Draft
Preparatory Leadership Campus Construction Environmental Assessment

United States Air Force Academy

UNITED STATES AIR FORCE ACADEMY

August 2020

ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
°F	Degree Fahrenheit
10 ABW	10th Air Base Wing
306 FTG	306th Flying Training Group
A.D.	Anno Domini
ACAM	Air Conformity Applicability Model
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-Containing Material
AFB	Air Force Base
AFI	Air Force Instruction
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effects
APZ	Accident Potential Zone
ARPA	Archaeological Resources Protection Act
AST	Aboveground Storage Tank
AT/FP	Antiterrorism/Force Protection
B.C.	Before Christ
BMP	Best Management Practice
CA/T	Central Artery/Tunnel
CAA	Clean Air Act
CDPS	Colorado Discharge Permit System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CRM	Cultural Resource Manager
CWA	Clean Water Act
CZ	Clear Zone
dB	Decibel
dBA	A-weighted Decibel
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
I-25	Interstate 25
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
LBP	Lead-Based Paint
L_{eq}	Equivalent Sound Level
L_{max}	Maximum Sound Level
MBTA	Migratory Bird Treaty Act
MS4	Municipal Separate Storm Sewer Systems
MSAT	Mobile Source Air Toxic
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	Ozone
Pb	Lead
PCB	Polychlorinated Biphenyl
pCi/L	picocuries per liter
PL	Preparatory Leadership
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter Less Than or Equal to 2.5 Microns in Diameter
PM_{10}	Particulate Matter Less Than or Equal to 10 Microns in Diameter
PMJM	Preble's Meadow Jumping Mouse
POI	Point of Interest
ppm	parts per million
PSD	Prevention of Significant Deterioration
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SAP	Satellite Accumulation Point
SARA	Superfund Amendments and Reauthorization Act
SEL	Sound Exposure Level
SF	square foot/feet
SHPO	State Historic Preservation Office(r)
SO_2	Sulfur Dioxide
SWMP	Stormwater Management Plan
THPO	Tribal Historic Preservation Officer
U.S.	United States
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USAFA	United States Air Force Academy
USAFA/AD	Directorate of Athletics
USAFA/CC	Superintendent
USAFA/CW	Commandant of Cadets
USAFA/DF	Dean of Faculty
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)
ENVIRONMENTAL ASSESSMENT OF THE
PREPARATORY LEADERSHIP CAMPUS CONSTRUCTION

BACKGROUND

The United States (U.S.) Air Force (USAF) conducted an Environmental Assessment (EA) of the potential environmental and social consequences of implementing proposed construction and demolition on the Preparatory Leadership (PL) Campus at the USAF Academy (USAFA), in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] 4321-4347), Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of NEPA* (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force Instruction (AFI) 32-7061 as promulgated at 32 CFR Part 989 *et seq.*, *Environmental Impact Analysis Process*.

DESCRIPTION OF THE PREFERRED ALTERNATIVE

To support the mission requirements of the USAFA and the USAFA Preparatory School, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic and headquarters facility, athletic building, terrazzo, and modify an existing stormwater facility.

Dormitory – The new dormitory would consist of a three-story, 126 room building with central latrines, squadron assembly rooms, offices, recreation and study areas, and communications, mechanical, and electrical support and storage areas. The new dormitory would accommodate 252 cadets and would be an approximately 29,606-square foot (SF) footprint and would be constructed north of Building 5226 within an existing parking area. Construction would include a reinforced concrete slab on grade with a partial basement, reinforced foundation, and structural steel framing. In addition, a new paved sidewalk and fire access road would be constructed north of the proposed dormitory within the footprint of the existing parking area and road.

Following the construction of the new dormitory, the three existing dormitories, Buildings 5210, 5212, and 5214, would be demolished and the areas would be landscaped. The demolition of these facilities would require reporting under the McKinney-Vento Homeless Assistance Act, in accordance with 42 USC 11411.

Academic and Headquarters Facilities – The new academic and headquarters building would accommodate 80 personnel and would be an approximately 88,150 SF, three-story building with an approximately 29,383 SF footprint. It would be partially on existing paved surfaces within the footprint of the existing parking lot and partially within an existing vegetated area. The facility

would consist of offices, classrooms, laboratories, and conference rooms, an auditorium, restrooms, and communications, mechanical, and electrical support and storage areas.

In addition, a terrazzo, or drill pad and formation area, would be constructed north of Building 5226 primarily on existing paved surfaces within the footprint of the existing parking lot; however, a small portion would be built east of the existing parking within a vegetated area.

Following the construction of these facilities, Buildings 5216 and 5220, which are currently used for headquarters and classroom facilities would be demolished and the areas would be landscaped.

Athletic Building – The new athletic building will be an approximately 67,200 SF, three-story building with one story below grade and an approximately 22,400 SF footprint. It will provide training facilities in the form of large weight rooms, a basketball court, a training room (physical therapy and preparation) as well as administrative functions and athlete academic support functions. Following the construction of the new athletic building, Building 5226 (Milazzo Club), which currently is used as the athletic facility, would be demolished and the areas would be landscaped.

Stormwater Detention Pond and Utilities – The existing stormwater detention facility located southeast of the soccer field would also be upgraded and expanded as necessary. The USAF Architect-Engineer and 10th Civil Engineer Squadron staff would ensure that the facility would meet any exceeding stormwater capacities of the current stormwater system. Utilities would also be installed/modified throughout the project area to service the new facilities.

ALTERNATIVES CONSIDERED

In addition to the Preferred Alternative, a No Action Alternative (as prescribed by CEQ regulations) and two action alternatives were considered and evaluated in the EA. Under the No Action Alternative, none of the proposed projects would be built, nor would the existing facilities fully support the mission requirements of the USAFA PL Campus. The USAF also evaluated alternative sites within the existing PL Campus footprint.

SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS

Analyses performed in the EA addressed potential effects of the Preferred Alternative (Alternative 1), Alternative 2, Alternative 3, and No Action alternatives on noise/acoustic environment, air quality and climate change, water resources, biological resources, earth resources, hazardous materials/waste, cultural resources, land use, infrastructure/utilities, and safety and occupational health. Details of the environmental consequences are provided in the EA and are incorporated by reference. The analyses indicate that implementing the Proposed

Action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment.

Consideration of effects described in the EA and a finding that they are not significant is a necessary and critical part of this Finding of No Significant Impact (FONSI) as required by 40 CFR 1508.13.

Significance criteria are defined in 40 CFR 1508.27 to consider direct, indirect, and cumulative impacts and the context and intensity of impacts. The potential impacts of the proposed projects are analyzed in detail in the Affected Environment and Environmental Consequences sections of the EA for the resource areas described above. Mitigation measures described in the EA and incorporated into the proposed actions are generally required by laws, regulations, or USAF policies and are adopted by this decision.

PUBLIC REVIEW AND INTERAGENCY COORDINATION

NEPA, CEQ regulations, and the Environmental Impact Analysis Process at 32 CFR Part 989 require public review of the EA before approval of the FONSI and implementation of any Proposed Action. The Draft EA was made available for a 30-day federal, state, and local agency and public review and comment period through publication of a notice of availability in the August 16 and 17, 2020 editions of the *Colorado Springs Gazette*. Copies of the Draft EA and Draft FONSI were distributed to various federal, state, and local agencies. Hard copies are available at the Penrose Library, Special Collections and the Air Force Academy Base Library in the Community Center. The Draft EA and Draft FONSI are also available on the USAFA website at https://www.usafa.af.mil/Units/Mission-Support-Group/Civil-Engineer-Squadron/. The public comment period on the EA closes on September 15, 2020.

FINDING OF NO SIGNIFICANT IMPACT

After review of the PL Campus Construction EA prepared in accordance with the requirements of NEPA, the CEQ regulations, and the Environmental Impact Analysis Process (32 CFR 989, as amended), I have determined that implementation of the Preferred Alternative would not have a significant impact on the quality of the human or natural environment. An Environmental Impact Statement will not be prepared. The Preferred Alternative was found to meet USAFA's purpose and need. This decision has been made after taking into account all submitted information and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

_____ _____

BRIAN S. HARTLESS, Colonel, USAF Date
Commander

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The United States (U.S.) Air Force (USAF) proposes to construct new facilities and demolish old facilities on the Preparatory Leadership (PL) Campus at the USAF Academy (USAFA). The mission of the USAFA is to educate, train, and inspire men and women to become officers of character, motivated to lead the USAF in service to our nation.

In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] 4321-4347), Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of NEPA* (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force Instruction (AFI) 32-7061 as promulgated at 32 CFR Part 989 *et seq*., *Environmental Impact Analysis Process*, the USAFA is preparing an Environmental Assessment (EA), which will consider the potential consequences to the human and natural environment that may result from implementation of this action.

1.2 BACKGROUND

The USAFA is located on the north side of Colorado Springs, Colorado on approximately 18,455 acres of land at the base of the Rampart Range in the Rocky Mountains (Figure 1-1). The USAFA was established on April 1, 1954, and the first class entered in July 1955 in temporary facilities at Lowry Air Force Base (AFB) in Denver, Colorado. Construction of the Academy began in 1955 and was completed in 1958.

The 10th Air Base Wing (10 ABW) provides all base-level support activities to the USAFA. These activities include security, civil engineering, communications, logistics, military and civilian personnel, financial management, command post, chaplaincy, and the USAF Clinic. The Superintendent (USAFA/CC) provides overall leadership of the USAFA. To accomplish its mission, the USAFA relies on support from several organizations. The Dean of Faculty (USAFA/DF) manages all the academic cadet experiences. The Directorate of Athletics (USAFA/AD) directs all cadet intercollegiate, intramural, and physical education athletic programs. The Commandant of Cadets (USAFA/CW) is responsible for command and control, staff supervision, planning and management, and overall command of the Academy Cadet Wing. The USAFA/CW administers the leadership and military training programs, applies the Cadet Honor Code, and supervises nearly all activities associated with cadet life. The 306th Flying Training Group (306 FTG), a tenant organization that reports to the Air Education and Training Command, specifically supports powered flight, soaring, and parachute training for the cadets.

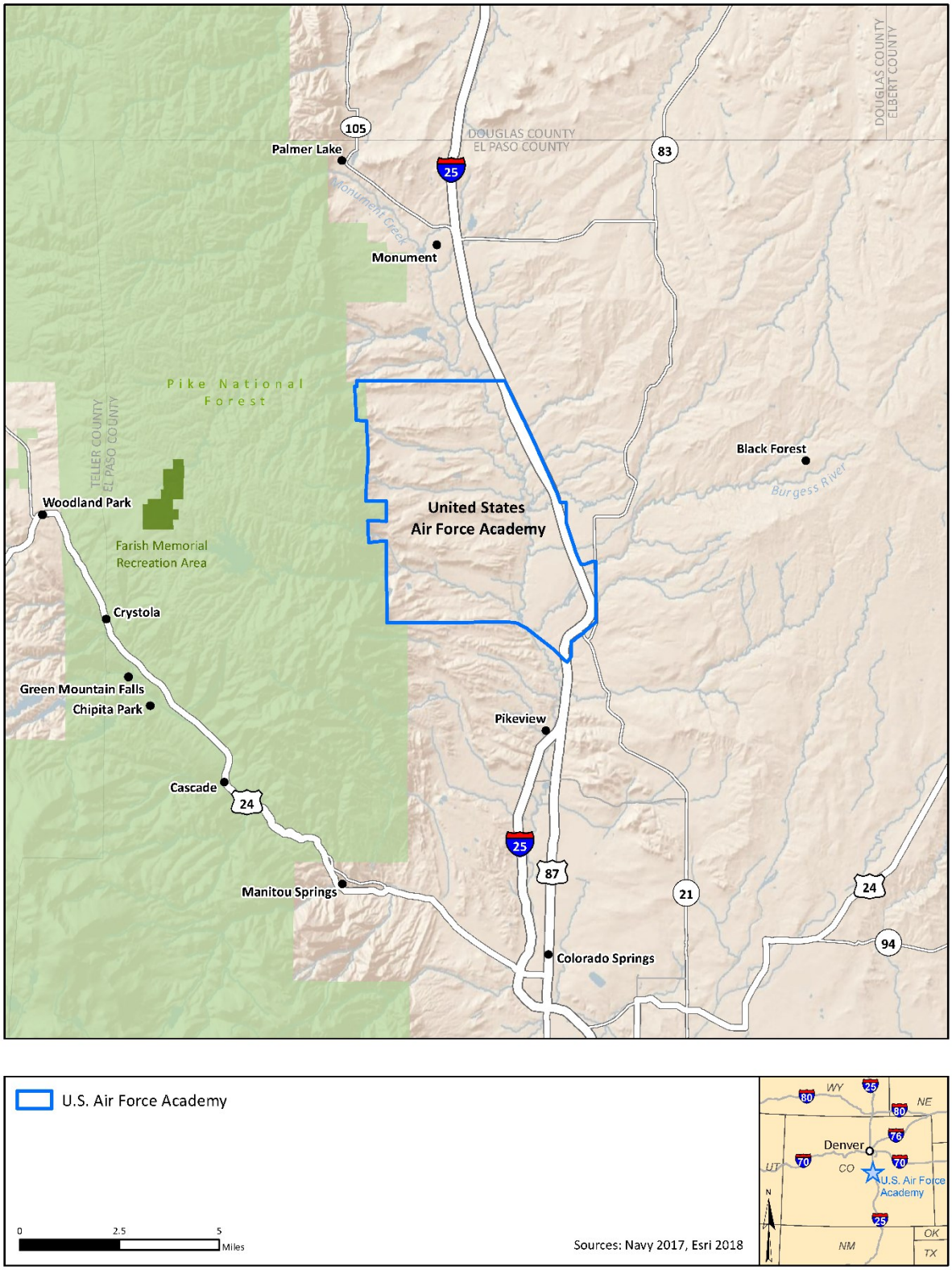


Figure 1-1

USAFA Location and Vicinity

Students not accepted to the USAFA as a cadet may receive an appointment letter to the USAFA Preparatory School, which is located approximately 4 miles from the cadet area. The mission of the USAFA Preparatory School is to prepare a diverse group of cadet candidates (students) in academics, military training, and athletics to succeed and lead at the USAFA. The USAFA Preparatory School accepts 240 students each summer into its 10-month program, and there is a slight attrition in attendance (five candidates on average) over the course of the program. These numbers are not expected to change in the foreseeable future.

Upon completion of the 10-month program, approximately 75 percent of the USAFA Preparatory School students successfully pass academic and fitness exams, receive a recommendation from the USAFA Preparatory School Commander, receive approval from the USAFA Board, and become enrolled as a cadet into the USAFA.

1.3 PURPOSE OF AND NEED FOR ACTION

The USAFA has prepared this EA to assess the environmental impacts from constructing new facilities and demolish old facilities on the PL Campus on the USAFA (Figure 1-2). These new facilities would consolidate functions and upgrade the facilities to current standards. These projects are needed because the current facilities are aged and inadequate and do not meet standards associated with occupant load, security, and fire protection set forth in the Unified Facilities Criteria (UFC) 4-020-01 *DoD Security Engineering Facilities Planning Manual,* UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings,* and National Fire Protection Association (NFPA) 101® *Life Safety Codes*.

The purpose of the Proposed Action is to provide housing that is conducive to proper rest, relaxation, and personal well-being, while providing a suitable study environment within the basic criteria presented within the USAF Unaccompanied Housing Design Guide (USAF 2006). Properly sized and configured dormitories are necessary to accommodate requirements for military students and eliminate the current facility deficiencies (USAF 2011a).

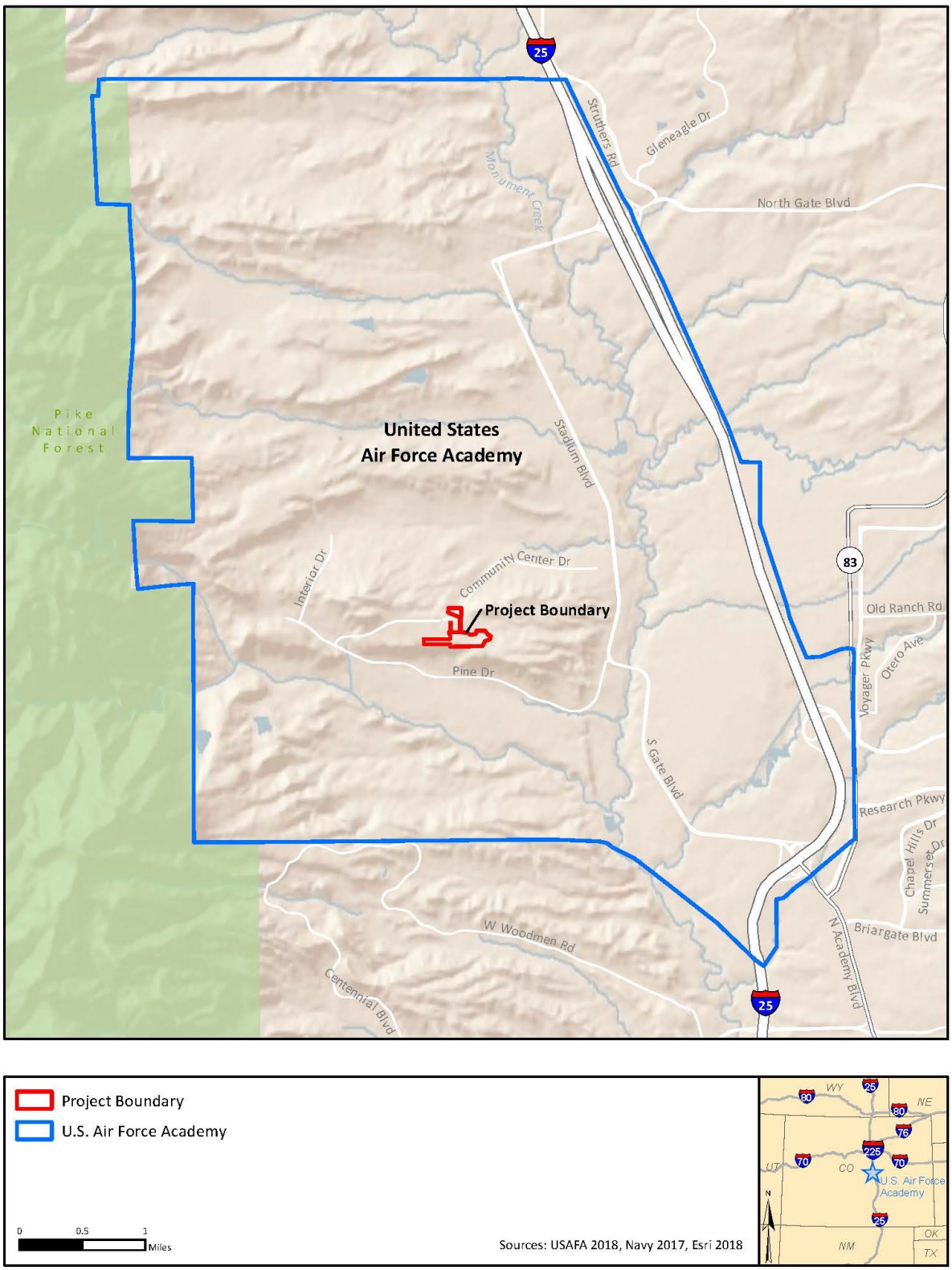


Figure 1-2
USAFA Project Area

The current PL campus facilities are located south of the Colonel Lee Black Field and Fitness Center, west of the Milazzo Club. The lack of adequate training facilities and the separation of staff in three locations make it difficult to coordinate and provide adequate education for cadet candidates. The academic facilities and Cadet Candidate Quarters need to be located within walking distance of the academic and gym facilities. Days are very structured for cadets and there is very little time available to travel between their scheduled events. A more convenient single consolidated facility for all administrative functions is needed to provide adequate training resources and a learning environment that gives students the necessary educational background to succeed in the USAFA's rigorous schedule and academic challenges. In addition, new modern athletic facilities are needed in order for the cadets to maintain physical fitness standards and to be competitive for recruiting.

The purpose of the new headquarters and academic facility is to provide a more convenient single consolidated facility for all administrative functions. The new academic facility would provide a learning environment that gives students the necessary educational background to succeed in the USAFA's rigorous schedule and academic challenges. A new, properly sized and configured academic facility is necessary to provide adequate training resources.

1.4 DECISION TO BE MADE

The analysis in this EA evaluates the potential environmental consequences of the proposed and alternative actions. Based on this information, the USAF would determine whether to implement the Proposed Action or take no action (No Action Alternative). As required by NEPA and its implementing regulations, preparation of an environmental document must precede final decisions regarding the Proposed Action, and be available to inform decision-makers of the potential environmental impacts of selecting the Proposed Action or the No Action Alternative. If significant impacts are identified, the USAF or USAFA would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an Environmental Impact Statement addressing the Proposed Action, or abandon the Proposed Action.

1.5 COOPERATING AGENCY AND PUBLIC REVIEW AND INTERGOVERNMENTAL COORDINATION/CONSULTATIONS

1.5.1 Cooperating Agency

As defined in 40 CFR § 1508.6, a potential cooperating agency is any other federal agency which has jurisdiction by law or special expertise with respect to any environmental issue. In addition, in certain circumstances, non-federal entities may seek and be granted cooperating agency status. For this Proposed Action, no cooperating agencies were identified.

1.5.2 Public Review and Interagency and Intergovernmental Coordination and Consultations

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), the proponent must notify applicable federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of a Proposed Action. Comments from these agencies are subsequently incorporated into the environmental impact analysis process (EIAP).

The Draft EA was made available for a 30-day federal, state, and local agency and public review and comment period through publication of a notice of availability in the August 16 and 17, 2020 editions of the *Colorado Springs Gazette*. Copies of the Draft EA and Draft Finding of No Significant Impact (FONSI) were distributed to various federal, state, and local agencies. Hard copies are available at the Penrose Library, Special Collections and the Air Force Academy Base Library in the Community Center. The Draft EA and Draft FONSI are also available on the USAFA website at https://www.usafa.af.mil/Units/Mission-Support-Group/Civil-Engineer-Squadron/. The public comment period on the EA closes on September 15, 2020. A list of relevant federal, state, and local agencies that received this EA for review and all correspondence received following the public comment period and throughout the EIAP process are provided in Appendix A.

1.6 APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS

1.6.1 National Environmental Policy Act

In accordance with NEPA of 1969 (42 USC 4321-4347), CEQ *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR Parts 1500-1508), and AFI 32-7061 as promulgated by 32 CFR Part 989 *et seq.*, *Environmental Impact Analysis Process*, the USAF is preparing an EA that will consider the potential consequences to the human and natural environment that may result from implementation of the Proposed Action.

NEPA requires federal agencies to take into consideration the potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. The CEQ was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued the *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR Parts 1500-1508) (CEQ 1978).

The activities addressed within this document constitute a major federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action includes the development of the EA to identify environmental issues related to the proposed activities.

1.6.2 Cultural Resources Regulatory Requirements

The National Historic Preservation Act (NHPA) of 1966 (54 USC 300101 et seq.) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) outlining procedures for the management of cultural resources on federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. NHPA requires federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern American Indians for maintaining their traditional culture. Section 106 of NHPA requires federal agencies to consult with State Historic Preservation Officers (SHPOs) if their undertakings might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR Part 800) provided an explicit set of procedures for federal agencies to meet their obligations under the NHPA, which includes inventory of resources and consultation with SHPOs.

The American Indian Religious Freedom Act (AIRFA) (42 USC § 1996) established federal policy to protect and preserve the rights of American Indians to believe, express, and exercise their traditional religions, including providing access to sacred sites.

The Archaeological Resources Protection Act (ARPA) of 1979 (16 USC §§ 470aa-mm) was created to protect archaeological resources and sites on public and American Indian lands in addition to encouraging cooperation and exchange of information between governmental authorities, professionals, and private individuals. The Act established civil and criminal penalties for destruction and alteration of cultural resources.

On November 27, 1999, the Department of Defense (DoD) promulgated its Annotated American Indian and Alaska Native Policy, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. This Policy requires an assessment, through consultation, of the effect of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the respective services (DoD American Indian/Alaska Native Policy), as does DoD Instruction 4710.02, *Interaction with Federally Recognized Tribes* (September 14,

2006). Section 106 consultation and government-to-government consultation for this project is ongoing (see Appendix A).

1.6.3 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC §§ 1531-1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require informal or formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Act. A letter was sent to the USFWS on May 3, 2019 and no response has been received (see Appendix A).

1.6.4 Other Environmental Requirements

Other environmental requirements that potentially apply to implementation of this proposal include guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that disproportionately high and adverse human health or environmental effects on citizens in these categories are identified and addressed, as appropriate. Additionally, potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The USAFA proposes to construct new facilities and demolish old facilities on the PL Campus in order to consolidate functions and upgrade facilities to current standards. All construction would include DoD Antiterrorism/Force Protection (AT/FP) Construction Standards and all facility construction would include sidewalks and utilities. The 1987 USAF Radon Assessment Mitigation Program identified the USAFA as a high-risk installation for radon. Accordingly, all construction would incorporate radon reduction measures in accordance with AFI 48-148, *Ionizing Radiation Protection*, for new facilities.

2.2 SELECTION STANDARDS

Identification and analysis of alternatives is one of the core elements of the environmental process under NEPA and the USAF's implementing regulations. The USAF may expressly eliminate alternatives from detailed analysis based on reasonable selection standards (32 CFR 989.8(c)). Consequently, the USAFA systematically evaluated design plans to identify potential design alternatives for the proposed PL Campus. A series of design factors were developed to identify a full set of reasonable options. The construction projects analyzed in this document have been sited according to the USAFA Area Development Plan (USAF 2005). The construction projects meet the criteria and scope specified in the USAF Manual 32-1084, *Civil Engineering Standard Facility Requirements* (USAF 2020).

Specifically, the selection standards for identifying a suitable design plan included the following:

1. Facility designs would meet current fire safety and building codes, and energy conservation standards.
2. Facilities would offer modern, comfortable, and safe living quarters for those enrolled at the USAFA Preparatory School.
3. Academic facilities and facilities for the Cadet Candidate Quarters would be centralized.
4. Facilities would be designed to provide adequate living space for the USAFA Preparatory School cadet candidates.
5. Academic facilities and Cadet Candidate Quarters would be located within walking distance of the academic and gym facilities. Days are very structured for cadets and there is very little time available to travel between their scheduled events.
6. Facilities would include a minimum of 15 classrooms and 5 laboratory facilities to meet USAFA mission requirements to educate, train, and inspire men and women to become cadets of character.

In accordance with 32 CFR 989.8(c), designs that failed to meet the majority of the selection standards listed above were removed from further consideration.

2.3 SCREENING OF ALTERNATIVES

NEPA and the CEQ regulations mandate the consideration of reasonable alternatives for the Proposed Action. Reasonable alternatives are those that could be used to meet the purpose of and need for the Proposed Action. Section 2.4 describes in detail the alternatives that were identified and screened against the selection standards.

2.4 DETAILED DESCRIPTION OF ALTERNATIVES

2.4.1 Alternative 1 (Preferred Alternative)

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic and headquarters facility, athletic building, terrazzo, and modify an existing stormwater facility (Figure 2-1). Engineering design requirements are presented in general terms, as specific design details are subject to change during subsequent engineering design reviews. The Preferred Alternative would meet the selection standards described in Section 2.2 and the facility site and design selection criteria described in Section 1.3.

2.4.1.1 Dormitory

There are currently three PL cadet dormitories at the USAFA, all constructed in 1959. The current facilities include 120 rooms for 250 students resulting in an overly cramped living environment, by current standards, for two students per room. The central latrines are in deteriorated condition. Severe overheating occurs in the south facing rooms and heating problems occur in the north facing rooms in the winter months. There is also severe moisture, mildew, and snow/rain infiltration, as well as frequent electrical power outages, causing damage to personal property and furthering the safety risk to students. Issues with inconsistent environmental conditions, including inadequate heating and cooling and poor insulation, significantly contribute to the inadequacy of the dormitories and resultant substandard teaching environment. The overcrowding conditions create increased discipline problems, higher failure/discharge rates, and increased maintenance and utility costs. In addition, women were admitted to the Preparatory School and the USAFA in 1976 without any appropriate renovations. Restroom and overall facilities are not access-restricted between males and females, which creates issues for privacy and security. Facility inequalities between male and female cadet candidates persist to this day.

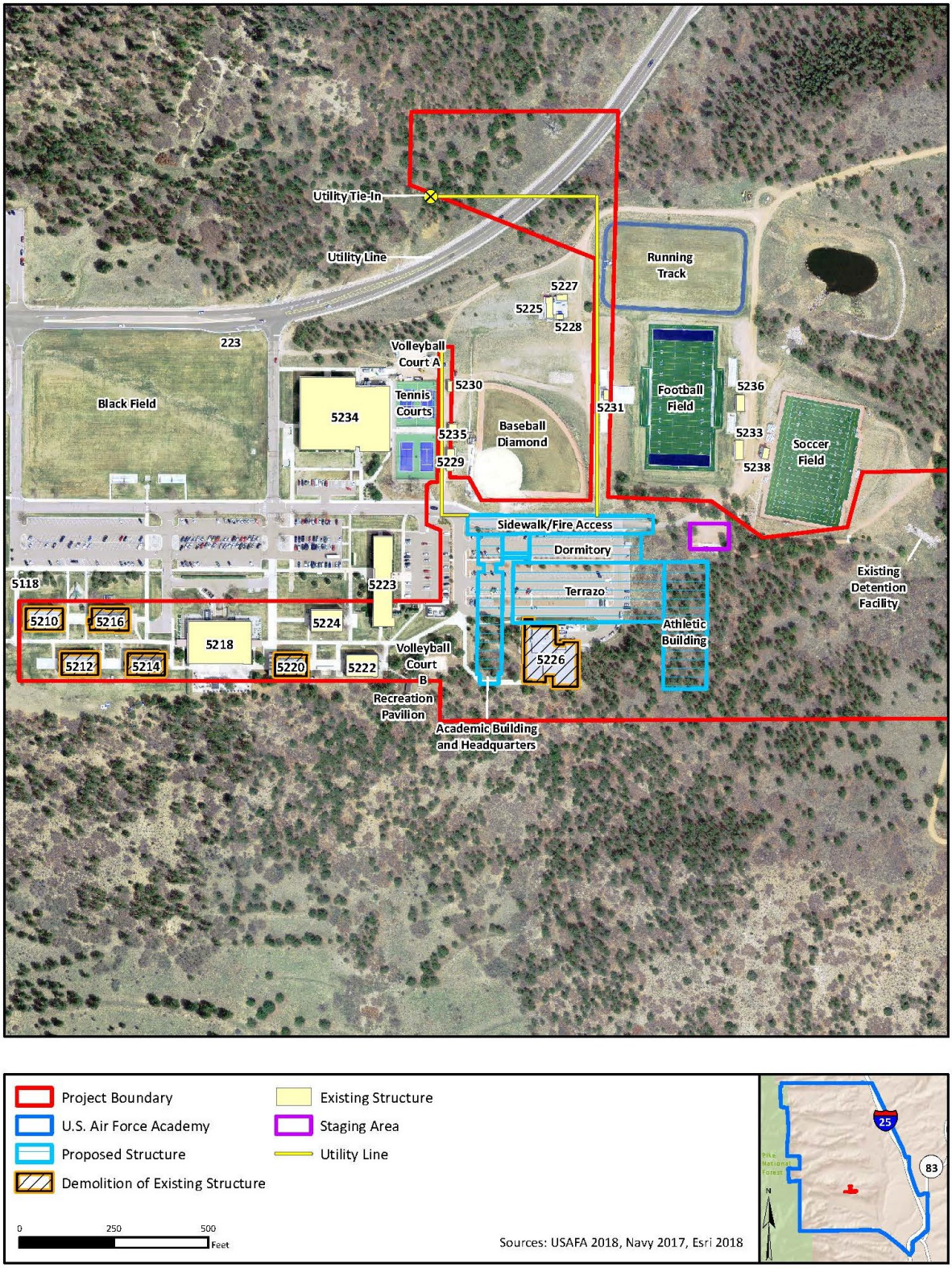


Figure 2-1

USAFA Alternative 1 Construction and Demolition Projects

The new dormitory would consist of a three-story, 126 room building with central latrines, squadron assembly rooms, offices, recreation and study areas, and communications, mechanical, and electrical support and storage areas. The new dormitory would accommodate 252 cadets and would be an approximately 29,606 square foot (SF) footprint, and would be constructed north of Building 5226 within an existing parking area (see inset Photo 1). Construction would include a reinforced concrete slab on grade with a partial basement, reinforced foundation, and structural steel framing.

Photo 1: Proposed location of the new dormitory

In addition, a new paved sidewalk and fire access road would be constructed north of the proposed dormitory within the footprint of the existing parking area and road.

Following the construction of the new dormitory, the three existing dormitories, Buildings 5210, 5212, and 5214, would be demolished and the areas would be landscaped. The demolition of these facilities would require reporting under the McKinney-Vento Homeless Assistance Act, in accordance with 42 USC 11411.

2.4.1.2 Academic and Headquarters Facilities

The current academic facilities and staff offices, all of which were once airmen quarters, are located in three reconfigured buildings that were originally constructed in 1959. The reconfiguration from airmen quarters to classroom buildings was completed without changing the overall building length and width, resulting in poorly configured classrooms and laboratories, and an overall inefficient use of space (USAF 2011b). Camera systems are not currently in place to ensure only authorized visitors are allowed in classrooms, plus older doors and windows allow easy access into the buildings (USAF 2011b). UFC 4-020-01 *DoD Security Engineering Facilities Planning Manual* in conjunction with UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* identify design strategies for four levels of protection. All four levels of protection involve using access control measures and construction that allows assets to be segregated from unauthorized personnel (UFC 4-20-01 Section 4-10.2). UFC 4-20-01 Section 4-9.3.3 suggests an intrusion detection system which may include closed circuit television cameras, whereupon there would have to be enough cameras to view every alarm point or zone.

The floor-to-ceiling height of the existing structures did not allow the addition of fume hoods and other necessary equipment to provide state-of-the art facilities. The lack of fume hoods in the chemistry laboratory does not meet current NFPA fire and life safety codes. NFPA 45 Chapter

8.2.6 requires that the release of chemicals into the laboratory be controlled by enclosure(s) or captured to prevent any flammable and/or combustible concentrations of vapors from reaching any source of ignition. Natural gas is not supplied in the laboratories. Handheld propane tanks are currently used to fuel Bunsen burners in chemistry experiments. Per NFPA 58, the only place to properly use a propane gas cylinder of any size is outside. Tanks that are not stored outside and in well-ventilated areas, at a safe distance away from any source of ignition (i.e., Bunsen burners) present fire hazards.

The new academic and headquarters three-story building would accommodate 80 personnel and would be approximately 88,150 SF in size, with an approximately 29,383 SF footprint. It would be partially located on existing paved surfaces within the footprint of the existing parking lot and partially within an existing vegetated area (see inset Photo 2). The facility would consist of offices, classrooms, laboratories, and conference rooms, an auditorium, restrooms, and communications, mechanical, and electrical support and storage areas.

Photo 2: Proposed location of the new academic and headquarters facilities

In addition, a terrazzo, or drill pad and formation area, would be constructed north of Building 5226 primarily on existing paved surfaces within the footprint of the existing parking lot; however a small portion would be built east of the existing parking within a vegetated area.

Following the construction of these facilities, Buildings 5216 and 5220, which are currently used for headquarters and classroom facilities would be demolished and the areas would be landscaped.

2.4.1.3 Athletic Building

The current athletic facilities are outdated and a new modern athletic building is needed in order for the cadets to maintain physical fitness standards and to be competitive for recruiting. The new three story athletic building will be approximately 67, 200 SF in size, with one story below grade and will have an approximately 22,400 SF footprint (see inset Photo 3). It will provide training facilities in the form of large weight rooms, a

Photo 3: Proposed location of the new athletic building

basketball court, a training room (physical therapy and preparation) as well as administrative functions and athlete academic support functions.

Following the construction of the new athletic building, Building 5226 (Milazzo Club), which currently is used as the athletic facility, would be demolished and the areas would be landscaped.

2.4.1.4 Stormwater Detention Pond and Utilities

The existing stormwater detention facility located southeast of the soccer field would also be upgraded and expanded as necessary. The USAF Architect-Engineer and 10th Civil Engineer Squadron staff would ensure that the facility would meet any exceeding stormwater capacities of the current stormwater system. Utilities would also be installed/modified throughout the project area to service the new facilities.

2.4.2 Alternative 2

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic building, headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, and a stormwater detention pond (Figure 2-2). Engineering design requirements are presented in general terms, as specific design details are subject to change during subsequent engineering design reviews. Alternative 2 would meet the selection standards described in Section 2.2 and the facility site and design selection criteria described in Section 1.3.

2.4.2.1 Dormitory

There are currently three PL cadet dormitories at the USAFA, all constructed in 1959. The current facilities include 120 rooms for 250 students resulting in an overly cramped living environment, by current standards, for two students per room. The central latrines are in deteriorated condition. Severe overheating occurs in the south facing rooms and heating problems occur in the north facing rooms in the winter months. There is also severe moisture, mildew, and snow/rain infiltration, as well as frequent electrical power outages, causing damage to personal property and furthering the safety risk to students. Issues with inconsistent environmental conditions including inadequate heating and cooling and poor insulation significantly contribute to the inadequacy of the dormitories and resultant substandard teaching environment. The overcrowding conditions create increased discipline problems, higher failure/discharge rates, and increased maintenance and utility costs. In addition, women were admitted to the Preparatory School and the USAFA in 1976 without any appropriate renovations. Restroom and overall facilities are not access-restricted between males and females, which creates issues for privacy and security. Facility inequalities between male and female cadet candidates persist to this day.

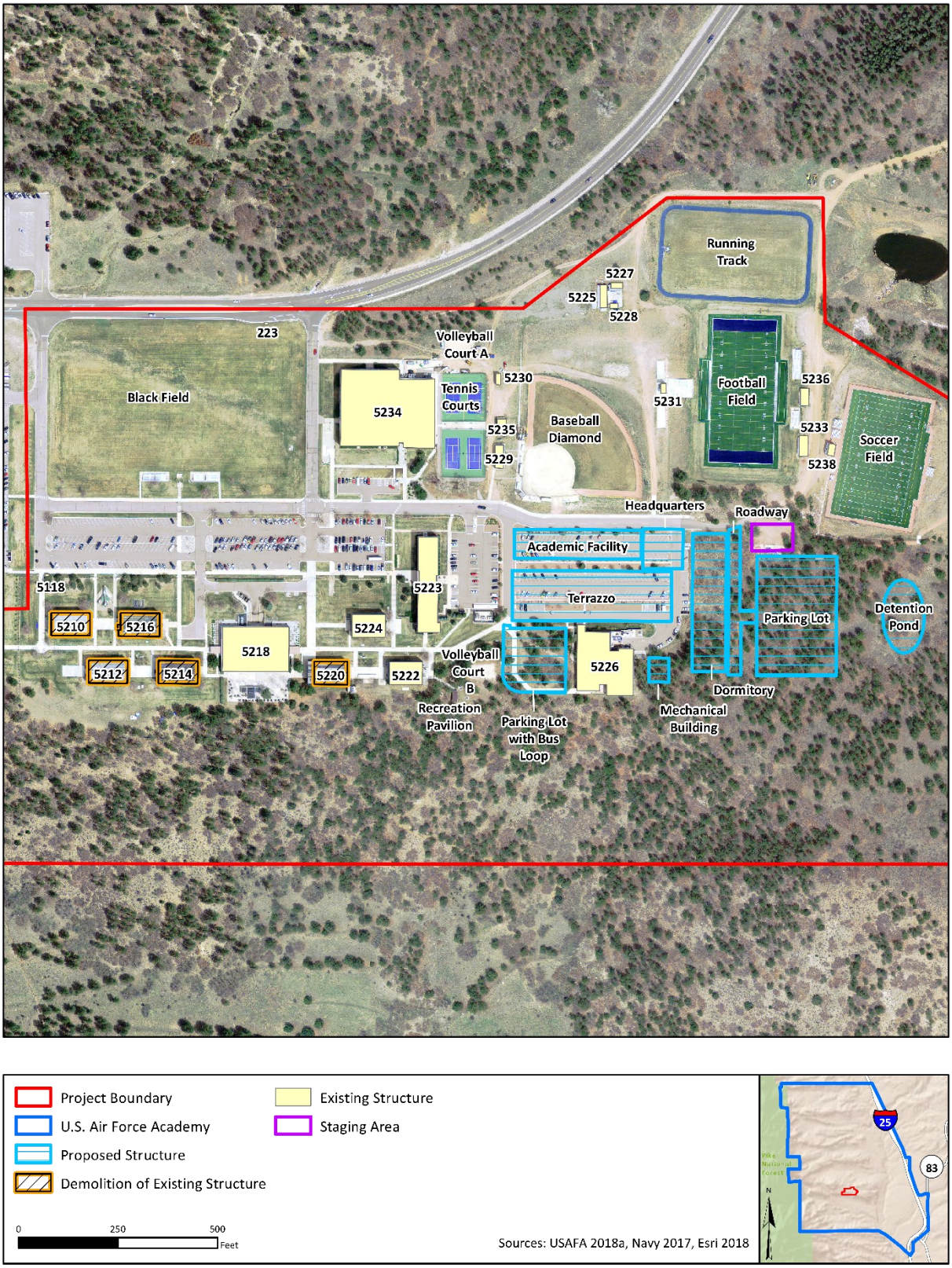


Figure 2-2

USAFA Alternative 2 Construction and Demolition Projects

The new dormitory would consist of a three-story, 126 room building with central latrines, squadron assembly rooms, offices, recreation and study areas, and communications, mechanical, and electrical support and storage areas. The new dormitory would have an approximately 88,624 SF footprint, and would be constructed east of Building 5226 within an area that is currently forested (see inset Photo 4). Construction would include a reinforced concrete slab on grade with a partial basement, reinforced foundation, and structural steel framing. In addition, an approximately 3,000 SF mechanical building to store mechanical equipment would be built just west of the new dormitory.

Photo 4: Proposed location of the new dormitory

Bus access for loading and unloading of sports equipment and pedestrian access from existing dormitories to the Milazzo Center would be maintained during construction. The existing concrete walkway would also provide access for emergency vehicles.

Following the construction of the new dormitory, the three existing dormitories, Buildings 5210, 5212, and 5214, would be demolished and the areas would be landscaped. The demolition of these facilities would require reporting under the McKinney-Vento Homeless Assistance Act, in accordance with 42 USC 11411.

2.4.2.2 Academic and Headquarters Facilities

The current academic facilities and staff offices, all of which were once airmen quarters, are located in three reconfigured buildings that were originally constructed in 1959. The reconfiguration from airmen quarters to classroom buildings was completed without changing the overall building length and width, resulting in poorly configured classrooms and laboratories, and an overall inefficient use of space (USAF 2011b). Camera systems are not currently in place to ensure only authorized visitors are allowed in classrooms, plus older doors and windows allow easy access into the buildings (USAF 2011b). UFC 4-020-01 *DoD Security Engineering Facilities Planning Manual* in conjunction with UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* identify design strategies for four levels of protection. All four levels of protection involve using access control measures and construction that allows assets to be segregated from unauthorized personnel (UFC 4-20-01 Section 4-10.2). UFC 4-20-01 Section 4-9.3.3 suggests an intrusion detection system which may include closed circuit television cameras, whereupon there would have to be enough cameras to view every alarm point or zone.

The floor-to-ceiling height of the existing structures did not allow the addition of fume hoods and other necessary equipment to provide state-of-the art facilities. The lack of fume hoods in the chemistry laboratory does not meet current NFPA fire and life safety codes. NFPA 45 Chapter 8.2.6 requires that the release of chemicals into the laboratory be controlled by enclosure(s) or captured to prevent any flammable and/or combustible concentrations of vapors from reaching any source of ignition. Natural gas is not supplied in the laboratories. Handheld propane tanks are currently used to fuel Bunsen burners in chemistry experiments. Per NFPA 58, the only place to properly use a propane gas cylinder of any size is outside. Tanks that are not stored outside and in well-ventilated areas, at a safe distance away from any source of ignition (i.e., Bunsen burners) present fire hazards.

Photo 5: Proposed location of the new academic and headquarters facilities

The new academic facility would consist of an approximately 66,600 SF, three-story building with an approximately 23,300 SF footprint. It would be constructed north of Building 5226 on primarily existing paved surfaces within the footprint of the existing parking lot (see inset Photo 5). The academic facility would consist of classrooms, laboratories, offices and conference rooms, an auditorium, restrooms, and communications, mechanical, and electrical support and storage areas. A new 10,000 SF headquarters facility would be constructed to the east of the proposed academic facility on existing paved surfaces within the footprint of the existing parking lot. Construction would include a reinforced concrete slab, below-grade reinforced foundation, and structural steel framing. Because the proposed projects are within an existing developed area, utilities and parking are already available.

In addition, a terrazzo, or drill pad and formation area, would be constructed south of these proposed facilities on existing paved surfaces within the footprint of the existing parking lot.

Following the construction of these facilities, Buildings 5216 and 5220, which are currently used for headquarters and classroom facilities, would be demolished and the areas would be landscaped.

2.4.2.3 Parking and Stormwater Detention Pond

Photo 6: Proposed location of the new proposed parking area east of the dormitory

Two parking areas would be constructed to support these new facilities. One parking area would be approximately 25,000 SF and constructed west of Building 5226 in an undeveloped forested area (see inset Photo 6), and would include a bus loop. A second parking area would be approximately 60,000 SF and constructed in an undeveloped forested area east of the new dormitory. In addition, a new roadway would be built connecting the main entrance road to the PL Campus to the parking area and dormitory. A stormwater detention pond would also be constructed east of the proposed dormitory parking lot. Runoff from the new parking areas would be piped to this new pond. The USAF Architect-Engineer and 10th Civil Engineer Squadron staff would ensure proper sizing of the outlet structure in order to meet historic discharge rates.

2.4.3 Alternative 3

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished (Figure 2-3). The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond.

2.4.4 No Action Alternative

The CEQ regulation 40 CFR § 1502.14(d) specifically requires analysis of the "No Action" alternative in all NEPA analyses. Under the No Action Alternative, the relocation of the PL Campus would not occur, and the USAFA would not implement the proposed project components described above under the Proposed Action. Under the No Action Alternative, a new dormitory, academic building, headquarters, terrazzo, additional parking, mechanical building, and stormwater detention pond would not be constructed. The existing facilities would continue to be inadequately sized and configured, facility maintenance and utility costs would continue to be high, and existing facilities would continue to not meet standards associated with occupant load, security, and fire protection.

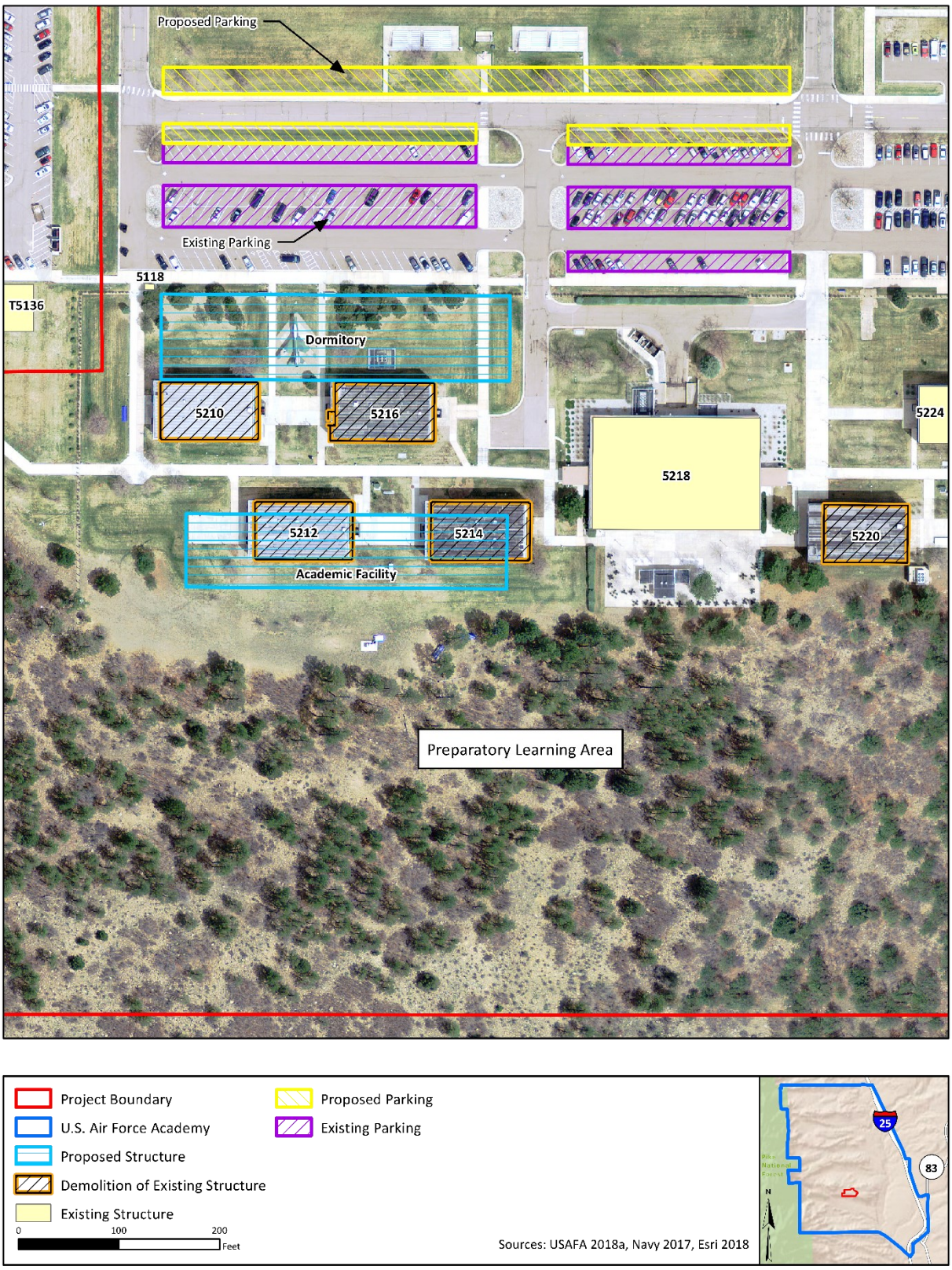


Figure 2-3

USAFA Alternative 3 Construction and Demolition Projects

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Renovation of the existing dormitories and academic facilities was initially considered as an alternative to new construction. However, the facilities would continue to be de-centralized. In addition, the overall length and width of the buildings and floor-to-ceiling height restrictions would continue to limit options for dormitory and laboratory configurations. Even with extensive renovation, this alternative would not meet the selection criteria of centralizing facilities and providing adequately sized laboratory facilities; therefore, it was dismissed from further consideration.

In addition, other locations within USAFA boundaries were considered but eliminated as they would not be in close enough proximity to existing PL facilities that would not be replaced to meet the purpose and need to be within walking distance.

3.0 AFFECTED ENVIRONMENT

3.1 SCOPE OF THE ANALYSIS

This section describes relevant existing environmental conditions for resources potentially affected by the Proposed Action, as well as the No Action Alternative, presented in Chapter 2.0. In describing the affected environment, a framework for understanding the potential direct, indirect, and cumulative effects of the Proposed Action is provided.

As directed by guidelines contained in NEPA, CEQ regulations, and 32 CFR Part 989 et seq., *The Environmental Impact Analysis Process*, the description of the affected environment focuses only on those resource areas potentially subject to impacts and is commensurate with the anticipated level of environmental impact.

3.1.1 Resources Analyzed

This EA analyzes potential environmental effects for the following resource areas: noise/acoustic environment, air quality and climate change, water resources, biological resources, earth resources, hazardous materials/waste, cultural resources, land use, infrastructure/utilities, and safety and occupational health. The following subsections contain definitions of each resource, describe the region of influence (ROI), and present existing conditions for each resource.

3.1.2 Resources Eliminated from Detailed Analysis

The following environmental issues were initially considered, but were dismissed because they are not expected to be affected or would be negligibly affected by the implementation of the alternatives.

Socioeconomics – Socioeconomics comprises the basic attributes and resources associated with the human environment, particularly population and economic activity. Socioeconomic impacts would be considered significant if the Proposed Action resulted in a substantial shift in population trends or notably affected regional employment, earnings, or community resources. The proposed project would not alter socioeconomic factors such as changes in local economic bases, salary levels, land use zoning, plans or programs of other agencies, or a particular socioeconomic group. Although the project would increase short-term employment, no substantial change to economic factors from the proposed construction activities or long-term operation of the proposed facilities would occur. Therefore, socioeconomic resources have been dismissed from analysis in this EA.

