geology and Soils: The building and general site excavation will require approximately 209,000 cubic yards of cut. Although some of the excavated material can be stockpiled, the expected fill requirement is approximately 48,800 cubic yards, so approximately 119,000 cubic yards of excess cut will need to be hauled away or deposited on adjacent site(s). There is the potential that the soil may be contaminated with TCE. The contractor shall test the soil and, if it tests positive for the presence of TCE, they shall dispose of the soil in an approved EPA facility.

6.1.8. Socioeconomic: The proposed facility will provide the greatest layer of protection for all residents in the surrounding community.

6.1.9. Accidents, Events or Threats:

The most significant environmental aspect of the proposed WSMF is constructing a facility that provides meets the very highest levels of safety and security. The primary accident considerations of this aspect include inadvertent internal detonations. Threats include FE threats, VBIED threats and site specific ballistic threats.

The Maintenance and Storage Area of the WSMF offers the most protection for assets from external threats, while offering protection to adjacent assets, mission activities, and the external environment from accidental internal detonations. The primary interior walls of Maintenance and Storage Area are 4-foot thick reinforced concrete (RC) elements with 4-foot thick RC roof slabs. The primary wall and roof elements are surrounded by a 20-foot thick soil layer which is contained by a 3-foot thick RC wall and roof element layer. The heavy multilayered system sits on a 5-foot thick RC structural mat for support. The primary purpose of the Maintenance and Storage Area is containment, which was verified for the events and performance requirements listed in the design analysis.

6.1.10. Truck access and a FE threat are the two primary requirements that drove the structure of the Loading Area. The requirements led to a multilayered, multi-material wall and roof system. The majority of the area's primary FE wall consists of a concrete/river rock/concrete system with steel plating on the interior surface. Horizontal surfaces use a similar sandwich construction with the addition of steel plates on both faces of both concrete layers. The roof system of the loading dock area is supported by steel framing with concrete and composite metal deck. Load-bearing concrete walls and steel columns are supported by isolated and strip footings. The floor system supports both operational loads of truck traffic and concentrated loads from unexpected events. The FE resistance of the wall and roof system, as well as the door elements and areas around the security forces, are detailed further in the design analysis. The structure in remaining areas of the facility including the Security Forces/Munitions Squadron (MUNS) Area, Training Area, and Entry Control Point Area are driven equally by both performance requirements and functional demands. Structural walls consist of ballistic-rated RC elements; multilayered FE walls with varying delay times; and ballistic-rated glass curtain wall. Floor and roof elements are RC or multilayered elements with support from steel beams, interior steel columns, and concrete walls mentioned above. Load-bearing walls and columns in these areas are also supported by isolated and strip footings.

The proposed WMSF is designed for increased levels of protection for accidents and site specific threats that exceed the minimum standards of UFC 4-010-01 DoD Minimum Antiterrorism Standards for the Buildings. The majority of the training, administrative support and loading dock areas are being designed to provide a medium level of protection for Vehicle Borne Improvised Explosive Device (VBIED) threats and site specific ballistic threats. There are hardened areas within the training, administration and loading dock area that offer higher levels of protection to not only the threats mentioned above but facility specific Forced Entry (FE) threats; however, details of threats, protection levels and mitigation strategies are classified and are not available in the format. The exclusion area where assets are maintained and stored offer the highest levels of protection to not only the threats mentioned above but to very severe facility-specific standoff, weapons, and FE threats. Details of specific threats, protection levels and mitigation strategies for the exclusion area are classified.

6.2. Rehabilitation of the Existing WSA Alternative:

6.2.1. Air Quality:

6.2.1.1. Non-Radiological Emissions: This alternative would represent no change to the existing conditions.

6.2.1.2. Radiological Emissions: This alternative would represent no change to the existing condition.

6.2.2. Water Resources: This alternative would represent no change to the existing conditions.

6.2.3. Safety & Occupational Health: This alternative would represent no change to the existing conditions.

6.2.4. Hazardous Material and Waste: This alternative would represent no change to the existing conditions.

6.2.5. Biological Resources: This alternative would likely have no impact to any biological resources as the current facility is not within any areas that are critical habitat.