Environmental Justice - EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* and EO 13045, *Protection of Children from*

Environmental Health Risks and Safety Risks, requires that all federal agencies address the effects of policies on minorities, low-income populations, and children.

All construction associated with the Proposed Action would occur within USAFA boundaries and is not expected to result in significant impacts to on- or off-base communities. Therefore, no populations (minority, low-income, or otherwise) would be disproportionately or adversely impacted and no adverse impact with regard to environmental justice would result.

Implementation of the Proposed Action would not result in increased exposure of children to environmental health risks or safety risks such as those associated with the generation, use, or storage of hazardous materials. Standard construction site safety precautions (e.g., fencing and other security measures) would reduce potential risks to minimal levels and any potential impacts to children would be negligible and short-term.

Visual Resources – The proposed construction and demolition would be located in or near a developed area of USAFA property, and would be consistent with the types of structures that are currently present. Minor and short-term impacts to the visual landscape could result from temporary construction activities but would not persist following project completion. Therefore, visual resources were dismissed from detailed analysis in this EA.

Airspace – Because the proposed projects would not involve any changes to airspace configuration or aircraft operations, there would be no impacts to airspace. Therefore, airspace was dismissed from detailed analysis in this EA.

3.2 NOISE/ACOUSTIC ENVIRONMENT

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB)
- Frequency – the number of cycles per second the air vibrates, in Hertz
- Duration – the length of time the sound can be detected

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the

setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

3.2.1 Definition of Resources

3.2.1.1 Basics of Sound and A-weighted Sound Level

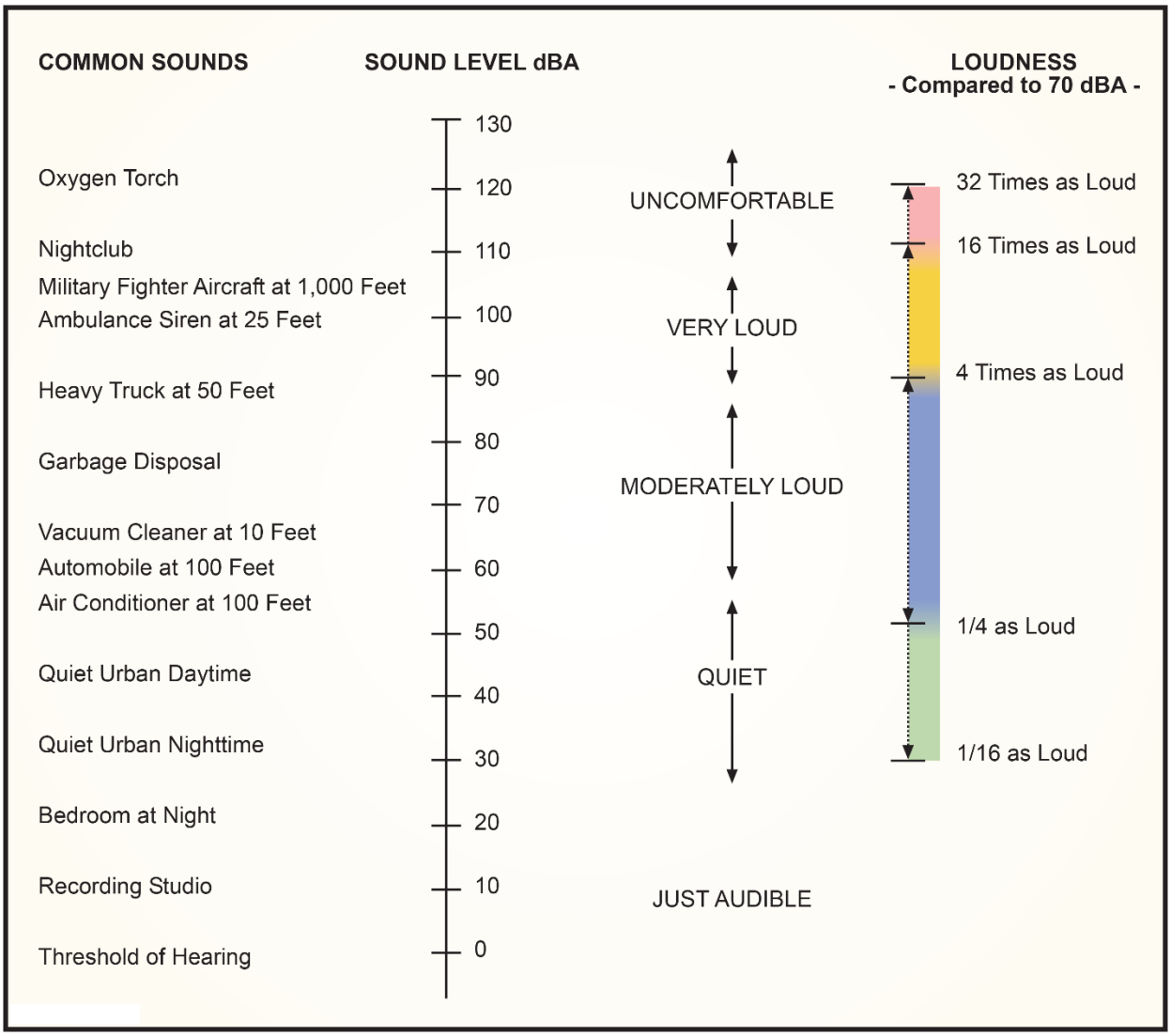
The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times greater than those of sounds that can barely be detected. This vast range renders a linear scale impractical to represent all sound intensities. The dB is a unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 microPascals (approximate threshold of human audibility). Table 3.2-1 provides a comparison of how the human ear perceives changes in sound level on the logarithmic scale. A difference of 3 dB is generally barely perceptible while a difference of 20 dB is typically experienced as a change in volume of fourfold.

Table 3.2-1. Subjective Responses to Differences in Sound Level Measured in A-Weighted Decibels

Difference in Sound	*Change in Perceived Loudness*
3 dB	Barely perceptible
5 dB	Quite noticeable
10 dB	Dramatic – twice or half as loud
20 dB	Striking – fourfold change

All sounds have a spectral component, which describes the magnitude or level across varying frequencies measured in cycles per second or Hertz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually presented on an "A-weighted" scale that de-emphasizes very low and very high frequencies in order to approximate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-weighted sound levels.

Figure 3.2-1 provides a chart of A-weighted sound levels from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) generate continuous sounds that maintain a constant sound level for some period of time. Some sources (e.g., automobile, heavy truck) listed in Figure 3.2-1 represent the maximum sound that occurs for events with sound levels that vary over time, such as a vehicle pass-by and other sounds (e.g., urban daytime, urban nighttime) represent averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed in the following section.



Sources: Derived from Harris (1979) and Federal Interagency Committee on Aviation Noise (1997).

Figure 3.2-1
A-Weighted Sound Levels from Typical Sources

3.2.1.2 Noise Metrics

A metric is a system for measuring or quantifying a particular characteristic of a subject. Because noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. The noise metrics used in this EA are described in summary format below.

As previously noted, the primary effect of aircraft noise on exposed communities is long-term annoyance, defined by the U.S. Environmental Protection Agency (USEPA) as any negative subjective reaction on the part of an individual or group. The scientific community has adopted the use of long-term annoyance as a primary indicator of community response and there is a consistent relationship between Day-Night Average Sound Level (DNL) and the level of

community annoyance (Federal Interagency Committee on Noise 1992). Additional metrics provide supplemental guidance on the potential for annoyance.

Equivalent Sound Level

A cumulative noise metric useful in describing noise is the Equivalent Sound Level (L_{eq}). L_{eq} is the continuous sound level that would be present if all of the variations in sound level occurring over a specified time period were averaged to contain the same total sound energy. The L_{eq} is often presented for time periods of 24 hours L_{eq}, abbreviated $L_{eq(24hr)}$. Other common periods include 1-hour and 8-hour time periods written as $L_{eq(1hr)}$ and $L_{eq(8hr)}$, respectively. Noises from activities that do not vary significantly throughout the day may use $L_{eq(1hr)}$ where noise in a 1-hour period is roughly the same as any other 1-hour period in the same day. In this case, $L_{eq(1hr)}$ and $L_{eq(8hr)}$ are exactly equal and is denoted as dBA L_{eq} in this analysis.

Day-Night Average Sound Level

The DNL metric, based upon L_{eq} provides the energy-averaged sound level measured over a 24-hour period, mathematically representing the continuous sound level that would be present if all of the variations in sound level were averaged to have the same total sound energy. DNL applies a 10 dB penalty to events occurring during the nighttime period (10 p.m. to 7 a.m.) to account for the added intrusiveness while people are most likely to be relaxing at home or sleeping. Because the DNL metric represents a cumulative measure that quantifies the total sound energy received, it does not provide specific information on the number of noise events or the individual sound levels that occur during the 24-hour day.

DNL is the standard noise metric used by the U.S. Department of Housing and Urban Development, Federal Aviation Administration, USEPA, and DoD and the State of Colorado, along with many more. Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments; there is a consistent relationship between DNL and the level of annoyance. Many people are exposed to sound levels of 50 to 55 DNL or higher on a daily basis and research has indicated that the majority of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (Federal Interagency Committee on Urban Noise 1980).

Maximum Sound Level

The highest A-weighted sound level measured during a single event where the sound level changes value with time (e.g., an aircraft overflight) is called the maximum A-weighted sound level or root mean squared maximum level of a noise (L_{max}). During an aircraft overflight, the noise level starts at the ambient or background noise level, rises to the maximum level as the aircraft flies closest to the observer, and returns to the background level as the aircraft recedes

into the distance. L_{max} defines the maximum sound level occurring for a fraction of a second. For aircraft noise, the "fraction of a second" over which the maximum level is defined is generally one-eighth of a second (American National Standards Institute 1988). For sound from aircraft overflights, the Sound Exposure Level (SEL) is usually greater than the L_{max} because an individual overflight takes many seconds and the L_{max} occurs instantaneously.

3.2.2 Existing Conditions

The USAFA, located north of Colorado Springs and west of the Ronald Reagan Highway, comprises over 18,000 acres of land at the base of the Rampart Range. The residential communities of Gleneagle to the east and Pikeview to the south represent the nearest noise sensitive locations outside of the USAFA at the greatest risk of impacts due to the Proposed Action given their proximity.

Noise sensitive locations include residential areas, schools, places of worship, and hospitals because these are most likely to be adversely impacted by increased noise levels. Figure 3.2-2 depicts the identified Points of Interest (POIs) in the surrounding communities to be considered and analyzed for the Proposed Action. These POIs are located in areas ranging from 'quiet suburban residential' to 'Quiet Urban residential' based on population density, with typical DNL varying from 49 to 55 dBA, as presented in Table 3.2-2 (American National Standards Institute 2013). The primary source of noise in these areas is road traffic.

The USAFA operates an airfield at the southeastern corner of the facility, as depicted in Figure 3.2-2, as part of the Airmanship Programs training cadets on soaring, parachuting and powered flight, and the fundamentals of flying. Flights utilize small single-engine propeller driven aircraft. The 2019 Air Installation Compatible Use Zones (AICUZ) determined the contours for the existing activity (USAFA 2019), which concluded that the 65 dB DNL contour at the Academy airfield remains wholly contained within the USAFA facility and does not impact land use compatibility in surrounding areas (USAFA 2019). Although the published noise contours do not currently impact residential areas, communities south and to the east of the USAFA are exposed to noise from aircraft overflights.

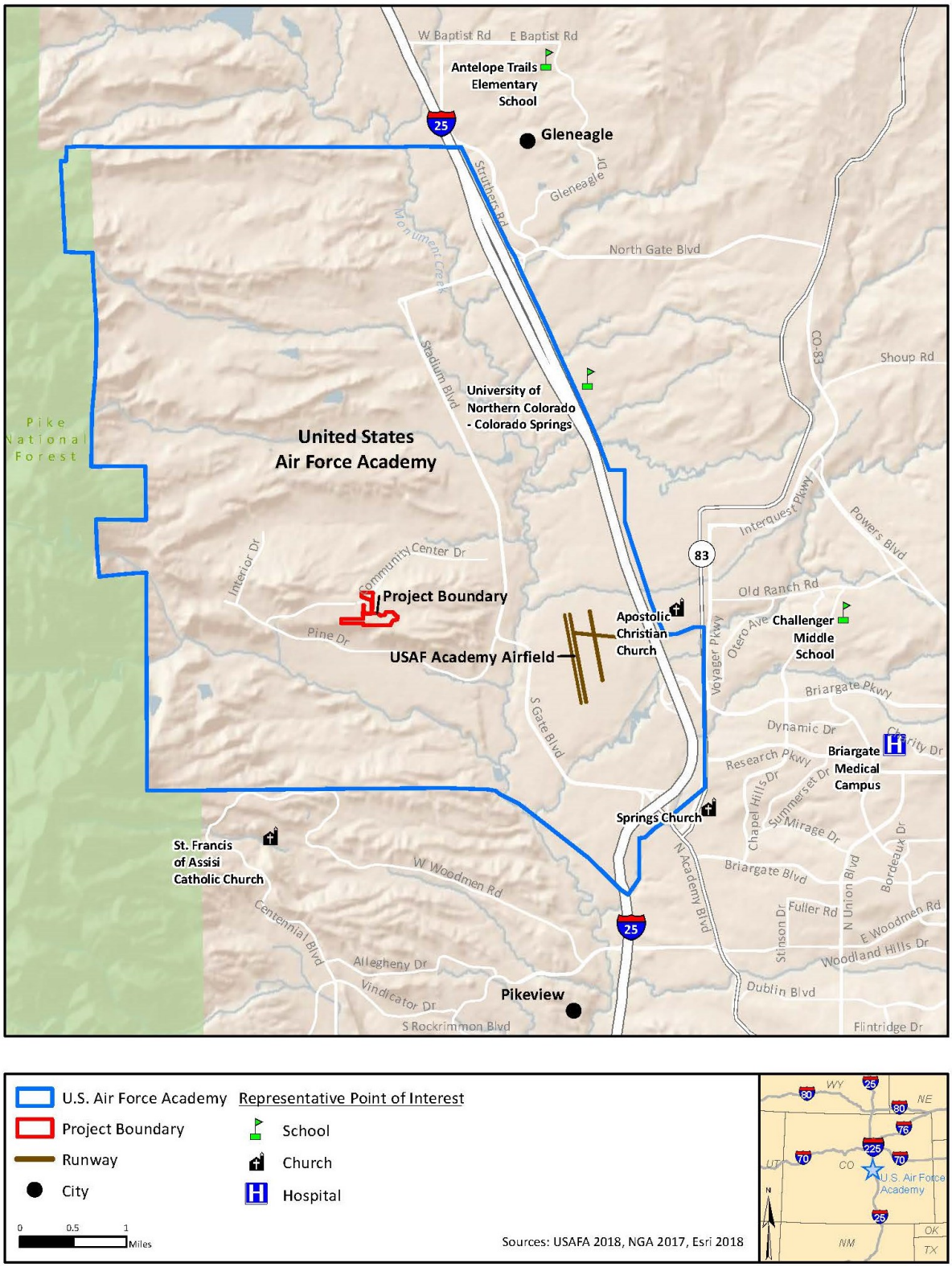


Figure 3.2-2

Noise Sensitive Locations Surrounding the USAFA

Table 3.2-2. Estimated Background Noise Levels

Example of Land Use Category	*Average Residential Intensity (people per acre)*	*DNL (dBA)*
Rural or remote areas	<2	<49
Quiet suburban residential	2	49
	4	52
	4.5	52
Quiet urban residential	9	55
Quiet commercial, industrial, and normal urban residential	16	58
	20	59

Source: American National Standards Institute 2013.

3.3 AIR QUALITY AND CLIMATE CHANGE

3.3.1 Definition of Resources

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health and welfare of the general public. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. When discussing air quality, it is important to consider the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological factors that affect air quality include wind and precipitation patterns that can affect the distribution, dilution, and removal of pollutant emissions from the atmosphere. Furthermore, chemical reactions in the atmosphere can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter [$\mu g/m^3$] of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as carbon monoxide (CO), sulfur dioxide (SO_2), lead (Pb), and some particulate matter (PM), are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as ozone (O_3), nitrogen dioxide (NO_2), and some PM, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. Suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}) (coarse PM) and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) (fine PM) are generated as primary pollutants by various processes. PM_{10} sources include crushing or grinding operations and dust stirred up by vehicles on roads. $PM_{2.5}$ emissions are

produced from all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. However, PM_{10} and $PM_{2.5}$ can also form as secondary pollutants through chemical reactions or by gaseous pollutants that condense into fine aerosols. Some air pollutants are considered "precursors" to the formation of criteria pollutants. Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) aid in the formation of ground level O_3 through atmospheric chemical reactions that occur in the presence of sunlight, and are considered to be O_3 precursors. For this reason, VOC and NO_x emissions are evaluated to assess impacts on O_3 concentrations in the ambient air.

The ROI for this discussion can vary according to pollutant. For pollutants that do not undergo a chemical reaction after being emitted from a source (i.e., direct emissions), the ROI is generally restricted to the immediate vicinity of the emissions source. These pollutants include CO, SO_2, and directly-emitted PM_{10} and $PM_{2.5}$. For pollutants that undergo chemical reactions and interact within the atmosphere to form secondary pollutants, such as O_3 and its precursors NO_x and VOCs, and precursors of PM_{10} and $PM_{2.5}$, the ROI is a larger regional area. The chemical transformations and interactions that create O_3 and secondary PM_{10} and $PM_{2.5}$ can take hours to occur; therefore, the precursor pollutants may be emitted some distance from the impact area depending on weather conditions.

The Proposed Action occurs at the USAFA located in El Paso County, Colorado. Therefore, the ROI is part of the San Isabel Air Quality Control Region (40 CFR 81.175).

3.3.2 Existing Conditions

3.3.2.1 Regulatory Setting

As part of the CAA, the USEPA has established National Ambient Air Quality Standards (NAAQS) for major pollutants of concern, called "criteria pollutants." These criteria pollutants include CO, SO_2, NO_2, O_3, PM_{10}, $PM_{2.5}$, and Pb. The NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety to protect the public health and welfare. Based on measured ambient criteria pollutant data, the USEPA designates areas in the U.S. as having air quality better than (attainment) or worse than (nonattainment) the NAAQS.

The Clean Air Act (CAA) also established a national goal of preventing degradation or impairment in federally designated Class I areas. Class I areas are defined as those areas where any appreciable degradation in air quality or associated visibility impairment is considered significant. As part of the Prevention of Significant Deterioration (PSD) Program, Congress assigned mandatory Class I status to all national parks, national wilderness areas (excluding wilderness study areas or wild and scenic rivers), and memorial parks greater than 5,000 acres.

There are no Class I areas within 100 kilometers of the USAFA. Stationary sources are regulated under the PSD Program. Mobile sources, including aircraft and associated operations such as those occurring at USAF installations, are not subject to the requirements of PSD.

In addition to criteria pollutants, the USEPA has defined 187 substances as hazardous air pollutants (HAPs). HAPs emitted from mobile sources are called Mobile Source Air Toxics (MSATs). MSATs are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. The primary control methodologies for these pollutants for mobile sources involves reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion. MSATs would be the primary HAPs emitted by mobile sources during construction. The equipment used during construction would likely vary in age and have a range of pollution reduction effectiveness. Construction equipment, however, would be operated intermittently, for the duration of construction, and would produce negligible ambient HAPs in a localized area. Therefore, MSAT emissions are not considered further in this analysis.

Greenhouse gases (GHGs) are also regulated under the federal CAA. The USEPA defines the following compounds as the main GHGs emitted into our atmosphere: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs have varying global warming potential (GWP). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. Other GHGs that have GWPs include CH_4, which has a GWP of 25, and N_2O, which has a GWP of 298. Carbon dioxide equivalent (CO_2e) emissions are defined as the amount of CO_2 that would have the same GWP, when measured over a specified timescale (generally, 100 years). CO_2e emissions are calculated by multiplying the mass emissions by the GWP and are reported in metric tons.

The potential effects of proposed GHG emissions are by nature global and result in cumulative impacts because most individual sources of GHG emissions are not large enough to have any noticeable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts.

3.3.2.2 Climate and Meteorology

In the El Paso County, Colorado region, the summers are warm, the winters are very cold and dry, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 20 degrees Fahrenheit (°F) to 84°F and is rarely below 4°F or above 92°F. The warm season lasts for about 3 months, from early June to mid-September, with an average daily high temperature above 76°F. The hottest day of the year typically falls in July, with an average high of 84°F and low of 58°F.

The cold season lasts for 3 to 4 months, from mid-November to early March, with an average daily high temperature below 51°F. The coldest day of the year usually falls in late December or early January, with an average low of 20°F and high of 43°F (Weather Spark 2018).

Most of the state has warmed 1 or 2°F in the last century. Throughout the western U.S., heat waves are becoming more common, snow is melting earlier in spring, and less water flows through the Colorado River. Rising temperatures and recent droughts in the region have killed many trees by drying out soils, increasing the risk of forest fires, or enabling outbreaks of forest insects. In the coming decades, the changing climate is likely to decrease water availability and agricultural yields in Colorado, and further increase the risk of wildfires.

During the last few decades, soils have become drier in most of Colorado, especially during summer. In the decades to come, rainfall during summer is more likely to decrease than increase in Colorado, and periods without rain are likely to become longer. All of these factors would tend to make droughts more severe in the future (USEPA 2016).

3.3.2.3 Regional and Local Air Pollutant Sources

The affected environment for the air quality analysis is El Paso County, Colorado, which is part of the San Isabel Intrastate Air Quality Control Region (40 CFR 81.175). A portion of El Paso County is designated as a maintenance area for CO, and this area includes the location of the USAFA and the Proposed Action, so a General Conformity applicability analysis is included in the air quality analysis.

Table 3.3-1 presents the 2017 emission inventory for El Paso County, which includes the city of Colorado Springs and the USAFA.

Table 3.3-1. 2017 Criteria Pollutant Emissions for El Paso County, Colorado

Location	EMISSIONS (TONS/YEAR)					
	VOCs	*CO*	*NO_x*	*SO_2*	*$PM_{2.5}$*	*PM_{10}*
El Paso County, Colorado	18,338	77,861	14,711	2,051	3,372	14,327

Legend: CO = carbon monoxide; NO_x = nitrogen oxides; SO_2 = sulfur dioxide; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.
Source: USEPA 2020.

3.4 WATER RESOURCES

3.4.1 Definition of Resources

Water resources analyzed in this EA include both surface water and groundwater quantity and quality, floodplains, and wetlands. Surface water includes all lakes, ponds, rivers, and streams and is important for a variety of reasons including irrigation, power generation, recreation, flood control, and human health. The nation's waters are protected under the Clean Water Act (CWA).

The goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand, total suspended solids, fecal coliform, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority. Under the CWA Section 402, it is illegal to discharge any point and/or nonpoint pollution sources into any surface water without a National Pollutant Discharge Elimination System (NPDES) permit.

Groundwater includes the subsurface hydrologic resources of the physical environment and is by and large a safe and reliable source of fresh water for the general population, especially those in areas of limited precipitation and is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater also plays an important part in the overall hydrologic cycle and its properties are described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Floodplains are defined by EO 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). Floodplains and riparian habitat are biologically unique and highly diverse ecosystems providing a rich diversity of aquatic and terrestrial species, as well as promoting stream bank stability and regulating water temperatures. EO 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development whenever there is a practicable alternative.

Wetlands are considered sensitive habitats and are subject to federal regulatory authority under Sections 401 and 404 of the CWA and EO 11990, *Protection of Wetlands*. Wetlands are defined by the U.S. Army Corps of Engineers (USACE) as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory 1987). Wetlands generally include swamps, marshes, bogs, and similar areas. The affected environment for wetlands includes only those areas potentially subject to ground disturbance.

The ROI for water resources includes the USAFA as well as nearby surface waters that receive runoff generated within the project area.

3.4.2 Existing Conditions

3.4.2.1 Surface Water

Monument Creek, which runs from north to south, is the primary surface water feature on the installation and is located on the east side of USAFA (Figure 3.4-1). The headwaters of Monument Creek are springs located in the Rampart Range north and west of the USAFA. Perennial streams that flow into Monument Creek from the west include Goat Camp Creek, Lehman Run, Stanley Creek, and West Monument Creek. Those that flow into Monument Creek from the east include Smith Creek, Kettle Creek, and Pine Creek. There are approximately 15 additional intermittent streams located in the vicinity of the USAFA that drain into Monument Creek (USAF 2018a).

Other perennial and intermittent streams on the installation are considered to be in poor to good condition depending on floodplain and channel stability and riparian vegetation cover. All tributary streams flowing into Monument Creek from the east have been impacted by urban development which produces increased stormwater runoff. Erosion and sedimentation have been severe in nearly all of the eastern tributaries, and some western tributaries have been degraded by increased runoff from on-installation developments. Open water on the USAFA consists of five recreational lakes and four non-potable reservoirs (USAF 2018a).

The USAFA is a considered a non-traditional phase II Small Municipal Separate Storm Sewer Systems (MS4) under NPDES requirements and is covered under an individual MS4 permit: COR042007 (USEPA 2015). Requirements of the MS4 permit include preparation and implementation of a Stormwater Management Plan (SWMP). The SWMP identifies structural and nonstructural best management practices (BMPs) that include construction site stormwater runoff control and post-construction stormwater management in new development, or redevelopment where there is disturbance equal to or greater than 1 acre (USEPA 2015). The SWMP is an evolving document that changes over time to reference new procedures and systems or newly constructed facilities.

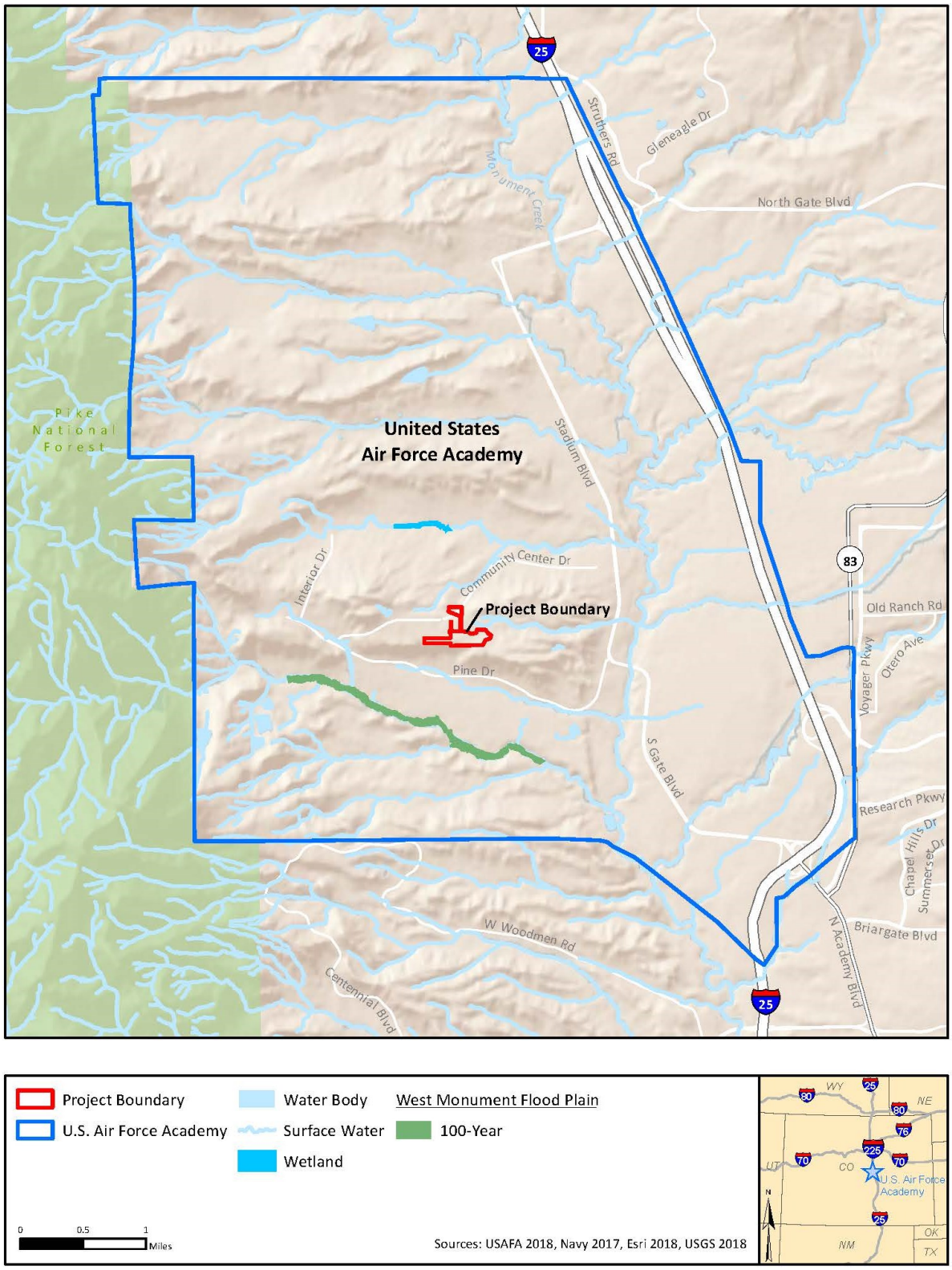


Figure 3.4-1

Water Resources and Wetlands within the Vicinity of USAFA

The USAFA has a stormwater drainage conveyance system typified by over land flow to catch basins, inlets, surface drains, underground pipes, culverts, ditches, and swales that discharge to receiving waters or other municipal separate storm sewer systems. The stormwater drainage system has been designed to safely collect and transport surface water runoff from storm events to prevent flooding within the installation and is a separate system from the wastewater (sewage) system. The increased development upstream has increased the volume and rate of flow onto the installation from surrounding areas, which has surpassed the capacity of USAFA's stormwater management system. This stormwater runoff is causing high levels of erosion and sedimentation downstream (USAF 2018a).

3.4.2.2 Groundwater

There are seven groundwater wells that supply non-potable water for industrial processing purposes at USAFA (USAFA 2018b). There are seven groundwater aquifers in northwestern El Paso County that lie in the Denver-Julesburg Basin. Four aquifers supply water wells: the Dawson, Denver, Arapahoe, and D Laramie-Fox Hills Aquifer. The elevation of the top of the water-bearing zone (all aquifers) ranges from approximately 6,000 feet at the northern end of USAFA to 5,500 feet at the southern end (USAFA 2012). Currently, potable water is purchased from Colorado Springs Utilities, and there are two transient, Non-Community public water systems in operation at the Farish Recreation Center. The two public water systems are permitted with the Colorado Department of Public Health and Environment (USAFA 2018b).

3.4.2.3 Floodplain

The Proposed Action is located atop a primary mesa on the southern portion of USAFA property and is not located within a floodplain area.

3.4.2.4 Wetlands

There are no wetlands located within the project area.

3.5 BIOLOGICAL RESOURCES

3.5.1 Definition of Resources

Biological resources include plant and animal species, and the habitats within which they occur. Plant associations are referred to as *vegetation* and animal species are referred to as *wildlife*. Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide aesthetic, recreational, and socioeconomic values to society. This analysis focuses on species or vegetation types that are important to the function of ecosystems, are of special societal importance, or are protected under federal or state law. For purposes of this

analysis, these resources are divided into three categories: vegetation, wildlife, and special status species.

Vegetation includes all existing terrestrial plant communities as well as their individual component species. Special status plant species are discussed in more detail below.

Wildlife includes the characteristic animal species that occur in the project area.

Special status species are those plant and animal species that are listed, have been proposed for listing, or are candidates for listing as threatened or endangered under the federal ESA, species protected by Colorado Parks and Wildlife, and other species of concern as recognized by state or federal agencies. Special consideration is given to bird species protected under the Migratory Bird Treaty Act (MBTA) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special status wildlife species are discussed in more detail below.

The ROI for biological resources consists only of lands that could be directly affected by the proposed demolition and construction footprints on the PL Campus and those lands in the immediate vicinity that could be indirectly affected by the Proposed Action.

3.5.2 Existing Conditions

3.5.2.1 Vegetation

The project area occurs within the Foothill Zone (6,000 to 8,000 feet in elevation), and the vegetated portion of the project area is dominated by coniferous tree species, including Ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), and white fir (*Abies concolor*) (USAFA 2018a, 2018b). All of the vegetation within the project area is considered upland forest, with openings amongst the trees dominated by shrub and herb species. There are no riparian or wetland communities in the project area. The majority of the project area consists of developed and/or disturbed lands.

3.5.2.2 Wildlife

The majority of the Proposed Action would occur on and in the vicinity of previously developed land. However, wildlife potentially occurring in the vicinity of the PL Campus would be consistent with common wildlife species that occur at the USAFA. The Proposed Action would not impact aquatic habitats; therefore, aquatic wildlife species are not addressed in this EA.

Mammal species known to occur at the USAFA include coyote (*Canis latrans*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), American elk (*Cervus elaphus*), beaver (*Castor canadensis*), several bat species,

Gunnison's prairie dog (*Cynomys gunnisoni*), spotted ground squirrel (*Spermophilus spilosoma*), northern pocket gopher (*Thomomys talpoides*), muskrat (*Ondatra zibethicus*), cottontail rabbit (*Sylvilagus nuttallii*), meadow vole (*Microtus pennsylvanicus*), Montane shrew (*Sorex monticolus*), and Western harvest mouse (*Reithrodontomys megalotis*) (USAFA 2018b). Black bears (*Ursus americanus*) have been a nuisance in housing areas and at other facilities at the USAFA, but the problem has been successfully managed with the provision of bear-proof dumpsters (USAFA 2018b).

Bird species known to occur at the USAFA include the red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), wild turkey (*Meleagris gallopavo*), prairie falcon (*Falco mexicanus*), scrub jay (*Aphelocoma coerulescens*), spotted towhee (*Pipilo erythrophthalmus*) Western kingbird (*Tyrannus tyrannus*), orange-crowned warbler (*Vermivora celata*), common yellowthroat (*Geothlypis trichas*), Wilson's warbler (*Wilsonia pusilla*), yellow warbler (*Dendroica petechia*), American goldfinch (*Carduelis tristis*), Western bluebird (*Sialia mexicana*), and vesper sparrow (*Pooecetes gramineus*) (USAFA 2018b).

Reptiles and amphibians known to occur at the USAFA include the pygmy short-horned lizard (*Phrynosoma douglassii*), bullsnake (*Pituophis catenifer sayi*), Western rattlesnake (*Crotalus viridis*), chorus frog (*Pseudacris triseriata*), and northern leopard frog (*Lithobates pipiens*) (USAFA 2018b).

3.5.2.3 Special Status Species

Table 3.5-1 presents the special status species that have the potential to occur on or within the vicinity of the USAFA. Of these species, only four bird species are likely to occur in the project area, as most of the project area is within or adjacent to developed land. The bald eagle, golden eagle, ferruginous hawk, and peregrine falcon are potential transients through the project area; however, they are unlikely to utilize the existing habitat.

Table 3.5-1. Special Status Species with the Potential to Occur on or within the Vicinity of the USAFA

Common Name	*Scientific Name*	*Federal Status*	*State Status*	*Occurrence in Project Area*
Animals				
Arkansas Darter	*Etheostoma cragini*	-	ST	NL
Bald Eagle	*Haliaeetus leucocephalus*	FP, BCC	SC	P
Burrowing Owl	*Athene cunicularia*	BCC	SC	NL
Cinnamon Teal	*Anas cyanoptera*	BCC	-	NL
Ferruginous Hawk	*Buteo regalis*	BCC	SC	P
Golden Eagle	*Aquila chrysaetos*	FP	-	P
Grasshopper Sparrow	*Ammodramus savannarum*	BCC	-	NL
Greenback Cutthroat Trout	*Oncorhynchus clarkia stomias*	T	ST	NL
Least Tern	*Sterna antillarum*	E	SE	NL
Long-Billed Curlew	*Numenius americanus*	BCC	SC	NL
Mexican Spotted Owl	*Strix occidentalis lucida*	T	T	NL
Mountain Plover	*Charadrius montanus*	BCC	SC	NL
Northern Leopard Frog	*Rana pipiens*	-	SC	NL
Pallid Sturgeon	*Scaphirhynchus albus*	E	-	NL
Pawnee Montane Skipper	*Hesperia leonardus montana*	T	-	NL
Peregrine Falcon	*Falco peregrinus*	BCC	SC	P
Piping Plover	*Charadrius melodus*	T	ST	NL
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	T	T	NL
Upland Sandpiper	*Bartramia longicauda*	BCC	-	NL
Whooping Crane	*Grus americana*	E	SE	NL
Wolverine	*Gulo gulo luscus*	T	T	NL
Plants				
American Currant	*Ribes americanum*	-	I	NL
Porter's Feathergrass	*Ptilagrostis porterii*	-	I	NL
Southern Rocky Mountain Cinquefoil	*Potentilla ambigens*	-	I	NL
Ute Ladies' Tresses	*Spiranthes diluvialis*	T	I	NL
Western Prairie Fringed Orchid	*Platanthera praeclara*	T	-	NL

Notes: BCC = Bird of Conservation Concern; C = Candidate; FP = Fully Protected; I = Imperiled; NL = not likely; P = potential; SC = Species of Concern; T= Threatened.
Sources: USFWS 2008, 2019; Colorado Natural Heritage Program 2019; Colorado Parks and Wildlife 2019; USAFA 2018b.

The federally threatened Preble's meadow jumping mouse (PMJM) (*Zapus hudsonius preblei*) is the only breeding, resident species on the USAFA that is protected under the ESA. The USAFA supports a significant PMJM population and the greatest extent of contiguous suitable habitat in the Arkansas River Basin (USAFA 2018b). The USAFA maintains a 3,300-acre PMJM Conservation Zone, which includes both riparian and adjacent upland habitats along the major creeks of the installation. No PMJM habitat or Conservation Zone areas occur within the project area.

3.6 EARTH RESOURCES

3.6.1 Definition of Resources

Earth resources include geology, and soils, and topography within the project area. The geology of an area includes bedrock materials and mineral deposits. The principal geologic factors influencing the stability of structures are soil stability, bedrock depth, and seismic properties. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, liquefaction potential, and its potential to erode, all determine the ability of the ground to support structures and facilities. Topography describes the physical surface characteristics of land such as slope, elevation, and general surface features. Long-term geological, erosional, and depositional processes typically influence topographic relief of an area.

The ROI for earth resources includes the project area on the PL Campus at the USAFA shown in Figure 1-2.

3.6.2 Existing Conditions

3.6.2.1 Geology

The USAFA is located on the southwestern margin of the Denver basin which is an asymmetrical basin that extends from the Front Range of Colorado eastward almost to the Kansas border and northward into eastern Wyoming. The Rampant Range was formed during the latest period of mountain building when the Precambrian Pikes Peak granite was forced upwards along the Rampart Range fault. The Rampart Range fault separates the older Precambrian granite from the younger sedimentary rocks that compose the dissected plains to the east. The Rampart fault runs north to south along the base of the Rampart Range and is quaternary in age. The geology at the USAFA is influenced by its position at the transition from plains to mountains. The Denver basin strata are locally tilted to a high angle next to the Rampart Range fault. However, to the east, the dip of the Denver basin strata flattens to 3 to 4 degrees east of northeast (U.S. Geological Survey [USGS] 1994).

The USGS National Earthquake Information Center considers the USAFA to be relatively aseismic with no recorded earthquake epicenters at the USAFA since 1800. The nearest event was a minor earthquake in 1979 with a magnitude of 2.9 on the Richter Scale with an epicenter located approximately 25 to 30 miles west of the USAFA (USAFA 2010a).

The predominant bedrock within the USAFA is the Dawson Arkose of the Cretaceous and Paleocene age. The Dawson Arkose is the original name given to what is now recognized as a grouping of three distinct stratigraphic units including the Dawson Arkose, Denver Formation,

and the Arapahoe Formation. Collectively, the three stratigraphic units are referred to as the Dawson Formation and consist of weakly indurated, non-cemented, and friable sandstones and beds of firm silty claystone. The three individual units are described from oldest to youngest as follows:

- The Late Cretaceous aged Arapahoe Formation consists of interbedded conglomerate, sandstone, siltstone, shale ranging in thickness from 400 to 700 feet.
- The Late Cretaceous and Early Tertiary aged Denver Formation consists of interbedded shale, claystone, siltstone, and sandstone in which coal and fossilized plant remains are common. The sandstone and siltstone are moderately consolidated and are present in poorly defined irregular beds separated by thick layers of claystone. The total thickness ranges from 600 to 1,000 feet.
- The Tertiary aged Dawson Arkose consists primarily of conglomerate, sandstone, and shale ranging in thickness from 200 to 700 feet. The conglomerate is generally coarse grained and poorly to moderately well consolidated (USGS 1994).

3.6.2.2 Soils

Soils at the USAFA are primarily derived from granitic parent material, are shallow, and have very little fine or organic material. Most of the USAFA has a moderate to high erosion potential due to steep topography and coarse soil particle size (USAFA 2007) and is subject to erosion during intense summer rainstorms. According to the U.S. Department of Agriculture (USDA) Web Soil Survey there are three soil types at the PL Campus including the Jarre gravelly sandy loam, the Jarre-Tecolote complex, and the Kettle gravelly loamy sand. The Jarre gravelly sandy loam is well drained, derived from alluvium parent material, and has a 1 to 8 percent slope. The Jarre-Tecolote complex consists of gravelly sandy loam with some clay loam, is well drained, is derived from alluvium parent material, and has a slope of 8 to 65 percent. The Kettle gravelly loamy sand is somewhat excessively drained, has parent material from sandy alluvium derived from arkose, and has a slope of 3 to 40 percent. These three soil types (Jarre gravelly sandy loam, Jarre-Tecolote complex, and Kettle gravelly loamy sand) are not identified as prime farmland (USDA 2018).

3.6.2.3 Topography

The topography of the USAFA consists of a series of west to east trending mesas interspersed by valleys including Jack's, Lehman, Douglass, and Pine valleys. These valleys meet the broader expanse of Monument Creek which consists of a wide, flat floodplain towards the eastern portion of the USAFA with a stream channel marked by steep, highly erodible banks. Elevations at the USAFA range from 6,376 feet above mean sea level at Monument Creek near the South Gate to

7,600 feet above mean sea level at the base of the Rampart Range. The PL Campus lies atop a primary mesa that is generally flat with a slope to the south of the area and higher elevation to the east (USAFA 2007).

3.7 HAZARDOUS MATERIALS/WASTE

3.7.1 Definition of Resources

This section describes the affected environment associated with hazardous materials and petroleum products, hazardous and petroleum wastes, Environmental Restoration Program (ERP) sites, asbestos-containing materials (ACM), lead-based paint (LBP), polychlorinated biphenyls (PCBs), radon, and solid waste at PL Campus at the USAFA.

The terms "hazardous materials" and "hazardous waste" refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, hazardous materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released into the environment. Hazardous wastes that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261, *Identification and Listing of Hazardous Waste*. The ERP is a USAF program designed to identify, characterize, and remediate environmental contamination from past activities at USAF installations.

Issues associated with hazardous material and waste typically center around waste streams, underground storage tanks (USTs), aboveground storage tanks (ASTs), and the storage, transport, use, and disposal of fuels, lubricants, and other industrial substances. When such materials are improperly used in any way, they can threaten the health and well-being of wildlife species, habitats, and soil and water systems, as well as humans.

Specific environmental statutes govern the management of hazardous materials and hazardous waste. The key statutes include:

- *CERCLA of 1980 (42 USC 9601–9675) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986*. CERCLA/SARA regulates the prevention, control, and compensation of environmental pollution.
- *Community Environmental Response Facilitation Act (42 USC 9620)*. This Act amended CERCLA to require that, prior to termination of federal activities on any real property

owned by the federal government, agencies must identify real property where hazardous substances were stored, released, or disposed of.

- *Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (42 USC 11001–11050)*. EPCRA requires emergency planning for areas where hazardous materials are manufactured, handled, or stored and provides citizens and local governments with information regarding potential hazards to their community.
- *Resource Conservation and Recovery Act (42 USC 6901–6992)*. RCRA established standards and procedures for handling, storage, treatment, and disposal of hazardous waste.
- *Federal Facility Compliance Act of 1992 (Public Law 102-426)*. This Act provides for a waiver of sovereign immunity on the part of federal agencies with respect to federal, state, and local requirements relating to RCRA solid and hazardous waste laws and regulations.
- *Pollution Prevention Act of 1990 (42 USC 13101–13109)*. This Act encourages minimization of pollutants and waste through changes in production processes.
- *USEPA Regulation on Identification and Listing of Hazardous Waste (40 CFR Part 261)*. This regulation identifies solid wastes subject to regulation as hazardous and to notification requirements under RCRA.
- *USEPA Regulation on Standards for the Management of Used Oil (40 CFR Part 279)*. This regulation delineates requirements for storage, processing, transport, and disposal of oil that has been contaminated by physical or chemical impurities during use.
- *USEPA Regulation on Designation, Reportable Quantities, and Notification (40 CFR Part 302)*. This regulation identifies reportable quantities of substances listed in CERCLA and sets forth notification requirements for releases of those substances. It also identifies reportable quantities for hazardous substances designated in the CWA.

The ROI hazardous materials and waste includes areas that could be exposed to an accidental release of a hazardous substance from construction or demolition activities, other specific areas affected by past and current hazardous waste operations, and areas where hazardous materials would be utilized or stored. Therefore, the ROI for this action is defined as PL Campus at the USAFA.

3.7.2 Existing Conditions

3.7.2.1 Hazardous Materials

Hazardous materials are used at the USAFA primarily for building, vehicle, and grounds maintenance. Types of hazardous materials found at the USAFA include flammable and

combustible liquids, fuels, acids, corrosives, caustics, anti-icing chemicals, compressed gases, solvents, paints, paint thinners, and pesticides.

Nine USTs and 84 ASTs are located at the USAFA. The 9 USTs hold diesel fuel, used oil, aviation gas, and gasoline. Of the 84 ASTs, 35 have a capacity larger than 500 gallons and all of the ASTs are either double-walled steel tanks that provide secondary self-containment or inside adequate secondary containment structures. None of the USTs or ASTs are located on the PL Campus (Schneider 2020).

3.7.2.2 Toxic Substances

Regulated toxic substances typically associated with building and facilities include asbestos, LBP, radon, and PCBs. Limited areas of the USAFA haven been surveyed for asbestos. A comprehensive asbestos survey has not been conducted at the USAFA. Buildings constructed prior to 1980 are assumed to have most likely been constructed with ACM. Buildings 5210, 5212, 5214, 5216, and 5220 were constructed between the years of 1958 and 1959. These five buildings are likely to contain ACM. ACMs are prevalent at the USAFA due to the age of the facilities and construction history of the facilities. Most of the ACMs have been removed during renovations and maintenance activities; however, a large amount still remains and must be managed appropriately.

The USAFA has conducted limited LBP surveys and LBP data was not available for the PL Campus. Buildings constructed prior to 1978 are presumed to contain LBP and would be tested for LBP prior to demolition or renovation. Buildings 5210, 5212, 5214, 5216, and 5220 were constructed before 1978 and may contain LBP (USAFA 2012).

There are no federal or state standards regulating radon exposure but the USEPA recommends a maximum exposure level of 4.0 picocuries per liter (pCi/L). Also, USAF policy requires the implementation of the Air Force Radon Assessment and Mitigation Program to determine levels of radon exposure to military personnel, to mitigate elevated levels of radon to acceptable levels, and to conduct sampling to validate the effectiveness of the mitigation. El Paso County, where the USAFA is located, is designated as a Zone 1 radon county by the USEPA. Zone 1 areas are predicted to have the highest potential for an average indoor radon screening level of greater than 4 pCi/L. Installation-wide radon sampling was conducted at the USAFA between April and June of 2010 in 153 facilities. Building 5220 had an average indoor radon level of greater than 4 pCi/L and was ranked second highest in terms of health risks posed by radon levels. Health risk was determined by the estimated annual dose to an individual occupant along with the total number of occupants in the building (USAFA 2010b).

All PCB-containing transformers at the USAFA have been removed, replaced, or retrofitted to below 50 ppm of PCBs. Buildings 5210, 5212, 5214, 5216, and 5220 were constructed before 1979 and may have capacitors and light ballasts that contain PCBs (USAFA 2012).

3.7.2.3 Hazardous Waste Management

The USAFA Spill Prevention and Response Plan specifies protocols for responding to releases, accidents, and spills involving petroleum, oil, and lubricants or hazardous substances. The protocols described in the Spill Prevention and Response Plan include training, spill detection, spill reporting, spill containment, and proper clean up and disposal methods (USAFA 2018b). The USAFA Hazardous Waste Management Plan outlines procedures for controlling and managing hazardous wastes from the point where they are generated until they are disposed. It also includes guidance for compliance with all federal, state, and local regulations pertaining to hazardous waste.

The USAFA is regulated as a Small Quantity Generator with production of 100 kilograms, but less than 1,000 kilograms of hazardous waste per month and has been assigned USEPA ID Number CO8572924928. A hazardous waste generation point is the location where a waste is initially created or generated. Waste cannot be accumulated or stored at the generation point unless the area has been designated as an approved accumulation point. As hazardous waste is generated, it is collected at the 22 Satellite Accumulation Points (SAPs) located on the USAFA. No SAPs are located on the PL Campus or surrounding area (USAFA 2007). At SAPs, waste may be accumulated in up to 55 gallon drums for a maximum of 6 months. After waste has accumulated at a SAP, it is transported to the 90-day Hazardous Waste Accumulation Site located within Building 8125 within the Service and Supply Area. The waste is picked up by a Defense Reutilization and Marketing Office contractor and taken to a treatment, storage, and disposal facility (USAFA 2002).

Oil/water separators are used to separate oils, fuels, sand, and grease from wastewater and to prevent contaminants from entering the sanitary sewer and stormwater drainage systems. Currently, there are 26 oil/water separators at the USAFA, which are part of the wastewater collections system for the USAFA wastewater treatment plant (WWTP). The WWTP processes sanitary sewer waste water generated on the installation and sends gray water into the non-potable irrigation system for use in irrigating the athletic fields, the cemetery, golf courses, and medians (USAFA 2018c).

3.7.2.4 Environmental Restoration Program Site

The DoD ERP (formerly known as Installation Restoration Program) was established as part of SARA of 1986 to facilitate cleanup of DoD sites. ERP sites are designated for the cleanup of hazardous substances, DoD-unique substances, and petroleum, oil, and lubricant contamination. The mission of the ERP is to identify and clean up contamination resulting from past DoD use and disposal practices for the protection of human health and the environment.

The USAFA prepared a Community Involvement Plan in 2010 that provided a comprehensive summary of the ERP sites at the USAFA to the public. The Community Involvement Plan documents all RCRA Facility Investigations that have been completed for 13 sites and 5 areas of concern at USAFA and includes recommended actions for each site and a listing of sites that require no further action. According to the Community Involvement Plan, only two sites are recommended for further action, Site 6 Landfill No. 1 and Site 7 Landfill No. 2. Of these identified sites and areas of concern, no sites are located in the immediate vicinity of the Proposed Action (USAFA 2010c).

3.8 CULTURAL RESOURCES

3.8.1 Definition of Resources

Cultural resources consist of prehistoric and historic buildings, districts, sites, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and traditional cultural resources.

Archaeological resources are locations where human activity measurably altered the earth or left deposits of physical remains (e.g., tools, arrowheads, or bottles). “Prehistoric” refers to resources that predate the advent of written records in a region. These resources can range from a scatter composed of a few artifacts to village sites and rock art. “Historic” refers to resources that postdate the advent of written records in a region. Archaeological resources can include campsites, roads, fences, trails, dumps, battlegrounds, mines, and a variety of other features.

Architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for protection under existing cultural resource laws. However, more recent buildings and structures, such as Cold War-era military buildings, may warrant protection if they have exceptional characteristics and the potential to be historically significant or if they are integral parts of a district that is eligible. These properties are evaluated under NRHP Criteria

Consideration G, which includes properties that have achieved significance within the past 50 years. Architectural resources must also possess integrity (i.e., important historic features must be present and recognizable in order to convey its significance).

Traditional cultural resources can include archaeological resources, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that American Indians or other groups consider essential for the continuance of traditional cultures.

Only cultural resources considered to be significant, known or unknown, warrant consideration with regards to adverse impacts resulting from a proposed action. To be considered significant, archaeological or architectural resources must meet one or more criteria as defined in 36 CFR 60.4 for inclusion in the NRHP. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) that are associated with the lives of persons significant in our past; or
(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(d) that have yielded, or may be likely to yield, information important in prehistory or history.

Several federal laws and regulations have been established to manage cultural resources, including the NHPA (1966), the Archaeological and Historic Preservation Act (1974), AIRFA (1978), the ARPA (1979), and Native American Graves Protection and Repatriation Act (1990). In addition, coordination with federally recognized American Indian Tribes must occur in accordance with EO 13175, *Consultation and Coordination with Indian Tribal Governments*.

On November 27, 1999, the DoD promulgated its Annotated American Indian and Alaska Native Policy, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. This Policy requires an assessment, through consultation, of the effect of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the respective services (DoD American Indian/Alaska Native Policy), as does DoD Instruction 4710.02, *Interaction with Federally Recognized Tribes* (September 14, 2006).

3.8.2 Existing Conditions

The area of potential effects (APE) for cultural resources is the project site for the Proposed Action. The APE encompasses the areas where ground-disturbing activities and building demolitions would occur.

The USAFA is located within the Arkansas River Basin. A brief overview of the cultural history of the area is presented below using the latest USAFA Integrated Cultural Resources Management Plan (USAFA 2017).

3.8.2.1 Paleoindian Period (10,000 to 5500 Before Christ [B.C.])

During the Paleoindian Period, inhabitants were nomadic and lived a hunting and gathering lifestyle. Projectile points were distinctive and created for hunting large and small game. Paleoindian sites were concentrated near playa lakes and stream terraces but are rare in the Arkansas River Basin. These sites are similar to Paleoindian sites located on the High Plains of eastern Colorado and northeast New Mexico (USAFA 2017).

3.8.2.2 Early Archaic Period (5500 to 3000 B.C.)

Early Archaic Period sites occur in high valleys and close to water. This period is marked by transition from lanceolate and large side-notched projectile points to stemmed and corner-notched points. The presence of grinding stones begins to appear, which suggests plant foods were processed (USAFA 2017).

3.8.2.3 Middle Archaic Period (3000 to 1000 B.C.)

Sites during the Middle Archaic Period are typically open sites located in open plains, timbered uplands, mountainous settings, canyons, and valleys. Open sites during this period vary in size and complexity as evidenced by the presence of hearths at some of the sites and chipped stone or ground stone artifact scatters. The tool assemblages found at sites within the Middle Archaic Period include corner-notched points with a few having serrated edges, formal and expedient tools, and ground stone tools (USAFA 2017).

3.8.2.4 Late Archaic Period (1000 B.C. to Anno Domini [A.D.] 500)

Late Archaic Period sites began to occupy a range of environmental settings although they are located in close proximity to water. The lithic tools during this period began to increase in variety with many having stemmed or corner-notched haft elements. The tool assemblage also included groundstone tools, sandstone and quartzite ovate manos with unifacial or bifacial grinding surfaces in addition to evidence of pecking (USAFA 2017).

3.8.2.5 Late Prehistoric Period (A.D. 100 to 1725)

The Late Prehistoric Period applies to all of eastern Colorado and bridges the end of the hunter-gatherer tradition of the Archaic Period with the appearance of historically known cultures. During this period, the bow and arrow, bone tools, ornamentation, ceramic technologies, and maize make their initial appearances. The ceramic wares present include cord-marked, plain, incised, polished, micaceous, corrugated, and painted varieties (USAFA 2017).

At least six American Indian groups lived in Colorado during this period. Protohistoric dates are arbitrary and are linked to the Apishapa abandonment of southeastern Colorado and the arrival of Athapaskan people. Lithic tools were small, triangular, unnotched, and side-notched points, micaceous gray ceramics were being produced, and the presence of stone circles or tipi rings are associated with this period. Historically, the Apache and Comanche people arrived to this area from the north while the Ute continued to migrate across the foothills and plains on a seasonal basis. There was a major architectural division between the Plains Apache nomads that built portable tipis and the communities of the Central Plain and northeastern New Mexico Apache that were more sedentary with their rancheria or pueblo communities (USAFA 2017).

3.8.2.6 Pre-USAFA Settlement

Europeans had explored the area of the USAFA by the early nineteenth century. Trappers, traders, mountain men, and military and government expeditions, including Zebulon Pike, Stephen Long, and John Charles Fremont, also explored the area (USAFA 2017). As a result of the Louisiana Purchase in 1803 and the Treaty of Guadalupe Hidalgo in 1848, Colorado became part of the U.S. When gold was discovered in Colorado in 1858, the area transformed overnight with a large influx of people that began to settle the region. In February 1861, the Territory of Colorado was officially recognized after debates over slavery and its place in the expansion of the U.S. Colorado entered into statehood in 1876 (USAFA 2017).

The land on what would become the USAFA included portions of Pine and Douglas valleys, which were used for cattle grazing and homesteads beginning in the mid-1860s. A stagecoach line ran through the eastern part of the USAFA property. Two small towns, Edgerton and Husted, were established after the Denver and Rio Grande Railroad was built to serve as shipping points for cattle and ice. Ranching activities persisted in addition to summer homes and estates in Pine Valley due to the growth in Colorado Springs (USAFA 2017). Stage stops were established on lands now part of the USAFA grounds. This land was quickly taken by homesteaders and settlers who purchased lands in the Pine and Jacks valleys after 1860.

Archaeological Resources

The project APE was surveyed for archaeological resources in the fall of 2018 (USAFA 2018d). The survey identified one historic archaeological site (5EP.8621.1) and no isolated finds. This site is a relatively short segment of an unnamed road that was constructed during the late nineteenth or early twentieth century. It was constructed during a period of homesteading in the area, but cannot be linked to a specific family or activity. Mid-twentieth century maps do not depict the road alignment, suggesting it was abandoned prior to the construction of the USAFA. This site was recommended not eligible for listing in the NRHP (USAFA 2018d). On February 24, 2020, the Colorado Office of Archaeology and Historic Preservation (OAHP) concurred with the USAFA determination that site 5EP.8621.1 is not eligible for listing in the NRHP (Turner 2020a, HC #77246).

Architectural Resources

The existing buildings within the project area include Buildings 5210, 5212, 5214, 5216, 5220, and 5226. In correspondence from the Colorado SHPO, dated February 24, 2020, it was determined their demolition would have no adverse effect on historic properties. Further stating "The Prep School complex was previously determined by our office to be ineligible for individual listing on the National Register of Historic Places, and to be a non-contributing resource within the Air Force Academy Historic District (5EP.595)" (Turner 2020a). As for modification of other minor existing elements and infrastructure within the new Campus area, it was further determined in correspondence with the SHPO, dated May 11, 2020, these potential modifications would also have no adverse effect on historic properties (Turner 2020b).

Traditional Cultural Resources

To date, no American Indian traditional cultural resources have been identified within the project area. However, 36 federally recognized American Indian Tribes that are historically, culturally, and linguistically affiliated with the area have been identified. A list of these American Indian Tribes can be found in Appendix A.

3.9 LAND USE

3.9.1 Definition of Resources

Land use comprises the natural conditions and/or human-modified activities occurring at a particular location. Natural conditions comprise those geographic characteristics that have a direct effect on the development potential of the landscape (e.g., rivers, steep slopes, and soil conditions). Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other

developed use areas. General land use patterns characterize the types of uses within a particular area including agricultural, residential, military, and recreational. Land ownership is a categorization of land according to type of owner. The major land ownership categories include private, state, and federal. Many urban areas use management plans and zoning regulations to determine the type and extent of land use allowable in specific areas and to protect specially designated or environmentally sensitive areas. Resources used to define land use include all land use plans, policies, and zoning limitations in the study area.

The ROI for land use includes USAFA and the lands immediately adjacent to the installation.

3.9.2 Existing Conditions

USAFA is located on the north side of Colorado Springs, Colorado and approximately 60 miles south of Denver. USAFA land covers approximately 18,455 acres at the base of the Rampart Range in the Rocky Mountains, with an additional 652 acres at the Farish Recreation Area northeast of Woodland Park and 197 acres for the Bullseye Auxiliary Airfield southeast of Ellicott, Colorado. USAFA's western boundary adjoins Pike National Forest, and there is an extensive network of hiking trails on the installation that lead into the Pike National Forest including the Falcon Trail, Chapel Overlook and Trail, and the Pine Valley Trail. Commercial, industrial, and single-family and multi-family residential development occur on the north, east, and south of the installation (USAFA 2018c). USAFA is currently working with the Pikes Peak Area Council of Governments to develop a Joint Land Use Study in a collaborative process for ensuring compatible local development with mission operations (USAFA 2018c). Towards that goal, a 2019 update to the airfield AICUZ analyzed current aircraft activity at the Academy airfield to provide land use guideline recommendations for surrounding areas.

USAFA is comprised of a series of subareas including the Cadet Areas, Main Airfield, Community Center, Service and Supply Area, and the family housing areas. There are 17 primary land use categories defined for the USAFA, including academic, administration, airfield operations maintenance, athletic, community (commercial), community (service), field training, housing (accompanied), housing (unaccompanied), medical, open space (natural preserved), open space (designated), open space (general), open space (natural), open space (restricted), industrial, and tourist area. A total of 11,953 acres (65 percent) of the installation are preserved as natural open space, 1,749 acres (9 percent) as designated open space, and 1,115 acres (6 percent) as restricted open space. Only 3,638 acres (20 percent) is developed property. Eight of these categories (open space natural, open space general, open space designated, athletic, academic, administration, community services, and housing [unaccompanied]) occur within the project area (Figure 3.9-1).

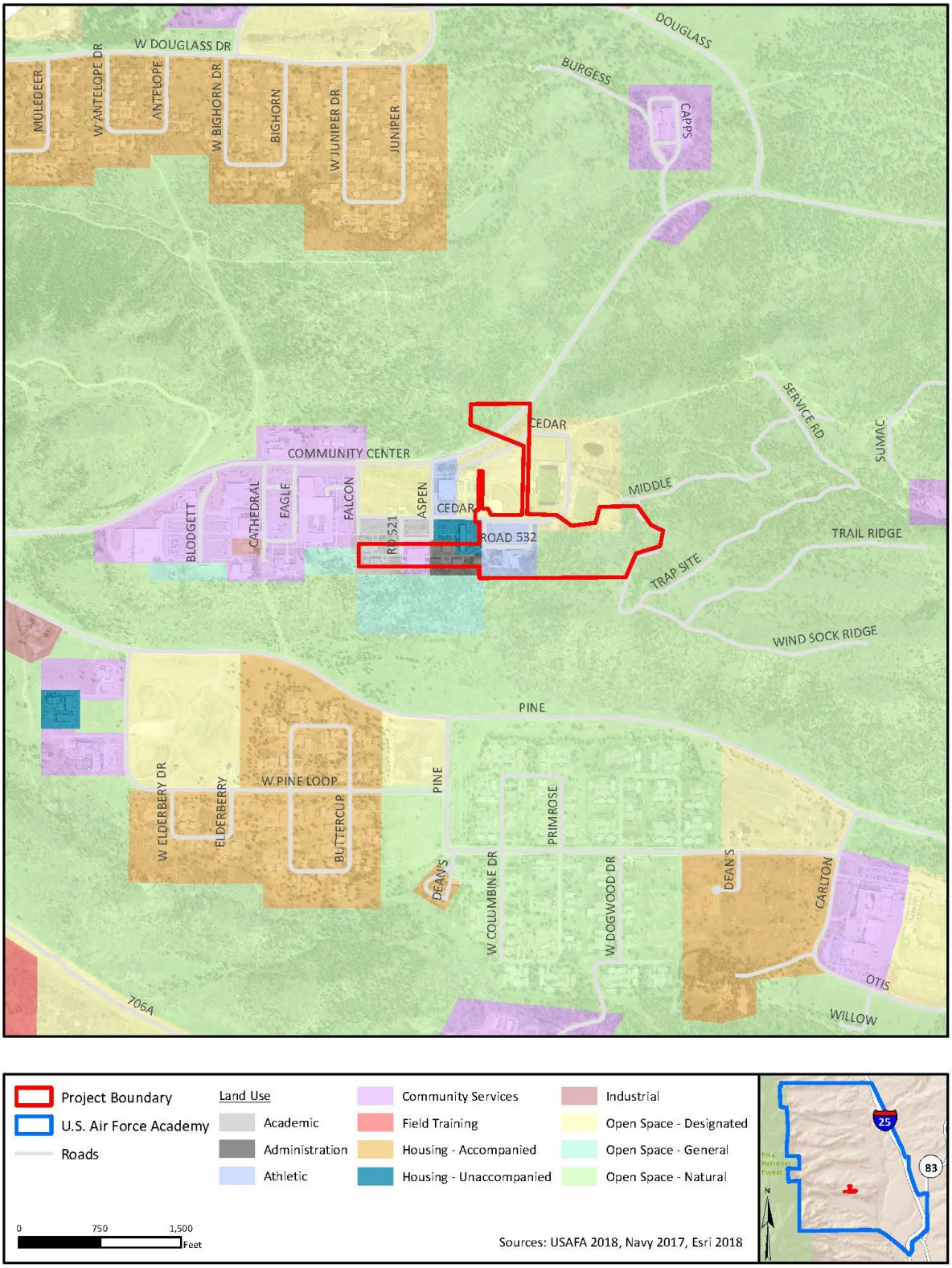


Figure 3.9-1

Land Use on USAFA within the Vicinity of the Project Area

3.10 INFRASTRUCTURE/UTILITIES

3.10.1 Definition of Resources

Infrastructure refers to the system of public works, such as utilities and transportation, which provide the underlying framework for a community. Utilities include such amenities as water, power supply, and waste management. Transportation and circulation refer to roadway and street systems, the movement of vehicles, pedestrian and bicycle traffic, and mass transit. The infrastructure components to be discussed in this section include the electricity and natural gas, wastewater, stormwater, solid waste, potable water, and transportation. The infrastructure elements at USAFA include both transportation and utility systems. The ROI for this resource primarily consists of USAFA, with additional information presented for the surrounding area where relevant.

3.10.2 Existing Conditions

3.10.2.1 Electrical and Natural Gas Systems

Colorado Springs Utilities supply electrical and natural gas to USAFA. Electricity is served via two substations, each with a capacity of more than 20 megawatts. In addition, a 40-acre, 6-megawatt solar array has been installed and provides 4 to 7 percent of the installation's annual electric power. Annual electrical supply/capacity for USAFA is 420,480-megawatt hours and the annual demand is 90,000-megawatt hours. Natural gas monthly average demand for USAF is 44,419 million British thermal units. The current USAFA electrical and natural gas system capacity is more than adequate to meet mission needs (USAFA 2018c).

3.10.2.2 Wastewater

The USAFA generates wastewater from sanitary sewer and industrial processes. USAFA owns and operates a federally owned treatment works WWTP that operates under its own NPDES permit. The WWTP processes the sanitary sewer wastewater generated on the installation and sends the gray water into non-potable irrigation systems for irrigating athletic fields, the cemetery, golf courses, and medians. The USAFA wastewater demand is on average 684,000 gallons per day, and the WWTP has a capacity of 1.4 million gallons per day (USAFA 2018c).

3.10.2.3 Stormwater

The USAFA stormwater drainage system has been designed to safely collect and transport surface water runoff from storm events to prevent flooding within the installation and is a separate system from the wastewater (sewage) system. There are approximately 367,000 linear feet of storm drainage pipe and five stormwater ponds/dry basins of varying sizes on the

installation. Approximately 75 percent of the Monument Creek watershed flows through the installation. The increased development upstream has increased the volume and rate of flow onto the installation from surrounding areas, which has surpassed the capacity of USAFA's stormwater management system. This stormwater runoff is causing high levels of erosion and sedimentation downstream. Throughout the installation, steps have been taken to reduce the runoff into these creeks. Detention ponds, detention basins, and riprap have been utilized in several locations on the installation to reduce the impacts of the stormwater runoff (USAF 2018a).

3.10.2.4 Solid Waste Management

Municipal solid waste at the USAFA is managed in accordance with the USAFA Integrated Solid Waste Management Plan (USAFA 2018e) and guidelines specified in AFI 32-7042, *Waste Management* (2017). In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for recycling, diversion, handling, storage, collection, and disposal of solid waste; recordkeeping and reporting; and pollution prevention.

The USAF Pollution Prevention and Solid Waste Programs facilitate the reduction of solid waste, both hazardous and nonhazardous, through adjusting the behaviors and work practices of installation personnel. The USAFA is required to have a Qualified Recycling Program where all facilities have accessible containers for the accumulation of the following recyclables: copier paper, plastic, metals, glass, used oil, lead acid batteries, cardboard, newspaper, and tires. The USAFA also complies with the Green Procurement, which seeks to direct USAF purchasing power towards high recycled-content goods (USAFA 2018e).

The installation generates solid waste in the form of office trash, nonhazardous industrial wastes, normal municipal waste, and construction debris. These nonhazardous solid wastes are collected in dumpsters located throughout the installation and transported by contractor to the off-site local landfill.

3.10.2.5 Potable Water System

Colorado Springs Utilities provide potable water for the USAFA from the Pine Valley Treatment Plant and the J.A. McCullough Treatment Plant. Water is collected from 3 large river basins and stored in 25 different reservoirs. Rampart Reservoir currently supplies more than 70 percent of the Colorado Springs water demand. The current Colorado Springs Utilities water system supplies an annual average of 75,000 acre-feet of potable water, of which USAFA uses approximately 1,300 acre-feet (USAFA 2018c).

3.10.2.6 Transportation

There are two primary entrances to the installation, the North Gate and the South Gate, which can both be accessed from U.S. Interstate 25 (I-25). I-25 passes through the eastern portion of USAFA, running north and south, and connects Colorado Springs to Denver. North Gate Boulevard, South Gate Boulevard, and Stadium Boulevard are major arterials within the installation that have four to six lanes. Academy Drive, Parade Loop, and Pine Drive are major collectors that link developed areas to arterials and other developed areas within USAFA. Burlington Northern Santa Fe and Union Pacific Railroads jointly operate a railroad which runs north/south through the eastern portion of USAFA (USAFA 2018c).

3.11 SAFETY AND OCCUPATIONAL HEALTH

3.11.1 Definition of Resources

This section addresses ground safety associated with activities conducted by USAFA. Ground safety considers issues associated with human activities, operations, and maintenance activities that support USAFA operations. Also considered are the implications of siting, construction, and compatible land use on the safety of persons and property. Construction site safety addresses the use of protective equipment and clothing, exposure limits for workplace stressors, training required for workers, etc. Health and safety of workers are safeguarded by standards issued by Occupational Safety and Health Administration and USEPA. A specific aspect of ground safety addresses AT/FP considerations. The safety analysis also addresses hazards associated with aviation safety (Accident Potential Zones [APZs]) arising from building obstructions.

The ROI for safety includes USAFA and the lands immediately adjacent to the installation.

3.11.2 Existing Conditions

3.11.2.1 Ground Safety

Construction Worker and Personnel Safety

The USAFA Fire Department responds to all aircraft accidents and structural fires on the installation. If increased response is required, the USAFA Fire Department has mutual support agreements with surrounding communities. All required emergency response equipment is available and all USAFA facilities are equipped with required automatic fire suppression systems.

All construction contractors at USAFA are required to conduct activities in a manner that minimizes risk to workers and personnel. All contractors must adhere to industrial hygiene

program guidelines that address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets.

Mishap prevention program requirements, assignment of responsibilities for program elements, and program management information is established within AFI 91-202, *The U.S. Air Force Mishap Prevention Program*, dated March 12, 2020, and incorporating change 1 on March 20, 2012, and implements Air Force Policy Directive 91-2, *Safety Programs*. All Air Force Occupational Safety and Health 91-series standards are consolidated in Air Force Guidance Memorandum to Air Force Manual 91-203, *Air Force Occupational Safety, Fire and Health Standards*, dated September 3, 2019. The Air Force Occupational Safety and Health Program applies to all USAF activities and its purpose is to minimize loss of USAF resources and protect USAF personnel from death, injuries, or illnesses by managing risks.

Antiterrorism/Force Protection

As a result of terrorist activities, the DoD and the USAF have developed a series of AT/FP guidelines for military installations:

- UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* (2018)
- UFC 4-022-01, *Entry Control Facilities Access Control Points* (2017a)
- AFI 10-245*, Antiterrorism (AT)* (2015)
- DoD Instruction 2000.12*, DoD Antiterrorism (AT) Program* (2017b)
- DoD Instruction 2000.16*, DoD Antiterrorism Standards* (2006)
- Joint Publication 3-07.2, *Antiterrorism* (2010)

These guidelines address a range of considerations that include access to the installation, access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping, in addition to addressing those elements directly related to limiting mass casualties and prevention of terrorist acts. The intent of this siting and design guidance is to improve security, minimize fatalities and possibility of mass casualties, protect personnel, and limit damage to facilities in the event of a terrorist attack.

These standards and guidelines have evolved and postdate many of the facilities at many military installations, such as those at USAFA. Thus, under current conditions, many units do not fully comply with all present AT/FP standards. However, as new construction occurs, AT/FP standards are incorporated to the maximum extent practicable.

Clear Zones and Accident Potential Zones

The USAF AICUZ Program provides compatible use guidelines for land use areas exposed to aircraft noise and accident potential. Land use guidelines include recommendations for Clear Zones (CZs) and APZs at an airfield. CZs and APZs are rectangular areas that extend outward from the end of the active runways and delineate those areas recognized as having the greatest risk of aircraft mishaps, most of which occur during take-off or landing. The CZs begin at the end of the runway and extend outward 3,000 feet and have the highest accident potential. APZ I extends out from the CZ an additional 5,000 feet while APZ II extends an additional 7,000 feet beyond that. DoD generally purchases lands or establishes easements to prevent developments within the CZ, and encourages local communities to prevent intensive land use within the APZs. USAFA utilizes these land use guidelines for these zones.

The USAFA airfield is subject to the requirements and restrictions set forth in UFC 3-260-01, *Airfield and Heliport Planning and Design*. This UFC specifies criteria for imaginary airfield surfaces including the primary surface, CZs, and approach departure zones. Imaginary surfaces include the area surrounding a runway that must be kept clear of objects that might damage an aircraft. Figure 3.11-1 depicts the CZs, APZs, and imaginary surfaces for the Main Airfield Runway that are within the vicinity of the project area. The USAFA airfield lies in a relatively flat portion of land west of I-25 and east of the PL Campus site at an elevation 6,572 feet above mean sea level. The PL Campus is located on a hillside approximately 300 feet higher in elevation than the airfield, portions of which currently penetrate the approach imaginary surfaces associated with Runway 08. However, use of Runway 08 has been limited to emergency operations (USAFA 2005).

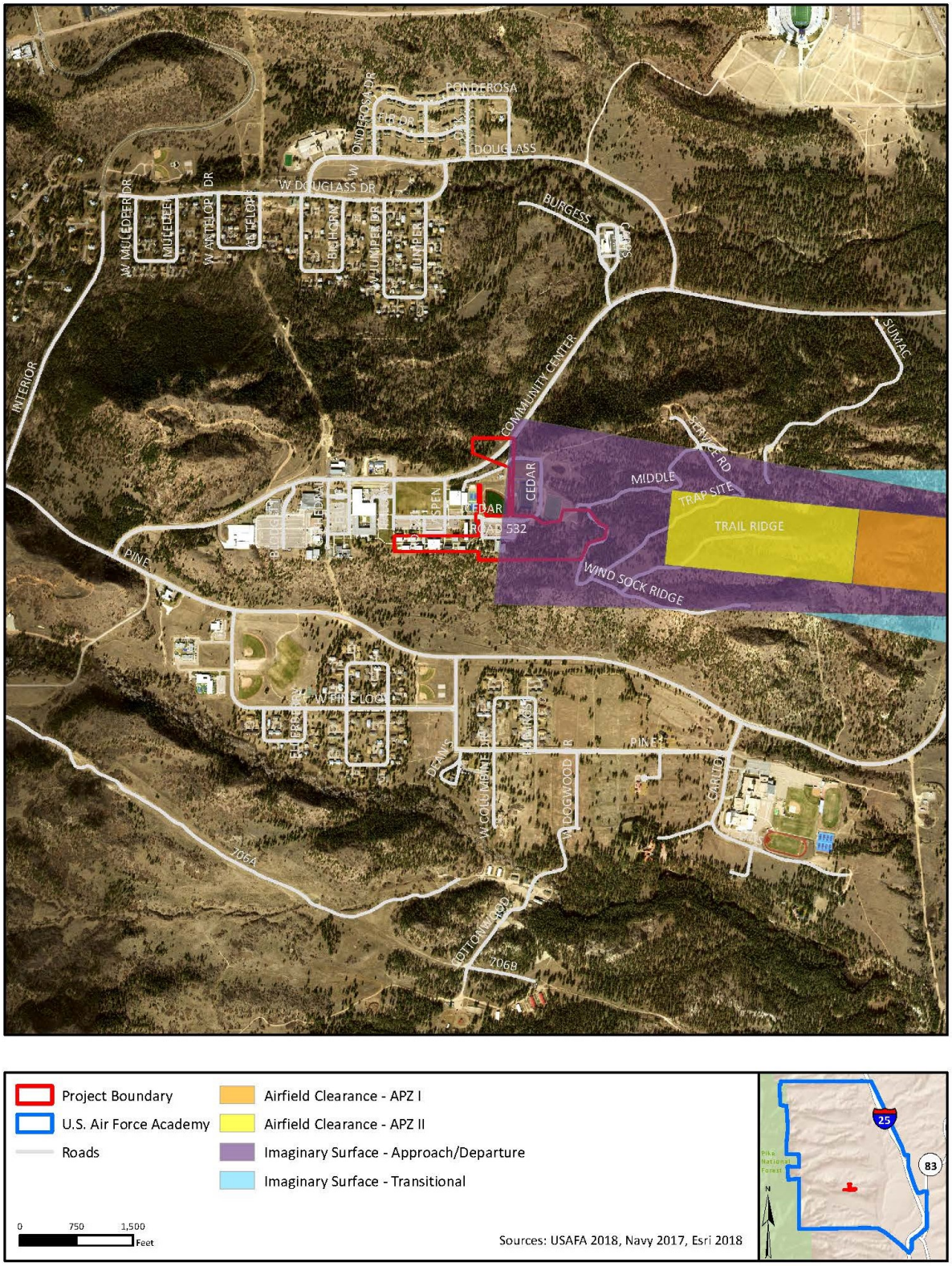


Figure 3.11-1

APZs and Imaginary Surfaces on USAFA within the Vicinity of the Project Area

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 NOISE/ACOUSTIC ENVIRONMENT

4.1.1 Methodology

The potential for noise impacts of the Proposed Action would come from either land use incompatibilities created as a result of the new buildings or short-term impacts from noise generated by construction equipment during the demolition and construction of the PL Campus. The recent 2019 AICUZ update analyzed current aircraft activity at USAFA and the noise contours and APZs associated with those operations at both the Academy airfield and Bullseye Auxiliary Airfield, which are reviewed for any noise incompatibilities with the Proposed Action.

No standardized criteria have been developed at a federal or state level for assessing temporary construction noise impacts. Local noise ordinances address the nuisance of typical construction activity by limiting the allowable maximum sound levels. This analysis considers the project construction single-event noise levels, cumulative noise levels, and the surrounding land use to determine whether a qualitative difference would occur. Noise sensitive locations, depicted in Figure 3.2-2, have been analyzed with attention to their lower tolerance to noise increases.

The Federal Highway Administration (FHWA) developed the Roadway Construction Noise Model (RCNM) for the prediction of construction noise. The Central Artery/Tunnel (CA/T) project developed the Construction Noise Control Specification 721.560, providing maximum sound levels for various construction equipment. Table 4.1-1 provides the 10 equipment types identified in the CA/T database with the greatest maximum sound levels (FHWA 2006). No pile driving or blasting is anticipated for the Proposed Action, so impact equipment and concrete saw would represent the source of greatest sound levels followed by concrete mixing trucks with L_{max} of 90 and 85 dBA, respectively. For the purposes of this analysis, only the loudest equipment level of 90 dBA, representing the Hydra Break Ram, will be used for the noise analysis to present the 'worst' or loudest conditions. The RCNM allows computation of L_{max} and L_{eq} at user defined noise sensitive locations for the selected equipment types.

Table 4.1-1. CA/T Noise Emission Reference Levels and Usage Factors

Equipment Description	*Impact device (?)*	*Acoustical Use Factor (%)*	*Spec 721.560 L_{max} at 50 ft (dBA)*	*Use for Proposed Action (?)*
Impact Pile Driver	Yes	20	95	No
Vibratory Pile Driver	No	20	95	No
Blasting	Yes	N/A	94	No
Clam Shovel (dropping)	Yes	20	93	No
Mounted Impact Hammer	**Yes**	**20**	**90**	**Yes**
Concrete Saw	**No**	**20**	**90**	**Yes**
Hydra Break Ram	**Yes**	**10**	**90**	**Yes**
Auger Drill Rig	No	20	85	No
Chain Saw	No	20	85	No
Concrete Mixer Truck	**No**	**40**	**85**	**Yes**

Legend: dBA = A-weighted decibel; ft = feet; L_{max} = Maximum Sound Level; USAFA = United States Air Force Academy.
Source: FHWA 2006.

4.1.2 Impacts

4.1.2.1 Alternative 1 (Preferred Alternative)

Alternative 1 proposes to relocate the PL Campus, construct a new dormitory, academic building, headquarters facility, terrazzo, athletic building, and modify an existing stormwater facility within the project area shown in Figure 3.2-2. Homes along West Woodmen Road in Pikeview represent the closest noise sensitive receptors.

AICUZ Compatibility

The 2019 AICUZ provides noise contours and safety zones for land use planning purposes. The 65 dB DNL contour, presented in the 2019 AICUZ, represents the lowest level at which land use guideline restrictions begin. These guidelines encourage compatible development in the vicinity of USAF airfields but do not legally limit development on- or off-base. The Academy airfield noise contours (65 dB DNL) remain within the USAFA boundary and over a mile from the project site so Alternative 1 would be compatible with the 2019 AICUZ noise contours.

Construction Noise

For the purposes of the noise impacts analysis, the loudest piece of potential equipment, Hydra Break Ram, has been modeled at the southwest corner of the project boundary, which provides for the shortest distance of 7,800 feet to the nearest receptors.

Utilizing the RCNM software to model the 'Hydra Break Ram' with a L_{max} of 90.3 dBA results in an estimated L_{max} of 46.4 dBA at the nearest noise sensitive location outside the USAFA. Using the RCNM recommended usage factor and including additional equipment (backhoe, dump truck, and 'all other equipment >5 Horsepower'), the daytime DNL is estimated at 44 dBA. For reference, a typical quiet office environment can range from 40 to 45 dBA. The POI in

the communities surrounding the USAFA could be considered 'quiet suburban residential' to 'quiet urban residential,' with typical DNL varying from 49 to 55 dBA (American National Standards Institute 2013). Although the construction activity could last multiple years, the proposed activity would generate noise levels slightly below the existing ambient levels at the closest noise sensitive receptor. Therefore, the proposed Alternative 1 would not cause significant noise impacts.

4.1.2.2 Alternative 2

The proposed construction under Alternative 2 would be similar to Alternative 1 except the building layout would vary slightly but remain within the same project boundary. Alternative 2 would be compatible with the 2019 AICUZ noise contours because the project site is outside of the 65 dB DNL contour. From a noise impact standpoint, the maximum potential sound levels generated under Alternative 2 would be similar to those discussed under Alternative 1 with maximum levels of 46 dBA experienced at the closest noise sensitive receptor generated by construction equipment. The proposed DNL would be up to 44 dBA outside the USAFA. Given that the maximum levels that would be experienced at the nearest noise sensitive receptor would not exceed existing ambient levels, Alternative 2 would not cause significant noise impacts.

4.1.2.3 Alternative 3

The proposed construction under Alternative 3 would be similar to Alternative 2 except there would be no new headquarters facility, terrazzo, additional parking and bus loop, mechanical building, or stormwater detention pond. Alternative 3 would be compatible with the 2019 AICUZ noise contours because the project site is outside of the 65 dB DNL contour. From a noise impact standpoint, the maximum potential sound levels generated under Alternative 3 would be similar to those discussed under Alternative 1 and 2 with maximum levels of 46 dBA experienced at the closest noise sensitive receptor caused by construction equipment. The proposed DNL would be up to 44 dBA outside the USAFA. The primary difference between the alternatives would be a shorter construction timeline for Alternative 3 because fewer buildings would need to be demolished and rebuilt. Given that the maximum levels that would be experienced at the nearest noise sensitive receptor would not exceed existing ambient levels, Alternative 3 would not cause significant noise impacts.

4.1.2.4 No Action Alternative

Under the No Action Alternative, the new PL Campus would not be constructed. There would be no new construction at the USAFA and conditions would not change from their current state.

Therefore, no significant impacts to the noise environment would occur with implementation of the No Action Alternative.

4.2 AIR QUALITY AND CLIMATE CHANGE

4.2.1 Methodology

Air quality impacts within the affected environment were reviewed relative to federal, state, and local air pollution standards and regulations. A portion of El Paso County is designated as a maintenance area for CO, and this area includes the location of the USAFA and the Proposed Action. As a result, a General Conformity applicability analysis for CO has been included in the air quality analysis. For all other criteria pollutants, for the purposes of this analysis, 100 tons per year per pollutant was used as an indicator to trigger further evaluation of potential air quality impacts. Indicators do not trigger a regulatory requirement; however, they provide an indication or a warning that the action is potentially approaching a threshold that would trigger a regulatory requirement. Used in this way, indicators provide relevant evidence of the potential impacts to air quality. The 100 tons per year per pollutant indicator is based on the de minimis thresholds that apply under the General Conformity Regulations. No similar regulatory indicator is available for mobile source emissions, which are the primary sources for construction activities under this proposal. Lacking any regulatory mobile source emissions thresholds, the 100 ton per year per pollutant indicator was used to equitably assess mobile source emissions at the USAFA.

4.2.2 Impacts

4.2.2.1 Alternative 1 (Preferred Alternative)

As a result of the proposed construction, approximately 244,168 SF of new buildings would be constructed and 273,122 SF of demolition would occur, involving 150,622 SF of buildings and 122,500 SF of paved surfaces. A total of 4,570 truck trips have been estimated, covering materials brought in (6,179 cubic yards) and materials removed (31,031 cubic yards). The construction and demolition activities would occur beginning in 2021. The following assumptions were used for construction projects at the USAFA:

- New building foundations require excavation of at least 1 foot of grade soil, except the new athletic building would have an estimated 50 percent of its footprint one story below grade.
- The dormitory and academic buildings would be three-story, the athletic building predominantly 2-story, and the headquarters facility and mechanical building would be single story.

- All new buildings require at least 100 feet of utility trenching and the dormitory requiring 1,325 feet of trenching.
- All new impervious surfaces are assumed to be asphalt unless clearly identified as a different material, such as terrazzo.
- All construction activities were assumed to occur in a 2-year period beginning in 2021.
- Where two options are under consideration, the option that would generate the greatest emissions was selected for analysis.

Construction emission estimates were prepared using the USAF Air Conformity Applicability Model. Emissions would primarily be generated by:

- diesel-powered construction equipment operating on site,
- trucks removing or delivering materials from the construction areas,
- application of architectural coatings, and
- dust created by grading and other bare earth construction activities.

Results of the modeling are presented in Table 4.2-1. The 100 ton per year de minimis threshold has been used for CO to assess General Conformity Rule applicability and the value otherwise serves as a comparative indicator for the remaining criteria pollutants and precursors. Detailed information on the modeling can be found in Appendix B, including a Record of Non-Applicability for CO.

Table 4.2-1. Alternative 1 Annual Construction Emissions Estimates: 2021 - 2023

Year	EMISSIONS (TONS/YEAR)						
	VOC	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e*
2021	0.34	2.45	2.34	0.01	3.48	0.10	603
2022	3.45	3.99	4.53	0.01	0.27	0.18	1,006
2023	0.09	0.65	0.69	0.00	0.03	0.03	154
de minimis threshold	NA	NA	100	NA	NA	NA	NA
Comparative Indicator	100	100	NA	100	100	100	NA
Exceedance (Yes/No)	No	No	No	No	No	No	NA

Legend: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; SO_x = sulfur oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compounds.

Based on the Air Conformity Applicability Model (ACAM) calculations, the emissions associated with construction activities proposed at the USAFA would not be significant. The estimated CO emissions are far below the General Conformity de minimis threshold and so the General Conformity Rule does not apply. All of the remaining criteria pollutant emissions are below the comparative indicator values. A Record of Non-Applicability has been prepared to document that the impacts of Alternative 1 would not be significant, and can be found in Appendix B.

4.2.2.2 Alternative 2

As a result of the proposed construction, 345,472 SF of new buildings would be constructed and 241,856 SF of demolition would occur, involving 49,535 SF of buildings, 62,500 SF of paved surfaces, and 129,821 SF of land clearing. A total of 13,205 truck trips have been estimated, covering materials brought in (8,066 cubic yards) and materials removed (37,220 cubic yards). The construction and demolition activities would occur beginning in 2021. The same assumptions for construction projects as those used for Alternative 1 apply except for the following :

- The dormitory and academic buildings would be three-story and the headquarters facility and mechanical building would be single story.
- All new buildings require at least 100 feet of utility trenching.

As with Alternative 1, construction emission estimates were prepared using ACAM.

Results of the modeling are presented in Table 4.2-2. The 100 ton per year de minimis threshold has been used for CO to assess General Conformity Rule applicability and the value otherwise serves as a comparative indicator for the remaining criteria pollutants and precursors. Detailed information on the modeling and results can be found in Appendix B.

Table 4.2-2. Alternative 2 Annual Construction Emissions Estimates: 2021-2023

Year	EMISSIONS (TONS/YEAR)						
	VOC	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e*
2021	0.42	2.98	2.76	0.01	4.61	0.12	717
2022	3.42	4.02	4.31	0.01	4.21	0.17	950
2023	1.31	0.80	0.82	0.00	0.03	0.03	185
de minimis threshold	NA	NA	100	NA	NA	NA	NA
Comparative Indicator	100	100	NA	100	100	100	NA
Exceedance (Yes/No)	No	No	No	No	No	No	NA

Legend: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; SO_x = sulfur oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.

Based on the ACAM calculations, the emissions associated with construction activities proposed at the USAFA would not be significant. The estimated CO emissions are far below the General Conformity de minimis threshold and so the General Conformity Rule does not apply. All of the remaining criteria pollutant emissions are below the comparative indicator values. A Record of Non-Applicability has been prepared to document that the impacts of Alternative 2 would not be significant, and can be found in Appendix B.

4.2.2.3 Alternative 3

Under Alternative 3, the new headquarters facility, terrazzo, additional parking and bus loop, mechanical building and stormwater detention pond would not be built. The remaining buildings

would be built in different locations from those indicated in Alternative 2. As a result of the proposed construction, 332,472 SF of new buildings would be constructed and 49,535 SF of building demolition would occur. A total of 8,881 truck trips have been estimated, covering materials brought in (4,188 cubic yards) and materials removed (28,389 cubic yards). The same assumptions were used for Alternative 3 as were used for Alternative 2 with the exception that some buildings and the paved surfaces would not be constructed under Alternative 3. The construction and demolition activities would occur beginning in 2021 and run through 2022.

Table 4.2-3. Alternative 3 Annual Construction Emissions Estimates: 2021-2023

Year	EMISSIONS (TONS/YEAR)						
	VOC	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e*
2021	0.45	3.38	2.88	0.01	1.90	0.13	834
2022	3.99	0.86	0.94	0.00	0.07	0.04	227
de minimis threshold	NA	NA	100	NA	NA	NA	NA
Comparative Indicator	100	100	NA	100	100	100	NA
Exceedance (Yes/No)	No	No	No	No	No	No	NA

Legend: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; SO_x = sulfur oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.

Based on the ACAM calculations, the emissions associated with construction activities proposed at the USAFA would not be significant. The estimated CO emissions are far below the General Conformity de minimis threshold and so the General Conformity Rule does not apply. All of the remaining criteria pollutant emissions are below the comparative indicator values. A Record of Conformity Analysis has been prepared to document that the impacts of Alternative 3 would not be significant, and can be found in Appendix B.

4.2.2.4 Greenhouse Gas Emissions

The proposed construction activities would contribute directly to GHG emissions from fossil fuel combustion (Table 4.2-4).

Table 4.2-4. Total GHG Emissions by Alternative

Alternative	EMISSIONS (TONS/YEAR)
	CO_2e
1	1,764
2	1,851
3	1,061

The operation of new facilities may result in a small increase in installation-related GHG emissions, primarily through the consumption of electricity and possibly through the combustion of fossil fuel on site if any oil or natural gas boilers or other heating units are installed in the new facilities. However, the use of Leadership in Energy and Environmental Design criteria are likely to ensure that the new buildings are significantly more energy efficient than the old buildings currently in use today.

While the GHG emissions generated from the construction activities and building operations alone would not be enough to cause global warming, in combination with past and future emissions from all other sources they would contribute incrementally to the global warming that produces the adverse effects of climate change.

4.2.2.5 No Action Alternative

Under the No Action Alternative, no construction, renovation, or demolition would be performed at the USAFA to replace dormitory and related space and improvements for the PL Campus. Air emissions would not be notably different from those that occur today.

4.3 WATER RESOURCES

4.3.1 Methodology

When land is developed, the hydrology, or natural cycle of water, can be altered. Impacts on hydrology can result from land clearing activities, disruption of the soil profile, loss of vegetation, introduction of pollutants, new impervious surface, and an increased rate and/or volume of runoff. Without proper management controls, these actions can adversely affect the quality and/or quantity of water resources.

Criteria for evaluating impacts related to water resources associated with the Proposed Action are stormwater runoff, water availability, water quality, groundwater recharge, and adherence to applicable regulations. Effects to water resources would be significant if they: (1) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; (2) threaten or damage unique hydrologic characteristics; or (3) violate established laws or regulations that have been adopted to protect or manage water resources of an area.

4.3.2 Impacts

4.3.2.1 Alternative 1 (Preferred Alternative)

Surface Water

Construction under Alternative 1 could potentially produce short-term impacts to surface water quality caused by erosion during construction activities. The collective area impacted by the proposed construction activity would exceed 1 acre in size and therefore require the application for, and compliance with the Colorado Discharge Permit System (CDPS) General Permit Stormwater Discharges associated with Construction Activity (COR400000). Specific stormwater pollution controls included in the permit would be implemented, including a site-specific construction SWMP. Further detail and control of stormwater flow and pollution

controls would be applied in accordance with the El Paso County Engineering Criteria Manual: Appendix I - Stormwater Quality Policy & Procedures. This manual regulates stormwater pollution and flow for construction activity that disturbs more than 1 acre of land (El Paso County 2016).

The sources of impacts from construction would be limited to the area of ground disturbance at any one time and the duration of construction at each distinct project site, and runoff would only be likely to occur during and following a precipitation event. The site-specific construction SWMP would include measures to minimize potential impacts associated with stormwater runoff during construction, including BMPs and standard erosion control measures such as straw bales, sandbags, silt fencing, earthen berms, use of tarps or water spraying, soil stabilization, temporary sedimentation basins, and re-vegetation with native plant species, where possible, to decrease erosion and sedimentation. Any potential impacts resulting from erosion or temporary increases in surface stormwater runoff during construction activities would be temporary and minimized by applying erosion control measures (e.g., wetting of soils, silt fencing, and detention basins).

Alternative 1 would result in a net total of approximately 2 acres of new impervious surface at the USAFA (as described in Section 2.4.1). In accordance with UFC 3-210-10 (as amended 2016) and Section 438 of the Energy Independence and Security Act, projects that include facilities and having a footprint consisting of new impervious area that exceeds 5,000 SF (0.1 acre) must maintain or restore the pre-development site hydrology to the maximum extent technically feasible. The project would also comply with the USAFA individual MS4 permit COR042007 requirements that all new and redevelopment projects that greater than 1 acre and that discharge into the MS4, are designed and constructed with permanent post-construction stormwater control measures designed to prevent or minimize water quality impacts using appropriate structural or nonstructural BMPs (USEPA 2015).

The existing SWMP was prepared under USAFA individual MS4 permit COR042007 and provides a management and engineering strategy to improve the quality of stormwater runoff from the USAFA and thereby improve the quality of the receiving waters. Although there would be an increase in runoff volumes and rates associated with the additional impervious areas, Alternative 1 includes upgrades and expansion of the existing detention pond to meet any exceeding stormwater capacities of the current stormwater system. The detention pond would be designed in compliance with applicable stormwater regulations. Low-impact development alternatives such as grass buffers and swales would also be incorporated into the stormwater management of the project site. In addition, the existing SWMP prepared under USAFA individual MS4 permit COR042007 would be updated to account for proposed facilities under Alternative 1. Therefore, impacts to surface waters from Alternative 1 would not be significant.

Groundwater

Under Alternative 1, the net increase in impervious surfaces (approximately 2 acres) could result in a decrease in groundwater recharge. The integration of water harvesting and natural open space into project design would minimize potential adverse impacts due to increase in impervious surface. The use of these features would also increase groundwater recharge through direct percolation offsetting the loss of pervious surface due to construction. In addition, in accordance with UFC 3-210-10, pre-development site hydrology must be maintained or restored to the maximum extent technically feasible. Any construction that involves foundations that would enter groundwater would need to meet federal, State of Colorado, and other pertinent regulations. Therefore, impacts to groundwater from Alternative 1 would be minor.

Floodplain

The project boundary does not include floodplains, and therefore, would not impact floodplains.

Wetlands

The project boundary does not include wetlands, and therefore, would not impact wetlands.

4.3.2.2 Alternative 2

Surface Water

Construction under Alternative 2 could potentially produce short-term impacts to surface water quality caused by erosion during construction activities. The collective area impacted by the proposed construction activity would exceed 1 acre in size and therefore require the application for, and compliance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000). Specific stormwater pollution controls included in the permit would be implemented, including a site-specific construction SWMP. Further detail and control of stormwater flow and pollution controls would be applied in accordance with the El Paso County Engineering Criteria Manual: Appendix I - Stormwater Quality Policy & Procedures, regulates stormwater pollution and flow for construction activity that disturbs more than 1 acre of land (El Paso County 2016).

The sources of impacts from construction would be limited to the area of ground disturbance at any one time and the duration of construction at each distinct project site, and runoff would only be likely to occur during and following a precipitation event. The site-specific construction SWMP would include measures to minimize potential impacts associated with stormwater runoff during construction, including best management practices (BMPs) and standard erosion control measures such as straw bales, sandbags, silt fencing, earthen berms, use of tarps or water

spraying, soil stabilization, temporary sedimentation basins, and re-vegetation with native plant species, where possible, to decrease erosion and sedimentation. Any potential impacts resulting from erosion or temporary increases in surface stormwater runoff during construction activities would be temporary and minimized by applying erosion control measures (e.g., wetting of soils, silt fencing, and detention basins).

Alternative 2 would result in a net total of 3.3 acres of new impervious surface at the USAFA (as described in Section 2.4.2). In accordance with UFC 3-210-10 (as amended 2016) and Section 438 of the Energy Independence and Security Act, projects that include facilities and having a footprint consisting of new impervious area that exceeds 5,000 SF (0.1 acre) must maintain or restore the pre-development site hydrology to the maximum extent technically feasible. The project would also comply with the USAFA individual MS4 permit COR042007 requirements that all new and redevelopment projects that greater than 1 acre and that discharge into the MS4, are designed and constructed with permanent post-construction stormwater control measures designed to prevent or minimize water quality impacts using appropriate structural or nonstructural BMPs (USEPA 2015).

The existing SWMP was prepared under USAFA individual MS4 permit COR042007 and provides a management and engineering strategy to improve the quality of stormwater runoff from the USAFA and thereby improve the quality of the receiving waters. Although there would be an increase in runoff volumes and rates associated with the additional impervious areas, Alternative 2 includes a detention pond (Figure 2-2) to meet any exceeding stormwater capacities of the current stormwater system. The detention pond under Alternative 2 would be designed in compliance with applicable stormwater regulations. Low-impact development alternatives such as grass buffers and swales would also be incorporated into the stormwater management of the project site. In addition, the existing SWMP prepared under USAFA individual MS4 permit COR042007 would be updated to account for proposed facilities under Alternative 2. Therefore, impacts to surface waters from Alternative 2 would not be significant.

Groundwater

Under Alternative 2, the net increase in impervious surfaces (3.3 acres) could result in a decrease in groundwater recharge. The integration of water harvesting and natural open space into project design would minimize potential adverse impacts due to increase in impervious surface. The use of these features would also increase groundwater recharge through direct percolation offsetting the loss of pervious surface due to construction. In addition, in accordance with UFC 3-210-10, pre-development site hydrology must be maintained or restored to the maximum extent technically feasible. Any construction that involves foundations that would enter groundwater

would need to meet federal, state of Colorado, and other pertinent regulations. Therefore, impacts to groundwater from Alternative 2 would be minor.

Floodplain

The project boundary does not include floodplains, and therefore, would not impact floodplains.

Wetlands

The project boundary does not include wetlands, and therefore, would not impact wetlands.

4.3.2.3 Alternative 3

Construction under Alternative 3 could potentially produce short-term impacts to surface water quality caused by erosion during construction activities. The collective area impacted by the proposed construction activity would exceed 1 acre in size and therefore require the application for, and compliance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000). A site-specific construction SWMP, including BMPs, would be implemented as described under Alternative 2. Any potential impacts resulting from erosion or temporary increases in surface stormwater runoff during construction activities would be temporary and minimized by applying erosion control measures (e.g., wetting of soils, silt fencing, and detention basins).

Alternative 3 would result in a net total of 1.3 acres of new impervious surface at the USAFA (as described in Section 2.4.2) and would comply with UFC 3-210-10 (as amended 2016) and the USAFA individual MS4 permit COR042007, as described under Alternative 2. In addition, the existing SWMP prepared under USAFA individual MS4 permit COR042007 would be updated, as necessary, to account for proposed facilities under Alternative 3. Therefore, impacts to surface waters from Alternative 3 would be minor.

Groundwater

Under the Alternative 3, the net increase in impervious surfaces (1.3 acres) could result in a decrease in groundwater recharge. The integration of water harvesting and natural open space into project design and compliance with UFC 3-210-10 would minimize potential adverse impacts due to impervious surface. Any construction that involves foundations that would enter groundwater would need to meet federal, state of Colorado, and other pertinent regulations. Therefore, impacts to groundwater from Alternative 3 would be minor.

Floodplain

The project boundary does not include floodplains, and therefore, would not impact floodplains.

Wetlands

The project boundary does not include wetlands, and therefore, would not impact wetlands.

4.3.2.4 No Action Alternative

Under the No Action Alternative, the new PL Campus would not be constructed and water resources would be expected to remain as described under the affected environment in Section 3.3.2. Therefore, there would be no additional impacts to water resources under the No Action Alternative.

4.4 BIOLOGICAL RESOURCES

4.4.1 Methodology

This section analyzes the potential for impacts to biological resources at the PL Campus resulting from implementation of the Proposed Action. Analysis of impacts focuses on whether and how ground-disturbing activities from proposed demolition of old facilities and construction of new facilities could affect biological resources.

Determination of the significance of potential impacts to biological resources is based on: (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration of ecological ramifications. Impacts to biological resources would be significant if species or habitats of concern were adversely affected over relatively large areas, if disturbances caused reductions in population size or distribution of a special status species, or if there are disproportionate adverse effects to habitat essential for breeding, feeding, or sheltering within the local region. This section analyzes the potential for direct and indirect impacts to biological resources from implementation of the Proposed Action.

Direct impacts are associated with ground-disturbing activities resulting from demolition or construction of the facilities. Direct impacts may be either temporary (reversible) or permanent (irreversible). Temporary impacts include disturbances caused by construction activities and operations, such as noise, emissions, and traffic. Removal of vegetation can be a temporary or permanent impact. If the vegetation is restored after construction, the impact would be temporary. If a permanent structure is built, the vegetation cannot be restored and the impact is permanent. Permanent impacts include direct mortality of species.

Indirect impacts are caused by or result from project-related activities but occur later in time and can extend beyond the immediate construction footprint(s). Indirect impacts are often diffuse,

variable, resource-specific, and less amenable to quantification or mapping than direct impacts, but still need to be considered.

4.4.2 Impacts

4.4.2.1 Alternative 1 (Preferred Alternative)

Vegetation

Under Alternative 1, approximately 1 acre of upland conifer forest would be permanently lost due to construction of new structures and facilities. This represents a loss of less than 1 percent of the roughly 10,500 acres of forested land at the USAFA (USAFA 2018b). The remainder of project activities would occur within previously developed and/or disturbed areas. The forested land that would be permanently impacted from construction activities represents a miniscule fraction of the total forested land at the USAFA. In addition, the land that would be permanently impacted is adjacent to disturbed and developed habitats. Therefore, impacts to vegetation would be less than significant under Alternative 1.

Wildlife

Under Alternative 1, impacts to wildlife from demolition and construction would be minor. Noise associated with construction may cause wildlife to temporarily avoid the area. Noise associated with construction activities, as well as an increase in general industrial activity and human presence, could evoke reactions in birds. Nests in the immediate vicinity of construction activities would be susceptible to abandonment and depredation if such activities occur during the nesting season. However, bird and wildlife populations in the vicinity of the PL Campus are accustomed to elevated noise and human presence. As a result, indirect impacts from construction noise are expected to be minimal because of the relatively minor and temporary nature of the proposed construction and modifications.