6.2.6. Cultural Resources: The current WSA contains properties that are eligible for listing in the NRHP. These properties include those that are eligible for their association with the development of the Peacekeeper Missile. Rehabilitation of these buildings would require consultation with the WYSHPO to ensure compliance with Section 106 of the NHPA. The modifications required to bring the current facility up to modern standards may constitute an adverse effect to historic properties

6.2.7. Geology and Soils: There are no anticipated impacts to geology and soils from rehabilitating the existing WSA.

6.2.8. Socioeconomic: This alternative would represent no change to the existing conditions.

6.2.9. Accidents or Events: This alternative would certainly improve some aspects of the handling of USAF assets as it would address some of the design deficiencies of the current facility. However, this alternative would still have deficiencies that the preferred alternative would address.

6.3. No Action Alternative:

6.3.1. Air Quality:

6.3.1.1. Non-Radiological Emissions: This alternative would represent no change to the existing conditions.

6.3.1.2. Radiological Emissions: This alternative would represent no change to the existing conditions.

6.3.2. Water Resources: This alternative would represent no change to the existing conditions.

6.3.3. Safety & Occupational Health: This alternative would represent no change to the existing conditions.

6.3.4. Hazardous Material and Waste: This alternative would represent no change to the existing conditions.

6.3.5. Biological Resources: This alternative would represent no change to the existing conditions.

6.3.6. Cultural Resources: This alternative would represent no change to the existing conditions.

6.3.7. Geology and Soils: This alternative would present no threats to or arising from geology and soils.

6.3.8. Socioeconomic: This alternative would represent no change to the existing conditions.

6.3.9. Accidents or Events: This alternative would represent no change to the existing conditions. While the current facility is safe, the USAF continually refines their protocols for handling assets. The existing facility has not kept pace with the improvements in storage and handling nor has it kept pace with emerging threats.

7. PERSONS AND AGENCIES CONSULTED.

The following agencies/individuals were contacted and/or provided a copy of the EA during its original preparation in order to afford an opportunity for comment on the content of the document. Agency consultations are required per 32 CFR 989.14(d).

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WY Department of Environmental Quality

Environmental Protection Agency
Region 8
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8. REFERENCES.

32 CFR §989, Department of the Air Force Environmental Impact Analysis Process (EIAP)

35% Early Preliminary Design FY16 Weapon Storage and Maintenance Facility, F. E. Warren AFB, Wyoming, 12 February 2014.

36 CFR §800, Protection of Historic Properties

Air Force Manual (AFM) 31-108, *Nuclear Weapon Security Manual*, Volumes 1-3 dated 1 Feb 2010 with Air Force Global Strike Command Supplement dated 23 Jan 2012

AFI 10-2501, *Air Force Emergency Management (EM) Program Planning and Operations*, 24 January 2007

AFI 32-7001, *Environmental Management*, 4 November 2011

AFI 32-7042, *Waste Management*, April 2009

AFI 32-7065, *Cultural Resources Management Program*

AFI 32-7086, *Hazardous Materials Management*, 1 November 2004

AFI 48-145, *Occupational and Environmental Health Program*, 22 July 2014

AFI 63-125, Nuclear Certification Program, dated 15 Mar 2004, Incorporating Change 1 dated 9 Nov 2009

AFI 90-801, *Environment, Safety, and Occupational Health Councils*, 25 March 2005

AFI 90-802, *Risk Management*, 11 February 2013

AFI 90-821, *Hazard Communication (HAZCOM) Program*, 27 January 2014

AFI 91-101, AIR FORCE NUCLEAR WEAPONS SURETY PROGRAM dated 15 August 2014

AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, 25 February 2014

AFI 91-103, Air Force Nuclear Safety Design Certification Program, dated 17 Nov 2010 with AFGSC Supplement dated 28 Sep 2011

AFI 91-110, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*, 28 June 2002

AFM 91-118, Safety Design and Evaluation Criteria/or Nuclear Weapon Systems, dated 4 Aug 2010, Incorporating Change 2 dated 19 Oct 2011

AFM 91-201, Explosive Safety Standards, dated 12 Jan 2011 with AFGSC Supplement dated 20 Oct 2011

AFI 91-202, The U.S. Air Force Mishap Prevention Program, dated 24 June 2015.