Demolition and construction associated with Alternative 1 would likely eliminate or displace wildlife from the project footprints, including the loss of approximately 1 acre of upland conifer forest, and their vicinities. Individuals of the smaller, less mobile, and burrowing species would likely be killed or injured by construction in new footprints, whereas mobile species (e.g., birds and larger mammal species) would disperse to surrounding areas. However, any loss of commonly occurring individuals would not represent a noticeable portion of the population. Substantial areas of upland forest would remain unaffected in the immediate vicinity of the project area, allowing temporary refuge for wildlife during construction. Therefore, impacts to wildlife would be less than significant under Alternative 1.

Special Status Species

As stated in Section 3.5.2.3, the PMJM does not occur in the vicinity of the project area and, therefore, would not be impacted by Alternative 1. Special status bird species could potentially occur within the vicinity of the project area, but none are expected to nest or roost in the project area. Construction and demolition activities would likely have minor impacts on such bird species, including those that are protected under the MBTA, to the extent that individuals would likely avoid the area during such activities. However, prior to conducting removal activities, a qualified biologist would survey for the removal for any bird nesting activities. Upon completion of construction and demolition, special status bird species would return to normal activities and utilize the project area and adjacent habitats as before such activities. Therefore, impacts to special status species would be less than significant under Alternative 1.

4.4.2.2 Alternative 2

Vegetation

Under Alternative 2, 3.03 acres of upland conifer forest would be permanently lost due to construction of new structures and facilities. This represents a loss of approximately 0.02 percent of the roughly 10,500 acres of forested land at the USAFA (USAFA 2018b). The remainder of project activities would occur within previously developed and/or disturbed areas. The forested land that would be permanently impacted from construction activities represents a miniscule fraction of the total forested land at the USAFA. In addition, the land that would be permanently impacted is adjacent to disturbed and developed habitats. Therefore, impacts to vegetation would be less than significant under Alternative 2.

Wildlife

Under Alternative 2, impacts to wildlife from demolition and construction would be minor. Noise associated with construction may cause wildlife to temporarily avoid the area. Noise associated with construction activities, as well as an increase in general industrial activity and human presence, could evoke reactions in birds. Nests in the immediate vicinity of construction activities would be susceptible to abandonment and depredation if such activities occur during the nesting season. However, bird and wildlife populations in the vicinity of the PL Campus are accustomed to elevated noise and human presence. As a result, indirect impacts from construction noise are expected to be minimal because of the relatively minor and temporary nature of the proposed construction and modifications.

Demolition and construction associated with Alternative 2 would likely eliminate or displace wildlife from the project footprints, including the loss of 3.03 acres of upland conifer forest, and

their vicinities. Individuals of the smaller, less mobile, and burrowing species would likely be killed or injured by construction in new footprints, whereas mobile species (e.g., birds and larger mammal species) would disperse to surrounding areas. However, any loss of commonly occurring individuals would not represent a noticeable portion of the population. Substantial areas of upland forest would remain unaffected in the immediate vicinity of the project area, allowing temporary refuge for wildlife during construction. Therefore, impacts to wildlife would be less than significant under Alternative 2.

Special Status Species

As stated in Section 3.5.2.3, the PMJM does not occur in the vicinity of the project area and, therefore, would not be impacted by Alternative 2. Special status bird species could potentially occur within the vicinity of the project area, but none are expected to nest or roost in the project area. Construction and demolition activities would likely have minor impacts on such bird species, including those that are protected under the MBTA, to the extent that individuals would likely avoid the area during such activities. However, prior to conducting removal activities, a qualified biologist would survey for the removal for any bird nesting activities. Upon completion of construction and demolition, special status bird species would return to normal activities and utilize the project area and adjacent habitats as before such activities. Therefore, impacts to special status species would be less than significant under Alternative 2.

4.4.2.3 Alternative 3

Vegetation

Under Alternative 3, all project activities would occur within previously developed and/or disturbed areas, including maintained/mowed areas around existing buildings and facilities. No natural plant communities would be directly impacted. Therefore, impacts to vegetation would be less than significant under Alternative 3.

Wildlife

Under Alternative 3, impacts to wildlife from demolition and construction would be minor. Similar to Alternative 2, noise associated with construction may cause wildlife to temporarily avoid the area, including those that are protected under the MBTA. Noise associated with construction activities, as well as an increase in general industrial activity and human presence, could evoke reactions in birds. Nests in the immediate vicinity of construction activities would be susceptible to abandonment and depredation if such activities occur during the nesting season. However, bird and wildlife populations in the vicinity of the PL Campus are accustomed to elevated noise and human presence. As a result, indirect impacts from construction noise are

expected to be minimal because of the relatively minor and temporary nature of the proposed construction and modifications.

Under Alternative 3, no natural plant communities that provide habitat for wildlife would be directly impacted. All project activities would occur within previously developed and/or disturbed areas. Therefore, impacts to wildlife would be less than significant under Alternative 3.

Special Status Species

Similar to Alternative 2, Alternative 3 would have no impact on the PMJM. Special status bird species could potentially occur within the vicinity of the project area, but none are expected to nest or roost in the project area. Construction and demolition activities would likely have minor impacts on such bird species, to the extent that individuals would likely avoid the area during such activities. Upon completion of construction and demolition, special status bird species would return to normal activities and utilize the project area and adjacent habitats as before such activities. Therefore, impacts to special status species would be less than significant under Alternative 3.

4.4.2.4 No Action Alternative

The No Action Alternative would result in no impacts to biological resources because no demolition or construction activities would occur. Existing biological resources would remain as described in Section 3.5.2.

4.5 EARTH RESOURCES

4.5.1 Methodology

In evaluating impacts to earth resources, protection of unique geologic features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards and soil limitations are considered. If a proposed action were to substantially affect or be substantially affected by any of these features, impacts may be considered significant. Generally, impacts associated with earth resources can be avoided or minimized to a level of insignificance if proper construction techniques, erosion control measures, geotechnical analysis, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to geologic resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resources, assessment of the significance of potential impacts, and provision of management measures in the event that potentially significant impacts are identified. Analysis of impacts to soil resources resulting from proposed activities examines the

suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that would expose soil to wind or water erosion, or otherwise damage soil productivity (e.g., through compaction).

Adverse impacts to soils and the associated potential indirect impacts to water resources can be minimized through the implementation of BMPs such as those typically required to be in compliance with the CWA. The NPDES program, administered by the Colorado Department of Public Health and Environment under the USEPA's supervision, requires a Construction General Permit for surface disturbance of 1 acre or more. Compliance with this permit involves development and implementation of a site-specific construction SWMP and erosion and sediment control plan that includes site-specific erosion control measures.

4.5.2 Impacts

4.5.2.1 Alternative 1 (Preferred Alternative)

Geology

Implementation of the proposed construction under Alternative 1 would not substantially affect the geologic units underlying the PL Campus or its surroundings as no unique geological features are present. The USGS National Earthquake Information Center considers the USAFA to be relatively aseismic with no recorded earthquake epicenters at the USAFA since 1800 (USAFA 2010a). Therefore, no impacts to geology would occur under Alternative 1 and no earthquake hazards are present.

Soils

Under Alternative 1, approximately 6 acres of temporary soil disturbance and approximately 2 acres of new impervious surfaces would occur as a result of the proposed construction and demolition. The proposed construction areas are located between 100 to 300 feet from the steep slope that is located south of the construction area. The soils on the steep slope would be highly susceptible to erosion if disturbed.

To minimize potential impacts to soil associated with erosion, runoff, and sedimentation during construction activity, standard construction practices as described in the site-specific construction SWMP would be implemented during and following the construction period. Such practices could include the use of straw bales, sandbags, silt fencing, earthen berms, use of tarps or water spraying, soil stabilization, temporary sedimentation basins, minimization of earth moving activities during wet weather, and covering of soil stockpiles, and re-vegetation with native plant species, where possible, to decrease soil erosion. A site-specific construction SWMP that coordinates the timing of soil disturbing activities with the installation of soil erosion and

runoff controls is an effective way of controlling erosion while soil is exposed and subject to construction activity. Prior to any construction activities, the installation would prepare a construction/demolition-specific SWMP, in accordance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000). This SWMP would include BMPs and monitoring requirements to minimize erosion and sedimentation. Construction activities subject to this permit include clearing, grading, and disturbances to the ground such as stockpiling or excavation. Implementation of these measures, as necessary and appropriate, would ensure that impacts to earth resources would be less than significant under Alternative 1.

Topography

Although ground disturbance would occur at the PL Campus during construction, the majority of the construction would occur on previously disturbed surfaces. While some grading would be required during the construction; the construction areas are relatively flat and no substantial topographic features would be affected as a result of development associated with Alternative 1. No construction is located on the steep slope to the south of the construction area. Therefore, no impacts to topography would occur under Alternative 1.

4.5.2.2 Alternative 2

Many of the components described under Alternative 1 are similar or identical to Alternative 2. However, under Alternative 2 there would be no new athletic building and there would be additional parking, a bus loop, mechanical building, and stormwater detention pond resulting in 6 acres of temporary soil disturbance and 3.3 acres of new impervious surfaces. The decreased amount of disturbance and new impervious surfaces has the potential to reduce the amount of erosion and temporary increases in surface runoff during the construction phase, when compared to Alternative 1. Prior to any construction activities, the installation would prepare a construction/demolition-specific SWMP, in accordance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000). This plan would include BMPs and monitoring requirements to minimize erosion and sedimentation. Therefore, impacts to soil would be less than significant. Similar to Alternative 1, Alternative 2 would have no impacts to geology or topography.

4.5.2.3 Alternative 3

Many of the components described under Alternative 2 are similar or identical to Alternative 3. However, under Alternative 3 there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond resulting in 2.5 acres

of temporary soil disturbance and 1.3 acres of new impervious surfaces. The decreased amount of disturbance and new impervious surfaces has the potential to reduce the amount of erosion and temporary increases in surface runoff during the construction phase, when compared to Alternative 2. Prior to any construction activities, the installation would prepare a construction/demolition-specific SWMP, in accordance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000). This plan would include BMPs and monitoring requirements to minimize erosion and sedimentation. With the reduced potential for impacts to soil from the implementation of Alternative 3, impacts to soil would be less than significant. Similar to Alternative 2, Alternative 3 would have no impacts to geology or topography.

4.5.2.4 No Action Alternative

Under the No Action Alternative, the new PL Campus would not be constructed and earth resources would be expected to remain as described under the affected environment in Section 3.6.2. Therefore, there would be no additional impacts to earth resources under the No Action Alternative.

4.6 HAZARDOUS MATERIALS/WASTE

4.6.1 Methodology

This section addresses the potential impacts caused by hazardous materials and waste management practices and the impacts of existing contaminated sites on reuse options. Hazardous materials and petroleum products, ACM, LBP, radon, PCBs, hazardous and petroleum wastes, solid wastes, and ERP sites are discussed in this section.

The qualitative and quantitative assessment of impacts from hazardous materials and waste management focuses on how and to what degree the Proposed Action affects hazardous materials usage and management, hazardous waste generation and management, and hazardous waste disposal. A substantial increase in the quantity or toxicity of hazardous substances used or generated would be considered potentially significant. Significant impacts could result if a substantial increase in human health risk or environmental exposure was generated at a level that cannot be mitigated to acceptable standards.

Regulatory standards and guidelines have been applied in evaluating the potential impacts that may be caused by hazardous materials and wastes. The following criteria were used to identify potential impacts:

- Generation of 1,000 kilograms (or more) of hazardous waste in a calendar month, resulting in increased regulatory requirements.
- A spill or release of a reportable quantity of a hazardous substance as defined by the USEPA in 40 CFR Part 302.
- Manufacturing, use, or storage of a compound that requires notifying the pertinent regulatory agency according to the EPCRA of 1986.
- Exposure of the environment or public to any hazardous material and/or waste through release or disposal practices.

4.6.2 Impacts

4.6.2.1 Alternative 1 (Preferred Alternative)

Hazardous Materials

Under Alternative 1, the quantities of hazardous materials and petroleum substances used throughout the PL Campus would not change over the long term. Construction and demolition activities would cause short-term increases in the quantities of hazardous materials (e.g., paint) and petroleum products (e.g., vehicle fuel) used and stored at the PL Campus. USAFA is responsible for managing these materials in accordance with federal, state, and local regulations to protect their employees from occupational exposure to hazardous materials and to protect the public health of the surrounding community. The USAFA would be responsible for the safe storage and handling of hazardous materials used in conjunction with all construction and demolition activities. These materials would be delivered to the installation in compliance with the Hazardous Materials Transportation Act.

Toxic Substances

Any structures proposed for demolition, addition, or retrofit would be inspected for ACM, LBP, and PCBs according to established procedures prior to any renovation or demolition activities. Radon levels should be monitored during the demolition of Building 5220. Any LBP, ACM, or PCB-containing materials that may be found in buildings that are proposed for demolition and renovation activities would be managed per applicable USAF regulations.

Hazardous Waste

The proposed construction and demolition activities would cause short-term increases in the volume of hazardous and petroleum wastes generated. Wastes generated by the construction contractors would be managed and removed off site by these contractors. The contractor would manage waste on site in accordance with the USAFA Hazardous Waste Management Plan.

Environmental Restoration Program

No ERP sites are located in the immediate vicinity of the Proposed Action. If any contaminated media (e.g., soil, groundwater) are encountered during the course of site preparation (e.g., clearing, grading) or site development (e.g., excavation) under Alternative 1, samples would be collected to determine whether the media are contaminated, and contaminated media would be segregated for off-site disposal or for on-site reuse, as appropriate. USAFA would take appropriate measures to ensure that personnel were not exposed to unacceptable levels of contaminated soil or groundwater. They would also establish an appropriate course of action to ensure that federal and state agency notification requirements are met and to arrange for agency consultation, as necessary.

Therefore, no significant impacts associated with hazardous materials and waste would occur under Alternative 1.

4.6.2.2 Alternative 2

Hazardous Materials

Under Alternative 2, the quantities of hazardous materials and petroleum substances used throughout the PL Campus would not change over the long term. Construction and demolition activities would cause short-term increases in the quantities of hazardous materials (e.g., paint) and petroleum products (e.g., vehicle fuel) used and stored at the PL Campus. USAFA is responsible for managing these materials in accordance with federal, state, and local regulations to protect their employees from occupational exposure to hazardous materials and to protect the public health of the surrounding community. The USAFA would be responsible for the safe storage and handling of hazardous materials used in conjunction with all construction and demolition activities. These materials would be delivered to the installation in compliance with the Hazardous Materials Transportation Act.

Toxic Substances

Any structures proposed for demolition, addition, or retrofit would be inspected for ACM, LBP, and PCBs according to established procedures prior to any renovation or demolition activities. Radon levels should be monitored during the demolition of Building 5220. Any LBP, ACM, or PCB-containing materials that may be found in buildings that are proposed for demolition and renovation activities would be managed per applicable USAF regulations.

Hazardous Waste

The proposed construction and demolition activities would cause short-term increases in the volume of hazardous and petroleum wastes generated. Wastes generated by the construction contractors would be managed and removed off-site by these contractors. The contractor would manage waste on site in accordance with the USAFA Hazardous Waste Management Plan.

Environmental Restoration Program

No ERP sites are located in the immediate vicinity of the Proposed Action. If any contaminated media (e.g., soil, groundwater) are encountered during the course of site preparation (e.g., clearing, grading) or site development (e.g., excavation) under Alternative 2, samples would be collected to determine whether the media are contaminated, and contaminated media would be segregated for off-site disposal or for on-site reuse, as appropriate. USAFA would take appropriate measures to ensure that personnel were not exposed to unacceptable levels of contaminated soil or groundwater. They would also establish an appropriate course of action to ensure that federal and state agency notification requirements are met and to arrange for agency consultation, as necessary.

Therefore, no significant impacts associated with hazardous materials and waste would occur with under Alternative 2.

4.6.2.3 Alternative 3

Alternative 3 has a smaller footprint than Alternative 2 for the proposed construction and demolition at the PL Campus. The quantities of hazardous materials and petroleum products used throughout the PL Campus would not change over the long term. The volume of hazardous and petroleum wastes generated during construction would be slightly reduced in comparison to Alternative 2. In addition, impacts to ERP sites would be the same as described under Alternative 2.

Therefore, impacts under Alternative 3 would be slightly reduced in comparison to those described under Alternative 2, and no significant impacts associated with hazardous materials and waste would occur under Alternative 3.

4.6.2.4 No Action Alternative

Under the No Action Alternative, proposed construction and demolition at the PL Campus would not occur. Therefore, no impacts to hazardous materials and waste would occur under the No Action Alternative

4.7 CULTURAL RESOURCES

4.7.1 Methodology

Section 106 of the NHPA of 1966 empowers the ACHP to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion in the NRHP. Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for listing in the NRHP) are protected under the NHPA.

Analysis of potential impacts on cultural resources considers both direct and indirect impacts. Direct impacts may occur by: (1) physically altering, damaging, or destroying all or part of a resource; (2) altering characteristics of the surrounding environment that contribute to resource significance; (3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or (4) neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the type and location of the Proposed Action and by determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of the use and operation of the facilities, which could disturb, damage, or destroy cultural resources.

4.7.2 Impacts

4.7.2.1 Alternative 1 (Preferred Alternative)

Archaeological Resources

The project APE (synonymous with project area) was surveyed and no NRHP-eligible archaeological resources were identified (USAFA 2018d). It is not expected that undiscovered cultural resources would be found during implementation of Alternative 1 at the USAFA; however, in the event of an inadvertent discovery during ground-disturbing operations, the following specific actions would occur. The Project Manager would cease work immediately and the discovery would be reported to the USAFA Cultural Resource Manager. The Cultural Resource Manager will ensure that all cultural items are left in place and that no further disturbance will occur until the discovery has been sufficiently identified. The Cultural Resource Manager will also notify the Security Forces of the discovery. The Security Forces will notify the Wing Commander regarding the location, nature, and circumstances of the discovery. They will also provide security and protection for the site to prevent unauthorized disturbance, looting, or vandalism (USAFA 2017). Under these conditions, there would be no adverse effects to archaeological resources with implementation of Alternative 1.

Architectural Resources

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic and headquarters facility, athletic building, terrazzo, and modify an existing stormwater facility (see Figure 2-1). Buildings 5210, 5212, 5214, 5216, and 5220 would be demolished and the areas would be landscaped. As discussed in Section 3.8.2.6, there are no eligible architectural resources within the affected environment and it was determined the proposed demolition would have no adverse effect on historic properties. Additionally, on May 11, 2020, the Colorado OAHP concurred with the USAFA determination that the construction of the new Prep School Campus would have no adverse effect to historic properties (Turner 2020b).

Traditional Cultural Resources

No traditional cultural resources have been identified within the project area.

Government-to-government consultation between the USAF and each federally recognized American Indian Tribe associated with the USAFA is being conducted for this action in recognition of their status as sovereign nations to provide information regarding tribal concerns per Section 106 of the NHPA as well as information on traditional cultural resources that may be present on or near the installation. An initial government-to-government consultation letter was sent to 36 federally recognized American Indian Tribes with ancestral ties to the USAFA installation in January 2020. After the initial government-to-government consultation letter was sent, the USAF followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action. Out of the 36 Tribes, five Tribes (Santa Clara Pueblo, Ute Mountain Ute, Rosebud Sioux, Northern Cheyenne, and Southern Ute) requested to be involved in continued consultation regarding the Proposed Action.

The Northern Cheyenne Tribal Historic Preservation Officer (THPO) responded that the project would have no effect on traditional cultural resources and the undertaking can proceed as planned (Limpy 2020). The Rosebud Sioux THPO responded that there is one area of tribal concern as the area appeared to be relatively undisturbed and there could be the possibility of intact subsurface cultural resources (Rhodd 2020a). The USAFA responded to the Rosebud Sioux email explaining that the area of concern was surveyed twice, most recently in 2019, and no archaeological materials were found. USAFA recommended that the Tribe re-summarize the area of concern so that the installation can make certain that this issue is clearly documented in the EA as part of the administrative record (Roemer 2020a). The Rosebud Sioux THPO was contacted by USAFA one more time to gain any additional input; however, no response was ever

received. The Southern Ute Indian Tribe responded stating they had no concerns regarding the project (Briggs 2020). The Ute Mountain Ute Indian Tribe responded that they concurred with the Colorado SHPO that there would be no adverse effect on historic properties (Shurack 2020). In a follow up discussion, the Ute Mountain Ute Indian Tribe expects that USAFA would conduct appropriate monitoring of exposed areas during construction and demolition (Roemer 2020b). The Pueblo of Santa Clara responded that if an inadvertent discovery was made during ground disturbing activities, that they be notified within 24 hours of the discovery to continue consultation for this project (Naranjo 2020). The Pueblo of Santa Ana THPO responded that they had no comments nor concerns regarding any cultural resources within the APE (Menchego 2020). The Comanche Nation responded that the project location had been cross referenced with their site files and there was an indication of "No Properties" identified (Minthorn 2020). The Taos Pueblo responded that there are no adverse effects on historic properties regarding the undertaking (Concha 2020). The Pawnee Nation responded that the proposed project would not adversely affect the cultural landscape of the Tribe and that the project may proceed (Reed 2020). The Pueblo de San Ildefonso responded that they concurred with the No Adverse Effect determination and required no further consultation on this project (Bremer 2020). The Assiniboine and Sioux Tribes of the Fort Peck responded that the project would have No Adverse Effect on historic or cultural properties significant to the Fort Peck Tribes (Grayhawk 2020).

Correspondence sent to and received from the American Indian Tribes is located in Appendix A.

Therefore, there will be no significant impacts to cultural resources under Alternative 1.

4.7.2.2 Alternative 2

Archaeological Resources

The project APE was surveyed and no NRHP-eligible archaeological resources were identified (USAFA 2018d). It is not expected that undiscovered cultural resources would be found during implementation of Alternative 2 at the USAFA; however, in the event of an inadvertent discovery during ground-disturbing operations, the same procedures for an inadvertent discovery as described above under Alternative 1 would be carried out under Alternative 2. Therefore, under these conditions, there would be no adverse effects to archaeological resources with implementation of Alternative 2.

Architectural Resources

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic building, headquarters facility, terrazzo,

additional parking and a bus loop, mechanical building, and a stormwater detention pond. Buildings 5210, 5212, 5214, 5216, and 5220 would be demolished and the areas would be landscaped. Since there are no eligible resources within the APE, there would be no effect under Section 106 of the NHPA with the implementation of Alternative 2.

Traditional Cultural Resources

No traditional cultural resources have been identified within the project area.

Government-to-government consultation between the USAF and each federally recognized American Indian Tribe associated with the USAFA is being conducted for this action in recognition of their status as sovereign nations to provide information regarding tribal concerns per Section 106 of the NHPA as well as information on traditional cultural resources that may be present on or near the installation. An initial government-to-government consultation letter was sent to 36 federally recognized American Indian Tribes with ancestral ties to the USAFA installation in January 2020. After the initial government-to-government consultation letter was sent, the USAF followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action. Tribal responses are described under Alternative 1. Correspondence sent to and received from the American Indian Tribes is located in Appendix A.

Therefore, there will be no significant impacts to cultural resources under Alternative 2.

4.7.2.3 Alternative 3

Archaeological Resources

The project APE was surveyed and no NRHP-eligible archaeological resources were identified (USAFA 2018d). It is not expected that undiscovered cultural resources would be found during implementation of Alternative 3 at the USAFA; however, in the event of an inadvertent discovery during ground-disturbing operations, the same procedures for an inadvertent discovery as described above under Alternative 1 would be carried out under Alternative 3. Therefore, under these conditions, there would be no adverse effects to archaeological resources with implementation of Alternative 3.

Architectural Resources

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus. Buildings 5210, 5212, 5214, 5216, and 5220 would be demolished. Since there are no eligible resources within the APE, there would be no effect under Section 106 of the NHPA with the implementation of Alternative 3.

Traditional Cultural Resources

No traditional cultural resources have been identified within the project area.

Government-to-government consultation between the USAF and each federally recognized American Indian Tribe associated with the USAFA is being conducted for this action in recognition of their status as sovereign nations to provide information regarding tribal concerns per Section 106 of the NHPA as well as information on traditional cultural resources that may be present on or near the installation. An initial government-to-government consultation letter was sent to 36 federally recognized American Indian Tribes with ancestral ties to the USAFA installation in January 2020. After the initial government-to-government consultation letter was sent, the USAF followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action. Tribal responses are described under Alternative 1. Correspondence sent to and received from the American Indian Tribes is located in Appendix A.

Therefore, there will be no significant impacts to cultural resources under Alternative 3.

4.7.2.4 No Action Alternative

Under the No Action Alternative, no construction or demolition would be performed and cultural resources would be expected to remain as described under the affected environment in Section 3.8.2. Therefore, there would be no impacts to cultural resources under the No Action Alternative.

4.8 LAND USE

4.8.1 Methodology

The methodology to assess impacts on individual land uses requires identifying those uses and determining the degree to which they would be changed by the implementation of the Proposed Action. Significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action. In general, land use impacts would be significant if they would:

1) be inconsistent or in non-compliance with applicable land use plans or policies;
2) preclude the viability of existing land use;
3) preclude continued use or occupation of an area; or
4) be incompatible with adjacent or land uses in the vicinity to the extent that public health or safety is threatened.

4.8.2 Impacts

4.8.2.1 Alternative 1 (Preferred Alternative)

The 2019 AICUZ provides CZ and APZs (Safety Zones) that exist as rectangular areas extending 8,000 feet from both ends of each Academy runway. The project site would be located approximately 1,000 feet from the nearest safety zone, so all development would be considered compatible with the 2019 safety zones. Although the AICUZ guidelines do not include legal limits to development, Alternative 1 would be compatible with the 2019 AICUZ regarding land use.

Under Alternative 1, all of the construction activities would occur within the boundaries of USAFA. Proposed construction activities would be short term and intermittent but may cause minor traffic and/or noise disruptions to USAFA roads and personnel. However, construction activities would be temporary. The construction of the new dormitories would convert open space to housing; however, land uses would be compatible with adjacent land uses and safety guidelines at the existing PL Campus. Therefore, impacts to land use on USAFA and vicinity would be less than significant under Alternative 1.

4.8.2.2 Alternative 2

Consistent with Alternative 1, the project site would be outside areas identified with recommended land use restrictions in the 2019 AICUZ, so development would be compatible. Impacts to land use under Alternative 2 would be similar to that described under Alternative 1. Therefore, impacts to land use on USAFA and vicinity would be less than significant under Alternative 2.

4.8.2.3 Alternative 3

Consistent with Alternative 1, the project site would be outside areas identified with recommended land use restrictions in the 2019 AICUZ, so development would be compatible. Impacts to land use under Alternative 3 would be similar to that described under Alternatives 1 and 2. However, there would be no conversion of open space and all new facilities would be within the existing PL Campus. Therefore, impacts to land use on USAFA and vicinity would be less than significant under Alternative 3.

4.8.2.4 No Action Alternative

Under the No Action Alternative, the new PL Campus would not be constructed and land use would be expected to remain as described under the affected environment in Section 3.9.2. Therefore, there would be no impacts to land use under the No Action Alternative.

4.9 INFRASTRUCTURE/UTILITIES

4.9.1 Methodology

The infrastructure components evaluated include the electrical and natural gas systems; wastewater; stormwater; solid waste management; potable water system; and transportation. Potential impacts to infrastructure elements at the USAFA are assessed in terms of effects of the Proposed Action on existing service levels. Impacts to public services/utilities and transportation networks are assessed with respect to the potential for disruption or improvement of current utility systems and traffic circulation patterns and deterioration or improvement of existing levels of service on local roads. Impacts may arise from physical changes to circulation or utility corridors, construction activity, and introduction of construction-related traffic and utility use.

Utility system effects may include disruption, degradation, or improvement of existing levels of service or potential change in demand for energy or water resources. Adverse impacts to roadway capacities would be significant if roads with no history of capacity exceedance had to operate at or above their full design capacity as a result of an action. Transportation effects may arise from changes in traffic circulation, delays due to construction activity, or changes in traffic volumes.

For the range of public services discussed below, the installation is required to proactively plan for and assess all specific infrastructure and utility requirements and other essential services to ensure that the proposed increase in personnel and their dependents would be accommodated under the Proposed Action. The installation routinely evaluates community facilities and services to account for fluctuations associated with new units assigned to the installation and the deployment of existing units. In addition, the installation identifies infrastructure or utility needs within the scope of each corresponding project. If particular projects require additional infrastructure or utilities, they are incorporated as a part of that project. This process ensures that any infrastructure or utility deficiencies are identified in the initial planning stages.

4.9.2 Impacts

4.9.2.1 Alternative 1 (Preferred Alternative)

Electrical and Natural Gas Systems

Demand for electricity and natural gas would be expected to increase slightly as a result of the new building space and facilities to be constructed. However, any new facilities and additions associated with Alternative 1 would be implemented with more energy efficient design standards and utility systems than are currently in place. In addition, construction projects would

incorporate Leadership in Energy and Environmental Design and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation. Therefore, average energy consumption would be expected to stay the same or decrease compared to energy consumption associated with existing facilities.

Construction activity associated with Alternative 1 could result in some temporary interruption of utility services during construction. These impacts would be temporary, occurring briefly during active construction periods. In addition, the demand for energy (primarily electricity) could increase slightly during demolition and construction phases. The energy supply at the installation and in the region is adequate and would not be affected by this temporary increase in demand.

Wastewater

No change is anticipated to the generation of wastewater due to the construction or demolition activities under Alternative 1. Therefore, no impact is anticipated to the wastewater system at USAFA.

Stormwater

The proposed construction activities under Alternative 1 could temporarily impact the quality of stormwater runoff (see Section 4.3.2, *Water Resources*). However, compliance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000) and implementation, a site-specific construction SWMP, including BMPs, would minimize these potential impacts. Therefore, impacts to the existing stormwater drainage system as a result of the proposed construction would be minimal.

Under Alternative 1, there would be up to approximately 6 acres of soil disturbance, including up to approximately 2 acres of new impervious surface as a result of proposed construction. In accordance with the Energy Independence and Security Act Section 438, any temporary increase in stormwater runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. Although there would be an increase in runoff volumes and rates associated with the additional impervious areas, Alternative 1 includes the upgrade and expansion of the existing stormwater detention pond to meet any exceeding stormwater capacities of the current stormwater system. The detention pond under Alternative 1 would be designed in compliance with applicable stormwater regulations. Low-impact development alternatives such as grass buffers and swales would also be incorporated into the stormwater management of the project site. The project would also comply with the USAFA individual MS4 permit COR042007 requirements that all new and redevelopment

projects that greater than 1 acre and that discharge into the MS4, are designed and constructed with permanent post-construction stormwater control measures designed to prevent or minimize water quality impacts using appropriate structural or nonstructural BMPs (USEPA 2015).

Solid Waste Management

The construction activities under Alternative 1 would generate construction and demolition debris requiring landfill disposal. Proposed increases in personnel and equipment use would also contribute to an increase in solid waste generation. However, impacts to local landfills would not be expected to exceed the permitted throughput or contribute significantly to the remaining capacity.

Off-installation contractors completing construction and demolition projects at the USAFA would be responsible for disposing of waste generated from these activities. Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the installation. Much of this material can be recycled or reused, or otherwise diverted from landfills. All non-recyclable construction and demolition waste would be collected in a dumpster until removal. Construction and demolition waste contaminated with hazardous waste, ACM, LBP, or other undesirable components would be managed in accordance with AFI 32-7042, *Waste Management* (2017).

Potable Water System

If recycled water is not used, the demand for potable water (e.g., if used to control dust) could also increase temporarily during demolition and construction phases. However, this increase would be temporary and intermittent and would not be expected to impact regional water supply.

Transportation

Construction equipment would be driven to proposed construction areas and would be kept on-site for the duration of the respective activity. Construction workers would drive daily in their personal vehicles to and from the construction site. In general, construction traffic would result in increases in the use of on-installation roadways during construction activities; however, increases would be temporary and intermittent, occurring only during active construction periods. Therefore, impacts to transportation infrastructure would not be significant under Alternative 1.

4.9.2.2 Alternative 2

Electrical and Natural Gas Systems

Demand for electricity and natural gas would be expected to increase slightly as a result of the new building space and facilities to be constructed. However, any new facilities and additions associated with Alternative 2 would be implemented with more energy efficient design standards and utility systems than are currently in place. In addition, construction projects would incorporate Leadership in Energy and Environmental Design and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation. Therefore, average energy consumption would be expected to stay the same or decrease compared to energy consumption associated with existing facilities.

Construction activity associated with Alternative 2 could result in some temporary interruption of utility services during construction. These impacts would be temporary, occurring briefly during active construction periods. In addition, the demand for energy (primarily electricity) could increase slightly during demolition and construction phases. The energy supply at the installation and in the region is adequate and would not be affected by this temporary increase in demand.

Wastewater

No change is anticipated to the generation of wastewater due to the construction or demolition activities under Alternative 2. Therefore, no impact is anticipated to the wastewater system at USAFA.

Stormwater

The proposed construction activities under Alternative 2 could temporarily impact the quality of stormwater runoff (see Section 4.3.2, *Water Resources*). However, compliance with the CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000) and implementation a site-specific construction SWMP, including BMPs, would minimize these potential impacts. Therefore, impacts to the existing stormwater drainage system as a result of the proposed construction would be minimal.

Under Alternative 2, there would be up to 6.0 acres of soil disturbance, including up to 3.3 acres of new impervious surface as a result of proposed construction. In accordance with the Energy Independence and Security Act Section 438, any temporary increase in stormwater runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. Although there would be an increase in runoff volumes and rates associated with the additional impervious areas, Alternative 2 includes a

stormwater detention pond (see Figure 2-2) to meet any exceeding stormwater capacities of the current stormwater system. The detention pond under Alternative 2 would be designed in compliance with applicable stormwater regulations. Low-impact development alternatives such as grass buffers and swales would also be incorporated into the stormwater management of the project site. The project would also comply with the USAFA individual MS4 permit COR042007 requirements that all new and redevelopment projects that greater than 1 acre and that discharge into the MS4, are designed and constructed with permanent post-construction stormwater control measures designed to prevent or minimize water quality impacts using appropriate structural or nonstructural BMPs (USEPA 2015).

Solid Waste Management

The construction activities under Alternative 2 would generate construction and demolition debris requiring landfill disposal. Proposed increases in personnel and equipment use would also contribute to an increase in solid waste generation. However, impacts to local landfills would not be expected to exceed the permitted throughput or contribute significantly to the remaining capacity.

Off-installation contractors completing construction and demolition projects at the USAFA would be responsible for disposing of waste generated from these activities. Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the installation. Much of this material can be recycled or reused, or otherwise diverted from landfills. All non-recyclable construction and demolition waste would be collected in a dumpster until removal. Construction and demolition waste contaminated with hazardous waste, ACM, LBP, or other undesirable components would be managed in accordance with AFI 32-7042, *Waste Management* (2017).

Potable Water System

If recycled water is not used, the demand for potable water (e.g., if used to control dust) could also increase temporarily during demolition and construction phases. However, this increase would be temporary and intermittent and would not be expected to impact regional water supply.

Transportation

Construction equipment would be driven to proposed construction areas and would be kept on-site for the duration of the respective activity. Construction workers would drive daily in their personal vehicles to and from the construction site. In general, construction traffic would result in increases in the use of on-installation roadways during construction activities; however, increases would be temporary and intermittent, occurring only during active construction

periods. Therefore, impacts to transportation infrastructure would not be significant under Alternative 2.

4.9.2.3 Alternative 3

Impacts under Alternative 3 would be similar to those under Alternative 2, except there would be up to 2.5 acres of temporary soil disturbance, including up to 1.3 acres of new impervious surface as a result of proposed construction. In addition, under Alternative 3 there would be no new stormwater detention pond constructed as the current stormwater drainage system would be sufficient for this alternative. Therefore, impacts to utilities and infrastructure would be less than significant under Alternative 3.

4.9.2.4 No Action Alternative

Under the No Action Alternative, the new PL Campus would not be constructed and infrastructure would be expected to remain as described under the affected environment in Section 3.10.2. Therefore, there would be no impacts to utilities infrastructure under the No Action Alternative.

4.10 SAFETY AND OCCUPATIONAL HEALTH

4.10.1 Methodology

4.10.2 Impacts

For the Proposed Action, the elements of the proposal that have a potential to affect safety are evaluated relative to the degree to which the action increases or decreases safety risks to aircrews, the public, and property. Ground safety is assessed for the potential to increase risk, and the unit's capability to manage that risk by responding to emergencies and suppressing fire When new or altered risks arising from the proposals are considered individually and collectively, assessments can be made about the adequacy of disaster response planning, and any additional or modified requirements that may be necessary as a result of the action. Flight safety considers the potential for new buildings to obstruct flight operations at the USAFA.

4.10.2.1 Alternative 1 (Preferred Alternative)

Providing new facilities for the USAFA that support the current mission, and are properly sited with adequate space and a modernized supporting infrastructure, would generally enhance ground safety during required operations, training, maintenance and support procedures, security functions, and other activities conducted by the USAFA.

Proposed infrastructure improvement projects under Alternative 1 would not occur within any existing APZs. UFC 3-260-01 provides planning, design, and construction criteria for DoD airfield and heliport facilities to limit obstructions and provide for safe aircraft operations. The Federal Aviation Administration describes similar criteria in Federal Aviation Regulation part 77. Both of these regulations define imaginary surfaces extending up and out from the runway surface that should be free of obstructions to aircraft. As discussed in Section 3.11, the hillside upon which the PL Campus is located currently penetrates portions of the approach imaginary surface associated with Runway 08. Proposed construction on the PL Campus would be considered an additional obstruction to the existing imaginary surfaces but would not be any more intrusive than the terrain already in this area.

Because no structures would be constructed within the existing APZs and current operations to Runway 08 are limited to emergency use, as stated in the 2005 AICUZ and confirmed in the 2015 analyses (USAFA 2005, USAFA 2015), the additional obstructions to the imaginary surfaces associated with Runway 08 would cause a minimal impact to safety. Therefore, impacts to health and occupational safety would be less than significant under Alternative 1.

4.10.2.2 Alternative 2

Impacts to safety under Alternative 2 would be similar to those under Alternative 1, except that there would be no new facilities underneath the imaginary surfaces. Therefore, impacts to safety would be minimal under Alternative 2.

4.10.2.3 Alternative 3

Impacts to safety under Alternative 3 would be similar to those under Alternatives 1 and 2, except that there would be no new facilities underneath the imaginary surfaces. Therefore, impacts to safety would be minimal under Alternative 3.

4.10.2.4 No Action Alternative

Under the No Action Alternative, the new PL Campus would not be constructed. The facilities would continue to be inadequately sized and configured, facility maintenance and utility costs would continue to be high, and would continue to not meet standards associated with occupant load, security, and fire protection.

4.11 OTHER NEPA CONSIDERATIONS

4.11.1 Unavoidable Adverse Effects

This EA identifies any unavoidable adverse impacts that would be required to implement the Proposed Action and the significance of the potential impacts to resources and issues. Title 40 of the CFR §1508.27 specifies that a determination of significance requires consideration of context and intensity. Unavoidable short-term adverse impacts associated with the construction activities, such as excavating and grading of the soil, would include temporary erosion and sedimentation from soils disturbance. Implementation of BMPs and standard erosion control practices during construction would limit potential effects. Therefore, unavoidable impacts on soils are not considered significant.

4.11.2 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with the construction activities on the PL Campus at USAFA. Construction would include short-term increases in emissions and construction-generated noise and would increase the use of utilities to power equipment.

Several kinds of activities could result in short-term resource uses that compromise long-term productivity. Filling of wetlands or loss of other especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

Long-term changes under Alternative 2 would not result in impacts to wetlands or an increase in use of nonrenewable resources. However, long-term losses would include alternations to land use on the eastern side of the existing campus, and loss of plant and wildlife resources with new construction.

4.11.3 Irreversible and Irretrievable Commitments of Resources

NEPA CEQ regulations require environmental analyses to identify any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. Building construction material such as gravel and gasoline usage for construction

equipment would constitute the consumption of nonrenewable resources. None of these activities would be expected to substantially affect environmental resources because the relative consumption of these materials is expected to change negligibly.

The primary irretrievable impacts of the Proposed Action would involve the use of energy, labor, and materials and funds. Irretrievable impacts would occur as a result of construction, facility operation, and maintenance activities. Permanent loss of forest habitat is not significant, relative to the amount available within the region of influence.

4.12 CUMULATIVE EFFECTS

Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the ROI. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed (or anticipated over the foreseeable future) is required.

A list of past, present, and reasonably foreseeable actions at USAFA and its immediate vicinity that could result in cumulative impacts with implementation of this project's Proposed Actions are shown in Table 4.12-1.

Table 4.12-1. Past, Present, and Reasonably Foreseeable Actions

Proponent	*Action Location/Description*	*Timeframe*
Developer	Ongoing residential and commercial development in northern areas of Colorado Springs directly west of USAFA, including Copper Ridge shopping development, The Farm housing area, and Interquest Parkway mixed use developments. As part of this project, mitigation will include restoration of a portion of Monument Branch Creek on USAFA property on the west side of I-25.	Present
City of Colorado Springs	Construction of the final segment of Powers Boulevard from its current northern terminus at US 83 at Interquest Parkway to new terminus at I-25 just south of North Gate Road through existing right-of-way. New interchange with I-25 to be constructed.	Present
El Paso County	Construction of a detention pond between northbound and southbound I-25 at North Gate Road.	Future
City of Colorado Springs	Channel and streambank restoration project for West Monument Branch Creek, including installation of hardened grade controls and erosion controls West Monument Branch Creek. This is occurring in three phases, with phase 1 completed and outside the installation, phase 2 partially on installation, and phase 3 totally on installation.	Present, Future
USAFA	Renovation of running track at the PL Campus.	Future
USAFA	USAFA Field House renovations.	Present
USAFA	Renovation of Sijan Hall dormitory.	Future

Table 4.12-1. Past, Present, and Reasonably Foreseeable Actions

Proponent	*Action Location/Description*	*Timeframe*
USAFA	Construction of a new visitor center on North Gate Road, outside the installation security perimeter and immediately west of I-25, near the current Santa Fe Trail parking lot.	Future
USAFA	Installation of a new sanitary sewer line running from the Cadet Area to near the B-52 Display.	Future
USAFA	Construction of new cyberwarfare training facility within the existing Cadet Area.	Future

Legend: I-25 = Interstate 25; USAFA = United States Air Force Academy.

4.12.1 Noise/Acoustic Environment

The potential for noise impacts due to the Proposed Action would be temporary and exist only during construction activity. There is the possibility that USAFA projects listed in Table 4.12-1 could include construction activity occurring concurrent with the Proposed Action. However, the Proposed Action would generate sound levels in noise sensitive areas outside the USAFA roughly 3 to 10 dB below existing ambient levels so the combined effect of multiple construction projects, all insignificant on their own, would still remain below the ambient levels. Therefore, no cumulative noise impacts are anticipated for either of the proposed alternatives.

4.12.2 Air Quality and Climate Change

Emissions associated with the projects described in Table 4.12-1 cannot be evaluated quantitatively, as too little information is available regarding the project details and timeframes for that level of analysis. While the USAFA is located in a designated maintenance area for CO, it is unlikely that significant impacts to air quality, such as violation of a NAAQS, would result from implementation of the Proposed Action in combination with other area projects described in Table 4.12-1. This conclusion is based on the emissions estimated for the Proposed Action, which would be well below the General Conformity de minimis threshold for CO and the comparative indicators for the other criteria pollutants. It is more likely that the overall level of criteria pollutant emissions would increase temporarily during construction periods, but at a level that would generate few, temporary impacts.

All of the projects listed in Table 4.12-1 would generate GHGs from construction, which is of temporary duration. Some long-term benefits may offset the GHGs emitted during construction (e.g., energy efficient buildings or solar generation for those projects involving buildings). While quantification of GHG emissions for all of these projects is not possible, it can generally be assumed that an overall temporary increase in GHG emissions, compared to the baseline, would occur as a result of the proposed construction projects.

Climate change, by definition, is a cumulative impact that results from the incremental addition of GHG emissions from millions of individual sources that collectively have a large impact on a

global scale. Impacts of climate change on the region will include severe rain events and flooding, which could produce negative impacts on mission activities and installation infrastructure.

4.12.3 Water Resources

The CWA considers stormwater from a construction site as a point source of pollution regulated by the NPDES permit. Therefore, those projects described in Table 4.12-1 larger than 1 acre are required to have a site-specific construction SWMP in compliance with CDPS General Permit Stormwater Discharges associated with Construction Activity (COR400000). The site-specific construction SWMPs would include measures to minimize potential impacts associated with stormwater runoff during construction, including BMPs and standard erosion control measures to minimize impacts to surface waters.

An increase in up to approximately 2 acres of new impervious surface would occur under the Proposed Action. It is unknown how many acres of other projects would be rendered impervious or otherwise disturbed, due to the unknown nature of the individual project status. The Proposed Action and any other cumulative project within USAFA would comply with UFC 3-210-10 (as amended 2016) and the existing SWMP prepared under USAFA individual MS4 permit COR042007 would be amended as necessary to reflect post-construction operations and potentially new BMPs.

Given the implementation of site-specific construction SWMPs and associated BMPs and standard erosion control measures, compliance with UFC 3-210-10 (as amended 2016), and updating the existing SWMP prepared under USAFA individual MS4 permit COR042007, cumulative impacts to water resources would be less than significant.

4.12.4 Biological Resources

No federally threatened and endangered species are currently known to reside within the project area. Construction-related impacts to the vegetation and wildlife in the vicinity of projects identified in Table 4.12-1 would be minor. These impacts would include the removal of some vegetation and associated wildlife habitat. Impacts to federally or state threatened, endangered, or special status species would be less than significant as a result of the Proposed Action at the USAFA; therefore, cumulative impacts to biological resources would be less than significant.

4.12.5 Earth Resources

Total acreage disturbed by the proposed construction projects would be up to approximately 6 acres of temporary soil disturbance, including up to approximately 2 acres of new impervious surface such as paved areas. It is unknown how many acres of other projects would be rendered

impervious or otherwise disturbed, due to the unknown nature of the individual project status. All proposed construction is within the footprint of the USAFA. As such, no significant impacts to geology, soils, or topography are expected under the Proposed Action at USAFA.

The CWA considers stormwater from a construction site as a point source of pollution regulated by the NPDES permit. Therefore, those projects described in Table 4.12-1 larger than 1 acre are required to have a site-specific construction SWMP that coordinates the timing of soil disturbing activities with the installation on soil erosion and runoff controls in an effort to reduce the impacts to the local watershed; this is an effective way of controlling erosion while soil is exposed and subject to construction activity. Implementation of BMPs and standard erosion control measures would be used to limit or eliminate soil movement, stabilize erosion, and control sedimentation. Following construction, disturbed areas not covered with impervious surfaces would be reestablished with appropriate vegetation and managed to minimize future erosion potential. Given the use of BMPs and engineering practices that would minimize potential erosion, cumulative impacts to earth resources would be expected to be less than significant.

4.12.6 Hazardous Materials/Waste

Under the Proposed Action, the quantities of hazardous materials and petroleum substances used throughout the PL Campus would not change over the long term. Construction and demolition activities would cause short-term increases in the quantities of hazardous materials (e.g., paint) and petroleum products (e.g., vehicle fuel) used and stored at the PL Campus, as well as cause short-term increases in the volume of hazardous and petroleum wastes generated. Additionally, no changes to the installation's Small Quantity Generator status would be expected to occur due to the no net change in hazardous waste generation during construction. Cumulative impacts as a result of hazardous materials and waste are expected to be less than significant.

4.12.7 Cultural Resources

The project APE was surveyed and no NRHP-eligible archaeological resources were identified. In the event of unanticipated discoveries of cultural resources during construction, work would halt at that specific location and the resources would be managed in compliance with federal law and DoD regulations. Cumulative impacts to cultural resources are not expected as a result of all planned activities at USAFA. Since there are no eligible resources within the APE, there would be no effect under Section 106 of the NHPA to architectural resources under the Proposed Action. No traditional cultural resources have been identified on the installation or in the areas proposed for present and future development. Therefore, cumulative impacts to cultural resources are expected to be less than significant under the Proposed Action at the USAFA.

4.12.8 Land Use

Under the Proposed Action at the USAFA, construction projects are inside the installation boundaries and would introduce short-term noise increases; however, these would not generate noise levels to cumulatively affect or change land use compatibilities. In addition, those projects described in Table 4.12-1 would be compatible with existing land uses. Therefore, cumulative impacts to land use due to the Proposed Action at the USAFA and reasonably foreseeable future projects are expected to be less than significant.

4.12.9 Infrastructure/Utilities

For the purposes of this analysis, infrastructure includes electrical and natural gas systems, wastewater, stormwater, solid waste management, potable water system, and transportation. Under the Proposed Action at the USAFA, short- and long-term demand for all services would increase by a minor degree when considered regionally.

Demand for electricity and natural gas would be expected to increase in the short-term due to construction activities. In the short term, existing energy systems have the ability to meet increased demand. In the long term, there is capacity to meet the demands of the minor increase in personnel. Further, any new facilities and additions associated with these projects would incorporate Leadership in Energy and Environmental Design and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation when compared to facilities currently in place.

The Proposed Action and other projects would increase demand for potable water, increase production of wastewater, and create more impervious surfaces to increase stormwater runoff. However, cumulative effects are anticipated to be minor because there is current and long-term capacity to meet increased demand for drinking water and disposal of wastewater. For stormwater, BMPs such as silt fencing, vegetation management, and ditching would minimize erosion and sedimentation during the short-term construction phases; retention and detention pond systems would avoid excessive runoff due to increases in impervious surfaces in the long term.

Under the Proposed Action and reasonably foreseeable future projects, it is anticipated that there would be short-term increases in solid waste generation. During demolition, renovation, and construction phases, all materials would be disposed in permitted facilities, which have the capacity to accept these materials.

In terms of transportation, the local traffic network has the ability to meet the short-term increases in traffic during construction activities from the Proposed Action and reasonably

foreseeable future projects. In summary, cumulative impacts to infrastructure due to the Proposed Action at the USAFA and reasonably foreseeable future projects are expected to be less than significant.

4.12.10 Safety and Occupational Health

Providing new and renovated facilities for the USAFA that are properly sited with adequate space and a modernized supporting infrastructure would generally enhance ground safety during required operations, training, maintenance and support procedures, security functions, and other activities conducted by the USAFA. AT/FP have also been addressed in all facility construction projects. The fire response capability currently provided by the USAFA is sufficient to meet all requirements. Risk of a catastrophic event occurring during construction activities under the Proposed Action or those activities described in Table 4.12-1 is considered low, and strict adherence to all applicable occupational safety requirements further minimize the relatively low risk associated with described construction activities. In summary, cumulative impacts to safety and occupational health due to the Proposed Action at the USAFA and reasonably foreseeable future projects are expected to be less than significant.