AFI 91-203, *Air Force Consolidated Occupational Safety Instruction,* 15 June 2012 AFI 91-204, *Safety Investigations and Reports,* 12 February 2014

AFPD 90-8, *Environment, Safety, and Occupational Health Management and Risk Management,* 2 February 2012

Clean Water Act

Department of Defense S-521 0.41-M. Nuclear Weapons Security Manual: DoD Nuclear Weapon Environment-Specific Requirements, Volumes I, II and III dated 13 Jul 2009

Energy Independence and Security Act of 2007

Endangered Species Act of 1973, as amended, 16 USC 1531 *et seq.*

ETL 11-7, Nuclear Weapons-Capable Maintenance and Storage Facilities, dated 1 Sep 2011

ETL 11-28, Mandatory Review and Update of Record Drawings for Nuclear-Capable Weapons and Munitions Storage and Maintenance Facilities, dated 7 Dec 2011

FEW Engineering Specification Section 01010 Environmental Protection

FEW Installation Development Plan, January 2013

FEW Integrated Cultural Resources Management Plan, August 2009

FEW Natural Resources Management Plan, as updated.

The National Environmental Policy Act, as amended 42 USC 4321 *et seq.*

U.S. Code Title 42, Chapter 85, Air Pollution Prevention and Control (as amended)

Wyoming Water Quality Rules and Regulations, Chapter 2

29 CFR §1910 Occupational Safety and Health Standards

29 CFR §1926.1101 Safety and Health Regulations for Construction

32 CFR §989, Department of the Air Force Environmental Impact Analysis Process (EIAP)

40 CFR §61.140, Subpart M – National Emission Standards for Asbestos

90 MW Plan 32-2, 90th Missile Wing Hazardous Waste Management Plan, January 2011

FEW Integrated Cultural Resources Management Plan, August 2009

FEW General Plan, April 2005

Toxic Substances Control Act (TSCA) Title II

9. LIST OF PREPARERS AND REVIEWERS

9.1. Preparers

Name	Background	Title
Andy McKinley	B.S. Environmental Engineering	Environmental Element Chief
Travis Beckwith	B.A. History; M.A. History	NEPA Coordinator/Cultural Resources Manager

9.2. Reviewers

Name	Agency	Title
Kurt Warmbier	USAF, 90 MW/JA	Attorney Advisor, Environmental Law
Travis Beckwith	90 MW/CEIEC	NEPA Coordinator/Cultural Resources Manager

TABLE 1: COMPARISON OF PREDICTED ENVIRONMENTAL IMPACTS.

Impacts	Alternative A: Preferred	Alternative B: Rehabilitation of Existing WSA	Alternative D: No Action
Air Quality	Positive Impacts.	Potential Negative Impacts.	Potential Negative Impacts.
Water Resources	No Impacts.	No Impacts.	No Impacts.
Safety and Occupational Health	Positive Impacts. Proposed facility will increase safety standards and represents a positive change to occupational health standards.	Positive Impacts. Rehabilitation would increase safety and occupational health standards but not likely to the extant as the Preferred Alternative.	Negative Impacts.
Hazardous Waste, Hazardous Materials, Solid Waste	Positive Impact.	No Impact.	No Impact.
Biological Resources	No Impact.	No Impact.	No Impact.

Impacts	Alternative A: Preferred	Alternative B: Rehabilitation of Existing WSA	Alternative D: No Action
Cultural Resources	No Impacts. FEW consulted with the WYSHPO in accordance with Section 106 of the NHPA. The WYSHPO concurred with FEW's determination of No Adverse Effect to Historic Properties.	Potential impacts. Coordination with the WYSHPO in accordance with Section 106 of the NHPA ensures impacts are avoided or mitigated	No Impacts.
Geology and Soils	Potential Impacts. This alternative may disturb TCE contaminated soils. The contractor shall test soils and, if found to contain TCE, dispose of at an approved EPA facility.	No Impacts.	No Impacts.
Socioeconomic	No Impacts.	No Impacts.	No Impacts.
Accidents, Events and Threats	Positive Impacts.	Negative Impacts.	Negative Impacts.

APPENDIX 1: AGENCY CORRESPONDENCE

APPENDIX 2: RADIOLOGICAL SURVEY