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Garcia, Mr. Damian, THPO, Pueblo of Acoma, Acoma Historic Preservation Office, PO Box 309, Acoma Pueblo, NM, 87034

Garcia, Mr. Nathan, Lt Governor, Pueblo of Santa Ana, 2 Dove Rd, Santa Ana Pueblo, NM 87004

Garcia, Mr. Terrance, San Ildefonso Pueblo, 02 Tunyo Po, Santa Fe, NM 87506

Gourneau, Mr. Boyd, Chairman, Lower Brule Sioux Tribe of the Lower Brule Reservation, SD, PO Box 187, Lower Brule, SD 57548-0187

Green, Ms. Clair, THPO, Lower Brule Sioux Tribe of the Lower Brule Reservation, SD, PO Box 187, Lower Brule, SD 57548-0187

Growing Thunder, Mr. Ramey, THPO Supervisor, Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, PO Box 1027, Poplar, MT 59255

Haozous, Mr. Jeff, Chairman, Fort Sill Apache Tribe, 43187 US Hwy 281, Apache, OK 73006-8038

Herrera, Mr. Dwayne, Governor, Pueblo de Cochiti, PO Box 70, Cochiti Pueblo, NM 87072

Herrera, Mr. Everett, Lt Governor, Pueblo de Cochiti, PO Box 70, Cochiti Pueblo, NM 87072

Hill, Mr. Vernon, Co-Chairman, Eastern Shoshone Tribe of Wind River Reservation, 15 N Fork Rd, Fort Washakie, WY, 82514-0538

Houghten, Ms. Holly, THPO, Mescalero Apache Tribe, PO Box 227, Mescalero, NM 88340-0227

Jensvold, Mr. Kevin, Chairman, Upper Sioux Indian Community, 5722 Travers Ln, PO Box 147, Granite Falls, MN 56241

Kills A Hundred, Mr. Garrie, THPO, Flandreau Santee Sioux Tribe of South Dakota, PO Box 283, Flandreau, SD 57028-0283

Killsback, Mr. Lawrence Jace, President, Northern Cheyenne Tribe, PO Box 128, Lame Deer, MT 59043

Kindle, Mr. William, President, Rosebud Sioux Tribe, PO Box 430, Rosebud, SD 57570

Knight, Mr. Terry, THPO/NAGPRA Representative, Ute Mountain Ute Tribe, PO Box 468, Towaoc, CO 81334-0188

Komalty, Mr. Matthew, Chairman, Kiowa Tribe of Oklahoma, PO Box 369, Carnegie, OK 73015

Komardly, Mr. Bobby, Chairman & THPO, Apache Tribe of Oklahoma, PO Box 1330, Anadarko, OK 73005

Lewis, Ms. Kellie, Acting THPO/NAGPRA Contact, Kiowa Tribe of Oklahoma, PO Box 50, Carnegie, OK 73015

Lightfoot, Ms. Crystal, Culture Program Coordinator, Apache Tribe of Oklahoma, PO Box 1330, Anadarko, OK 73005

Limpy, Ms. Teanna, THPO, Northern Cheyenne Tribe, PO Box 128, Lame Deer, MT 59043

Little Coyote, Ms. Karen, Cultural Heritage Program Director, Cheyenne, PO Box 145, Concho, OK 73022

Little Thunder, Mr. Jeremy, Tribal Archivist, Cheyenne River Sioux Tribe, Preservation Office, PO Box 590, Eagle Butte, SD 57625

Longie, Dr. Erich, THPO, Spirit Lake Nation, PO Box 76, Fort Totten, ND 58335

Looper, Ms. Micah, THPO Research Analyst, Cheyenne and Arapaho Tribes of Oklahoma, PO Box 8, Concho, OK 73022

Marks, Mr. Merle, THPO, Crow Creek Sioux Tribe, PO Box 286, Fort Thompson, SD 57339

Martinez, Mr. Perry, Governor, San Ildefonso Pueblo, 02 Tunyo Po, Santa Fe, NM 87506

McAdams, Mr. Gary, THPO/NAGPRA Representative, Wichita and Affiliated Tribes of Oklahoma, PO Box 729, Anadarko, OK 73005

McGee, Frank, Colorado Parks and Wildlife, 4255 Sinton Road, Colorado Springs, CO 80907

Menchego, Mr. Timothy, THPO, Pueblo of Santa Ana, 2 Dove Rd, Santa Ana Pueblo, NM 87004

Mosqueda, Sr., Mr. Federico (Fred), NAGPRA Contact, Cheyenne-Arapaho Tribes Vocational Rehabilitation Program, PO Box 687, 110 N Noble, Watonga, OK 73772

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Nelson, Mr. David, Environmental Protection Director, Cheyenne River Sioux Tribe, PO Box 590, Eagle Butte, SD 57625

Nelson, Mr. William, Chairman, Comanche Nation of Oklahoma, PO Box 908, Lawton, OK 73502

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Odegard, Ms. Samantha, THPO, Upper Sioux Indian Community, 5722 Travers Ln, PO Box 147, Granite Falls, MN 56241

Ogle, Mr. Raymond, THPO Field Manager, Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, PO Box 1027, Poplar, MT 59255

Oldman, Mr. Devin, THPO Director, Northern Arapaho Tribe, PO Box 396, Fort Washakie, WY 82514

Panteah, Sr., Mr. Val, Governor, Pueblo of Zuni, PO Box 339, Zuni, NM 87327-0339

Parton, Ms. Terri, President, Wichita and Affiliated Tribes of Oklahoma, PO Box 729, Anadarko, OK 73005

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Pesata, Mr. Levi, President, Jicarilla Apache Tribe, PO Box 507, Dulce, NM 87528-0507

Pratt, Mr. W. Bruce, President, Pawnee Nation of Oklahoma, PO Box 470, Pawnee, OK 74058-0470

Pueblo de Cochiti, Historic Preservation Office, PO Box 70, Cochiti Pueblo, NM 87072

Pueblo of Picuris, Historic Preservation Office, PO Box 127, Penasco, NM 87553

Quanchello, Mr. Craig, Governor, Pueblo of Picuris, PO Box 127, Penasco, NM 87553

Reed, Mr. Matt, THPO Director, Pawnee Nation of Oklahoma, PO Box 470, Pawnee, OK 74058-0470

Reider, Mr. Anthony, President, Flandreau Santee Sioux Tribe of South Dakota, PO Box 283, Flandreau, SD 57028-0283

Rhodd, Mr. Benjamin, THPO, NAGPRA Contact, Rosebud Sioux Tribe, PO Box 809, Rosebud, SD 57570

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Rios, Ms. Tammy, Secretary, Cheyenne and Arapaho Tribes of Oklahoma, PO Box 38, Concho, OK 73022-0038

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Sage, Ms. Christine, Chairman, Southern Ute Indian Tribe, PO Box 737, Ignacio, CO 81137

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Shurack, Ms. Nikki, Tribal Archaeologist, Ute Mountain Ute Tribe, PO Box 468, Towaoc, CO 81334-0188

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Spotted Eagle, Mr. Kip, THPO, Yankton Sioux Tribe, PO Box 1153, 800 Main Ave SW, Wagner, SD 57380

Suazo, Ms. Reva, Tribal Realty Officer, Pueblo of Taos, Municipal Services Division/Realty Office, Taos Pueblo Administration Bldg, PO Box 1846, Taos, NM 87571

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THPO Director's Assistant, Northern Arapaho Tribe, PO Box 396, Fort Washakie, WY 82514

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Vierra, Dr. Bradley, THPO, San Ildefonso Pueblo, 02 Tunyo Po, Santa Fe, NM 87506

Villicana, Mr. Theodore, Comanche Nation of Oklahoma, Comanche Nation Historic Preservation Office, #6 SW "D" Avenue, Ste C, Lawton, OK 73507

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Wassana, Mr. Reggie, Governor, Cheyenne and Arapaho Tribes of Oklahoma, PO Box 38, Concho, OK 73022-0038

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Yankton, Mr. Douglas, Vice Chair, Spirit Lake Nation, PO Box 359, Fort Totten, ND 58332

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Young, Mr. Benjamin, THPO Compliance Officer, Rosebud Sioux Tribe, PO Box 809, Rosebud, SD 57570

Youpee, Ms. Dyan, THPO, Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, PO Box 1027, Poplar, MT 59255

Zogel, Mr. Matthew, Scheduling Assistant, Cheyenne River Sioux Tribe, PO Box 590, Eagle Butte, SD 57625

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APPENDIX A
INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Mr. Robert Fant, P.E.
Chief, Installation Management
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
U.S. Air Force Academy, CO 80840

MAY 3 2019

Mr. Frank McGee
Colorado Parks and Wildlife
4225 Sinton Road
Colorado Springs, CO 80907

Dear Mr. McGee

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the construction of new facilities and demolition of old facilities on the Preparatory Leadership (PL) Campus at the USAF Academy (USAFA), Colorado as shown in Attachment 1. To take into account various environmental concerns, the USAF is engaging with the appropriate resource and regulatory agencies as it formulates this undertaking.

The purpose of the Proposed Action is to provide the USAFA with new facilities that would consolidate functions and upgrade the facilities to current standards. The USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic building, headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, and a stormwater detention pond (Attachment 1). These projects are needed because the current facilities are aged and inadequate and do not meet standards associated with occupant load, security, and fire protection set forth in the Unified Facilities Criteria (UFC) 4-020-01, DoD Security Engineering Facilities Planning Manual; UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings; and National Fire Protection Association (NFPA) 101® Life Safety Codes.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we solicit your comments concerning the proposal and any potential environmental consequences of the action. We also request information regarding other recently completed, ongoing, or proposed projects in the vicinity that create cumulative impacts in association with the Proposed Action.

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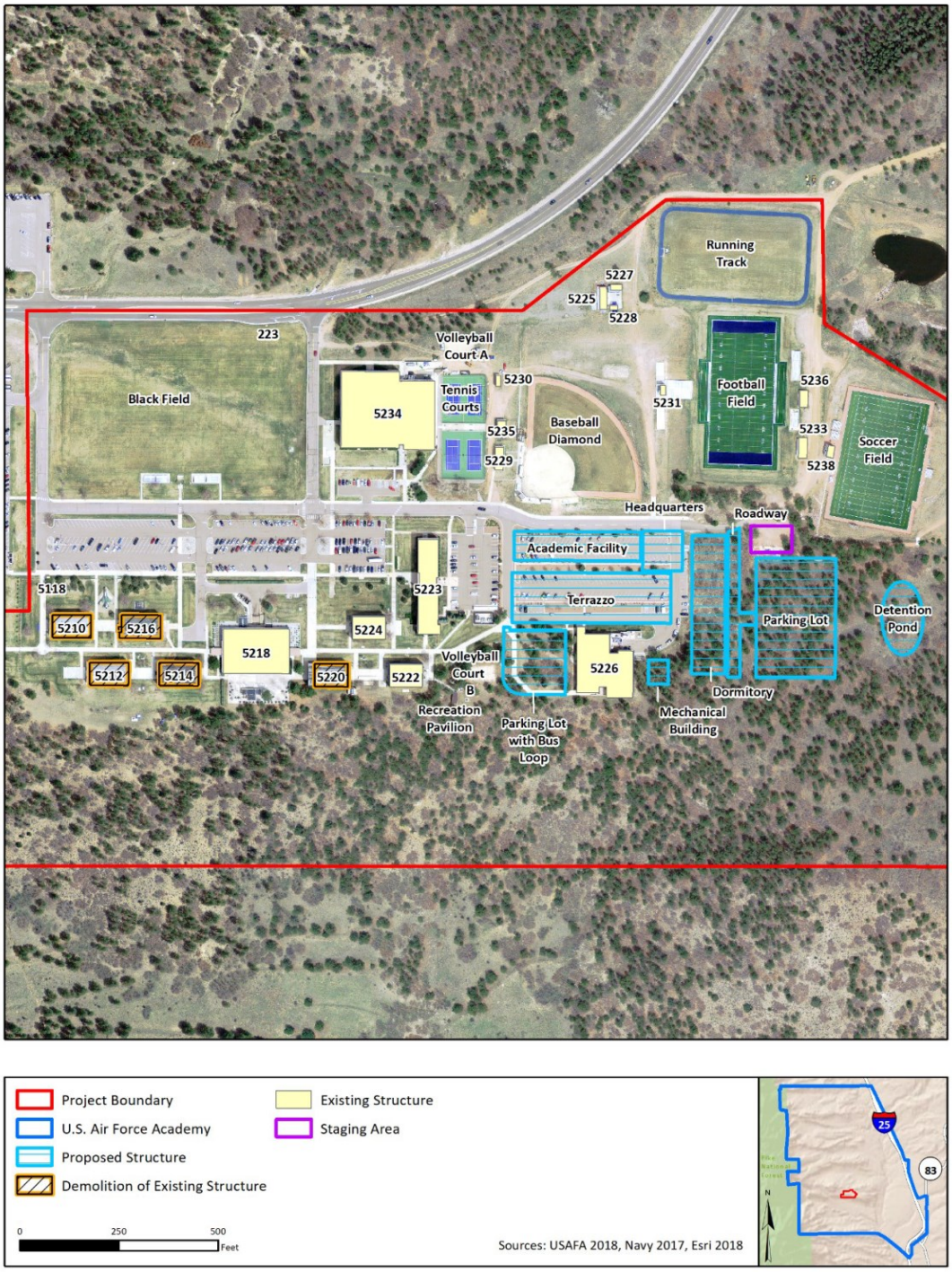
We look forward to partnering with you on this important USAFA development and thank you in advance for your assistance in this effort. If you have any questions, please contact Ms. Sylvette Goodwin at 719-333-6717; sylvette.goodwin@us.af.mil; or 8120 Edgerton Drive, USAFA, CO 80840.

Sincerely

ROBERT L. FANT, P.E.
Chief, Installation Management

1 Attachment
1. Proposed Action Map



USAFA Alternative 1 Construction and Demolition Projects

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Mr. Robert Fant, P.E.
Chief, Installation Management
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
U.S. Air Force Academy, CO 80840

MAY 3 2019

Mr. Steve Turner, AIA
History Colorado
1200 Broadway
Denver, CO 80203-2137

Dear Mr. Turner

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the construction of new facilities and demolition of old facilities on the Preparatory Leadership (PL) Campus at the USAF Academy (USAFA), Colorado as shown in Attachment 1. To take into account various environmental concerns, the USAF is engaging with the appropriate resource and regulatory agencies as it formulates this undertaking.

The purpose of the Proposed Action is to provide the USAFA with new facilities that would consolidate functions and upgrade the facilities to current standards. The USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic building, headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, and a stormwater detention pond (Attachment 1). These projects are needed because the current facilities are aged and inadequate and do not meet standards associated with occupant load, security, and fire protection set forth in the Unified Facilities Criteria (UFC) 4-020-01, DoD Security Engineering Facilities Planning Manual; UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings; and National Fire Protection Association (NFPA) 101® Life Safety Codes.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we solicit your comments concerning the proposal and any potential environmental consequences of the action. We also request information regarding other recently completed, ongoing, or proposed projects in the vicinity that create cumulative impacts in association with the Proposed Action.

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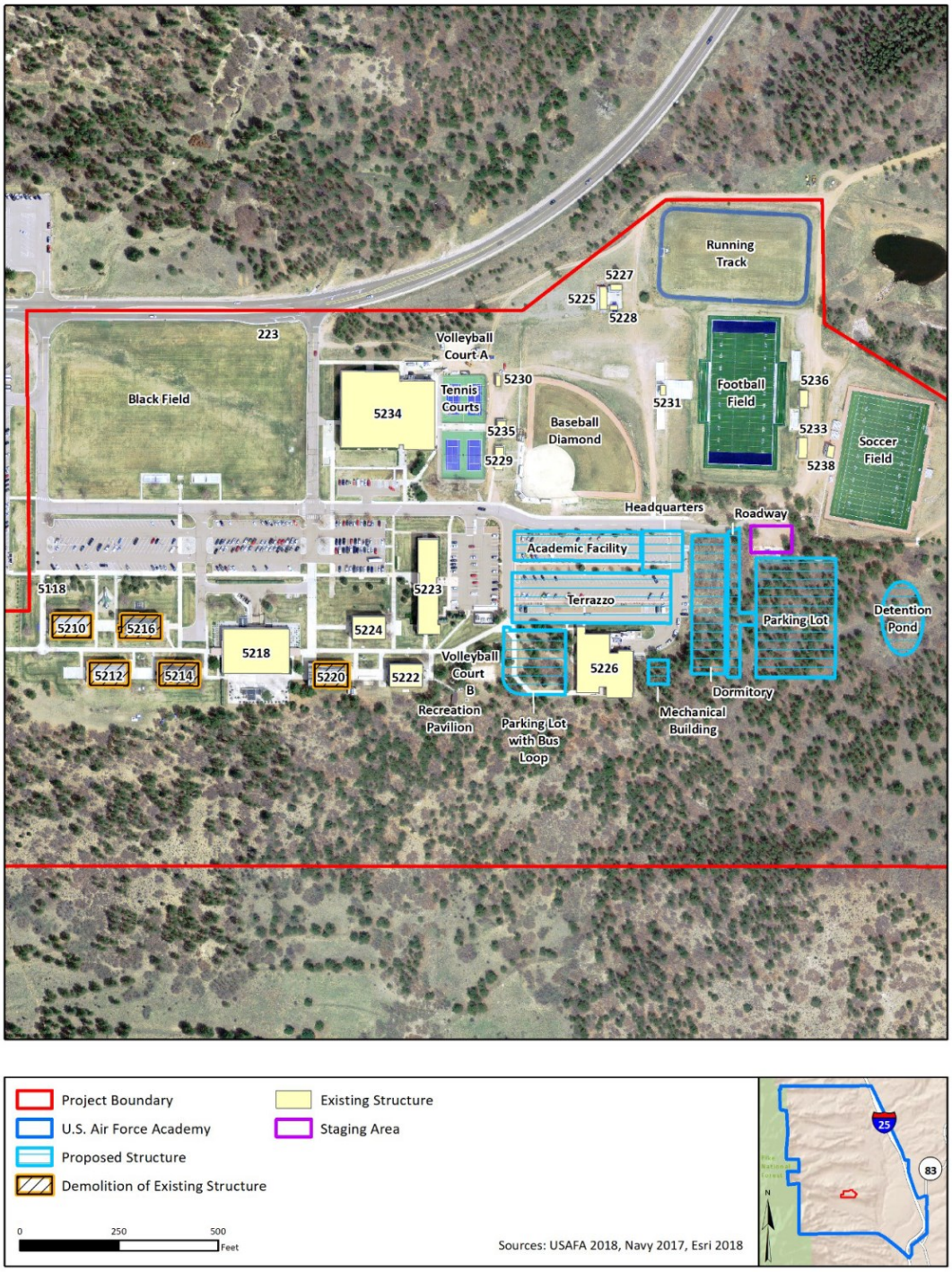
2

We look forward to partnering with you on this important USAFA development and thank you in advance for your assistance in this effort. If you have any questions, please contact Ms. Sylvette Goodwin at 719-333-6717; sylvette.goodwin@us.af.mil; or 8120 Edgerton Drive, USAFA, CO 80840.

Sincerely

ROBERT L. FANT, P.E.
Chief, Installation Management

1 Attachment
1. Proposed Action Map



USAFA Alternative 1 Construction and Demolition Projects

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Mr. Robert Fant, P.E.
Chief, Installation Management
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
U.S. Air Force Academy, CO 80840

MAY 3 2019

Mr. Drue DeBerry
Colorado Field Supervisor
U.S. Fish and Wildlife Service
Colorado Ecological Services
P.O. Box 25486 DFC (MS 65412)
Denver CO 80225-0486

Dear Mr. DeBerry

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with the construction of new facilities and demolition of old facilities on the Preparatory Leadership (PL) Campus at the USAF Academy (USAFA), Colorado. Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (16 USC 1531+-1544), the USAFA has determined that the Proposed Action *will have no effect on* federally listed species.

The purpose of the Proposed Action is to provide the USAFA with new facilities that would consolidate functions and upgrade the facilities to current standards. The USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new dormitory, academic building, headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, and a stormwater detention pond (Attachment 1). These projects are needed because the current facilities are aged and inadequate and do not meet standards associated with occupant load, security, and fire protection set forth in the Unified Facilities Criteria (UFC) 4-020-01, DoD Security Engineering Facilities Planning Manual; UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings; and National Fire Protection Association (NFPA) 101® Life Safety Codes.

Threatened, Endangered, and Candidate Species and Critical Habitat

The USAFA Integrated Natural Resource Management Plan (INRMP) and the USFWS Information for Planning and Consultation System (Attachment 2) were reviewed to determine if any federally-listed species potentially occur in the vicinity of the Proposed Action. Table 1 lists the federally listed species that have the potential to occur on USAFA. The species included in this list are based on habitat on base identified in the USAFA INRMP.

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Table 1: Federally Listed Species with the Potential to Occur on USAFA

Common Name	Scientific Name	Federal Status	Preferred Habitat
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	T	Cold-water streams and lakes. No aquatic habitats occur in the project Action Area.
Least Tern	*Sterna antillarum*	E	Sand or gravel shores of rivers or lakes. No habitat occurs within the project Action Area.
Mexican Spotted Owl	*Strix occidentalis lucida*	T	Old-growth conifer and riparian forests; forested canyons. Not known to occur on USAFA, but the installation contains potential habitat.
Pallid Sturgeon	*Scaphirhynchus albus*	E	Large, turbid, free-flower riverine habitat with rocky or sandy substrate. No aquatic habitats occur in the project Action Area.
Piping Plover	*Charadrius melodus*	T	Sand or gravel shores of rivers or lakes. No habitat occurs within the project Action Area.
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	T	Herbaceous riparian habitat with adjacent upland grasslands. Known to occur on USAFA, but no habitat occurs within the project Action Area.
Ute Ladies' Tresses	*Spiranthes diluvialis*	T	Open habitat in floodplains, perennial stream terraces, and oxbows. No habitat occurs within the project Action Area.
Western Prairie Fringed Orchid	*Platanthera praeclara*	T	Level or slightly sloping floodplains and drainage bottoms at elevations of 5,000–6,400 feet. No habitat occurs within the project Action Area.
Whooping Crane	*Grus americana*	E	Croplands and palustrine wetlands. No habitat occurs within the project Action Area.
Wolverine	*Gulo gulo luscus*	T	Areas of persistent seasonal snowpack, low human activity, and large contiguous habitat patches. No habitat occurs within the project Action Area.

The Proposed Action *will have no effect on* federally-listed species. The federally-threatened Preble's meadow jumping mouse (PMJM) (*Zapus hudsonius preblei*) is the only breeding, resident species on the USAFA that is protected under the ESA. The USAFA maintains a 3,300-acre PMJM Conservation Zone, which includes both riparian and adjacent upland habitats along the major creeks of the Base. However, no PMJM habitat or Conservation Zone areas occur within the project area and the species would not be directly or indirectly affected by the Proposed Action. Additionally, no habitat for federally-listed plant species occurs in the project area.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we solicit your comments concerning the proposal and any potential environmental consequences of the action. We also request information regarding other recently completed, ongoing, or proposed projects in the vicinity that create cumulative impacts in association with the Proposed Action.

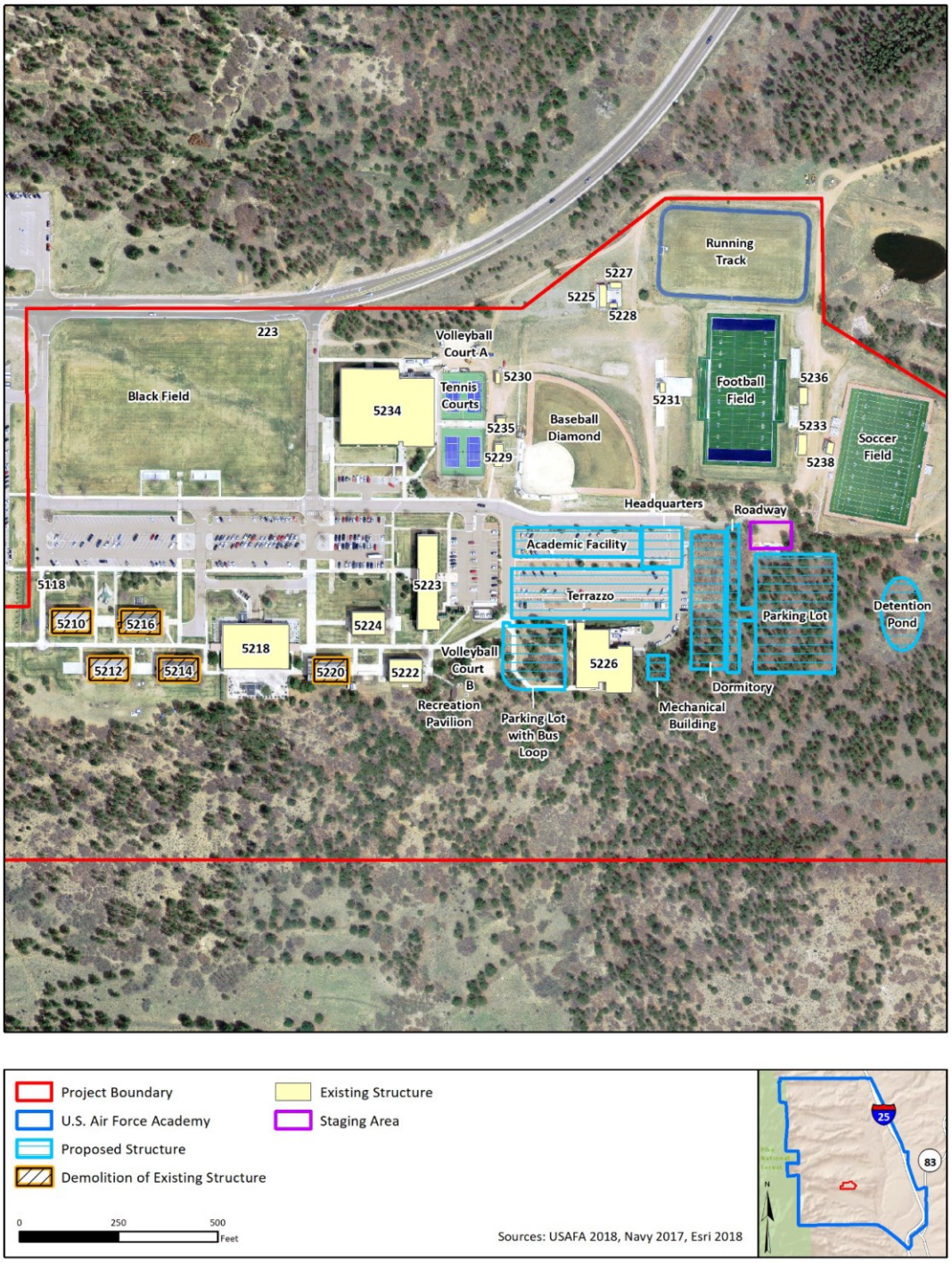
3

Please provide any comments you may have within 30 days of receipt of this letter to contact Ms. Sylvette Goodwin at 719-333-6717; sylvette.goodwin@us.af.mil; or 8120 Edgerton Drive, USAFA, CO 80840. We thank you in advance for your assistance in this effort.

Sincerely

ROBERT L. FANT, P.E.
Chief, Installation Management

2 Attachments
1. Proposed Action Map
2. IPaC Report



USAFA Alternative 1 Construction and Demolition Projects

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

El Paso County, Colorado

Local office

Colorado Ecological Services Field Office

(303) 236-4773
(303) 236-4005

MAILING ADDRESS
Denver Federal Center
P.O. Box 25486
Denver, CO 80225-0486

PHYSICAL ADDRESS

134 Union Boulevard, Suite 670
Lakewood, CO 80228-1807

http://www.fws.gov/coloradoES
http://www.fws.gov/platteriver

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

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Mammals

NAME	STATUS
North American Wolverine Gulo gulo luscus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened
Preble's Meadow Jumping Mouse Zapus hudsonius preblei There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/4090	Threatened

Birds

NAME	STATUS
Least Tern Sterna antillarum This species only needs to be considered if the following condition applies: • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered
Mexican Spotted Owl Strix occidentalis lucida There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Piping Plover Charadrius melodus This species only needs to be considered if the following condition applies: • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Whooping Crane Grus americana This species only needs to be considered if the following condition applies: • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

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Fishes

NAME	STATUS
Greenback Cutthroat Trout Oncorhynchus clarkii stomias No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2775	Threatened
Pallid Sturgeon Scaphirhynchus albus This species only needs to be considered if the following condition applies: • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Ute Ladies'-tresses Spiranthes diluvialis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2159	Threatened
Western Prairie Fringed Orchid Platanthera praeclara This species only needs to be considered if the following condition applies: • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1669	Threatened

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Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Mexican Spotted Owl Strix occidentalis lucida https://ecos.fws.gov/ecp/species/8196#crithab	Final
Preble's Meadow Jumping Mouse Zapus hudsonius preblei https://ecos.fws.gov/ecp/species/4090#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE"

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	INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Brewer's Sparrow Spizella breweri This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9291	Breeds May 15 to Aug 10
Brown-capped Rosy-finch Leucosticte australis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 15 to Sep 15
Golden Eagle Aquila chrysaetos This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lark Bunting Calamospiza melanocorys This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker Melanerpes lewis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-eared Owl asio otus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31

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Pinyon Jay Gymnorhinus cyanocephalus — Breeds Feb 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9420

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Veery Catharus fuscescens salicicola — Breeds May 15 to Jul 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Virginia's Warbler Vermivora virginiae — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9441

Willow Flycatcher Empidonax traillii — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/3482

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted

Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

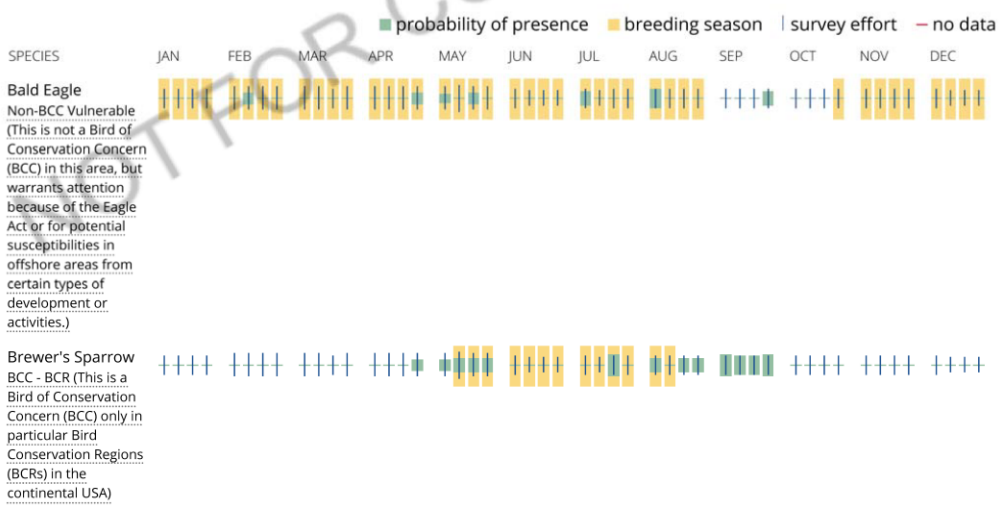
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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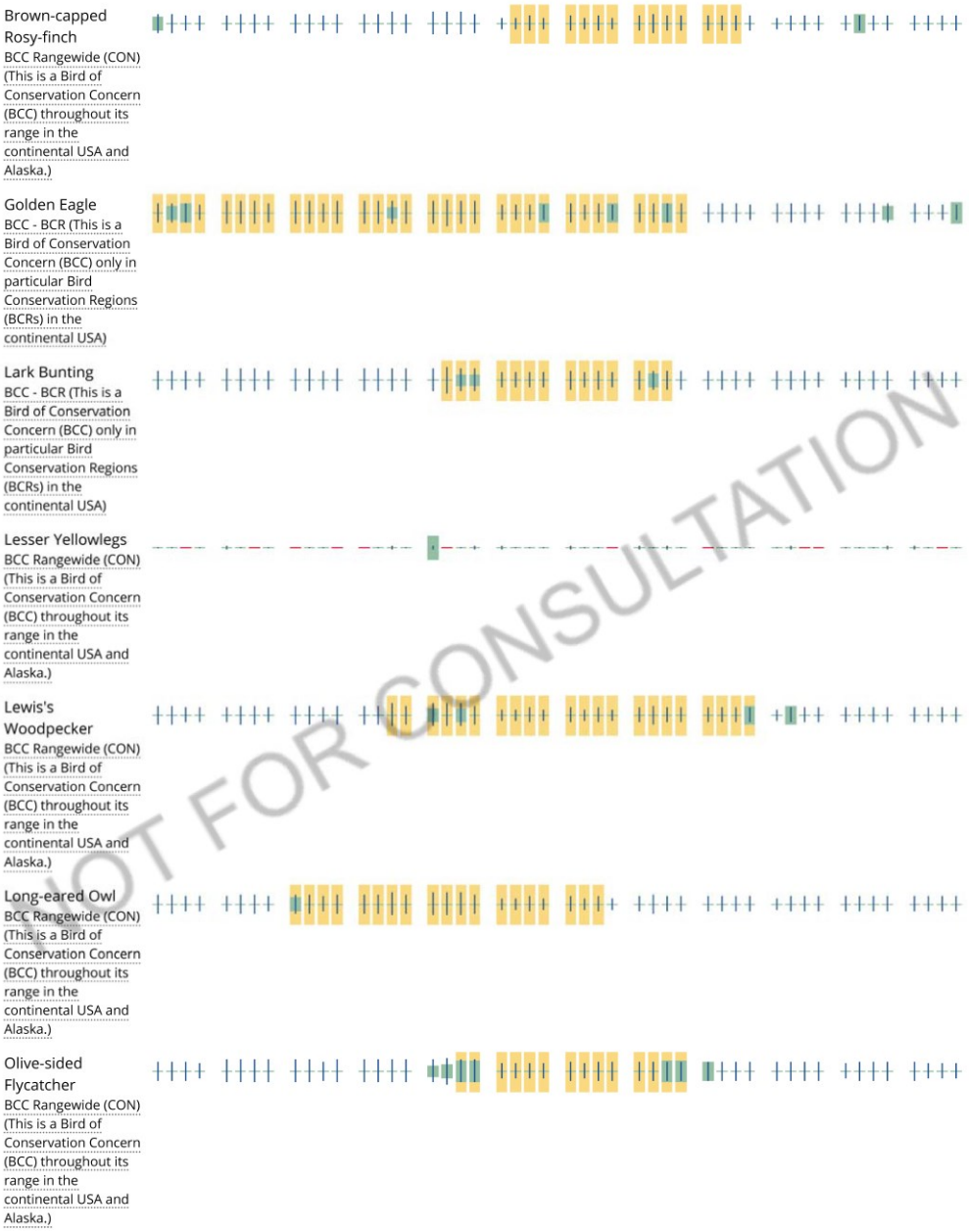

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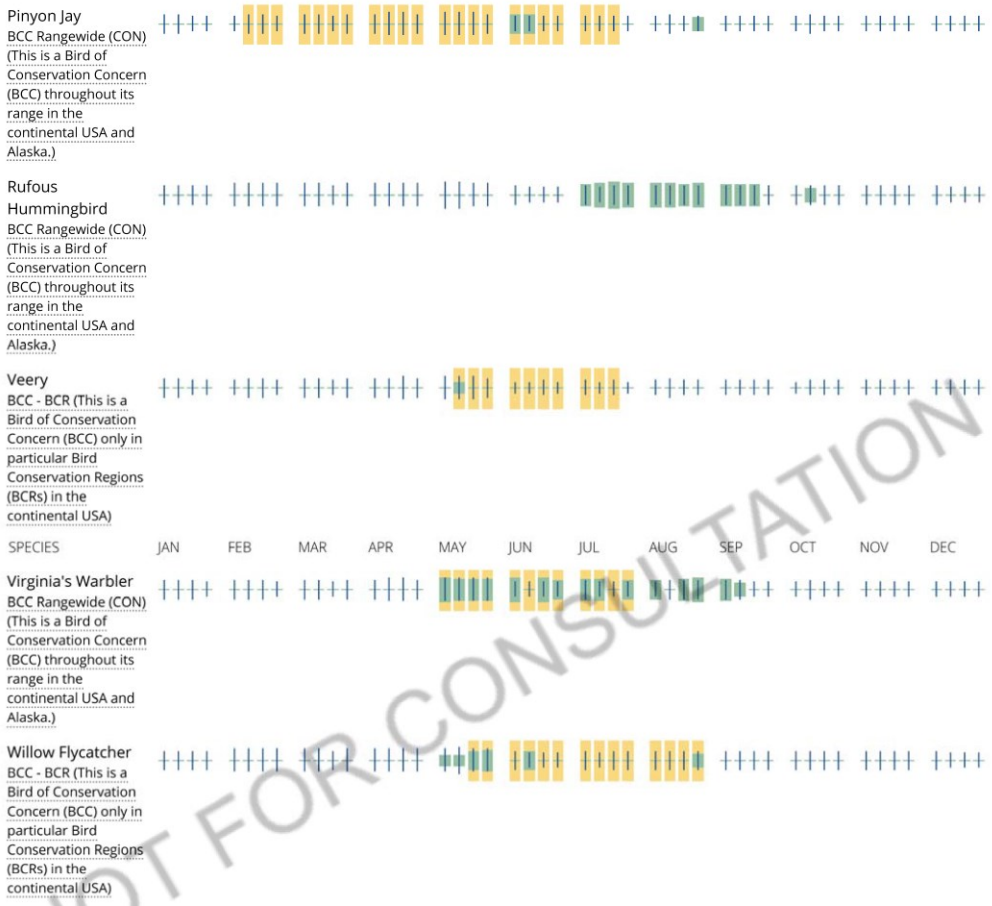

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects,

and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

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Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND
- PSSC
- PFO/SSA
- PSSA
- PSS/EM1A
- PFOA
- PSSCx
- PFOAx

FRESHWATER POND
- PUBGx
- PUBF
- PABFh
- PUBKg
- PABFx
- PUBK
- PUSK
- PUBFx
- PUSCh
- PUSC
- PABF
- PUSA
- PUSAh

RIVERINE
- R4SBC
- R5UBH
- R2UBH
- R4SBA
- R5UBFx
- R2USC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

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The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Mr. Steve Turner, AIA
History Colorado Executive Director & Colorado State Historic Preservation Officer
Colorado Historical Society
1200 Broadway
Denver CO 80203-2137

Dear Mr. Turner

Please find enclosed the United States Air Force Academy's (USAFA) initiation of Section 106 consultation, in accordance with the National Historic Preservation Act (NHPA), for an undertaking to relocate the USAFA Preparatory School (Prep School) to the east of the current Prep School campus location. This relocation would include construction of new facilities and demolition of existing facilities (Attachment 1). The proposed project area is within view of the USAFA Cadet Area National Historic Landmark (5EP.4680) and within the boundary of the National Register of Historic Places (NRHP) proposed USAFA Campus Historic District (5EP.595).

The existing Prep School campus is located roughly in the south central portion of USAFA. It is immediately east of the USAFA Community Center, accessed primarily from Community Center Drive. The Prep School mission is to prepare, motivate, and evaluate cadet candidates for admission to USAFA. Approximately 240 cadet candidates annually enroll in the Prep School.

The recently completed 2019 Prep School Master Plan advocates for a different location for the Prep School, including proposed construction of new facilities with demolition of existing Prep School facilities. The new construction, as conceptually proposed, would occur in roughly three phases aligned to the Master Plan. In general, the first phase would include the design and construction of a new Dormitory Building. The second phase would address the Academic Building/Headquarters, and the final phase would be for all remaining construction.

A National Environmental Policy Act-associated Environmental Assessment (EA) is being developed to support this planning effort. The EA will address a preferred action alternative, and three other alternatives. As currently envisioned, the preferred alternative will include the scope summarized in Attachment 1. The three other alternatives will be: (1) a no action alternative, (2) a design alternative previously analyzed in 2012, and (3) an alternative with a different building configuration, in the same location as the preferred alternative.

The referenced 2012 alternative involved a proposed upgrade to the Prep School, and it was consulted with your office. That project proposed demolition of six buildings (5210, 5212, 5214, 5216, 5220, 8137), construction of two new buildings (a Cadet Candidate Quarters building and an Academic Facility), and an addition to the Community Center Gymnasium (Building 5234). In January 2012, your

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office concurred that the project would result in "no adverse effect to historic properties" (CHS #60900; Attachment 2) and an EA was completed for the project, resulting in a Finding of No Significant Impact. However, the project was not executed and since that time, the new Master Plan was developed, resulting in significant changes for area goals (Attachment 3). Consequently, USAFA is initiating Section 106 consultation with your office on the scope of the newly proposed project. The new EA will cite this 2012 alternative as previously consulted upon, as above, with your office.

Based upon anticipated impacts from the proposed undertaking, the Area of Potential Effect (APE) for proposed future work encompasses all existing facilities used by the Prep School, and those areas proposed for the relocated Prep School, including areas potentially planned for stormwater and infrastructure improvements.

While the general layout and design guidelines for the facilities within the new Prep School campus will follow USAFA Installation Facility Standards, the final design for the new Dormitory Building will be determined through a design competition with design-build contractors. This design process was selected to leverage the skills and ideas of the various contractors to develop a design that creatively meets the needs of the user while complementing the existing architectural expression at USAFA. Design guidelines for the new Prep School are specified in the Master Plan and in the Scope of Work that will solicit requests for proposals from the contractors.

Since the *final* project details are unknown for the proposed new Prep School buildings, USAFA at present cannot propose a Section 106 determination of effect. To complete the associated EA and as allowed by the Section 106 regulations, USAFA proposes the development of a project-specific Programmatic Agreement (PA) to resolve potential adverse effects that may result from multiple future undertakings whose *"effects on historic properties cannot be fully determined prior to approval of an undertaking"* (36 CFR § 800.14(b)(1)(ii)). If your office concurs with our approach to use a project PA, we respectfully request that you let us know as soon as possible. As prescribed by 36 CFR § 800.6(a)(1), the Advisory Council on Historic Preservation will be notified.

In preparation for future consultation on the undertakings involved with relocating the Prep School, USAFA has begun updating cultural resources inventories (both architectural and archaeological) across the proposed APE. Attachment 4 provides a final report (dated December 2019) titled *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA,* with a companion State of Colorado Cultural Resources Survey Form for 5EP.8621.1. This survey was conducted to satisfy requirements under the NHPA Section 110, as well as requirements under Section 106. The report's information is portrayed in Attachment 1.

The 2019 archeological survey report documents a historic road segment (5EP.8621.1) identified and recorded within the APE. The segment is recommended by USAFA as not supporting of the overall linear resource (5EP.8621). Until such time that the entire linear resource may be surveyed, 5EP.8621 is recommended eligible for listing in the NRHP. USAFA, under provisions of NHPA Section 106 and Section 110, respectfully requests your concurrence for the Prep School planning, 5EP.8621.1 does not contribute to potential NRHP-eligibility of 5EP.8621. We welcome any comments on this final report and request that you file it with your official records.

Attachment 5 contains the current list of all potential Section 106 stakeholders to this project, and Attachment 6 provides the pertinent letter sent to these parties. If USAFA does not receive a response from a stakeholder indicating their preference to participate in the project PA (assuming you concur in developing the PA) and after follow-up communication is complete (i.e. confirming the stakeholder wishes no participation) such a party will receive no further project-specific communications on this

undertaking, unless we discover previously unknown cultural resources or information. If something previously unknown is discovered, USAFA would of course notify all stakeholders.

Please direct comments to Mr. Erwin Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, (719) 333-7341, or at the above address. We thank you for your review and assistance.

Sincerely

JEOUN.JIMMY.JOSEPH.1237435385 Digitally signed by JEOUN.JIMMY.JOSEPH.1237435385 Date: 2020.01.24 16:11:50 -07'00'

JIMMY J. JEOUN, Lt Col, USAF

6 Attachments:
1. USAFA Cultural Resources Section 106 Project Review
2. January 2012 SHPO Correspondence (CHS #60900)
3. September 2019 Prep School Master Plan
4. Report titled *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA,* associated forms, and GIS data (paper copy and CD with digital copies)
5. Consulting/Interested Stakeholder List
6. Tribe/Stakeholder Letter

ATTACHMENT 1

United States Air Force Academy (USAFA) Cultural Resources Section (CRS)
Section 106 Project Review

Undertaking: Relocation of the USAFA Preparatory (Prep) School involving construction of new school facilities and demolition of existing school facilities.

The undertaking proposes to relocate the Prep School Campus to the eastern boundary of the Community Center area. Although many details of the proposed project are unknown at this time, the undertaking will generally include the construction of a new dormitory, academic building/headquarters facility, athletic training facility, terrazzo, and a stormwater detention pond. Additionally, the undertaking likely will involve the demolition of six buildings currently used for Prep School purposes that would be made redundant by new construction. The proposed project area is within view of the Cadet Area National Historic Landmark (NHL) (5EP.4680) and within the proposed National Register-eligible USAFA Campus Historic District (5EP.595). Figures 1 and 2 provide maps of the proposed undertaking location.

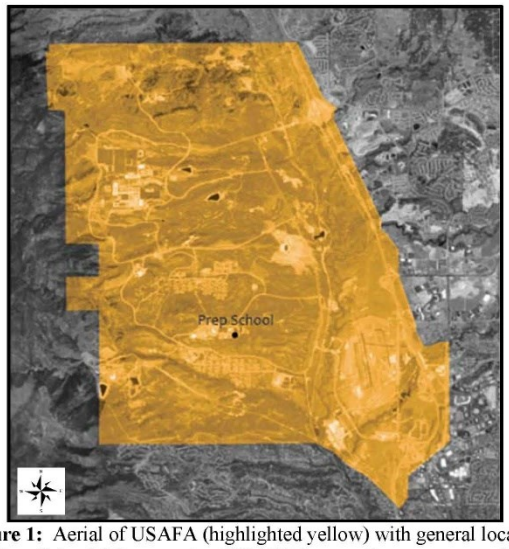

Figure 1: Aerial of USAFA (highlighted yellow) with general location of Prep School (please contact USAFA for questions on map scales).

Figure 2: Aerial of USAFA Community Center (existing Prep School blue, proposed location red).

Undertaking Justification:

The proposed undertaking has been determined necessary because the existing Prep School facilities are outdated without the ability to be renovated to the level required to meet today's educational needs. Additionally, the existing campus location and configuration is not conducive to a modern academic campus.

Undertaking Description:

The existing Prep School Campus is roughly located in the south central portion of USAFA and east of the USAFA Community Center, and is accessed primarily from Community Center Drive. The Prep School mission is to prepare, motivate, and evaluate cadet candidates for admission to and success at USAFA. Approximately 240 cadet candidates enter the Prep School each summer and their successful completion of the program improves their chance for an appointment to USAFA as a Cadet, but does not guarantee it. The primary buildings currently used by the Prep School for their programs include those in Table 1-1.

Table 1-1. List of primary Prep School buildings currently utilized.

No.	Building Number	Building Name/Current Function
1	5210	Prep School Quarters
2	5212	Prep School Quarters
3	5214	Prep School Quarters
4	5216	Prep School Academic Training
5	5218	High Country Inn / Airmen Dining Hall
6	5220	Academy Classroom
7	5224	Atlantis Hall / Academic Training
8	5222	Challenger Hall / Airmen Dormitory
9	5226	Sam A. Milazzo Club

Specifically, the new Master Plan calls for a new dormitory, academic building/headquarters facility, athletic training facilities, terrazzo, and stormwater detention. The new location is east of the current school and new construction will primarily modify existing parking lots, landscaping, and the Ponderosa Pine forest bordering existing development near the Milazzo Center (Building 5226). Buildings 5210, 5212, 5214, 5216, 5220, and 5226 are proposed for demolition and the Air Force is proceeding with an Economic Analysis to determine if this is most monetarily effective decision. The new campus will continue to use the existing dining hall (Building 5218) and the gym (Building 5234). Figures 3 – 5 show the proposed new location for the Prep School, the existing condition of the primary area, and available views to the Cadet Area.

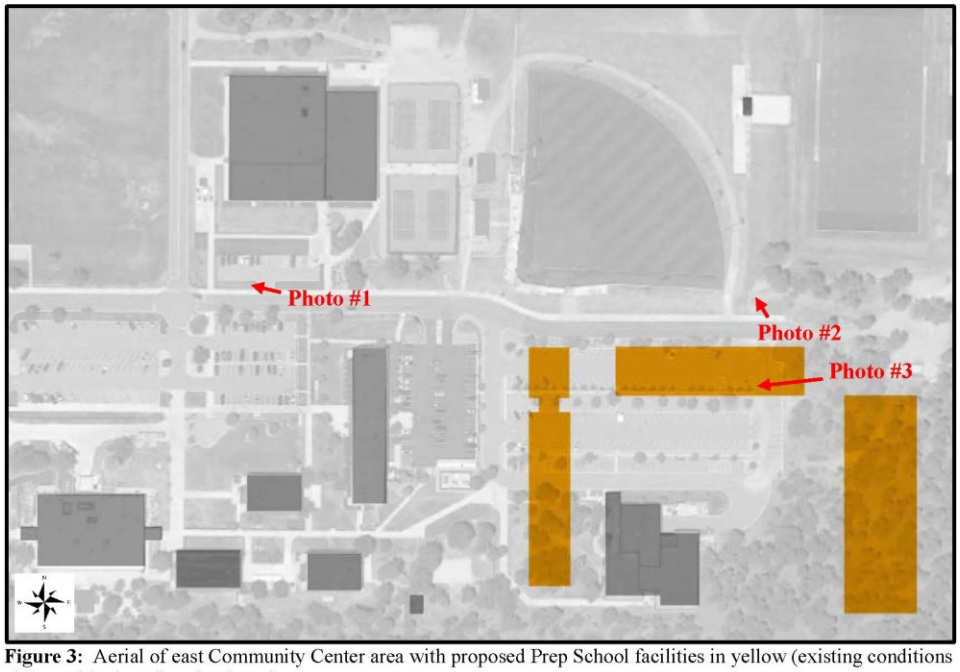

Figure 3: Aerial of east Community Center area with proposed Prep School facilities in yellow (existing conditions photos with view direction in red).

Figure 4: (Left) Photo #1: View west along Cedar Drive. (Right) Photo #3: Existing condition of parking lot in vicinity of future new Prep School Dormitory.

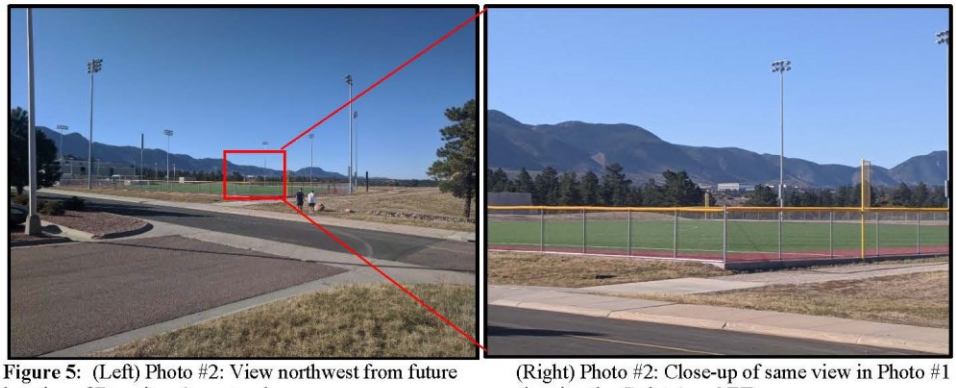

Figure 5: (Left) Photo #2: View northwest from future location of Dormitory's east end. (Right) Photo #2: Close-up of same view in Photo #1 showing the Cadet Area NHL.

An Environmental Assessment (EA) is also being conducted for the future work described in the 2019 Master Plan. The EA will address one preferred action and three alternatives. Currently, the preferred anticipated action will include the scope summarized above in this document. The three alternatives will likely include 1) a no action alternative, 2) a design alternative previously analyzed in 2012, and 3) an alternative with a different building configuration in the same location as the preferred alternative. All these action alternatives are conceptual and preliminary in nature, and for considerations of compliance under the National Historic Preservation Act, a project Programmatic Agreement (PA) will be developed *prior* to the EA's completion. The PA will be structured to address details of final design(s), construction, etc. which cannot be specified until after the EA is finalized

As referenced above, a design alternative to upgrade the Prep School was consulted with your office in 2012. This project proposed the demolition of six building (5210, 5212, 5214, 5216, 5220, 8137), construction of two new buildings (a Cadet Candidate Quarters building and an Academic Facility), and an addition to the Community Center Gymnasium (Building 5234). In January 2012, your office concurred the project would result in "no adverse effect to historic properties" (CHS #60900) (Attachment 2) and an EA was completed for the project resulting in a Finding of No Significant Impact (FONSI). However, the project was not executed and since then, a new Prep School Master Plan has been developed that has changed the location (Attachment 3). Consequently, USAFA is again initiating Section 106 consultation with your office on the new scope of the preferred proposed project.

The proposed construction at the new location will occur in roughly three phases (dependent on available funds) and will be funded through the Military Construction (MILCON) program. Phase 1 will include the construction of the dormitory and demolition of existing dorm facilities, Phase 2 the terrazzo and the Academic facility/Headquarters, and Phase 3 will complete the campus with a new Athletic facility and demolition of the Milazzo Club (Figures 6 – 8). The stormwater detention infrastructure will be constructed at all three phases to ensure standards are met at each development stage.

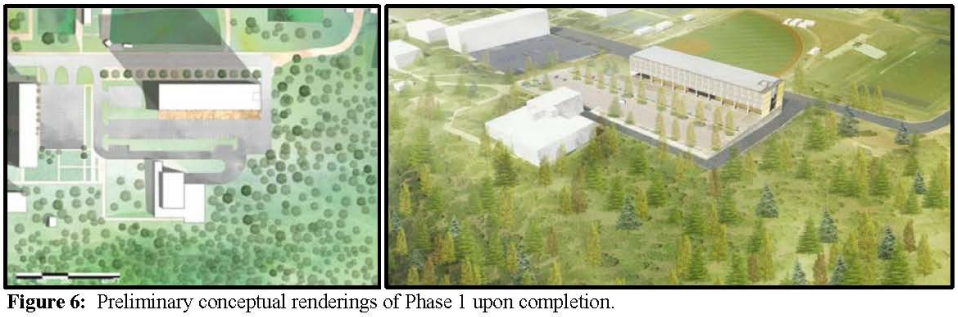

Figure 6: Preliminary conceptual renderings of Phase 1 upon completion.

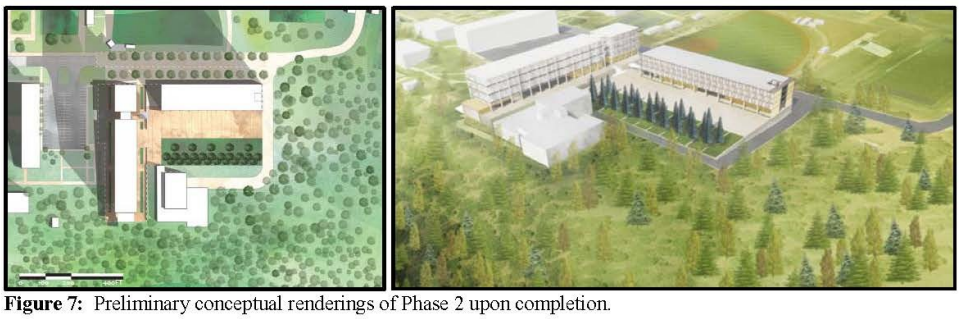

Figure 7: Preliminary conceptual renderings of Phase 2 upon completion.

Figure 8: Preliminary conceptual renderings of Phase 3 upon completion.

While the general layout and design guidelines for the facilities within the new Prep School campus will follow USAFA Installation Facility Standards, the final design for the new Dormitory will be determined through a design competition with design-build contractors. This design process was selected to leverage the skills and creative ideas of the various contractors to develop a design that creatively meets the needs of the user while complementing the existing architectural expression at USAFA. Design guidelines for the new Prep School are specified in the new Master Plan and in the Scope of Work (SOW) that will solicit requests for proposals from the contractors. These guidelines include the following specifications:

1. The three main buildings of the new Prep School (Dormitory, Academic Building/Headquarter, and Athletic Training Facility) will surround a common outdoor space modeled after the Terrazzo space in the Cadet Area National Historic Landmark (NHL) (Figure 9).

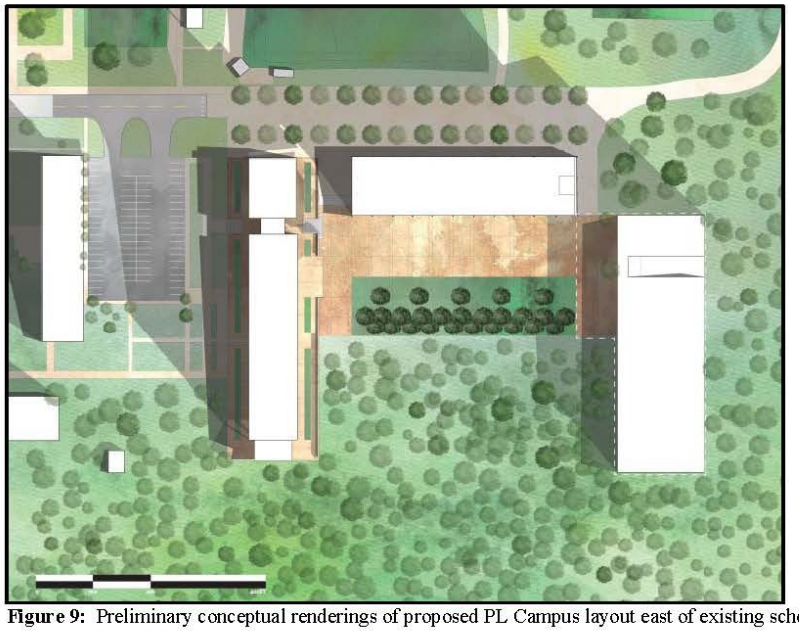

Figure 9: Preliminary conceptual renderings of proposed PL Campus layout east of existing school buildings.

2. The Terrazzo space will be located at the ground floor of the new Dormitory and existing Milazzo Club entry level. The Academic Building will be elevated above the proposed Terrazzo level to meet the existing grade roughly eight to 10 feet higher. The Athletic Training Building steps further down the site to the east following the existing natural topography (Figures 10 & 11).

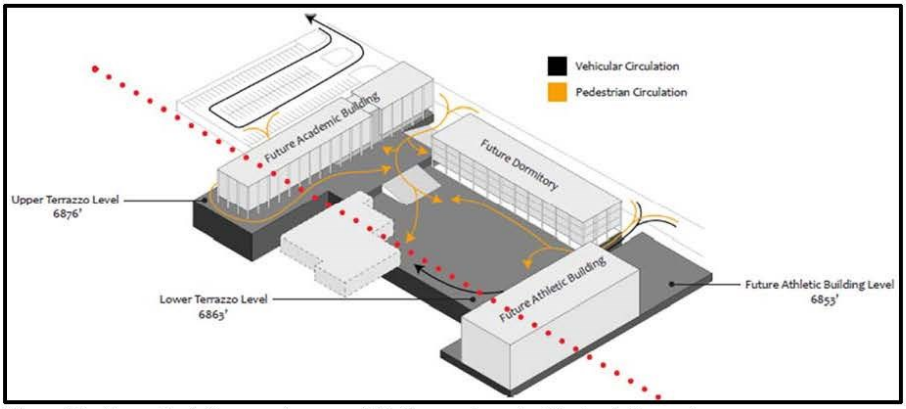

Figure 10: Conceptual diagram of proposed PL Campus layout with circulation routes.

Figure 11: Conceptual view (as preliminarily proposed) for upper Terrazzo next to Academic Facility/Headquarters looking North.

3. Architecturally, the buildings are imagined as a family with slight variations due to both the scale and program contained in each. A common theme of all three is clarity of structural expression. Columns spaced on 28' centers define the dormitory which complements the individual room increment of 14' on center.

   The architecture of USAFA is rigorous and defined by the geometric precision of the 7' module in either 21' or 28' structural grids. The massing is direct but provides cover for outdoor circulation pathways, or opens to define entry (Figure 12).

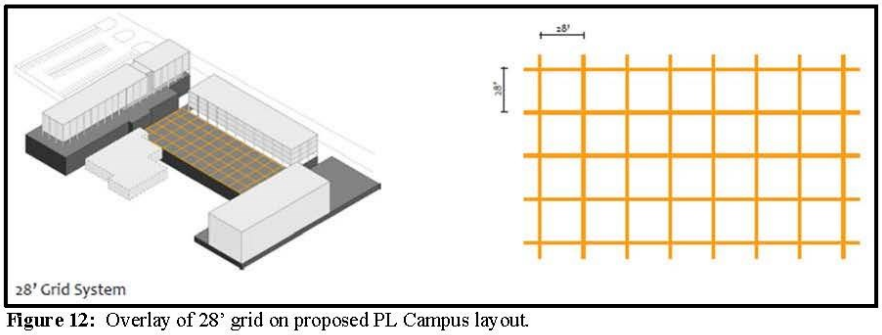

Figure 12: Overlay of 28' grid on proposed PL Campus layout.

4. Another notable characteristic of USAFA buildings is the interplay between manmade objects and nature – whether topographic features, foothills, ravines, rolling hills, majestic conifers, or the spread of turf across a plane; the dialogue between buildings and nature is dynamic and creates a unique sense of place in the distinct environment. The placement of buildings in the Prep School Master Plan are set to enhance the natural features of the site from the gentle slope from the foothills to the dramatic view of the southern valley, the Prep School campus uses the

dialogue between building and land to create a similarly strong sense of place. The outdoor gathering space "Terrazzo" is both a point of reference – a datum to the topography – and a central focal point for the campus. It provides an order, a sense of connection and a locus for a variety of activities the preppies will experience in their year at the Academy. The buildings create an assembly that is coherent while responding to the natural grade and opening the dramatic views toward the south (Figures 13 - 15).

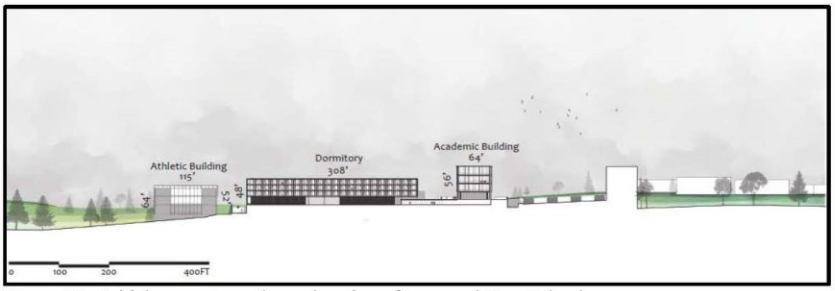

Figure 13: Initial concept, northern elevation of proposed Prep School.

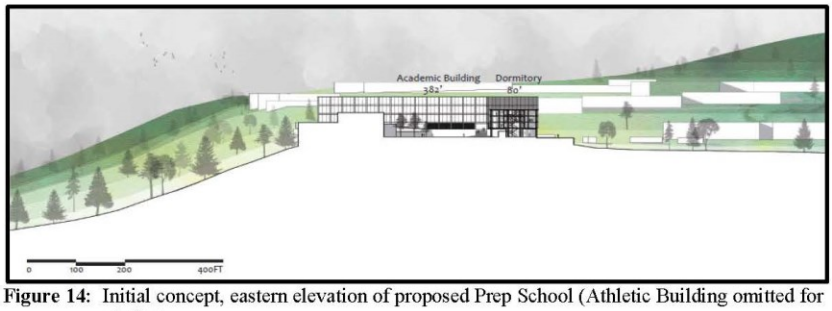

Figure 14: Initial concept, eastern elevation of proposed Prep School (Athletic Building omitted for clarity).

Figure 15: Initial concept, southern elevation of proposed Prep School.

5. The new architectural parti for the Prep School establishes not only an organized space for program and function, but also creates an elegant transition of spaces from the entry public area to an interior quad area that is semi-public and more private for programmed activities of the

school and informal outdoor circulation and enjoyment. Consistent with the historical precedents of the USAFA Air Garden, Cadet Terrazzo Area, and overall vision of Dan Kiley, the public realm is organized in the same spirit, using the historically-established grid and segmentation of spaces. This organization of spaces shall accommodate the cadet and student marching exercises, as well as provide intuitive connection between the newly established architecture and programmed uses. A clearly organized zone of xeriscape grasses, paired with a dominant conifer tree planting organization, serves two purposes; simultaneously allowing the plaza area of the quad to be internally defined, while also externally connecting to the natural context and hillside to the south (Figures 16 – 17).

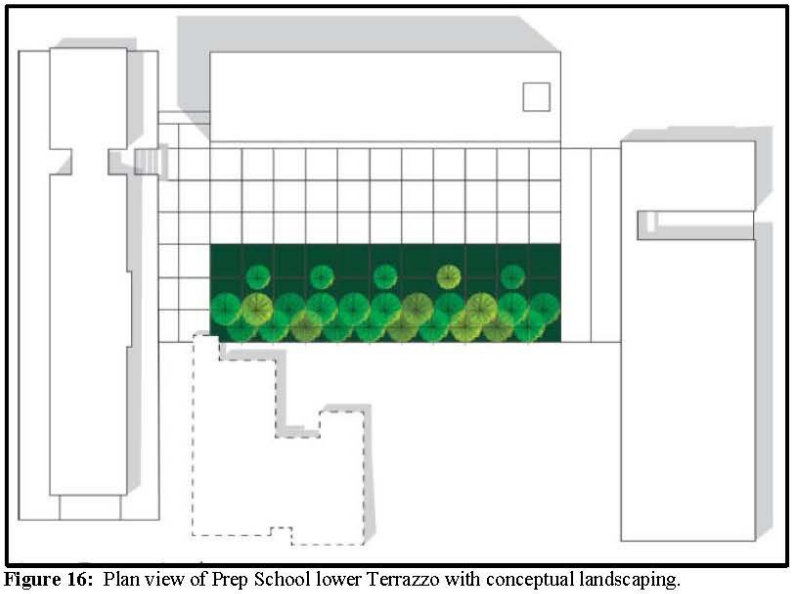

Figure 16: Plan view of Prep School lower Terrazzo with conceptual landscaping.

Figure 17: Rendering (initial concept) looking Northwest of Prep School lower Terrazzo.

6. The building stock at USAFA provide clear examples of an approach to architectural expression that is driven primarily by clear, understated massing and a direct use of materials that are durable, in their natural state and expressive of their function. The proposed buildings have taken these elements as a basis and explored ways to alter the expression to distinguish new from existing, but still responding to the clearly defined context.

7. In order to improve energy efficiency, control glare and provide visual interest, external metal sun shades are placed on the façade of the dormitory to provide scale and layering to private spaces so that the glass can increase in transparency and provide better daylight and access to views.

8. Exterior material guidance states the exterior of the building needs to be primarily glass windows, as each dorm room is required to have vision glazing, and interior material guidance states the interior wall materials shall be painted gypsum wallboard on steel studs.

Steps Taken to Identify the Area of Potential Effect (APE):

Based upon anticipated impacts from relocation of the existing Prep School, the APE for proposed future project work has been formulated to encompass all existing facilities used by the Prep School and those areas proposed for development, including any stormwater and infrastructure improvements (Figure 18). Additionally, while not shown on the APE map below, potential impacts to the Cadet Area National Historic Landmark (NHL) (5EP.4680) and the proposed potentially National Register (NR)-eligible USAFA Campus Historic District (5EP.595) will be considered within analysis of determination of effects.

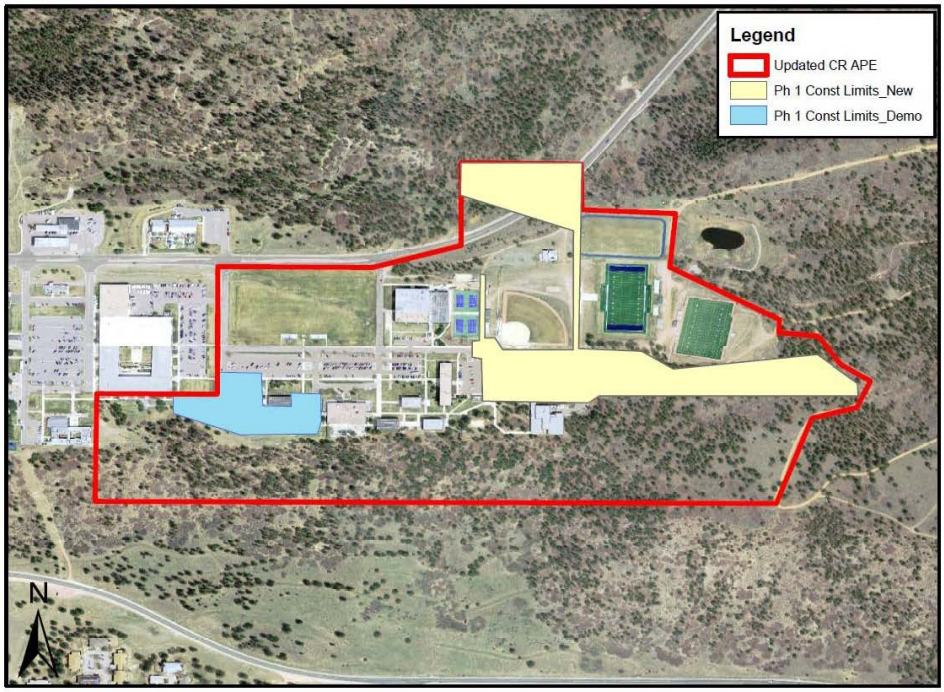

Figure 18: APE for future undertakings involved with the relocation of the existing Prep School.

In preparation for future consultation on the undertakings involved with relocating the existing Prep School, USAFA has begun updating cultural resources inventories (both architectural and archaeological) of the existing Prep School and the proposed new location, coincident with the APE shown in Figure 18. In order to satisfy requirements under the NHPA Section 110 (54 U.S.C. 306101(a) and 306102), as well as requirements under Section 106 (54 U.S.C. 306108), an archaeological survey of most of the undeveloped areas within the defined APE has been executed and is included in Attachment 4 of this package for concurrence on the single recommended determination of eligibility for listing in the National Register of Historic Places (NRHP).

Potential for Impacts to Historic Properties and Determination of Effects:

Since the final project details for the proposed new buildings within the new Prep School are substantially unknown, USAFA has determined they cannot come to a determination of effect. In order to complete the associated EA and as is allowed by the NHPA, USAFA proposes the development of a project specific Programmatic Agreement (PA) to resolve potential adverse effects that may result from multiple future undertakings whose *"effects on historic properties cannot be fully determined prior to approval of an undertaking"* (36 CFR § 800.14(b)(1)(ii)). If your office concurs with our approach, we respectfully request you let us know as soon as possible so that we might contact the Advisory Council on Historic Preservation (ACHP) and ask them if they wish to participate in the development of the project PA.

REFERENCES

Jones, Robert and Isla Nelson
2019 *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA.* Cardno, Inc. Contract Number FA8903-16-D-0032, Task Order FA8903-18-F-0242.

United States Air Force Academy
2012 *Preparatory School and Community Center Gymnasium Construction Final Environmental Assessment (EA), U.S. Air Force Academy, Colorado.* Prepared by: URS Group, Inc.

United States Air Force Academy
2019 *Preparatory School Master Plan.*

ATTACHMENT 2
January 2012 SHPO Correspondence (CHS #60900)

HISTORY Colorado

27 January 2012 CHS #60900

Vicki Williams
10 CES/CEAO
United States Air Force Academy
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy, CO 80840-2400

RE: New Preparatory Leadership Academic Facility, United States Air Force Academy, El Paso County

Dear Ms. Williams:

Thank you for your recent correspondence dated 30 November 2011, concerning the proposed replacement of Buildings 5210, 5211, 5214, 5316, and 5220 with new campus structures for the Air Force Preparatory Leadership Academy. The project will also expand the existing gymnasium building (5234). Our office has reviewed the submitted materials.

Although the Preparatory Leadership Academy buildings are more than fifty years old, we do not believe that they are eligible for listing on the National Register, or that they contribute to the significance of the National Register-eligible US Air Force Academy campus (5EP.595). The buildings of the PL Academy have been altered over the years, and they are only tangentially related to the mission and function of the US Air Force Academy.

Therefore, we find that the proposed project will have no adverse effect on the US Air Force Academy. No other historic properties will be affected by this project.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer, and
President, Colorado Historical Society

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
303-866-3392 • Fax 303-866-2711 • E-mail: oahp@chs.state.co.us • Internet: www.historycolorado.org

- 1 -

WWW.HISTORYCOLORADO.ORG
HISTORY COLORADO CENTER 1200 BROADWAY DENVER COLORADO 80203

ATTACHMENT 5
Consulting/Interested Parties

Apache Tribe of Oklahoma
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe
Comanche Nation of Oklahoma
Crow Nation
Eastern Shoshone Tribe of the Wind River Reservation
Flandreau Santee Sioux Tribe of South Dakota
Fort Belknap Indian Community
Fort Sill Apache Tribe
Jicarilla Apache Tribe
Kiowa Tribe of Oklahoma
Lower Brule Sioux Tribe of the Lower Brule Reservation
Mescalero Apache Tribe
Navajo Nation
Northern Arapaho Tribe
Northern Cheyenne Tribe
Oglala Sioux Tribe
Pawnee Nation of Oklahoma
Pueblo de Cochiti
Pueblo of Picuris
Pueblo of San Ildefonso
Pueblo of Santa Ana
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Zuni
Rosebud Sioux Tribe
Santee Sioux Nation
Southern Ute Indian Tribe
Spirit Lake Nation
Standing Rock Sioux Tribe
Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
Upper Sioux Indian Community
Ute Indian Tribe of the Uintah and Ouray Reservation
Ute Mountain Ute Tribe
Yankton Sioux Tribe

Colorado State Historic Preservation Officer (SHPO)
National Park Service

ATTACHMENT 6
Signed Tribe/Stakeholder Letter

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Dear Tribal Historic Preservation Officer and other stakeholders

Please find enclosed the United States Air Force Academy's (USAFA) initiation of Section 106 consultation, in accordance with the National Historic Preservation Act (NHPA), for an undertaking to relocate the USAFA Preparatory School (Prep School) to the east of the current Prep School campus location. This relocation will include the construction of new facilities and demolition of existing Prep School facilities (Attachment 1). The proposed project area is within view of the USAFA Cadet Area National Historic Landmark (5EP.4680) and within the boundary of the potentially National Register of Historic Places (NRHP) proposed USAFA Campus Historic District (5EP.595).

The existing Prep School campus is located in the south central portion of USAFA. It is immediately east of the USAFA Community Center, accessed primarily from Community Center Drive. The Prep School mission is to prepare, motivate, and evaluate cadet candidates for admission to USAFA. Approximately 240 cadet candidates annually enroll in the Prep School.

The recently completed 2019 Prep School Master Plan advocates for a different location for the Prep School, including proposed construction of new facilities with demolition of existing Prep School facilities. The new construction, as conceptually proposed, would occur in roughly three phases aligned to the Master Plan. In general, the first phase would include the design and construction of a new Dormitory Building. The second phase would address the Academic Building/Headquarters, and the final phase would be for all remaining construction.

A National Environmental Policy Act-associated Environmental Assessment (EA) also is being developed to support this planning effort. The EA will address a preferred action alternative and three other alternatives. As currently envisioned, the preferred alternative will include the scope summarized in Attachment 1. The three other alternatives will be: (1) a no action alternative, (2) a design alternative previously analyzed in 2012, and (3) an alternative with a different building configuration in the same location as the preferred alternative.

The referenced 2012 alternative involved a proposed upgrade to the Prep School. That project proposed demolition of six buildings (5210, 5212, 5214, 5216, 5220, 8137), construction of two new buildings (a Cadet Candidate Quarters building and an Academic Facility), and an addition to the Community Center Gymnasium (Building 5234). Tribes were not consulted during 2012 because those plans were for architectural impacts "in place", i.e. no impact to the open space east of the current Prep School. In January 2012, the Colorado State Historic Preservation Officer concurred that the project would result in "no adverse effect to historic properties" (Attachment 2), and an EA was completed for the project, resulting in a Finding of No Significant Impact. However, the project was not executed, and since then, the new Master Plan was developed, which significantly changed the area goals (Attachment 3) and the cultural resources Area of Potential Effect (APE) leading to this present communication.

Integrity - Service - Excellence

Based upon anticipated impacts from the proposed undertaking, the APE for proposed future work encompasses all existing facilities used by the Prep School, and those areas proposed for the relocated Prep School including areas potentially planned for stormwater and infrastructure improvements.

While the general layout and design guidelines for the facilities within the new Prep School campus will follow USAFA Installation Facility Standards, the final design for the new Dormitory Building will be determined through a design competition with design-build contractors. This design process was selected to leverage the skills and ideas of the various contractors to develop a design that creatively meets the needs of the user while complementing the existing architectural expression at USAFA. Design guidelines for the new Prep School are specified in the Master Plan and in the Scope of Work that will solicit requests for proposals from the contractors.

Since the *final* project details are unknown for the proposed new Prep School buildings, USAFA at present cannot propose a determination of effect. To complete the associated EA and as allowed by the Section 106 regulations, USAFA proposes the development of a project-specific Programmatic Agreement (PA) to resolve potential adverse effects that may result from multiple future undertakings whose *"effects on historic properties cannot be fully determined prior to approval of an undertaking"* (36 CFR § 800.14(b)(1)(ii)). The PA would stipulate roles and responsibilities pertaining to the Prep School's construction.

In preparation for future consultation on the undertakings involved with relocating the Prep School, USAFA has begun updating cultural resources inventories (both architectural and archaeological) across the proposed APE. Attachment 4 provides a final report (dated December 2019) titled *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA,* with a companion State of Colorado Cultural Resources Survey Form for 5EP.8621.1. This survey was conducted to satisfy requirements under the NHPA Section 110, as well as requirements under Section 106. The report's information is portrayed in Attachment 1.

The 2019 archeological survey report documents a historic road segment (5EP.8621.1) identified and recorded within the APE. The segment is recommended by USAFA as not supporting of the overall linear resource (5EP.8621). Until such time that the entire linear resource may be surveyed, 5EP.8621 is recommended eligible for listing in the NRHP. USAFA, under provisions of NHPA Section 106 and Section 110, is recommending to the State Historic Preservation Officer that for the Prep School planning, 5EP.8621.1 does not contribute to potential NRHP-eligibility of 5EP.8621. We welcome any comments on this final report and request that you file it with your official records.

Attachment 5 contains a list of potential Section 106 stakeholders to this proposed project. Regarding the present initial communication on the project, please submit your comments to the above address, or by email (for the latter, emails are acceptable and included in our administrative record in the same manner as written correspondence). We respectfully request that comments be provided within 30 days of receipt of this consultation package. In your response, please indicate if you would like to participate as a concurring party regarding development of the project PA, and if the latter (i.e. no PA participation) please tell us if you otherwise wish to receive or not receive future communications regarding this project. If USAFA does not hear from you after the 30-day period, my staff will communicate informally to confirm that you wish no further correspondence on this project. However please be assured that should this project ultimately produce an inadvertent discovery of previously unknown cultural resources or information, such as might be of interest to USAFA tribal stakeholders, USAFA would of course notify all such stakeholders.

3

Please direct comments to Mr. Erwin Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, (719) 333-7341, or at the above address. We thank you for your review and assistance.

Sincerely

JEOUN.JIMMY.JOSEPH.1237435385 Digitally signed by JEOUN.JIMMY.JOSEPH.1237435385 Date: 2020.01.24 16:12:31 -07'00'

JIMMY J. JEOUN, Lt Col, USAF

5 Attachments:
1. USAFA Cultural Resources Section 106 Project Review
2. January 2012 SHPO Correspondence (CHS #60900)
3. September 2019 Prep School Master Plan (digital copy)
4. Report titled *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA* and associated forms (digital copies)
5. Consulting/Interested Stakeholder List

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Mr. Steve Turner, AIA
Executive Director & Colorado State Historic Preservation Officer
History Colorado
1200 Broadway
Denver CO 80203-2137

Dear Mr. Turner

Thank you for your reply by letter dated 24 February 2020 on the demolition, relocation, and reconstruction planned for the United States Air Force Academy's Preparatory Campus (referenced HC #77246 in your records).

Your letter recommended that a project Programmatic Agreement is not needed because (1) there are no buildings eligible for listing on the National Register of Historic Places (NRHP), (2) the linear road segment 5EP.8621.1 does not contribute eligibility to pertinent NRHP properties, and (3) the proposed demolition would have no adverse effect upon historic properties. Therefore, we conclude that National Historic Preservation Act Section 106 review is complete. Post-review Discoveries procedures at 36CFR§800.13 along with our Integrated Cultural Resources Management Plan would apply to unanticipated findings, if any, during construction.

Please let us know if you concur with this project's Section 106 review process being complete. Comments can be directed to Mr. Erwin Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, (719) 333-7341, or at the above address.

Sincerely

JEOUN.JIMMY.JOSEPH.1237435385 Digitally signed by JEOUN.JIMMY.JOSEPH.1237435385 Date: 2020.03.16 18:38:41 -06'00'

JIMMY J. JEOUN, Lt Col, USAF

Integrity - Service - Excellence

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Mr. Steve Turner, AIA
History Colorado Executive Director & Colorado State Historic Preservation Officer
Colorado Historical Society
1200 Broadway
Denver CO 80203-2137

Dear Mr. Turner

Please find enclosed materials supporting the United States Air Force Academy's (USAFA) Section 106 consultation, in accordance with the National Historic Preservation Act, for an undertaking to relocate the USAFA Preparatory School Campus (Prep School) by construction of new facilities. The proposed project area is within the boundary of the National Register of Historic Places (NRHP) proposed USAFA Campus Historic District (5EP.595).

In a letter from USAFA to your office dated 24 January 2020, USAFA proposed a project Programmatic Agreement (PA) in order to complete Section 106 consultation for the relocation of the Prep School. This relocation involves both demolition of existing facilities and construction of new facilities with the same functions as those being demolished. However, in correspondence from your office in February and March 2020 (HC #77246) (Attachment 1), you recommended no project PA is needed, and further requested that the Section 106 consultation for the Prep School relocation be completed in two separate consultations: one for demolition of existing facilities and the other for relocation/new construction of the Prep School.

Regarding demolition associated with the relocation of the Prep School, in the letter dated 28 February 2020, you stated the existing Prep School-associated buildings (Buildings 5210, 5212, 5214, 5216, 5218, 5220, 5224, 5222, and 5226) were not individually eligible for the NRHP nor were they contributing to the proposed USAFA Campus Historic District (5EP.595). At that time, you communicated that the demolition of Buildings 5210, 5212, 5214, 5216, 5220, and 5226 as a part of the work to relocate/construct a new Prep School would have *"no adverse effect on historic properties"* (36 CFR § 800.5(b)).

Per your request, the present consultation package addresses the new construction associated with the relocation of the Prep School. The relocation and construction of the new Prep School is proposed eastward of the existing Prep School in the USAFA Community Center area. The proposed undertaking is described in more detail in Attachment 2 and is informed by the recently completed 2019 Prep School Master Plan (Attachment 3). Additionally, the site development drawings for Phase 1 Design are provided in Attachment 4. The new construction, as conceptually proposed, would occur in roughly three phases aligned to the Master Plan. In general, the first phase would involve the design finalization and

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construction of a new Dormitory Building, the second phase for the Academic Building/Headquarters, and the final phase for an Athletic Training Facility.

The Area of Potential Effect (APE) for the three phases of the new Prep School construction was developed to encompass all areas proposed for ground disturbance, new facilities, utilities, laydown, and staging. All three construction phases (all designed conceptually and discussed in this letter, the Master Plan, and the Phase 1 Design) will occur within the designated APE.

The potential for impacts to Historic Properties for the new construction of the Prep School was assessed based upon previously conducted archaeological surveys that covered or were near the undertaking's APE (Arbogast et al. 1996; Jones & Nelson, 2019), thorough inspection of the Colorado Office of Archaeology and Historic Preservation's COMPASS Cultural Resource Database, review of USAFA records, and study of available topographic maps and aerial imagery of the APE.

There is a single historic road segment in the southern portion of the APE (5EP.8621.1). It was determined officially ineligible to the NRHP in 2019 (HC #77246). Additionally, there are no known areas of interest to USAFA-affiliated Tribes within the proposed APE.

For the built environment within the APE, as was previously determined in the letter discussed above from the State Historic Preservation Officer, the Milazzo Center (Building 5226) is officially ineligible for the NRHP individually or as a contributing facility to the proposed 5EP.595 historic district. Additionally, there is a three-sided stockpile bin and a segment of a fitness trail within the APE, both of which have not been evaluated for the NRHP. While the exact installation date of the stockpile bin is unknown, its design and aesthetic are purely functional in nature, simplistic, and unremarkable. Additionally, other similar bins exist elsewhere on USAFA. As for the segment of the fitness trail, aerial imagery indicates the segment was developed between 1966 and 1982 and the trail as a whole was converted to the fitness course more recently in 1982. Furthermore, aerial imagery (Attachment 1, Figures 2–7) indicates modifications have previously occurred to this portion of the trail, which would have impacted any integrity had it been present at the time. Based upon the background of these elements, it is USAFA's recommendation that neither the stockpile bin nor the segment of the fitness trail would qualify for the NRHP under Criteria A–D or by exception.

The APE also is within the boundary of the installation and therefore within the boundary of the potentially NRHP-eligible proposed USAFA Campus Historic District (5EP.595). However, the proposed new campus and its facilities have been designed to use concepts previously developed by Skidmore, Owings & Merrill, and present on USAFA. Additionally, while the proposed new construction will be minimally visible from other areas of the installation, the design is such that it will complement the existing architectural expression present on USAFA and it will not overshadow or detract from other historic facilities/areas on USAFA. Furthermore, a 2012 iteration of a proposed new Prep School previously was determined by your office to not have an adverse effect.

Under 36 CFR Part 800, the responsible Federal agency first determines whether the proposed Federal action is an undertaking as defined in § 800.16(y) and, if so, whether it is a type of activity that has the potential to cause effects on Historic Properties. As defined at § 800.16(i), an effect means alteration to the characteristics of a Historic Property qualifying it for inclusion in or eligibility for the NRHP. In accordance with 36 CFR § 800.5(b), USAFA proposes a finding of *"no adverse effect to historic properties"* for the construction of the new Prep School.

Should unanticipated cultural resources be encountered, the construction contractor will cooperate with USAFA to follow 36 CFR § 800.13 and the Standard Operating Procedures for "Discoveries of Archaeological Resources and NAGPRA Items" published in the 2019 Integrated Cultural Resources

3

Management Plan. All work would stop in the area of such a find, and the Cultural Resources Manager, Erwin Roemer, would be contacted to work appropriate next steps. Should potential impacts to Historic Properties be possible due to a change in the construction's scope of work, proposed locations, or due to activities proposed beyond the scope of the undertaking, follow-up Section 106 consultation would occur.

Due to the nature and scope of this undertaking, in accordance with 36 CFR § 800.2(c) USAFA has sent project review documentation to interested Native American tribes, and other stakeholders (Attachment 5) and will address their comments or concerns.

Please direct comments to Mr. Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, teleworking number (646) 673-4642, or at the above address. We thank you for your review and assistance.

Sincerely

JEOUN.JIMMY.JOSEPH.1237435385 Digitally signed by JEOUN.JIMMY.JOSEPH.1237435385 Date: 2020.05.04 16:36:22 -06'00'

JIMMY J. JEOUN, Lt Col, USAF

5 Attachments:
1. Recent SHPO Correspondence on Prep School Relocation
2. USAFA Cultural Resources Section 106 Project Review
3. 2019 Prep School Master Plan
4. Phase 1 Site Development Design for Prep School Relocation
5. Consulting/Interested Stakeholder List

cc:
Mr. Justin Henderson, Program Manage
Heritage Partnership Program
National Park Service Regional Office
serving Department of the Interior Regions 6, 7, & 8
12795 W Alameda Parkway
Lakewood CO 80228-2838

ATTACHMENT 1

Recent SHPO Correspondence on Prep School Relocation

HISTORY Colorado

24 February 2020 HC #77246

Lt Col Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy, CO 80840-2400

RE: Demolition, Relocation, and Reconstruction of the USAFA Preparatory School Campus, United States Air Force Academy, El Paso County

Dear Lt Col Jeoun:

Thank you for your recent correspondence received 28 January 2020, concerning the proposed demolition of the USAFA Preparatory School campus, and its eventual relocation to a new area on Academy grounds (housed in new buildings). Our office has reviewed the submitted materials. The Prep School complex was previously determined by our office to be ineligible for individual listing on the National Register of Historic Places, and to be a non-contributing resource within the Air Force Academy Historic District (5EP.595).

Because the buildings in question are not historic, and the proposed location of the new campus is generally known, we are not convinced that a Programmatic Agreement is necessary at this time. The possible effects of the undertaking to both historic and prehistoric (if present) resources is either known, or easily ascertained. Any significant changes in the final project design (for example, a larger footprint, or a change in building materials) can be reviewed in a straightforward consultation under 36.CFR.800.

For the purposes of the project before us, we concur that (1) the buildings under consideration are not eligible for listing on the National Register; (2) the identified road segment (5EP.8621.1) does not support the eligibility of the overall resource, and; (3) the demolition of the Prep School buildings will have no adverse effect on historic properties.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

FEB 28 2020

Steve Turner, AIA
State Historic Preservation Officer

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
303-866-3392 * Fax 303-866-2711 * E-mail: oahp@state.co.us * Internet: www.historycolorado.org

History Colorado, 1200 Broadway, Denver, CO 80203 HistoryColorado.org

Attachment 1 – Recent SHPO Correspondence on Prep School Relocation 1

HISTORY Colorado

23 March 2020 HC #77246

Lt Col Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy, CO 80840-2400

RE: Demolition, Relocation, and Reconstruction of the USAFA Preparatory School Campus, United States Air Force Academy, El Paso County

Dear Lt Col Jeoun:

Thank you for your recent correspondence received 19 March 2020, concerning the proposed demolition of the USAFA Preparatory School campus, and its eventual relocation to a new area on Academy grounds (housed in new buildings). Our office has reviewed the submitted materials.

Please note that while the demolition of the existing buildings will have no adverse effect on historic properties, the relocation of the Prep School to a new site is a separate Undertaking pursuant to 36.CFR.800, and will need to be reviewed by consulting parties once a new campus has been officially located, sited, and designed. We look forward to working with your office as the Prep School project moves forward.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

Steve Turner, AIA
State Historic Preservation Officer

WWW.HISTORYCOLORADO.ORG
HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Attachment 1 – Recent SHPO Correspondence on Prep School Relocation 2

ATTACHMENT 2

United States Air Force Academy (USAFA) Cultural Resources Section (CRS)
Section 106 Project Review

Undertaking: Relocation of the USAFA Preparatory (Prep) School involving construction of new school facilities.

The undertaking proposes to relocate the Prep School Campus to the eastern boundary of the Community Center area. The details of the three phases of the proposed undertaking are provided in this package and the 2019 Prep School Master Plan (Attachment 3). The three phases of the relocation will include the construction of a new dormitory, academic building/headquarters facility, athletic training facility, terrazzo, and a stormwater detention pond. Additionally, the project likely will involve the demolition of six buildings currently used for Prep School purposes that would be made redundant by new construction. However, in correspondence from the Colorado State Historic Preservation Office (SHPO), dated 28 February 2020, it was determined the demolition of Buildings 5210, 5212, 5214, 5216, 5220, and 5226 would have no adverse effect on historic properties. Consequently, this consultation package only addresses the work required to construct the new Prep School Campus to completion. Figure 1 provides a map of the proposed undertaking location.

Figure 1: Aerial of USAFA Community Center (existing Prep School blue, proposed location red).

Purpose and Background

The proposed undertaking has been determined necessary because the existing Prep School facilities are outdated without the ability to be renovated to the level required to meet today's educational needs. Additionally, the existing campus location and configuration is not conducive to a modern academic campus.

Sometime between 1992 and 2008, the area that is proposed for the new Prep School Campus and facilities was generally solidified into the area that is shown on current aerial imagery. Figures 2 – 7 provide imagery showing development of the area starting in 1937 and culminating in 2019 with the general project area highlighted in each. As one can see from these figures, buildings, parking lots, fields, and support infrastructure have been constructed and modified in the area in various capacities since the 1960s. Of particular note is that almost half of the proposed location for the Prep School Campus has experienced substantial ground disturbance from USAFA development and activities.

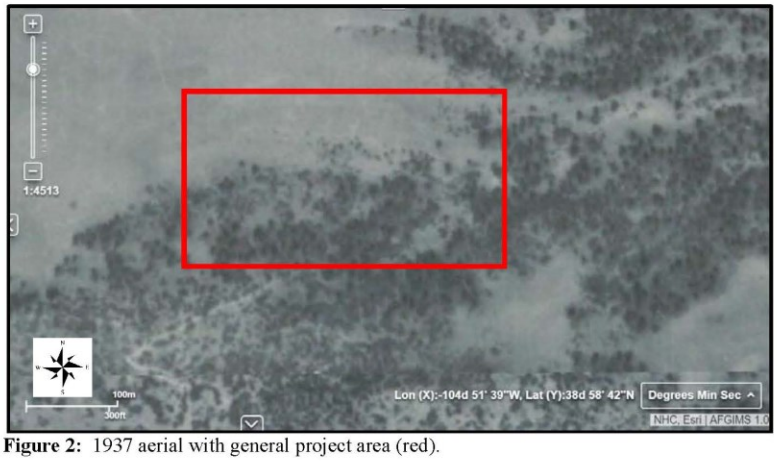

Figure 2: 1937 aerial with general project area (red).

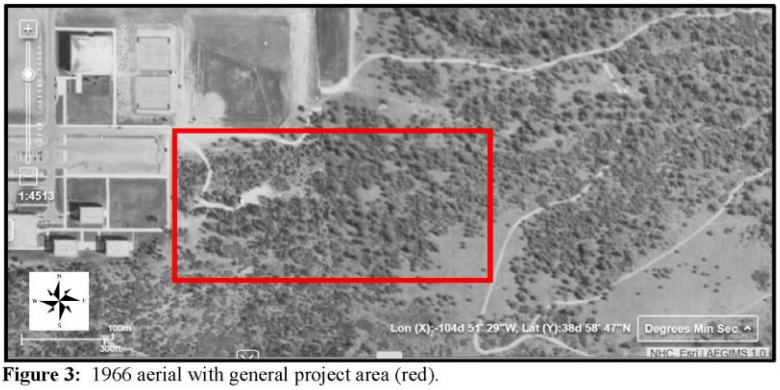

Figure 3: 1966 aerial with general project area (red).

Figure 4: 1982 aerial with general project area (red).

Figure 5: 1992 aerial with general project area (red).

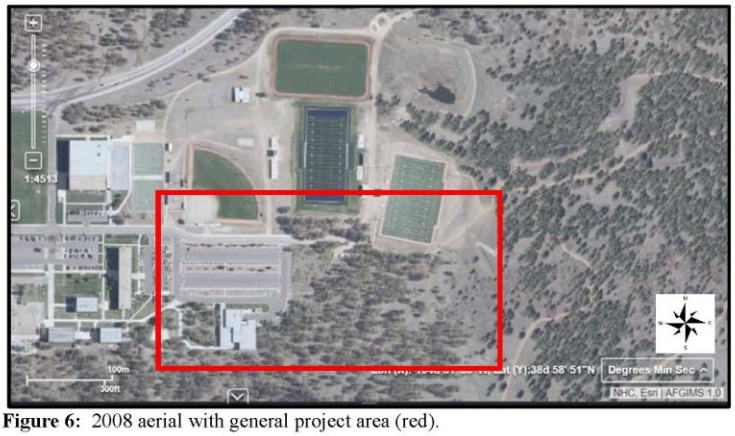

Figure 6: 2008 aerial with general project area (red).

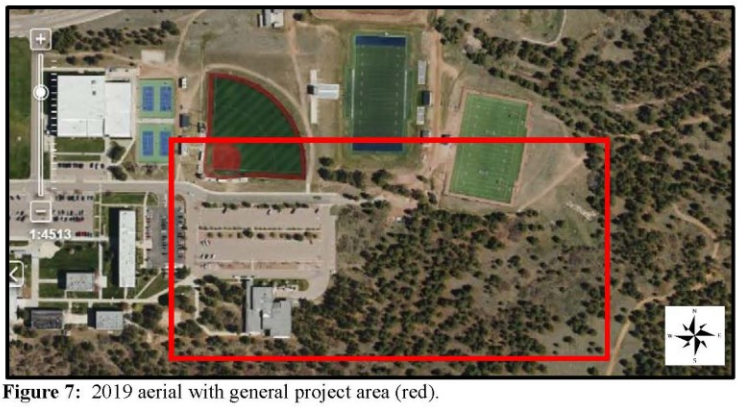

Figure 7: 2019 aerial with general project area (red).

Based upon aerial imagery, a three sided stockpile bin (measuring approximately 10 feet by 45 feet and made of concrete) seems to appear in the project area sometime after 1966 and original construction of the Community Center. Based upon available information regarding this bin, USAFA believes it was likely constructed quickly by in-house staff to support the area. This also seems likely based upon the purely functional nature of the bin and the simplistic, unremarkable design and aesthetic. It is used to store landscaping materials for in the area, which is characterized by a variety of athletic fields, and resembles other three sided stockpile bins on USAFA (Figure 8).

Figure 8: (Left) 2008 aerial image of stockpile bin; (right) example photo of similar stockpile bin in USAFA Service & Supply.

A trail that appears on aerial imagery sometime between 1937 and 1966 meanders through the Community Center in the area of the project. In 1982 it was converted into a Physical Activity Referral Scheme (PARS) course and a segment of this course runs through the project area (Figure 9). The course is utilized by various groups of the USAFA community and is marked by occasional exercise equipment such as pull-up bars. The small segment of the PARS course trail that runs through the APE may require modification/realignment. However, this segment of the trail was developed after original Community Center construction, the conversion of the trail to a PARS course occurred more recently in 1982, and aerial imagery indicates the modification to this portion of the trail has occurred before. Based upon imagery, this section of the trail developed at some point between 1966 and 1982 and then was very likely modified again between 1992 and 2008 due to the replacement of the field a portion of it runs through from a baseball diamond to a multi-purpose field. Generally, this segment of the PARS course trail has meandered in the area of fields and appears to have been rerouted at times to accommodate athletic facility needs and area development.

Figure 9: Project area with storage area (red) and PARS course trail segment (dashed yellow).

Project Description:

The existing Prep School Campus is roughly located in the south central portion of USAFA and east of the USAFA Community Center, and is accessed primarily from Community Center Drive. The Prep School mission is to prepare, motivate, and evaluate cadet candidates for admission to and success at USAFA. Approximately 240 Cadet Candidates enter the Prep School each summer and their successful completion of the program improves their chance for an appointment to USAFA as a Cadet, but does not guarantee it.

The new Master Plan calls for a new dormitory, academic building/headquarters facility, athletic training facilities, terrazzo, and stormwater detention. The new location is east of the current school and new construction will modify existing parking lots and sidewalks, landscaping, a three sided concrete/cinder block landscaping storage element, a segment of a PARS course trail, and the Ponderosa Pine forest bordering existing development near the Milazzo Center (Building 5226). The new campus will continue to use the existing dining hall (Building 5218) and the gym (Building 5234). Utilities will also be installed/modified throughout proposed APE to service the new Prep School Campus location. The design drawings for Phase 1 are provided in Attachment 4. Figures 10 – 12 show the proposed new location for the Prep School, the existing condition of the primary new campus area, and existing utilities in the area.

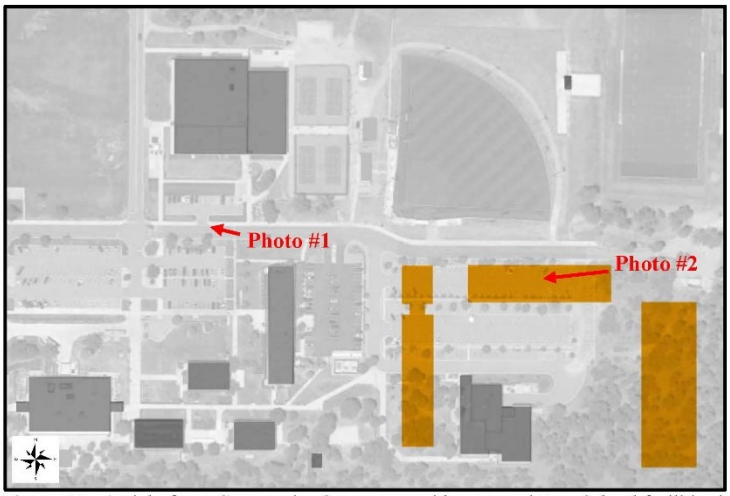

Figure 10: Aerial of east Community Center area with proposed Prep School facilities in yellow (existing conditions photos with view direction in red (See Figure 12)).

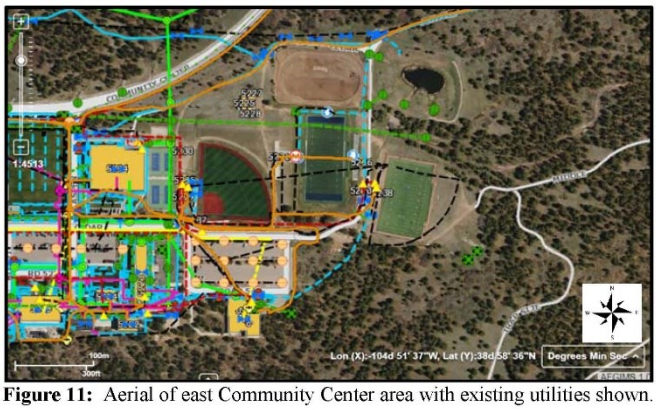

Figure 11: Aerial of east Community Center area with existing utilities shown.

Figure 12: (left) Exiting condition of Cedar Drive (looking west) within project area; (right) Existing condition of parking lots within project area.

An Environmental Assessment (EA) is also being conducted for the future work described in the 2019 Master Plan. The EA will address one preferred action and three alternatives. Currently, the preferred anticipated action will include the scope summarized above in this document. The three alternatives will likely include 1) a no action alternative, 2) a design alternative previously analyzed in 2012, and 3) an alternative with a different building configuration in the same location as the preferred alternative.

As referenced above, a design alternative to upgrade the Prep School was consulted with your office in 2012. This project proposed the demolition of six building (5210, 5212, 5214, 5216, 5220, 8137), construction of two new buildings (a Cadet Candidate Quarters building and an Academic Facility), and an addition to the Community Center Gymnasium (Building 5234). In January 2012, your office concurred the project would result in *"no adverse effect to historic properties"* (CHS #60900) and an EA was completed for the project resulting in a Finding of No Significant Impact. However, the project was not executed and since then, a new Prep School Master Plan has been developed that has changed the location and design.

The proposed construction at the new location will occur in roughly three phases (dependent on available funds) and will be funded through the Military Construction (MILCON) program. Phase 1 will include the construction of the dormitory and demolition of existing dorm facilities, Phase 2 the construction of the terrazzo and the Academic facility/Headquarters and demolition of the old facilities, and Phase 3 will complete the campus with a new Athletic facility and demolition of the Milazzo Club (Figures 13 – 15). The stormwater detention infrastructure will be constructed in all three phases to ensure standards are met at each development stage.

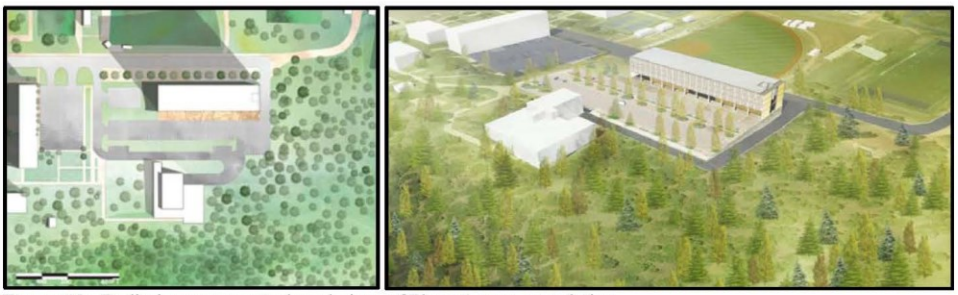

Figure 13: Preliminary conceptual renderings of Phase 1 upon completion.

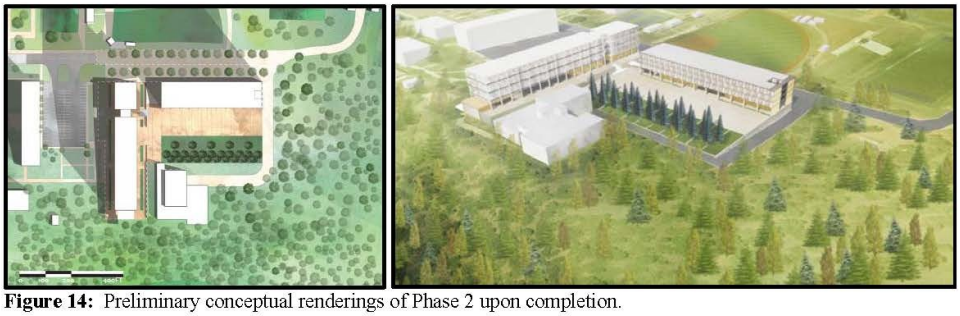

Figure 14: Preliminary conceptual renderings of Phase 2 upon completion.

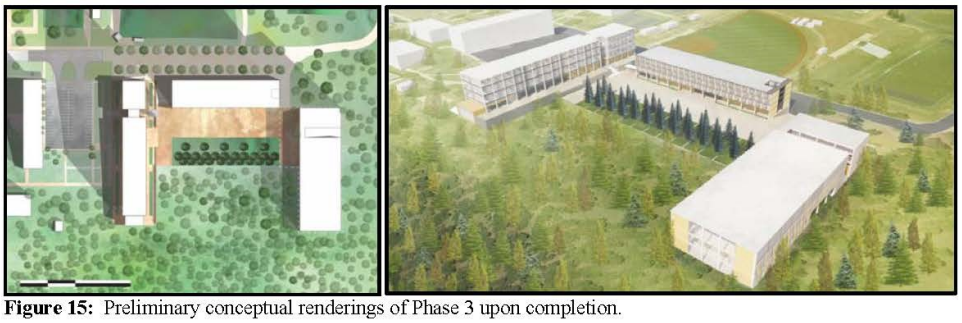

Figure 15: Preliminary conceptual renderings of Phase 3 upon completion.

The new Prep School Campus has been sited and organized as shown in the Master Plan and Figure 10. The architectural design and aesthetics for the facilities within the new campus will follow USAFA Installation Facility Standards and renderings of the facilities are provided in this attachment and the Master Plan. However, the more minute design details for the new Dormitory (and possibly the other facilities) will be determined through a design competition with design-build contractors. This design process was selected to leverage the skills and creative ideas of the various contractors to develop a design that creatively meets the needs of the user while complementing the existing architectural expression at USAFA. The known design details of the new Prep School Campus include the following:

1. The three main buildings of the new Prep School (Dormitory, Academic Building/Headquarter, and Athletic Training Facility) will surround a common outdoor space modeled after the Terrazzo space in the Cadet Area National Historic Landmark (NHL) (Figure 16).

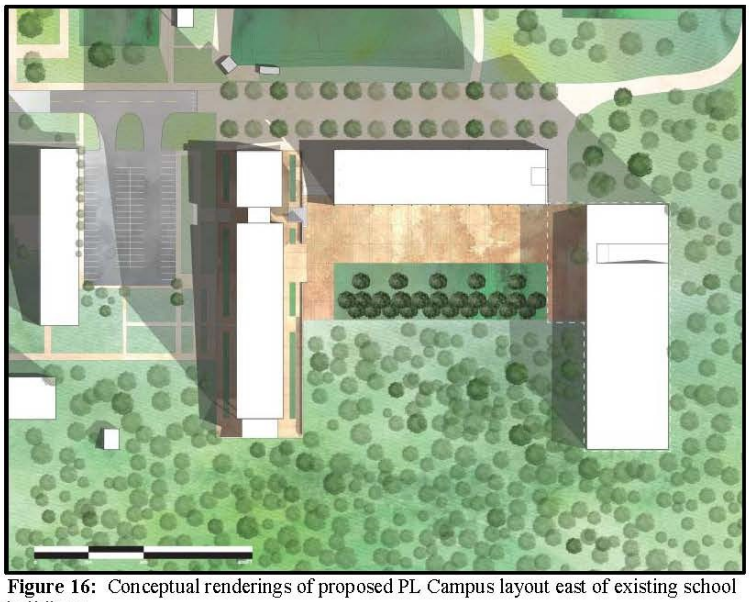

Figure 16: Conceptual renderings of proposed PL Campus layout east of existing school buildings.

2. The Terrazzo space will be located at the ground floor of the new Dormitory and existing Milazzo Club entry level. The Academic Building will be elevated above the proposed Terrazzo level to meet the existing grade roughly eight to 10 feet higher. The Athletic Training Building steps further down the site to the east following the existing natural topography (Figures 17 & 18). Please note, the way the facilities are oriented in height in relation to one another is similar to the organization of the buildings within the Cadet Area NHL. These kinds of changes in height help "to separate, yet integrate, the buildings with each other and the landscape." (Schaffer 1994:53)

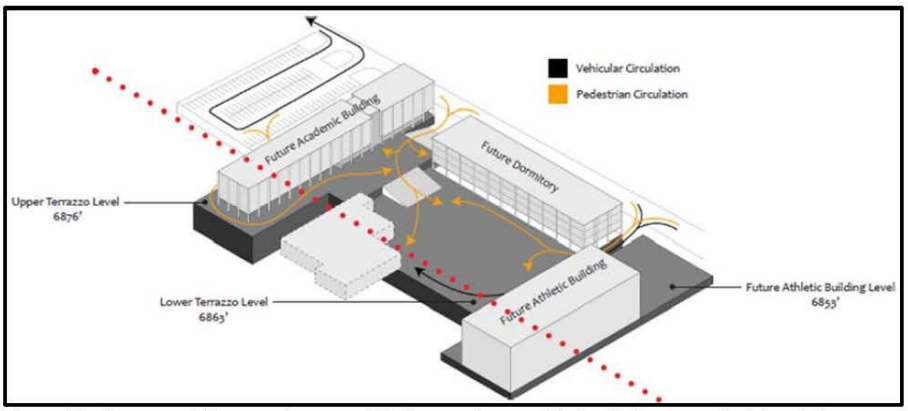

Figure 17: Conceptual diagram of proposed PL Campus layout with circulation routes (red dots indicate east/west axis).

Figure 18: Conceptual view (as preliminarily proposed) for upper Terrazzo next to Academic Facility/ Headquarters looking North.

3. Architecturally, the buildings are imagined as a family with slight variations due to both the scale and program contained in each. A common theme of all three is clarity of structural expression. Columns spaced on 28' centers define the dormitory which complements the individual room increment of 14' on center.

   The architecture of USAFA is rigorous and defined by the geometric precision of the seven foot module in either 21 foot or 28 foot structural grids. Based upon his experience in Japan, the seven-foot module was one of the enduring contributions of Walter Netsch to the SOM design for USAFA (Schaffer 1994:49). The massing is direct but provides cover for outdoor circulation pathways, or opens to define entry (Figure 19).

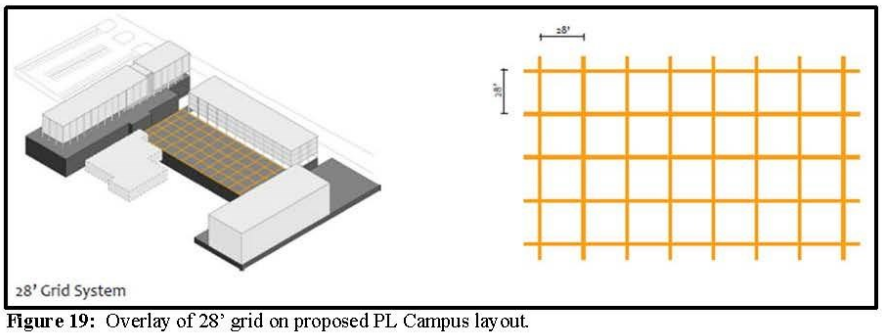

Figure 19: Overlay of 28' grid on proposed PL Campus layout.

4. Another notable characteristic of USAFA buildings is the interplay between manmade objects and nature – whether topographic features, foothills, ravines, rolling hills, majestic conifers, or the spread of turf across a plane; the dialogue between buildings and nature is dynamic and creates a unique sense of place in the distinct environment. The placement of buildings in the

Prep School Master Plan are set to enhance the natural features of the site from the gentle slope from the foothills to the dramatic view of the southern valley, the Prep School campus uses the dialogue between building and land to create a similarly strong sense of place. The outdoor gathering space "Terrazzo" is both a point of reference – a datum to the topography – and a central focal point for the campus. It provides an order, a sense of connection and a locus for a variety of activities the Cadet Candidates will experience in their year at the Academy. The buildings create an assembly that is coherent while responding to the natural grade and opening the dramatic views toward the south (Figures 20 - 22). While the proposed design for the new Prep School Campus and its facilities is different from the existing Prep School, the design concepts to be applied to the new campus are not new to USAFA and were utilized by SOM in designing the Cadet Area NHL.

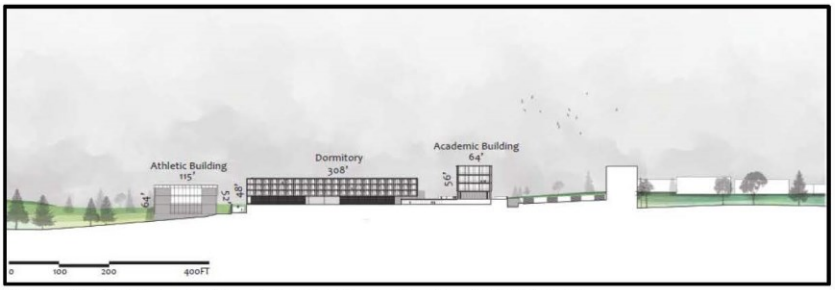

Figure 20: Initial concept, northern elevation of proposed Prep School.

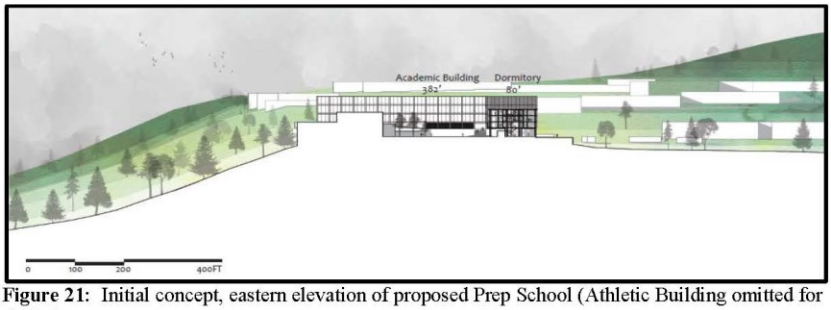

Figure 21: Initial concept, eastern elevation of proposed Prep School (Athletic Building omitted for clarity).

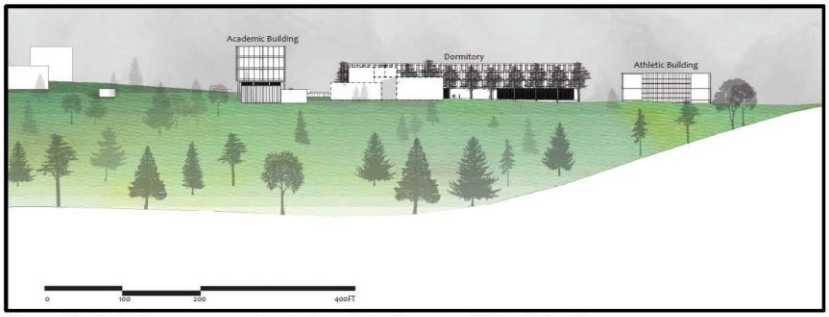

Figure 22: Initial concept, southern elevation of proposed Prep School.

5. The new architectural parti for the Prep School establishes not only an organized space for program and function, but also creates an elegant transition of spaces from the entry public area to an interior quad area that is semi-public and more private for programmed activities of the school and informal outdoor circulation and enjoyment. Consistent with the historical precedents of the USAFA Air Garden, Cadet Terrazzo Area, and overall vision of Dan Kiley, the public realm is organized in the same spirit, using the historically-established grid and segmentation of spaces. This organization of spaces shall accommodate the cadet and student marching exercises, as well as provide intuitive connection between the newly established architecture and programmed uses. A clearly organized zone of xeriscape grasses, paired with a dominant conifer tree planting organization, serves two purposes; simultaneously allowing the plaza area of the quad to be internally defined, while also externally connecting to the natural context and hillside to the south (Figures 23 & 24).

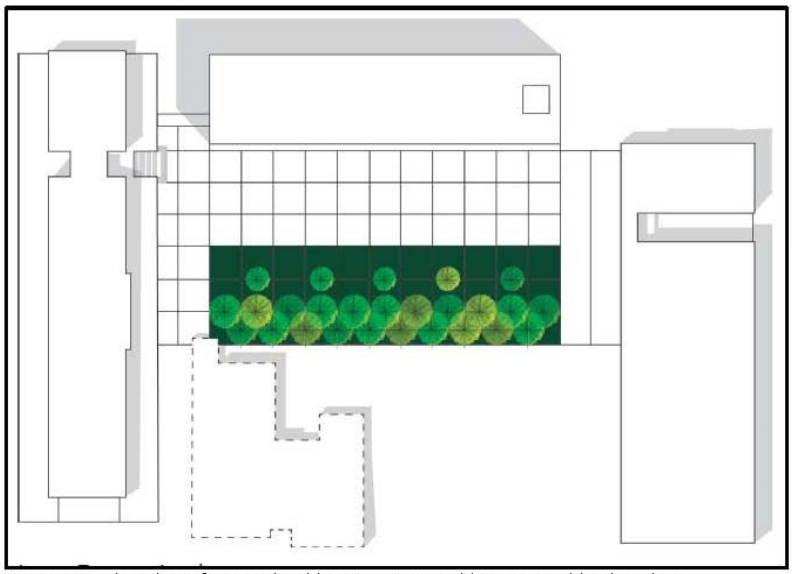

Figure 23: Plan view of Prep School lower Terrazzo with conceptual landscaping.

Figure 24: Conceptual rendering looking northwest of Prep School lower Terrazzo.

6. The building stock at USAFA provide clear examples of an approach to architectural expression that is driven primarily by clear, understated massing and a direct use of materials that are durable, in their natural state and expressive of their function. The proposed buildings have taken these elements as a basis and explored ways to alter the expression to distinguish new from existing, but still responding to the clearly defined context.

7. In order to improve energy efficiency, control glare and provide visual interest, external metal sun shades are placed on the façade of the dormitory to provide scale and layering to private spaces so that the glass can increase in transparency and provide better daylight and access to views.

8. Exterior material guidance states the exterior of the building needs to be primarily glass windows, as each dorm room is required to have vision glazing, and interior material guidance states the interior wall materials shall be painted gypsum wallboard on steel studs.

Steps Taken to Identify the Area of Potential Effect (APE)

The APE for the three phases of the new Prep School Campus construction was developed to encompass all areas proposed for ground disturbance, new facilities, utilities, laydown, and staging. Currently, only Phase 1 work areas have been formalized and therefore, that phase of the Prep School Campus design is the only one shown on the figure. However, all three construction phases (all designed conceptually and discussed in this document and the Master Plan) will occur within the designated APE outlined in red in Figure 25.

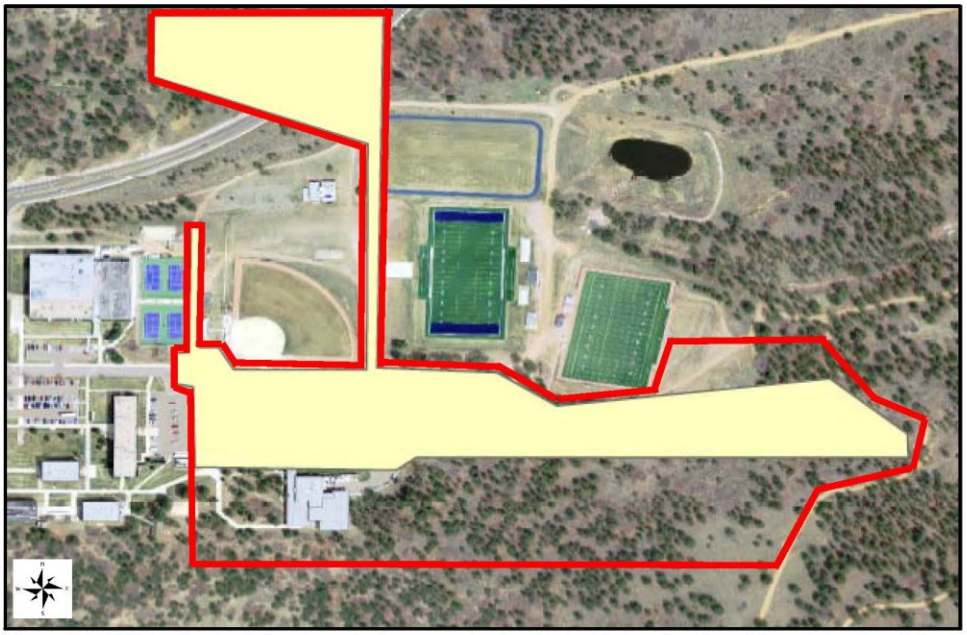

Figure 25: APE (outlined red) for phases 1 - 3 construction involved with the relocation of the existing Prep School (Phase 1 construction shown in yellow).

Potential for Impacts to Historic Properties

The potential for impacts to Historic Properties for the new construction of the Prep School Campus was assessed based upon previously conducted archaeological surveys that include or were near the undertaking APEs (Arbogast et al. 1996; Jones & Nelson, 2019), thorough inspection of the Colorado Office of Archaeology and Historic Preservation's COMPASS Cultural Resource Database, review of USAFA records, and available topographic maps and aerial imagery of the APEs.

There is a single historic road segment in the southern portion of the APE (5EP.8621.1), however it was determined officially not eligible to the NRHP in 2019 (HC #77246). Additionally, there are no known areas of interest to USAFA-affiliated Tribes within the proposed APE.

As far as the built environment within the APE is concerned, as was previously determined in a letter from the SHPO discussed above, the Milazzo Center (Building 5226) is officially not eligible for the NRHP individually or as a contributing facility to the proposed 5EP.595 historic district. Additionally, there is a three sided stockpile bin and the segment of a PARS course trail within the project area, both of which have not been evaluated for the NRHP. While the exact installation date of the stockpile bin is unknown, the design and aesthetic of the bin is purely functional in nature, simplistic, and unremarkable. Additionally, other similar bins exist elsewhere on USAFA. As for the segment of the PARS course trail, aerial imagery indicates the segment was developed sometime between 1966 and 1982 and the trail as a whole was converted to a PARS course more recently in 1982. Furthermore, aerial imagery (Figure 2 – 7) indicates modifications to this portion of the trail have previously occurred which would have impacted any integrity, had it been present at the time, in this segment. Based upon the background of these

elements, it is USAFA's recommendation that neither the stockpile bin nor the segment of the PARS course trail would qualify for the NRHP under Criteria A – D or by exception.

The project area is also within the boundary of the installation and therefore within the boundary of the potentially NR-eligible proposed USAFA Campus Historic District (5EP.595). However, the proposed new campus and its facilities have been designed to use existing design concepts previously developed by SOM and present on USAFA. Additionally, while the proposed new construction will be minimally visible from other areas of the installation, the design is such that it will complement with the existing architectural expression that is present on USAFA and will not overshadow or detract from the other historic facilities/areas on USAFA. Additionally, as was stated earlier, a 2012 iteration of a new Prep School Campus was previously determined by your office to not have an adverse effect.

Determination of Effects

In accordance with 36 CFR § 800.5(b), USAFA proposes a finding of *"no adverse effect to historic properties"* for the new construction of the Prep School Campus.

Should additional unanticipated cultural resources be encountered, the Contractor and USAFA will follow 36 CFR § 800.13 and the Standard Operating Procedures (SOP) for "Discoveries of Archaeological Resources and NAGPRA Items" as published in the 2019 Integrated Cultural Resources Management Plan (ICRMP) in Section 7.4. All work will stop and the Cultural Resources Manager, Erwin Roemer, will be contacted to begin compliance.

Should potential impacts to historic properties be identified in the future due to a change in the submitted scopes of work, proposed locations, or due to activities proposed beyond the scope of the undertaking, follow-up Section 106 consultation will occur as required.

Due to the nature and scope of this undertaking, in accordance with 36 CFR 800.2(c), USAFA is providing this project review documentation to you and other interested Native American tribes (Attachment 5), and will address any comments or concerns therefrom.

REFERENCES

Jones, Robert and Isla Nelson
2019 *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA.* Cardno, Inc. Contract Number FA8903-16-D-0032, Task Order FA8903-18-F-0242.

Schaffer, Kristen
1994 Creating a national Landmark in *Modernism at Mid-Century: The Architecture of the United States Air Force Academy*, edited by Robert Bruegmann. Chicago, IL: The University of Chicago Press

United States Air Force Academy
2012 *Preparatory School and Community Center Gymnasium Construction Final Environmental Assessment (EA), U.S. Air Force Academy, Colorado.* Prepared by: URS Group, Inc.

United States Air Force Academy
2019 *Preparatory School Master Plan.*

ATTACHMENT 5
Consulting/Interested Parties

Northern Cheyenne Tribe
Pueblo of Santa Clara
Rosebud Sioux Tribe
Southern Ute Indian Tribe
Ute Mountain Ute Tribe

Colorado State Historic Preservation Officer (SHPO)
National Park Service

DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Dear Tribal Historic Preservation Officer and other stakeholders

Please find enclosed materials supporting the United States Air Force Academy's (USAFA) Section 106 consultation, in accordance with the National Historic Preservation Act, for an undertaking to relocate the USAFA Preparatory School Campus (Prep School) by construction of new facilities. The proposed project area is within the boundary of the National Register of Historic Places (NRHP) proposed USAFA Campus Historic District (5EP.595).

In a letter from USAFA to your office dated 24 January 2020, USAFA proposed a project Programmatic Agreement (PA) in order to complete Section 106 consultation for the relocation of the Prep School. This relocation involves both demolition of existing facilities and construction of new facilities with the same functions as those being demolished. However, in correspondence from the Colorado State Historic Preservation Officer (SHPO) in February and March 2020 (Attachment 1) it was recommended no project PA is needed, and the SHPO further requested that the Section 106 consultation for the Prep School relocation be completed in two separate consultations: one for demolition of existing facilities and the other for relocation/new construction of the Prep School.

Regarding demolition associated with the relocation of the Prep School, in a SHPO letter dated 28 February 2020, it was communicated that the existing Prep School-associated buildings (Buildings 5210, 5212, 5214, 5216, 5218, 5220, 5224, 5222, and 5226) were not individually eligible for the NRHP nor were they contributing to the proposed USAFA Campus Historic District (5EP.595). At that time the SHPO also communicated that the demolition of Buildings 5210, 5212, 5214, 5216, 5220, and 5226 as a part of the work to relocate/construct a new Prep School would have *"no adverse effect on historic properties"* (36 CFR § 800.5(b)).

Per the SHPO's request, the present consultation package addresses the new construction associated with the relocation of the Prep School. The relocation and construction of the new Prep School is proposed eastward of the existing Prep School in the USAFA Community Center area. The proposed undertaking is described in more detail in Attachment 2 and is informed by the recently completed 2019 Prep School Master Plan (Attachment 3). Additionally, the drawings for Phase 1 Design are provided in Attachment 4. The new construction, as conceptually proposed, would occur in roughly three phases aligned to the Master Plan. In general, the first phase would involve the design finalization and construction of a new Dormitory Building, the second phase for the Academic Building/Headquarters, and the final phase for an Athletic Training Facility.

The Area of Potential Effect (APE) for the three phases of the new Prep School construction was developed to encompass all areas proposed for ground disturbance, new facilities, utilities, laydown, and staging. All three construction phases (all designed conceptually and discussed in this letter, the Master Plan, and the Phase 1 Design) will occur within the designated APE.

Integrity - Service - Excellence

The potential for impacts to Historic Properties for the new construction of the Prep School was assessed based upon previously conducted archaeological surveys that covered or were near the undertaking's APE (Arbogast et al. 1996; Jones & Nelson, 2019), thorough inspection of the Colorado Office of Archaeology and Historic Preservation's COMPASS Cultural Resource Database, review of USAFA records, and study of available topographic maps and aerial imagery of the APE.

There is a single historic road segment in the southern portion of the APE (5EP.8621.1). It was determined officially ineligible to the NRHP in 2019 (HC #77246). No archeological sites are identified in the APE. Additionally, the APE has no known areas of special interest to tribes routinely consulted by USAFA.

For the built environment within the APE, as was previously determined in the letter discussed above from the SHPO, the Milazzo Center (Building 5226) is officially ineligible for the NRHP individually or as a contributing facility to the proposed 5EP.595 historic district. Additionally, there is a three-sided stockpile bin and a segment of a fitness trail within the APE, both of which have not been evaluated for the NRHP. While the exact installation date of the stockpile bin is unknown, its design and aesthetic are purely functional in nature, simplistic, and unremarkable. Additionally, other similar bins exist elsewhere on USAFA. As for the segment of the fitness trail, aerial imagery indicates the segment was developed between 1966 and 1982 and the trail as a whole was converted to the fitness course more recently in 1982. Furthermore, aerial imagery (Attachment 1, Figures 2–7) indicates modifications have previously occurred to this portion of the trail, which would have impacted any integrity had it been present at the time. Based upon the background of these elements, it is USAFA's recommendation that neither the stockpile bin nor the segment of the fitness trail would qualify for the NRHP under Criteria A–D or by exception.

The APE also is within the boundary of the installation and therefore within the boundary of the potentially NRHP-eligible proposed USAFA Campus Historic District (5EP.595). However, the proposed new campus and its facilities have been designed to use concepts previously developed by Skidmore, Owings & Merrill, and present on USAFA. Additionally, while the proposed new construction will be minimally visible from other areas of the installation, the design is such that it will complement the existing architectural expression present on USAFA and it will not overshadow or detract from other historic facilities/areas on USAFA. Additionally, a 2012 iteration of a proposed new Prep School previously was determined by your office to not have an adverse effect.

Under 36 CFR Part 800, the responsible Federal agency first determines whether the proposed Federal action is an undertaking as defined in § 800.16(y) and, if so, whether it is a type of activity that has the potential to cause effects on Historic Properties. As defined at § 800.16(i), an effect means alteration to the characteristics of a Historic Property qualifying it for inclusion in or eligibility for the NRHP. In accordance with 36 CFR § 800.5(b), USAFA proposes a finding of *"no adverse effect to historic properties"* for the construction of the new Prep School.

Should unanticipated cultural resources be encountered, the construction contractor will cooperate with USAFA to follow 36 CFR § 800.13 and the Standard Operating Procedures for "Discoveries of Archaeological Resources and NAGPRA Items" published in the 2019 Integrated Cultural Resources Management Plan. All work would stop in the area of such a find, and the Cultural Resources Manager, Erwin Roemer, would be contacted to work appropriate next steps, including notification to tribes. Should potential impacts to Historic Properties be possible due to a change in the construction's scope of work, proposed locations, or due to activities proposed beyond the scope of the undertaking, follow-up Section 106 consultation would occur.

3

Due to the nature and scope of this undertaking, in accordance with 36 CFR § 800.2(c) USAFA has sent project review documentation to the SHPO, interested Native American tribes, and other stakeholders (Attachment 5), and will address all comments or concerns.

Please submit your comments to the above address, however, comments can submitted via email and are included in our administrative record in the same manner as written correspondence. We respectfully request your comments on this undertaking within 30 days of receiving the consultation package.

Please direct comments to Mr. Erwin Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, teleworking number (646) 673-4642 Mountain Time Zone, or at the above address. We thank you for your review and assistance.

Sincerely

JEOUN.JIMMY.JOSEPH.1237435385 Digitally signed by JEOUN.JIMMY.JOSEPH.1237435385 Date: 2020.05.04 16:37:02 -06'00'

JIMMY J. JEOUN, Lt Col, USAF

5 Attachments:
1. Recent SHPO Correspondence on Prep School Relocation
2. USAFA Cultural Resources Section 106 Project Review
3. 2019 Prep School Master Plan
4. Phase 1 Design for Prep School Campus Relocation
5. Consulting/Interested Stakeholder List

ATTACHMENT 1

Recent SHPO Correspondence on Prep School Relocation

HISTORY Colorado

24 February 2020 HC #77246

Lt Col Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy, CO 80840-2400

RE: Demolition, Relocation, and Reconstruction of the USAFA Preparatory School Campus, United States Air Force Academy, El Paso County

Dear Lt Col Jeoun:

Thank you for your recent correspondence received 28 January 2020, concerning the proposed demolition of the USAFA Preparatory School campus, and its eventual relocation to a new area on Academy grounds (housed in new buildings). Our office has reviewed the submitted materials. The Prep School complex was previously determined by our office to be ineligible for individual listing on the National Register of Historic Places, and to be a non-contributing resource within the Air Force Academy Historic District (5EP.595).

Because the buildings in question are not historic, and the proposed location of the new campus is generally known, we are not convinced that a Programmatic Agreement is necessary at this time. The possible effects of the undertaking to both historic and prehistoric (if present) resources is either known, or easily ascertained. Any significant changes in the final project design (for example, a larger footprint, or a change in building materials) can be reviewed in a straightforward consultation under 36.CFR.800.

For the purposes of the project before us, we concur that (1) the buildings under consideration are not eligible for listing on the National Register; (2) the identified road segment (5EP.8621.1) does not support the eligibility of the overall resource, and; (3) the demolition of the Prep School buildings will have no adverse effect on historic properties.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

FEB 28 2020

Steve Turner, AIA
State Historic Preservation Officer

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
303-866-3392 * Fax 303-866-2711 * E-mail: oahp@state.co.us * Internet: www.historycolorado.org

History Colorado, 1200 Broadway, Denver, CO 80203 HistoryColorado.org

Attachment 1 – Recent SHPO Correspondence on Prep School Relocation 1

HISTORY Colorado

23 March 2020 HC #77246

Lt Col Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy, CO 80840-2400

RE: Demolition, Relocation, and Reconstruction of the USAFA Preparatory School Campus, United States Air Force Academy, El Paso County

Dear Lt Col Jeoun:

Thank you for your recent correspondence received 19 March 2020, concerning the proposed demolition of the USAFA Preparatory School campus, and its eventual relocation to a new area on Academy grounds (housed in new buildings). Our office has reviewed the submitted materials.

Please note that while the demolition of the existing buildings will have no adverse effect on historic properties, the relocation of the Prep School to a new site is a separate Undertaking pursuant to 36.CFR.800, and will need to be reviewed by consulting parties once a new campus has been officially located, sited, and designed. We look forward to working with your office as the Prep School project moves forward.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

Steve Turner, AIA
State Historic Preservation Officer

WWW.HISTORYCOLORADO.ORG
HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Attachment 1 – Recent SHPO Correspondence on Prep School Relocation 2

ATTACHMENT 2

United States Air Force Academy (USAFA) Cultural Resources Section (CRS)
Section 106 Project Review

Undertaking: Relocation of the USAFA Preparatory (Prep) School involving construction of new school facilities.

The undertaking proposes to relocate the Prep School Campus to the eastern boundary of the Community Center area. The details of the three phases of the proposed undertaking are provided in this package and the 2019 Prep School Master Plan (Attachment 3). The three phases of the relocation will include the construction of a new dormitory, academic building/headquarters facility, athletic training facility, terrazzo, and a stormwater detention pond. Additionally, the project likely will involve the demolition of six buildings currently used for Prep School purposes that would be made redundant by new construction. However, in correspondence from the Colorado State Historic Preservation Office (SHPO), dated 28 February 2020, it was determined the demolition of Buildings 5210, 5212, 5214, 5216, 5220, and 5226 would have no adverse effect on historic properties. Consequently, this consultation package only addresses the work required to construct the new Prep School Campus to completion. Figure 1 provides a map of the proposed undertaking location.

Figure 1: Aerial of USAFA Community Center (existing Prep School blue, proposed location red).

Purpose and Background

The proposed undertaking has been determined necessary because the existing Prep School facilities are outdated without the ability to be renovated to the level required to meet today's educational needs. Additionally, the existing campus location and configuration is not conducive to a modern academic campus.

Sometime between 1992 and 2008, the area that is proposed for the new Prep School Campus and facilities was generally solidified into the area that is shown on current aerial imagery. Figures 2 – 7 provide imagery showing development of the area starting in 1937 and culminating in 2019 with the general project area highlighted in each. As one can see from these figures, buildings, parking lots, fields, and support infrastructure have been constructed and modified in the area in various capacities since the 1960s. Of particular note is that almost half of the proposed location for the Prep School Campus has experienced substantial ground disturbance from USAFA development and activities.

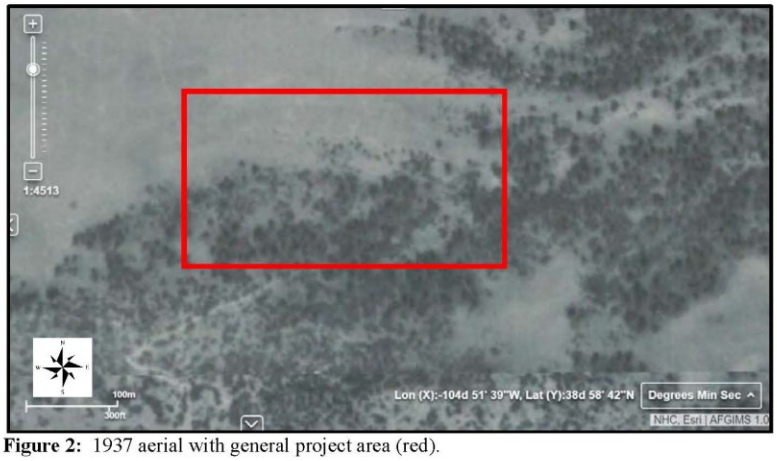

Figure 2: 1937 aerial with general project area (red).

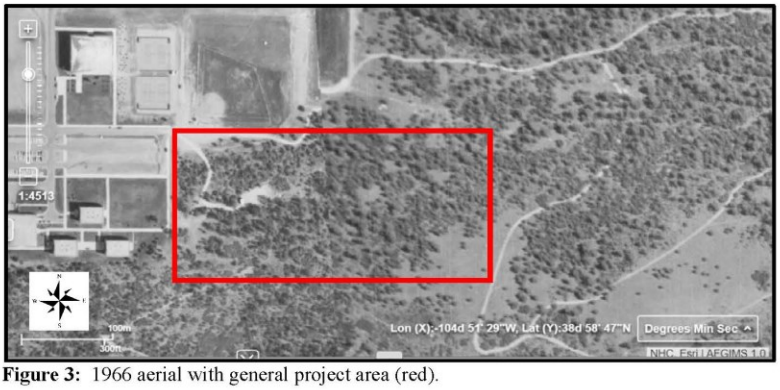

Figure 3: 1966 aerial with general project area (red).

Figure 4: 1982 aerial with general project area (red).

Figure 5: 1992 aerial with general project area (red).

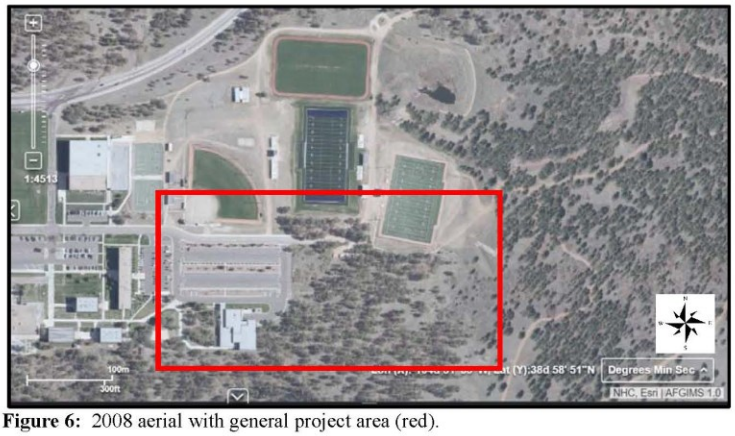

Figure 6: 2008 aerial with general project area (red).

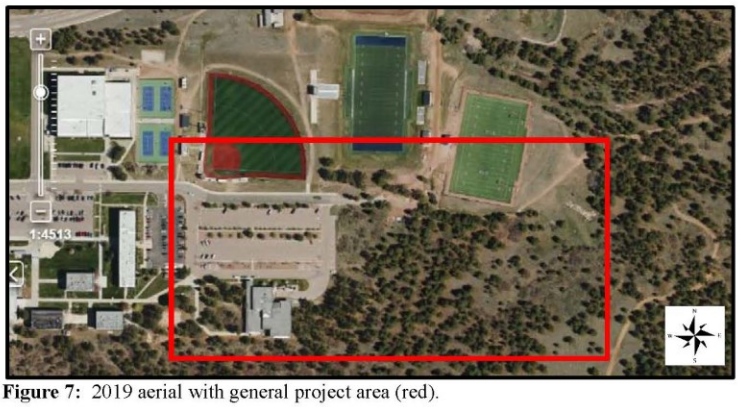

Figure 7: 2019 aerial with general project area (red).

Based upon aerial imagery, a three sided stockpile bin (measuring approximately 10 feet by 45 feet and made of concrete) seems to appear in the project area sometime after 1966 and original construction of the Community Center. Based upon available information regarding this bin, USAFA believes it was likely constructed quickly by in-house staff to support the area. This also seems likely based upon the purely functional nature of the bin and the simplistic, unremarkable design and aesthetic. It is used to store landscaping materials for in the area, which is characterized by a variety of athletic fields, and resembles other three sided stockpile bins on USAFA (Figure 8).

Figure 8: (Left) 2008 aerial image of stockpile bin; (right) example photo of similar stockpile bin in USAFA Service & Supply.

A trail that appears on aerial imagery sometime between 1937 and 1966 meanders through the Community Center in the area of the project. In 1982 it was converted into a Physical Activity Referral Scheme (PARS) course and a segment of this course runs through the project area (Figure 9). The course is utilized by various groups of the USAFA community and is marked by occasional exercise equipment such as pull-up bars. The small segment of the PARS course trail that runs through the APE may require modification/realignment. However, this segment of the trail was developed after original Community Center construction, the conversion of the trail to a PARS course occurred more recently in 1982, and aerial imagery indicates the modification to this portion of the trail has occurred before. Based upon imagery, this section of the trail developed at some point between 1966 and 1982 and then was very likely modified again between 1992 and 2008 due to the replacement of the field a portion of it runs through from a baseball diamond to a multi-purpose field. Generally, this segment of the PARS course trail has meandered in the area of fields and appears to have been rerouted at times to accommodate athletic facility needs and area development.

Figure 9: Project area with storage area (red) and PARS course trail segment (dashed yellow).

Project Description:

The existing Prep School Campus is roughly located in the south central portion of USAFA and east of the USAFA Community Center, and is accessed primarily from Community Center Drive. The Prep School mission is to prepare, motivate, and evaluate cadet candidates for admission to and success at USAFA. Approximately 240 Cadet Candidates enter the Prep School each summer and their successful completion of the program improves their chance for an appointment to USAFA as a Cadet, but does not guarantee it.

The new Master Plan calls for a new dormitory, academic building/headquarters facility, athletic training facilities, terrazzo, and stormwater detention. The new location is east of the current school and new construction will modify existing parking lots and sidewalks, landscaping, a three sided concrete/cinder block landscaping storage element, a segment of a PARS course trail, and the Ponderosa Pine forest bordering existing development near the Milazzo Center (Building 5226). The new campus will continue to use the existing dining hall (Building 5218) and the gym (Building 5234). Utilities will also be installed/modified throughout proposed APE to service the new Prep School Campus location. The design drawings for Phase 1 are provided in Attachment 4. Figures 10 – 12 show the proposed new location for the Prep School, the existing condition of the primary new campus area, and existing utilities in the area.

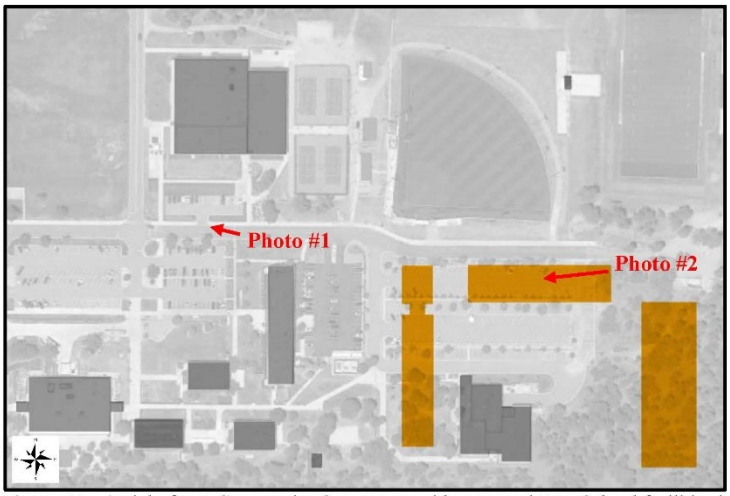

Figure 10: Aerial of east Community Center area with proposed Prep School facilities in yellow (existing conditions photos with view direction in red (See Figure 12)).

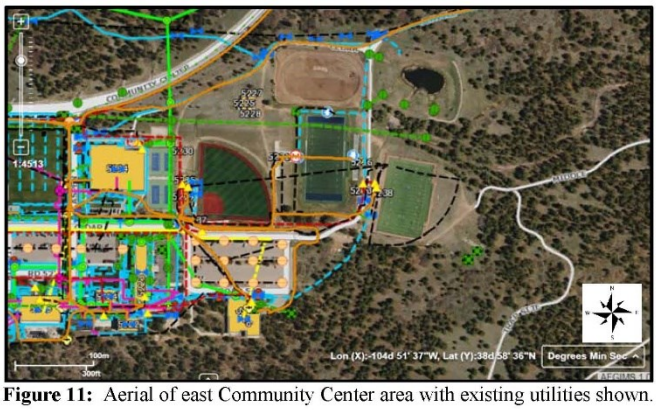

Figure 11: Aerial of east Community Center area with existing utilities shown.

Figure 12: (left) Exiting condition of Cedar Drive (looking west) within project area; (right) Existing condition of parking lots within project area.

An Environmental Assessment (EA) is also being conducted for the future work described in the 2019 Master Plan. The EA will address one preferred action and three alternatives. Currently, the preferred anticipated action will include the scope summarized above in this document. The three alternatives will likely include 1) a no action alternative, 2) a design alternative previously analyzed in 2012, and 3) an alternative with a different building configuration in the same location as the preferred alternative.

As referenced above, a design alternative to upgrade the Prep School was consulted with your office in 2012. This project proposed the demolition of six building (5210, 5212, 5214, 5216, 5220, 8137), construction of two new buildings (a Cadet Candidate Quarters building and an Academic Facility), and an addition to the Community Center Gymnasium (Building 5234). In January 2012, your office concurred the project would result in *"no adverse effect to historic properties"* (CHS #60900) and an EA was completed for the project resulting in a Finding of No Significant Impact. However, the project was not executed and since then, a new Prep School Master Plan has been developed that has changed the location and design.

The proposed construction at the new location will occur in roughly three phases (dependent on available funds) and will be funded through the Military Construction (MILCON) program. Phase 1 will include the construction of the dormitory and demolition of existing dorm facilities, Phase 2 the construction of the terrazzo and the Academic facility/Headquarters and demolition of the old facilities, and Phase 3 will complete the campus with a new Athletic facility and demolition of the Milazzo Club (Figures 13 – 15). The stormwater detention infrastructure will be constructed in all three phases to ensure standards are met at each development stage.

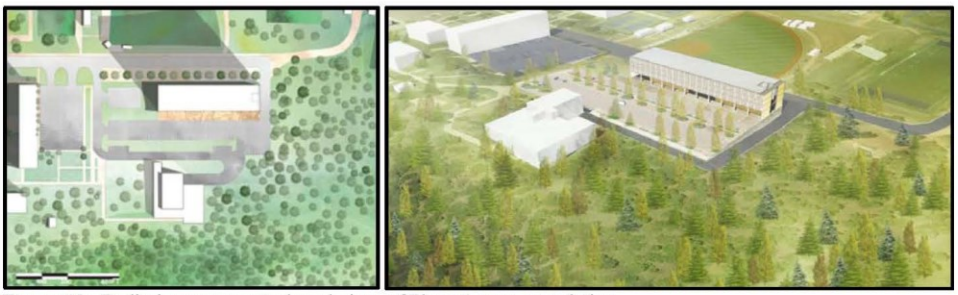

Figure 13: Preliminary conceptual renderings of Phase 1 upon completion.

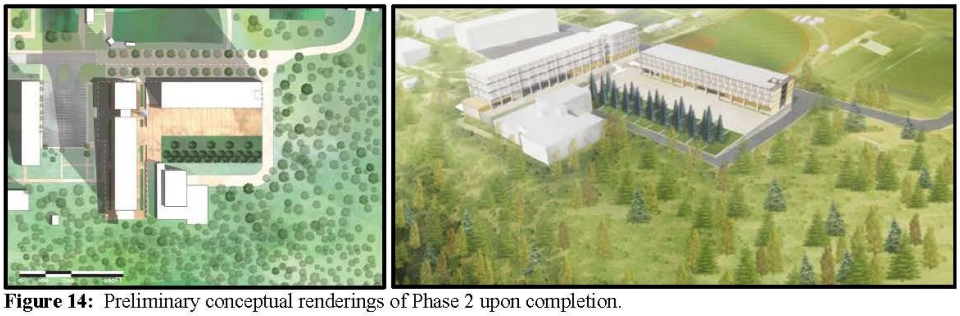

Figure 14: Preliminary conceptual renderings of Phase 2 upon completion.

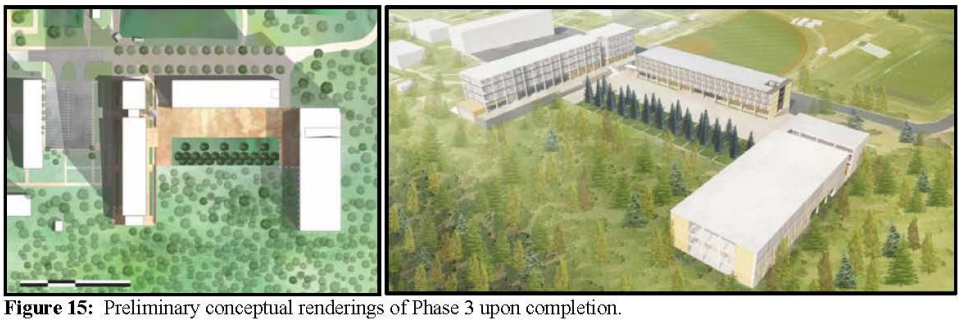

Figure 15: Preliminary conceptual renderings of Phase 3 upon completion.

The new Prep School Campus has been sited and organized as shown in the Master Plan and Figure 10. The architectural design and aesthetics for the facilities within the new campus will follow USAFA Installation Facility Standards and renderings of the facilities are provided in this attachment and the Master Plan. However, the more minute design details for the new Dormitory (and possibly the other facilities) will be determined through a design competition with design-build contractors. This design process was selected to leverage the skills and creative ideas of the various contractors to develop a design that creatively meets the needs of the user while complementing the existing architectural expression at USAFA. The known design details of the new Prep School Campus include the following:

1. The three main buildings of the new Prep School (Dormitory, Academic Building/Headquarter, and Athletic Training Facility) will surround a common outdoor space modeled after the Terrazzo space in the Cadet Area National Historic Landmark (NHL) (Figure 16).

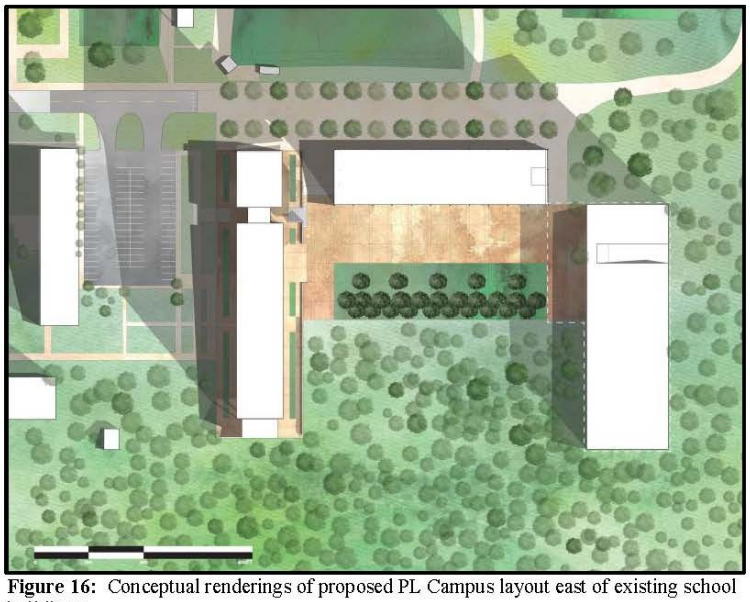

Figure 16: Conceptual renderings of proposed PL Campus layout east of existing school buildings.

2. The Terrazzo space will be located at the ground floor of the new Dormitory and existing Milazzo Club entry level. The Academic Building will be elevated above the proposed Terrazzo level to meet the existing grade roughly eight to 10 feet higher. The Athletic Training Building steps further down the site to the east following the existing natural topography (Figures 17 & 18). Please note, the way the facilities are oriented in height in relation to one another is similar to the organization of the buildings within the Cadet Area NHL. These kinds of changes in height help "to separate, yet integrate, the buildings with each other and the landscape." (Schaffer 1994:53)

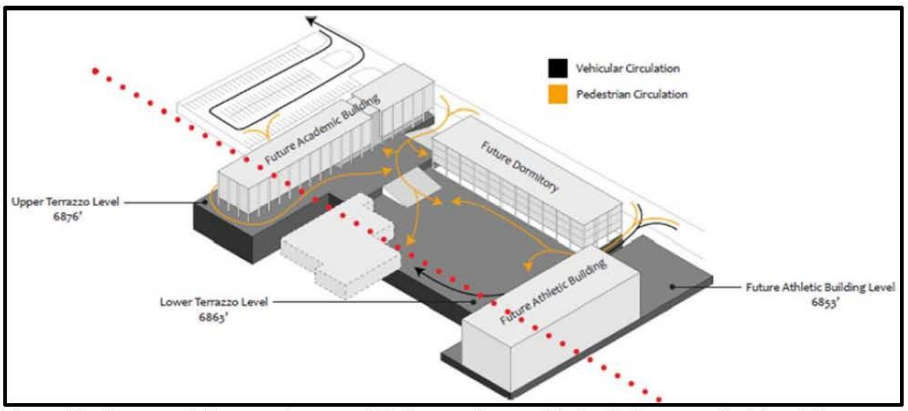

Figure 17: Conceptual diagram of proposed PL Campus layout with circulation routes (red dots indicate east/west axis).

Figure 18: Conceptual view (as preliminarily proposed) for upper Terrazzo next to Academic Facility/ Headquarters looking North.

3. Architecturally, the buildings are imagined as a family with slight variations due to both the scale and program contained in each. A common theme of all three is clarity of structural expression. Columns spaced on 28' centers define the dormitory which complements the individual room increment of 14' on center.

   The architecture of USAFA is rigorous and defined by the geometric precision of the seven foot module in either 21 foot or 28 foot structural grids. Based upon his experience in Japan, the seven-foot module was one of the enduring contributions of Walter Netsch to the SOM design for USAFA (Schaffer 1994:49). The massing is direct but provides cover for outdoor circulation pathways, or opens to define entry (Figure 19).

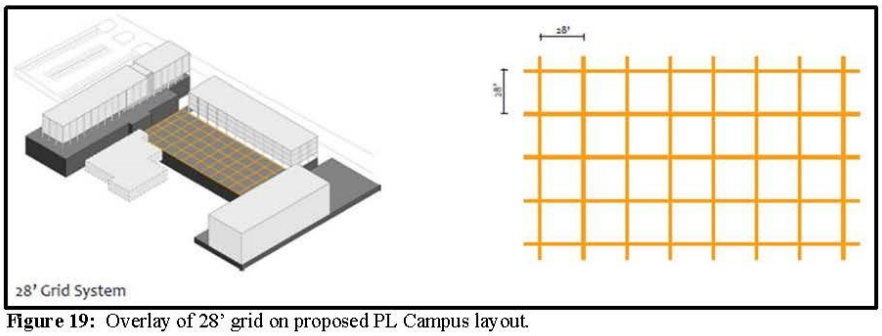

Figure 19: Overlay of 28' grid on proposed PL Campus layout.

4. Another notable characteristic of USAFA buildings is the interplay between manmade objects and nature – whether topographic features, foothills, ravines, rolling hills, majestic conifers, or the spread of turf across a plane; the dialogue between buildings and nature is dynamic and creates a unique sense of place in the distinct environment. The placement of buildings in the

Prep School Master Plan are set to enhance the natural features of the site from the gentle slope from the foothills to the dramatic view of the southern valley, the Prep School campus uses the dialogue between building and land to create a similarly strong sense of place. The outdoor gathering space "Terrazzo" is both a point of reference – a datum to the topography – and a central focal point for the campus. It provides an order, a sense of connection and a locus for a variety of activities the Cadet Candidates will experience in their year at the Academy. The buildings create an assembly that is coherent while responding to the natural grade and opening the dramatic views toward the south (Figures 20 - 22). While the proposed design for the new Prep School Campus and its facilities is different from the existing Prep School, the design concepts to be applied to the new campus are not new to USAFA and were utilized by SOM in designing the Cadet Area NHL.

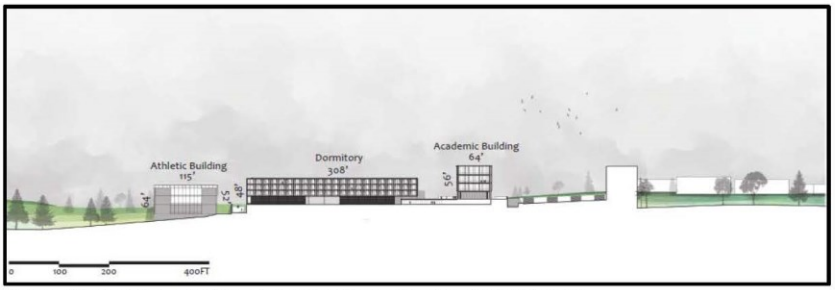

Figure 20: Initial concept, northern elevation of proposed Prep School.

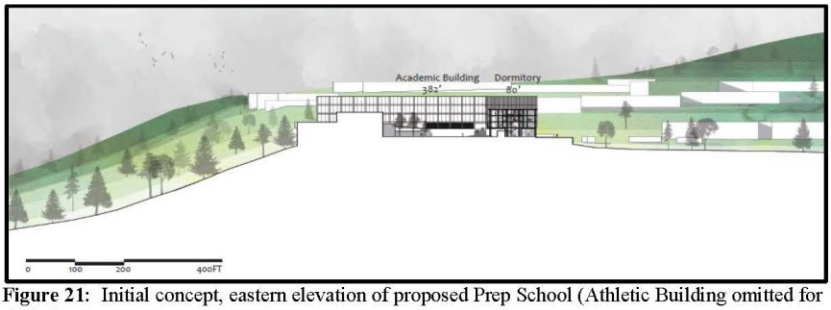

Figure 21: Initial concept, eastern elevation of proposed Prep School (Athletic Building omitted for clarity).

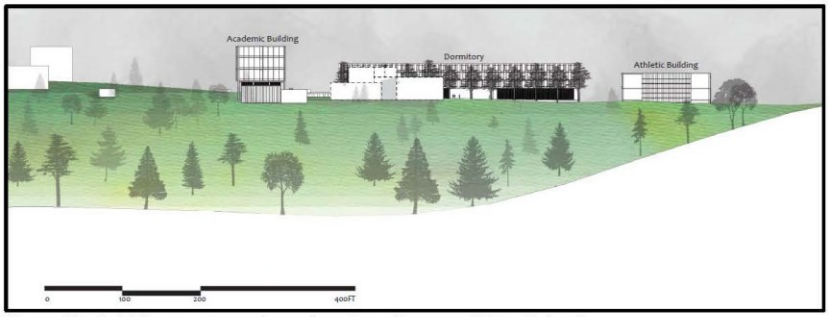

Figure 22: Initial concept, southern elevation of proposed Prep School.

5. The new architectural parti for the Prep School establishes not only an organized space for program and function, but also creates an elegant transition of spaces from the entry public area to an interior quad area that is semi-public and more private for programmed activities of the school and informal outdoor circulation and enjoyment. Consistent with the historical precedents of the USAFA Air Garden, Cadet Terrazzo Area, and overall vision of Dan Kiley, the public realm is organized in the same spirit, using the historically-established grid and segmentation of spaces. This organization of spaces shall accommodate the cadet and student marching exercises, as well as provide intuitive connection between the newly established architecture and programmed uses. A clearly organized zone of xeriscape grasses, paired with a dominant conifer tree planting organization, serves two purposes; simultaneously allowing the plaza area of the quad to be internally defined, while also externally connecting to the natural context and hillside to the south (Figures 23 & 24).

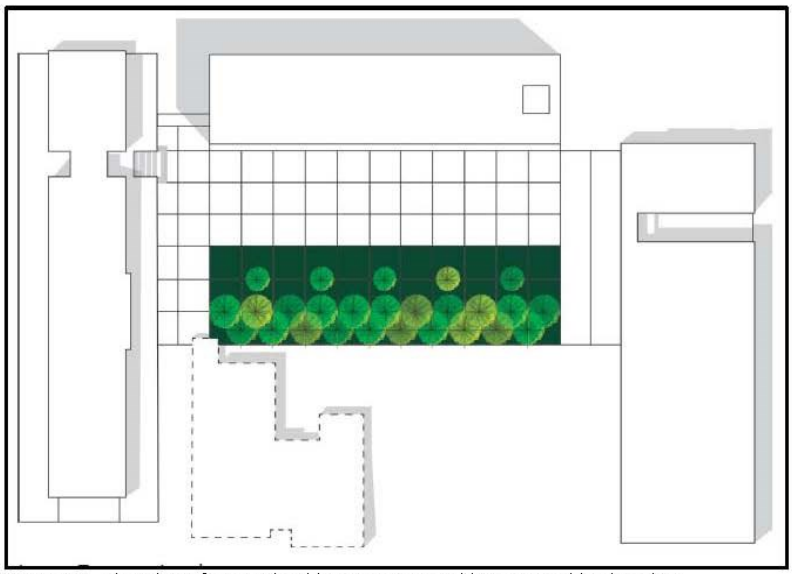

Figure 23: Plan view of Prep School lower Terrazzo with conceptual landscaping.

Figure 24: Conceptual rendering looking northwest of Prep School lower Terrazzo.

6. The building stock at USAFA provide clear examples of an approach to architectural expression that is driven primarily by clear, understated massing and a direct use of materials that are durable, in their natural state and expressive of their function. The proposed buildings have taken these elements as a basis and explored ways to alter the expression to distinguish new from existing, but still responding to the clearly defined context.

7. In order to improve energy efficiency, control glare and provide visual interest, external metal sun shades are placed on the façade of the dormitory to provide scale and layering to private spaces so that the glass can increase in transparency and provide better daylight and access to views.

8. Exterior material guidance states the exterior of the building needs to be primarily glass windows, as each dorm room is required to have vision glazing, and interior material guidance states the interior wall materials shall be painted gypsum wallboard on steel studs.

Steps Taken to Identify the Area of Potential Effect (APE)

The APE for the three phases of the new Prep School Campus construction was developed to encompass all areas proposed for ground disturbance, new facilities, utilities, laydown, and staging. Currently, only Phase 1 work areas have been formalized and therefore, that phase of the Prep School Campus design is the only one shown on the figure. However, all three construction phases (all designed conceptually and discussed in this document and the Master Plan) will occur within the designated APE outlined in red in Figure 25.

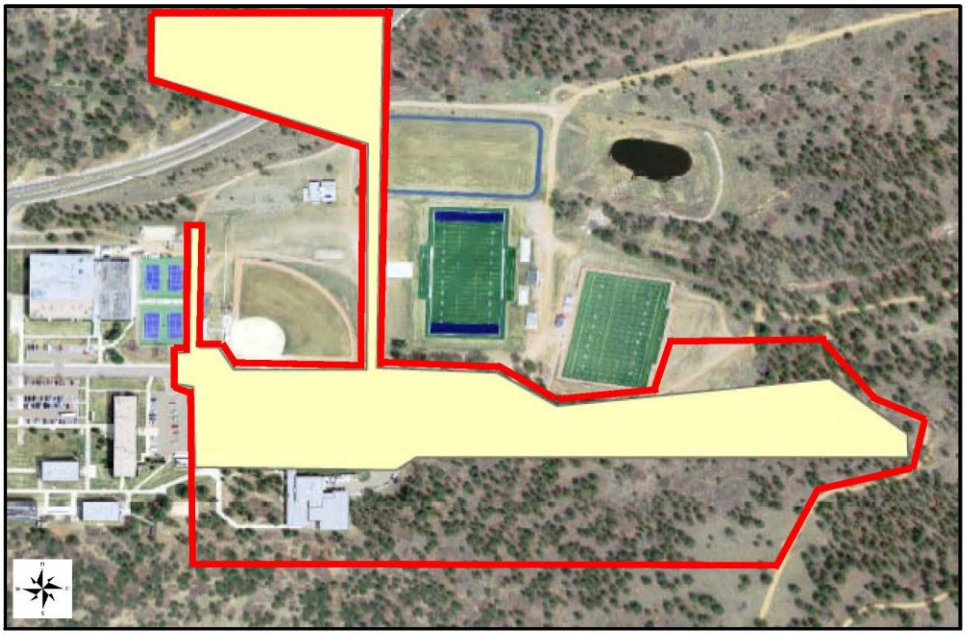

Figure 25: APE (outlined red) for phases 1 - 3 construction involved with the relocation of the existing Prep School (Phase 1 construction shown in yellow).

Potential for Impacts to Historic Properties

The potential for impacts to Historic Properties for the new construction of the Prep School Campus was assessed based upon previously conducted archaeological surveys that include or were near the undertaking APEs (Arbogast et al. 1996; Jones & Nelson, 2019), thorough inspection of the Colorado Office of Archaeology and Historic Preservation's COMPASS Cultural Resource Database, review of USAFA records, and available topographic maps and aerial imagery of the APEs.

There is a single historic road segment in the southern portion of the APE (5EP.8621.1), however it was determined officially not eligible to the NRHP in 2019 (HC #77246). Additionally, there are no known areas of interest to USAFA-affiliated Tribes within the proposed APE.

As far as the built environment within the APE is concerned, as was previously determined in a letter from the SHPO discussed above, the Milazzo Center (Building 5226) is officially not eligible for the NRHP individually or as a contributing facility to the proposed 5EP.595 historic district. Additionally, there is a three sided stockpile bin and the segment of a PARS course trail within the project area, both of which have not been evaluated for the NRHP. While the exact installation date of the stockpile bin is unknown, the design and aesthetic of the bin is purely functional in nature, simplistic, and unremarkable. Additionally, other similar bins exist elsewhere on USAFA. As for the segment of the PARS course trail, aerial imagery indicates the segment was developed sometime between 1966 and 1982 and the trail as a whole was converted to a PARS course more recently in 1982. Furthermore, aerial imagery (Figure 2 – 7) indicates modifications to this portion of the trail have previously occurred which would have impacted any integrity, had it been present at the time, in this segment. Based upon the background of these

elements, it is USAFA's recommendation that neither the stockpile bin nor the segment of the PARS course trail would qualify for the NRHP under Criteria A – D or by exception.

The project area is also within the boundary of the installation and therefore within the boundary of the potentially NR-eligible proposed USAFA Campus Historic District (5EP.595). However, the proposed new campus and its facilities have been designed to use existing design concepts previously developed by SOM and present on USAFA. Additionally, while the proposed new construction will be minimally visible from other areas of the installation, the design is such that it will complement with the existing architectural expression that is present on USAFA and will not overshadow or detract from the other historic facilities/areas on USAFA. Additionally, as was stated earlier, a 2012 iteration of a new Prep School Campus was previously determined by your office to not have an adverse effect.

Determination of Effects

In accordance with 36 CFR § 800.5(b), USAFA proposes a finding of *"no adverse effect to historic properties"* for the new construction of the Prep School Campus.

Should additional unanticipated cultural resources be encountered, the Contractor and USAFA will follow 36 CFR § 800.13 and the Standard Operating Procedures (SOP) for "Discoveries of Archaeological Resources and NAGPRA Items" as published in the 2019 Integrated Cultural Resources Management Plan (ICRMP) in Section 7.4. All work will stop and the Cultural Resources Manager, Erwin Roemer, will be contacted to begin compliance.

Should potential impacts to historic properties be identified in the future due to a change in the submitted scopes of work, proposed locations, or due to activities proposed beyond the scope of the undertaking, follow-up Section 106 consultation will occur as required.

Due to the nature and scope of this undertaking, in accordance with 36 CFR 800.2(c), USAFA is providing this project review documentation to you and other interested Native American tribes (Attachment 5), and will address any comments or concerns therefrom.

REFERENCES

Jones, Robert and Isla Nelson
2019 *Final Archaeological Survey for the Preparatory Leadership Campus at USAFA.* Cardno, Inc. Contract Number FA8903-16-D-0032, Task Order FA8903-18-F-0242.

Schaffer, Kristen
1994 Creating a national Landmark in *Modernism at Mid-Century: The Architecture of the United States Air Force Academy*, edited by Robert Bruegmann. Chicago, IL: The University of Chicago Press

United States Air Force Academy
2012 *Preparatory School and Community Center Gymnasium Construction Final Environmental Assessment (EA), U.S. Air Force Academy, Colorado.* Prepared by: URS Group, Inc.

United States Air Force Academy
2019 *Preparatory School Master Plan.*

ATTACHMENT 5
Consulting/Interested Parties

Northern Cheyenne Tribe
Pueblo of Santa Clara
Rosebud Sioux Tribe
Southern Ute Indian Tribe
Ute Mountain Ute Tribe

Colorado State Historic Preservation Officer (SHPO)
National Park Service

HISTORY Colorado

11 May 2020 HC #77246

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy, CO 80840-2400

RE: New Campus for the USAFA Preparatory School, United States Air Force Academy, El Paso County

Dear Lt Col Jeoun:

Thank you for your recent correspondence received 4 May 2020, concerning the proposed construction of a new multi-building campus for the USAFA Preparatory School Our office has reviewed the submitted materials. The project is located within the boundaries of the U.S. Air Force Academy Historic District (5EP.595), a National Register-eligible district.

We concur with your assessment that the proposed undertaking will have no adverse effect on historic properties. Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change please contact our office for continued consultation under 36 CFR 800.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

Steve Turner, AIA
State Historic Preservation Officer

WWW.HISTORYCOLORADO.ORG
HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

From: Ben Rhodd
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
Subject: [Non-DoD Source] Re: Section 106 Request USAF Academy Preparatory School follow up with Attachment 3
Date: Wednesday, May 6, 2020 3:54:44 PM

Lt. Col. Jeoun,

Thank you for the enclosed information concerning th buildings to be built and the demolition. I have enclosed a picture of the area of my concern and hope that additional information can come forth concerning how to approach this area. I am stating this as it appears to be relatively undisturbed and the opportunity of intact sub-surface cultural resources I would assess as high. The other two areas of proposed disturbance I have no concerns about but the third area, I do.

With Regards,

Ben Rhodd
Rosebud Sioux Tribe
Tribal Historic Preservation Officer
PO Box 809
Rosebud, SD 57570
Email: rst.thpo@rst-nsn.gov
Ph.- 605-747-4255
And
brhodd1@yahoo.com
Ph. - 605-393-7329

On Tuesday, May 5, 2020, 2:43:37 PM CDT, SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil> wrote:

Lieutenant Colonel Jimmy J. Jeoun

Commander

10th Civil Engineer Squadron

8120 Edgerton Drive, Suite 40

USAF Academy CO 80840-2400

Dear Tribal Historic Preservation Officer and other stakeholders

Please find enclosed materials supporting the United States Air Force Academy's (USAFA) Section 106 consultation, in accordance with the National Historic Preservation Act, for an undertaking to relocate the USAFA Preparatory School Campus (Prep School) by construction of new facilities. The proposed project area is within the boundary of the National Register of Historic Places (NRHP) proposed USAFA Campus Historic District

(5EP.595).

In a letter from USAFA to your office dated 24 January 2020, USAFA proposed a project Programmatic Agreement (PA) in order to complete Section 106 consultation for the relocation of the Prep School. This relocation involves both demolition of existing facilities and construction of new facilities with the same functions as those being demolished. However, in correspondence from the Colorado State Historic Preservation Officer (SHPO) in February and March 2020 (Attachment 1) it was recommended no project PA is needed, and the SHPO further requested that the Section 106 consultation for the Prep School relocation be completed in two separate consultations: one for demolition of existing facilities and the other for relocation/new construction of the Prep School.

Regarding demolition associated with the relocation of the Prep School, in a SHPO letter dated 28 February 2020, it was communicated that the existing Prep School-associated buildings (Buildings 5210, 5212, 5214, 5216, 5218, 5220, 5224, 5222, and 5226) were not individually eligible for the NRHP nor were they contributing to the proposed USAFA Campus Historic District (5EP.595). At that time the SHPO also communicated that the demolition of Buildings 5210, 5212, 5214, 5216, 5220, and 5226 as a part of the work to relocate/construct a new Prep School would have *"no adverse effect on historic properties"* (36 CFR § 800.5(b)).

Per the SHPO's request, the present consultation package addresses the new construction associated with the relocation of the Prep School. The relocation and construction of the new Prep School is proposed eastward of the existing Prep School in the USAFA Community Center area. The proposed undertaking is described in more detail in Attachment 2 and is informed by the recently completed 2019 Prep School Master Plan (Attachment 3). Additionally, the drawings for Phase 1 Design are provided in Attachment 4. The new construction, as conceptually proposed, would occur in roughly three phases aligned to the Master Plan. In general, the first phase would involve the design finalization and construction of a new Dormitory Building, the second phase for the Academic Building/Headquarters, and the final phase for an Athletic Training Facility.

The Area of Potential Effect (APE) for the three phases of the new Prep School construction was developed to encompass all areas proposed for ground disturbance, new facilities, utilities, laydown, and staging. All three construction phases (all designed conceptually and discussed in this letter, the Master Plan, and the Phase 1 Design) will occur within the designated APE.

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There is a single historic road segment in the southern portion of the APE (5EP.8621.1). It was determined officially ineligible to the NRHP in 2019 (HC #77246). No archeological sites are identified in the APE. Additionally, the APE has no known areas of special interest to tribes routinely consulted by USAFA.

For the built environment within the APE, as was previously determined in the letter discussed above from the SHPO, the Milazzo Center (Building 5226) is officially ineligible for the NRHP individually or as a contributing facility to the proposed 5EP.595 historic district. Additionally, there is a three-sided stockpile bin and a segment of

a fitness trail within the APE, both of which have not been evaluated for the NRHP. While the exact installation date of the stockpile bin is unknown, its design and aesthetic are purely functional in nature, simplistic, and unremarkable. Additionally, other similar bins exist elsewhere on USAFA. As for the segment of the fitness trail, aerial imagery indicates the segment was developed between 1966 and 1982 and the trail as a whole was converted to the fitness course more recently in 1982. Furthermore, aerial imagery (Attachment 1, Figures 2–7) indicates modifications have previously occurred to this portion of the trail, which would have impacted any integrity had it been present at the time. Based upon the background of these elements, it is USAFA's recommendation that neither the stockpile bin nor the segment of the fitness trail would qualify for the NRHP under Criteria A–D or by exception.

The APE also is within the boundary of the installation and therefore within the boundary of the potentially NRHP-eligible proposed USAFA Campus Historic District (5EP.595). However, the proposed new campus and its facilities have been designed to use concepts previously developed by Skidmore, Owings & Merrill, and present on USAFA. Additionally, while the proposed new construction will be minimally visible from other areas of the installation, the design is such that it will complement the existing architectural expression present on USAFA and it will not overshadow or detract from other historic facilities/areas on USAFA. Additionally, a 2012 iteration of a proposed new Prep School previously was determined by your office to not have an adverse effect.

Under 36 CFR Part 800, the responsible Federal agency first determines whether the proposed Federal action is an undertaking as defined in § 800.16(y) and, if so, whether it is a type of activity that has the potential to cause effects on Historic Properties. As defined at § 800.16(i), an effect means alteration to the characteristics of a Historic Property qualifying it for inclusion in or eligibility for the NRHP. In accordance with 36 CFR § 800.5(b), USAFA proposes a finding of *"no adverse effect to historic properties"* for the construction of the new Prep School.

Should unanticipated cultural resources be encountered, the construction contractor will cooperate with USAFA to follow 36 CFR § 800.13 and the Standard Operating Procedures for "Discoveries of Archaeological Resources and NAGPRA Items" published in the 2019 Integrated Cultural Resources Management Plan. All work would stop in the area of such a find, and the Cultural Resources Manager, Erwin Roemer, would be contacted to work appropriate next steps, including notification to tribes. Should potential impacts to Historic Properties be possible due to a change in the construction's scope of work, proposed locations, or due to activities proposed beyond the scope of the undertaking, follow-up Section 106 consultation would occur.

Due to the nature and scope of this undertaking, in accordance with 36 CFR § 800.2(c) USAFA has sent project review documentation to the SHPO, interested Native American tribes, and other stakeholders (Attachment 5), and will address all comments or concerns.

Please submit your comments to the above address, however, comments can submitted via email and are included in our administrative record in the same manner as written correspondence. We respectfully request your comments on this undertaking within 30 days of receiving the consultation package.

Please direct comments to Mr. Erwin Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, teleworking number (646) 673-4642 Mountain Time Zone, or at the above address. We thank you for your review and assistance.

Sincerely

JIMMY J. JEOUN, Lt Col, USAF

5 Attachments:

1. Recent SHPO Correspondence on Prep School Relocation
2. USAFA Cultural Resources Section 106 Project Review
3. 2019 Prep School Master Plan
4. Phase 1 Design for Prep School Campus Relocation
5. Consulting/Interested Stakeholder List

Note: You will be receiving a hard copy of this Section 106 request for comments in the mail, as well.

Thank you,

//SIGNED//

Bernard Schriever, CTR.

Cultural Resources Planner

10 CES/CENPP

KIRA Facilities Services

8120 Edgerton Dr.

USAF Academy, CO 80840

Desk: 719-333-8375

Cell: 970-901-4999

From: Ben Rhodd
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
Subject: [Non-DoD Source] Re: Section 106 Request USAF Academy Preparatory School follow up with Attachment 3
Date: Wednesday, May 6, 2020 3:58:13 PM

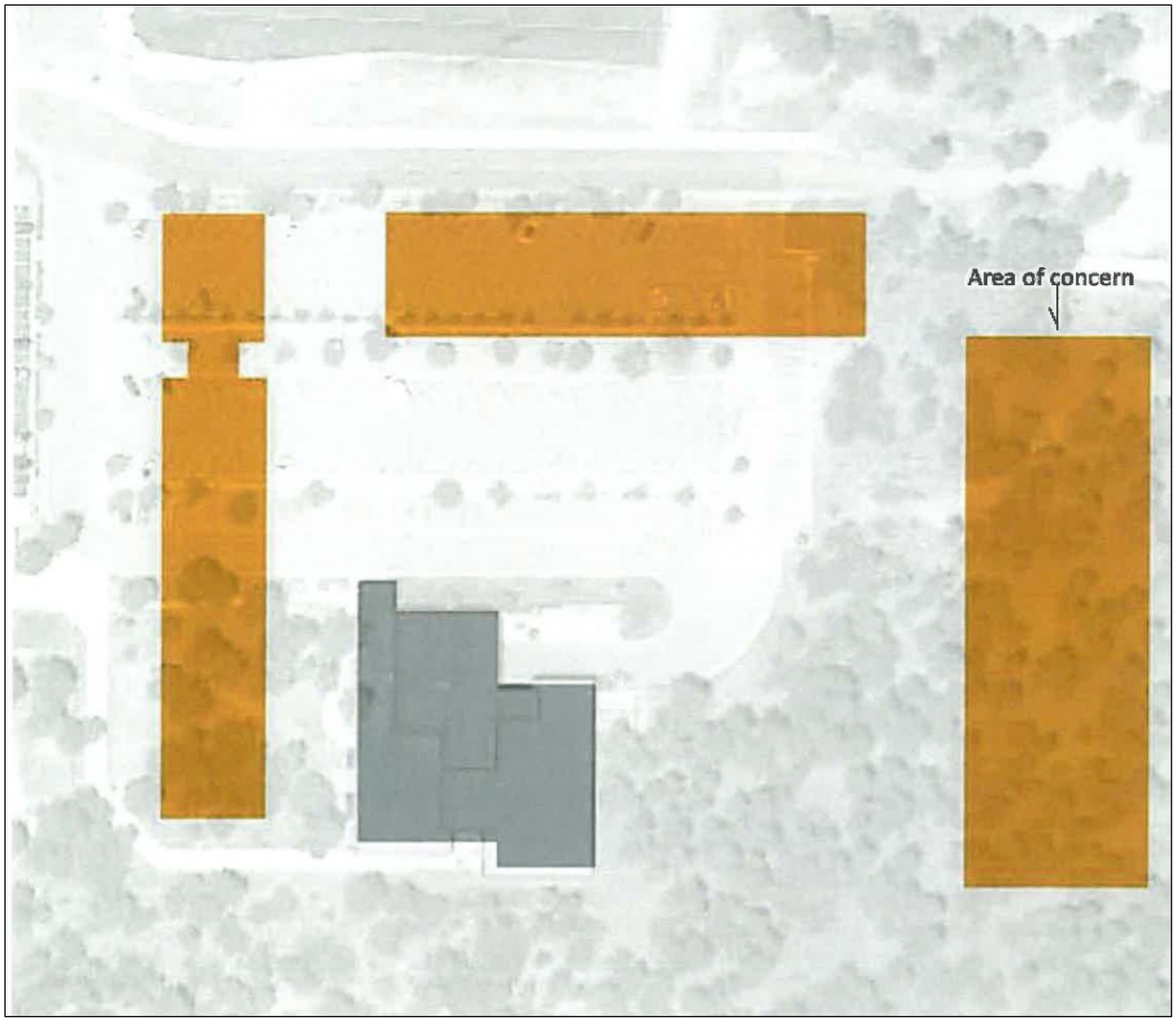
Lt. Col. Jeoun,

Apologies... I forgot to attach the map of the 3rd area I have concerns about.

Ben Rhodd
RST-THPO

Inline image

On Wednesday, May 6, 2020, 4:53:52 PM CDT, Ben Rhodd <brhodd1@yahoo.com> wrote:


Area of concern

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Due to the nature and scope of this undertaking, in accordance with 36 CFR § 800.2(c) USAFA has sent project review documentation to the SHPO, interested Native American tribes, and other stakeholders (Attachment 5), and will address all comments or concerns.

Please submit your comments to the above address, however, comments can submitted via email and are included in our administrative record in the same manner as written correspondence. We respectfully request your comments on this undertaking within 30 days of receiving the consultation package.

Please direct comments to Mr. Erwin Roemer, Cultural Resources Manager, 10 CES/CENP, erwin.roemer@us.af.mil, teleworking number (646) 673-4642 Mountain Time Zone, or at the above address. We thank you for your review and assistance.

Sincerely

JIMMY J. JEOUN, Lt Col, USAF

5 Attachments:

1. Recent SHPO Correspondence on Prep School Relocation
2. USAFA Cultural Resources Section 106 Project Review
3. 2019 Prep School Master Plan
4. Phase 1 Design for Prep School Campus Relocation
5. Consulting/Interested Stakeholder List

Note: You will be receiving a hard copy of this Section 106 request for comments in the mail, as well.

Thank you,

//SIGNED//

Bernard Schriever, CTR.

Cultural Resources Planner

10 CES/CENPP

KIRA Facilities Services

8120 Edgerton Dr.

USAF Academy, CO 80840

Desk: 719-333-8375

Cell: 970-901-4999

Northern Cheyenne Tribal Historic Preservation

14 E. Medicine Lodge Drive | P.O Box 128| Lame Deer, MT. 59043

Ph: (406) 477- 4838/ 4839/ 8113/ 8114

CONSULTATION REQUEST

CONSULTING AGENCY	10th Civil Engineer Squadron USAF Academy Colorado
ADDRESS	8120 Edgerton Dr. Suite 40
CITY/STATE/ZIP	USAF Acad. CO. 80840
PHONE	(646) 673-4642
FAX	
E-MAIL	erwin.roemer@us.af.mil
AGENCY CONTACT	Erwin Roemer
PROJECT CONTACT	
PREPARED BY:	Gary LaFranier

PROJECT TYPE	New Relocated USAFA Preparatory School Campus Facility.
FEDERAL AGENCY	Department of the Airforce
STATE / COUNTY	Colorado/ El Paso

CORRESPONDENCE	
DATE RECEIVED	5/11/2020
REVIEW PERIOD	30-DAY
DEADLINE	6/11/2020

DOCUMENTATION RECEIVED	
MAPS	YES
SURVEY	CLASS I
TRIBAL SURVEY	NO

DETERMINATION	
FINDING	NO EFFECT
COMMENT	Your undertaking may proceed as planned

ADDITIONAL COMMENTS

Teanna Limpy

Tribal Historic Preservation Officer

5/18/2020

DATE

LITTLEWOLF AND MORNING STAR- Out of Defeat and exile they led us back to Montana and won our Cheyenne Homeland that we will keep forever

CONSULTING AGENCY

10th Civil Engineer Squadron USAF Academy Colorado

ADDRESS

8120 Edgerton Dr. Suite 40

CITY/STATE/ZIP

USAF Acad. CO. 80840

PHONE

(646) 673-4642

FAX

E-MAIL

erwin.roemer@us.af.mil

AGENCY CONTACT

Erwin Roemer

PROJECT CONTACT

PREPARED BY:

Gary LaFranier

LITTLEWC
our Cheyen

Page 2 of 2

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
Cc: BELDING, SAMANTHA J CTR USAF USAFA 10 CES/CENPP
Subject: Northern Cheyenne replies on New Relocated USAFA Preparatory School Campus Facility & Natural Resources Vegetation Thinning Areas.
Date: Monday, May 18, 2020 4:20:58 PM
Attachments: New Relocated USAFA Preparatory School Campus Facility..pdf
Natural Resources Vegetation Thinning Areas.pdf
Importance: High

Concurrence letters from Northern Cheyenne. Kind of interesting they assigned "Class III" survey to the vegetation thinning project. Wonder what their definition is on that.

It has interested me over the years that Class I, II etc. (or "Phases" of CR work) have no specs under federal laws/regs/guidance. The way the term is presented, typically, in Sec. 106-driven CR reports leads the engineer audience to think they are some crucial terminology of Sec. 106.

Erwin Roemer, RPA
Cultural Resources Manager
U.S. Air Force Academy (10 CES/CENP)
telework pers cell (646) 673-4642 Mountain Time
email erwin.roemer@us.af.mil

From: glafranier@ncthpo.com <glafranier@ncthpo.com>
Sent: Monday, May 18, 2020 3:41 PM
To: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Subject: [Non-DoD Source] New Relocated USAFA Preparatory School Campus Facility & Natural Resources Vegetation Thinning Areas.
Importance: High

Good Afternoon,

Attached are the two projects: New Relocated USAFA Preparatory School Campus Facility & Natural Resources Vegetation Thinning Areas.

Thank You,

Gary LaFranier
FCC/ Section 106 Coordinator
Northern Cheyenne THPO
(406)477-8114
Lame Deer, MT. 59043

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
Subject: FW: UMUT response to Prep School Project
Date: Thursday, May 28, 2020 1:59:19 PM

Ute Mountain Ute okay with Prep School. Vr, Erwin

Erwin Roemer, RPA
Cultural Resources Manager
U.S. Air Force Academy (10 CES/CENP)
telework pers cell (646) 673-4642 Mountain Time
email erwin.roemer@us.af.mil

From: Nichol Shurack <NShurack@utemountain.org>
Sent: Thursday, May 28, 2020 1:01 PM
To: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Subject: [Non-DoD Source] UMUT response to Prep School Project

Erwin,

UMUT THPO concurs with the Colorado SHPO that previous surveys in the APE determined the buildings under construction are not eligible for the NRHP; the road segment does not contribute to the overall eligibility of the resource; and demolition of the Prep School will have no adverse effect on historic properties.

We also concur that the relocation of the Prep School will be considered a different undertaking and will need separate review and consultation.

Thank you,
Nikki

Nichol Shurack M.A., RPA
Cultural Resources Contract Administrator
Tribal Historic Preservation Office
Ute Mountain Ute Tribe

P.O. Box 468
Towaoc, CO 81334

Office (970) 564-5731
Cell (602) 350-8387

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
Subject: RE: RE UMUT response to Prep School Project
Date: Thursday, May 28, 2020 3:57:20 PM

I interrupted her on a Zoom call, but she said okay and talked with me briefly. She would like some form of monitoring, but in my impression didn't sound like it would have to be a Big Deal such as negative findings sent to her in letter report. Vr, Erwin

From: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Sent: Thursday, May 28, 2020 3:46 PM
To: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Subject: RE: RE UMUT response to Prep School Project

Thanks Erwin, I'll save this email for the record

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Sent: Thursday, May 28, 2020 3:32 PM
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Cc: Nichol Shurack <NShurack@utemountain.org>
Subject: RE UMUT response to Prep School Project

RE total project APE, I called Ms Shurack (cc'ed here) and explained this was an unusual project where CO SHPO wanted "separate" consultation on demolition though there's only one project/one APE. The letter we sent was complicated because it was trying to capture what SHPO already bought off on (the construction) and to describe the demolition. I further explained the APE (there's only one) has been well surveyed with no findings of interest of tribes (just that hist. road segment not NRHP-eligible). Ms. Shurack said she's in concurrence with the total project then, and would expect us to conduct appropriate monitoring of exposed areas, etc. during construction/demolition.

Ms. Shurack please add comments if needed. Sorry to take your time today! Vr, Erwin

Erwin Roemer, RPA
Cultural Resources Manager
U.S. Air Force Academy (10 CES/CENP)
telework pers cell (646) 673-4642 Mountain Time
email erwin.roemer@us.af.mil

From: Nichol Shurack <NShurack@utemountain.org>
Sent: Thursday, May 28, 2020 1:01 PM
To: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Subject: [Non-DoD Source] UMUT response to Prep School Project

Erwin,

UMUT THPO concurs with the Colorado SHPO that previous surveys in the APE determined the buildings under construction are not eligible for the NRHP; the road segment does not contribute to the overall eligibility of the resource; and demolition of the Prep School will have no adverse effect on historic properties.

We also concur that the relocation of the Prep School will be considered a different undertaking and will need separate review and consultation.

Thank you,
Nikki

Nichol Shurack M.A., RPA
Cultural Resources Contract Administrator
Tribal Historic Preservation Office
Ute Mountain Ute Tribe

P.O. Box 468
Towaoc, CO 81334

Office (970) 564-5731
Cell (602) 350-8387

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP
To: Ben Rhodd
Cc: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP; Benjamin Young
Subject: U.S. Air Force Academy, CO, and plans for Preparatory School Campus new construction
Date: Thursday, May 28, 2020 7:47:28 AM

Hello Mr. Rhodd.

Thank you for your response to our continuing consultation regarding the U.S. Air Force Academy's (USAFA) plans for new Preparatory Leadership School Campus. Mr. Beau Schriever of our staff, copied here, has been in touch with you on the following. I'll also cc to Mr. Young.

On May 6th, 2020, you communicated by email to USAFA's Lt. Col. Jeoun regarding a concern that the proposed athletic facility footprint, Phase 3 of the Campus construction, appears relatively undisturbed and it may have the potential for buried cultural resources. We understand that concern though the area was field-surveyed twice, most recently in 2019, without locating any cultural resources such as archeological materials.

For the overall project we believe Sec. 106 studies are adequate including field-surveys of the Phase 3 area, whose actual design and construction are many years out. Here's my suggestion if you are comfortable with it, and of course call me if needed to discuss. This project's administrative record for Sec. 106 will be disclosed in the project's environmental assessment (EA) report produced under National Environmental Policy Act. That EA will be a planning document referred to through all phases of this multi-year project. Perhaps you might re-summarize your concerns in an email to me (or if you wish a letter to Lt Col Jeoun) and we can make certain that becomes a clearly documented concern in the EA.

I know you are very busy, but please let me know your thoughts on this approach. Again please accept our thanks for the insightful advice, and your time, to help us plan this project.

Also I am sure hoping the best for your tribe's situation dealing with the COVID-19 issues.
Sincerely, Erwin

Erwin Roemer, RPA
Cultural Resources Manager
U.S. Air Force Academy (10 CES/CENP)
telework pers cell (646) 673-4642 Mountain Time
email erwin.roemer@us.af.mil

From: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
To: BELDING, SAMANTHA J CTR USAF USAFA 10 CES/CENPP
Subject: FW: [EXTERNAL] RE Section 106 Follow up Request for Comment on USAF Academy Preparatory School
Date: Monday, June 08, 2020 1:10:54 PM

From: Briggs, Garrett <gbriggs@southernute-nsn.gov>
Sent: Saturday, June 6, 2020 10:55 AM
To: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Cc: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Subject: [Non-DoD Source] RE: [EXTERNAL] RE Section 106 Follow up Request for Comment on USAF Academy Preparatory School

Mr. Roemer-

Thank you for checking-up on this and providing us with an update. We have no additional concerns at the moment. We appreciate you doing so. Further, thank you for the kind wishes for myself and the community. At this moment of time, we are hanging in there. We are holding fast and strong.

I too hope you and yours are well.

We will be in touch.

Stay safe, say healthy.

Sincerely,

-Garrett

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Sent: Friday, June 05, 2020 6:18 PM
To: Briggs, Garrett <gbriggs@southernute-nsn.gov>
Cc: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Subject: [EXTERNAL] RE Section 106 Follow up Request for Comment on USAF Academy Preparatory School

Yes we received the attached letter. The project planned then evolved into a somewhat different direction in that the anticipated project Programmatic Agreement (what we spoke of in our initial communitions to you) ended up not being needed. It turned out that from consultation with the Colorado SHPO, no mitigation is required for the built environment. The SHPO did want a second letter of information/plans specific to the new construction, and that letter (dated 4 May 2020) was sent to tribes, then followed by email May 28th as a reminder for comments. This stuff gets confusing! However the ultimate situation is that apart from impacts to buildings (demolition of dorms for ex.) the land involved (project APE) has no archeological sites, and has no other forms of resources that would appear to be of

potential interest to tribes. There is a portion of a historic road recorded in the APE. So it turns out that no Sec. 106 agreement or mitigation is necessary. This is a long term and phased construction of the new buildings, etc. We do routinely monitor such construction projects to be certain if a finding of any possible interest turns up, such as a buried feature or artifacts, and if such occurred we'd quickly notify the Southern Ute Indian Tribe and others. We don't need a new letter of response from you, but please let me know if I and/or Beau Schriever (copied here) should call you to further explain this poject's planning.

I hope you all are doing okay with the COVID-19 situation, etc. We all live in an extra challenging situation right now, no question on that. I still aim to visit someday when it's possible. Sincerely, Erwin

---

From: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Sent: Friday, June 5, 2020 4:44 PM
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Subject: S. Ute ... Section 106 Follow up Request for Comment on USAF Academy Preparatory School

Let me check my emails. But FYSA as below. ER

Erwin Roemer, RPA
Cultural Resources Manager
U.S. Air Force Academy (10 CES/CENP)
telework pers cell (646) 673-4642 Mountain Time
email erwin.roemer@us.af.mil

From: Briggs, Garrett <gbriggs@southernute-nsn.gov>
Sent: Friday, June 5, 2020 4:25 PM
To: ROEMER, ERWIN JR GS-12 USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>
Subject: [Non-DoD Source] RE: [EXTERNAL] Section 106 Follow up Request for Comment on USAF Academy Preparatory School

Mr. Roemer-

I wanted to follow-up to make sure that you had received our response letter for this proposed project. If not, please let me know. Our NAGPRA Technician sent it on 03/05/2020.

Best,

-Garrett

From: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Sent: Thursday, May 28, 2020 11:15 AM
To: Thompson, Shelly <sthompson@southernute-nsn.gov>; Atencio, Cassandra <catencio@southernute-nsn.gov>; Briggs, Garrett <gbriggs@southernute-nsn.gov>
Subject: [EXTERNAL] Section 106 Follow up Request for Comment on USAF Academy Preparatory School

Dear Ms. Thompson, Ms. Atencio, and Mr. Briggs

In a letter (Tab 2_THPO Ltr_Prep School_22Apr20.pdf, attached) signed by Lt. Colonel Jeoun on May 4, 2020, the United States Air Force Academy (USAFA) contacted you under Section 106 of National Historic Preservation Act for comments on the proposed undertaking to relocate the USAFA Preparatory School Campus (Prep School) by construction of new facilities. This email is to check if you may be replying by est. June 11, 2002, or require more time. All attachments to this email were previously sent to you, and they are listed at the end of this email.

To re-summarize, this project will address the need for a modern preparatory-type campus that promotes academic integrity and excellence. The existing Prep School facilities are outdated and cannot be renovated to meet today's educational needs. The project Area of Potential Effects has been surveyed twice, most recently in 2019, with a historic road segment representing the only cultural resource identified. The project is planned to occur in 3 phases, of which only the design aspect for Phase 1 has been funded. It will be a few years before Phase 1 is completed. Therefore Phases 2 and 3 are years into the future, as funding allows, etc. Regardless, we are seeking to complete Section 106 review for the total project effort.

USAFA has not yet received a response from you to this request and the 30 day response period will end on June 11th. Given the present circumstances surrounding the Coronavirus emergency, we understand that you may require more time to consider the request. USAFA would appreciate your response as soon as possible, including please let us know if you require more time. Please submit your comments by either mailing to Lt Col Jeoun at the address below, or by emailing to USAFA Cultural Resources Manager Erwin Roemer at erwin.roemer@us.af.mil.

Lieutenant Colonel Jimmy J. Jeoun
Commander
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

For any questions don't hesitate to contact Mr. Roemer at his teleworking # (646) 673-4642 Mountain Time Zone. Thank you for your review and assistance on this matter.

Attachments to this email:

1. THPO letter from Lt Col Jeoun, dated 4 May 2020 ("Tab 2…"); a hard copy of this letter was mailed to you.
2. SHPO correspondence plus project description ("Atch 1-2…") of 4 May 2020 letter.
3. Phase 1 Design (maps/plans ("Atch 4…) of 4 May 2020 letter.
4. Consulting/Interested Stakeholder List ("Atch 5…") of 4 May 2020 letter.

Also: Attachment 3 of 4 May 2020 is the 2019 Prep School Master Plan which *due to size, is re-sent by separate email*).

Erwin Roemer, RPA
Cultural Resources Manager

U.S. Air Force Academy (10 CES/CENP)
telework pers cell (646) 673-4642 Mountain Time
email erwin.roemer@us.af.mil

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APPENDIX B
AIR QUALITY

Alternative 1

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): Colorado Springs, CO

b. Action Title: Preparatory Leadership Campus at USAF Academy Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4 / 2021

e. Action Description:

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished. The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Assoc
Organization: Cardno
Email: Lesley.Hamilton@cardno-gs.com
Phone Number:

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

Conformity Analysis Summary:

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.343		
NOx	2.455		
CO	2.347	100	No
SOx	0.006		
PM 10	3.476		
PM 2.5	0.103		
Pb	0.000		
NH3	0.005		
CO2e	603.0		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	3.455		
NOx	3.990		
CO	4.530	100	No
SOx	0.011		
PM 10	0.275		
PM 2.5	0.178		
Pb	0.000		
NH3	0.004		
CO2e	1006.1		

2023

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.095		
NOx	0.650		
CO	0.689	100	No
SOx	0.002		
PM 10	0.029		
PM 2.5	0.029		
Pb	0.000		
NH3	0.001		
CO2e	154.5		

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.000		
NOx	0.000		
CO	0.000	100	No
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Lesley Hamilton

7/1/2020

Lesley Hamilton, Sr Assoc

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): Colorado Springs, CO

- Action Title: Preparatory Leadership Campus at USAF Academy Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 4 / 2021

- Action Purpose and Need:

The USAFA proposes to construct new facilities and demolish old facilities on the PL Campus in order to consolidate functions and upgrade facilities to current standards.

- Action Description:

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

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- Point of Contact

Name: Lesley Hamilton
Title: Sr Assoc
Organization: Cardno
Email: Lesley.Hamilton@cardno-gs.com
Phone Number:

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Alternative 1 Construction

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Alternative 1 Construction

- Activity Description:
Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

- Activity Start Date
Start Month: 4
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	3.892017
SO_x	0.018128
NO_x	7.094992
CO	7.566365
PM 10	3.779918

Pollutant	Total Emissions (TONs)
PM 2.5	0.310137
Pb	0.000000
NH_3	0.009882
CO_2e	1763.6

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 150622
Height of Building to be demolished (ft): 3

- Default Settings Used: No

- Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Air Compressors Composite	1	8
Concrete/Industrial Saws Composite	1	8
Dumpers/Tenders Composite	3	8
Excavators Composite	1	8
Rubber Tired Loaders Composite	8	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 12

Average Hauling Truck Round Trip Commute (mile): 12

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Air Compressors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0414	0.0007	0.2677	0.3041	0.0137	0.0137	0.0037	63.700
Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0648	0.0013	0.3170	0.5103	0.0136	0.0136	0.0058	119.72
Rubber Tired Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0661	0.0012	0.3848	0.4358	0.0180	0.0180	0.0059	108.76
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 21

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 488840
Amount of Material to be Hauled On-Site (yd^3): 6179
Amount of Material to be Hauled Off-Site (yd^3): 31031

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Dumpers/Tenders Composite	1	5
Excavators Composite	1	5
Graders Composite	1	8
Plate Compactors Composite	2	8
Rubber Tired Dozers Composite	1	5
Skid Steer Loaders Composite	1	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 12
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Skid Steer Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0212	0.0003	0.1544	0.2119	0.0041	0.0041	0.0019	30.324

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Duration
Number of Month: 0
Number of Days: 10

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 1525
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 42

- Trenching Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 12
Average Hauling Truck Round Trip Commute (mile): 12

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Skid Steer Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0212	0.0003	0.1544	0.2119	0.0041	0.0041	0.0019	30.324

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 24
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 244168
Height of Building (ft): 38
Number of Units: N/A

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- Building Construction Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	1	8
Cranes Composite	1	8
Generator Sets Composite	1	6
Rough Terrain Forklifts Composite	3	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Cement and Mortar Mixers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0085	0.0001	0.0535	0.0414	0.0021	0.0021	0.0007	7.2674
Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Rough Terrain Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0497	0.0008	0.3192	0.4453	0.0172	0.0172	0.0044	70.392
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 6
Number of Days: 0

2.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 244168
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 9
Start Quarter: 1
Start Year: 2022

- Phase Duration

Number of Month: 0
Number of Days: 28

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 27048

- Paving Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Dumpers/Tenders Composite	1	5
Graders Composite	1	6
Pavers Composite	1	8
Paving Equipment Composite	1	1
Rollers Composite	2	4

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.6.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Skid Steer Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0212	0.0003	0.1544	0.2119	0.0041	0.0041	0.0019	30.324

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

Alternative 2

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): Colorado Springs, CO

b. Action Title: Preparatory Leadership Campus at USAF Academy Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4 / 2021

e. Action Description:

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished. The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Assoc
Organization: Cardno
Email: Lesley.Hamilton@cardno-gs.com
Phone Number:

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

Conformity Analysis Summary:

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.419		
NOx	2.984		
CO	2.765	100	No
SOx	0.007		
PM 10	4.614		
PM 2.5	0.120		
Pb	0.000		
NH3	0.006		
CO2e	716.9		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	3.423		
NOx	4.017		
CO	4.308	100	No
SOx	0.010		
PM 10	0.207		
PM 2.5	0.174		
Pb	0.000		
NH3	0.006		
CO2e	949.6		

2023

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	1.319		
NOx	0.796		
CO	0.819	100	No
SOx	0.002		
PM 10	0.034		
PM 2.5	0.033		
Pb	0.000		
NH3	0.001		
CO2e	184.6		

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.000		
NOx	0.000		
CO	0.000	100	No
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Lesley Hamilton

7/1/2020

Lesley Hamilton, Sr Assoc

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): Colorado Springs, CO

- Action Title: Preparatory Leadership Campus at USAF Academy Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 4 / 2021

- Action Purpose and Need:

The USAFA proposes to construct new facilities and demolish old facilities on the PL Campus in order to consolidate functions and upgrade facilities to current standards.

- Action Description:

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished. The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond

- Point of Contact

Name: Lesley Hamilton
Title: Sr Assoc
Organization: Cardno
Email: Lesley.Hamilton@cardno-gs.com
Phone Number:

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Alternative 1 Construction

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Alternative 1 Construction

- Activity Description:
Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

- Activity Start Date
Start Month: 4
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	5.160888
SO_x	0.018796
NO_x	7.796388
CO	7.893234
PM 10	4.854731

Pollutant	Total Emissions (TONs)
PM 2.5	0.326646
Pb	0.000000
NH_3	0.013952
CO_2e	1851.1

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 0
Number of Days: 30

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 49535
Height of Building to be demolished (ft): 3

- Default Settings Used: No

- Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Air Compressors Composite	1	8
Concrete/Industrial Saws Composite	1	8
Dumpers/Tenders Composite	3	8
Excavators Composite	1	8
Rubber Tired Loaders Composite	8	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 12

Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Air Compressors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0414	0.0007	0.2677	0.3041	0.0137	0.0137	0.0037	63.700
Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0648	0.0013	0.3170	0.5103	0.0136	0.0136	0.0058	119.72
Rubber Tired Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0661	0.0012	0.3848	0.4358	0.0180	0.0180	0.0059	108.76
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 26

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 526804
Amount of Material to be Hauled On-Site (yd^3): 8066
Amount of Material to be Hauled Off-Site (yd^3): 37220

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	5
Graders Composite	1	8
Plate Compactors Composite	2	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 12
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 3

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2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 400
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 42

- Trenching Default Settings

Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 12
Average Hauling Truck Round Trip Commute (mile): 12

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 24
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 345472
Height of Building (ft): 38
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	1	8
Cranes Composite	1	8
Dumpers/Tenders Composite	5	8
Generator Sets Composite	1	6
Rough Terrain Forklifts Composite	3	8
Skid Steer Loaders Composite	1	8
Tractors/Loaders/Backhoes Composite	1	6

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Cement and Mortar Mixers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0085	0.0001	0.0535	0.0414	0.0021	0.0021	0.0007	7.2674
Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Rough Terrain Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0497	0.0008	0.3192	0.4453	0.0172	0.0172	0.0044	70.392
Skid Steer Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0212	0.0003	0.1544	0.2119	0.0041	0.0041	0.0019	30.324
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 10
Number of Days: 0

2.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 345472
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 20

2.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 97281

- Paving Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Dumpers/Tenders Composite	1	5
Graders Composite	1	6
Pavers Composite	1	8
Paving Equipment Composite	1	1
Rollers Composite	2	4

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.6.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

Alternative 3

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): Colorado Springs, CO

b. Action Title: Preparatory Leadership Campus at USAF Academy Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4 / 2021

e. Action Description:

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished. The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Assoc
Organization: Cardno
Email: Lesley.Hamilton@cardno-gs.com
Phone Number:

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

Conformity Analysis Summary:

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.454		
NOx	3.378		
CO	2.877	100	No
SOx	0.008		
PM 10	1.897		
PM 2.5	0.131		
Pb	0.000		
NH3	0.009		
CO2e	834.0		

2022

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	3.991		
NOx	0.863		
CO	0.938	100	No
SOx	0.002		
PM 10	0.068		
PM 2.5	0.037		
Pb	0.000		
NH3	0.001		
CO2e	227.5		

2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	0.000		
NOx	0.000		
CO	0.000	100	No
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Lesley Hamilton

7/1/2020

Lesley Hamilton, Sr Assoc

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): Colorado Springs, CO

- Action Title: Preparatory Leadership Campus at USAF Academy Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 4 / 2021

- Action Purpose and Need:

The USAFA proposes to construct new facilities and demolish old facilities on the PL Campus in order to consolidate functions and upgrade facilities to current standards.

- Action Description:

Under Alternative 1, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 88,818 sf dormitory, 88,150 sf academic and headquarters facility, 67,200 sf athletic building, terrazzo, and modify an existing stormwater facility. Buildings 5210, 5216, 5212, 5214, 5220 and 5226 would be demolished.

Under Alternative 2, the USAFA proposes to relocate the PL Campus to the east of the current campus and construct a new 265,872 sf dormitory, 66,600 sf academic building, 10,000 sf headquarters facility, 3,000 sf mechanical building, terrazzo, additional parking and a bus loop, and a stormwater detention pond. Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished.

Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished. The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond

- Point of Contact

Name: Lesley Hamilton
Title: Sr Assoc
Organization: Cardno
Email: Lesley.Hamilton@cardno-gs.com
Phone Number:

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Alternative 1 Construction

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Alternative 1 Construction

- Activity Description:
Under Alternative 3, a new dormitory and academic facility would be constructed within the existing footprint of the PL Campus, and Buildings 5210, 5216, 5212, 5214, and 5220 would be demolished. The new dormitory and academic facility would be the same size and type of construction as described under Alternative 2. Under Alternative 3, there would be no new headquarters facility, terrazzo, additional parking and a bus loop, mechanical building, or stormwater detention pond

- Activity Start Date
Start Month: 4
Start Month: 2021

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	4.445343
SO_x	0.010522
NO_x	4.240695
CO	3.814805
PM 10	1.965294

Pollutant	Total Emissions (TONs)
PM 2.5	0.167844
Pb	0.000000
NH_3	0.010200
CO_2e	1061.5

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 0
Number of Days: 30

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 49535
Height of Building to be demolished (ft): 3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Default Settings Used: No

- Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Air Compressors Composite	1	8
Concrete/Industrial Saws Composite	1	8
Dumpers/Tenders Composite	3	8
Excavators Composite	1	8
Rubber Tired Loaders Composite	8	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 12

Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Air Compressors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0414	0.0007	0.2677	0.3041	0.0137	0.0137	0.0037	63.700
Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0648	0.0013	0.3170	0.5103	0.0136	0.0136	0.0058	119.72
Rubber Tired Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0661	0.0012	0.3848	0.4358	0.0180	0.0180	0.0059	108.76
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 24

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 223848
Amount of Material to be Hauled On-Site (yd^3): 4188
Amount of Material to be Hauled Off-Site (yd^3): 28389

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	5
Graders Composite	1	4
Plate Compactors Composite	2	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 12
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 0
Number of Days: 3

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 400
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 42

- Trenching Default Settings

Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 12
Average Hauling Truck Round Trip Commute (mile): 12

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0687	0.0013	0.3576	0.5112	0.0158	0.0158	0.0062	119.73
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Plate Compactors Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0050	0.0001	0.0314	0.0263	0.0012	0.0012	0.0004	4.3251
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2021

- Phase Duration
Number of Month: 10
Number of Days: 10

2.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 332472
Height of Building (ft): 38
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	1	8
Cranes Composite	1	8
Dumpers/Tenders Composite	5	8
Generator Sets Composite	1	6
Rough Terrain Forklifts Composite	3	8
Skid Steer Loaders Composite	1	8
Tractors/Loaders/Backhoes Composite	1	6

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Cement and Mortar Mixers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0085	0.0001	0.0535	0.0414	0.0021	0.0021	0.0007	7.2674
Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Dumpers/Tenders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0091	0.0001	0.0581	0.0313	0.0021	0.0021	0.0008	7.6451
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0362	0.0006	0.2977	0.2707	0.0130	0.0130	0.0032	61.074
Rough Terrain Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0497	0.0008	0.3192	0.4453	0.0172	0.0172	0.0044	70.392
Skid Steer Loaders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0212	0.0003	0.1544	0.2119	0.0041	0.0041	0.0019	30.324
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 6
Number of Days: 0

2.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 332472
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons