ENVIRONMENTAL ASSESSMENT (EA)
FOR
NORTHERN MONUMENT CREEK INTERCEPTOR

PREPARED BY:

Department of the Air Force
U.S. Army Corps of Engineers (Cooperating Agency)

March 2024

Letters or other written comments provided may be published in the Final EA. As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AF	Air Force
AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zones
BA	Biological Assessment
BMPs	Best Management Practices
CCR	Code of Colorado Regulations
CDLE/OPS	Colorado Department of Labor and Employment Division of Oil and Public Safety
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CNHP	Colorado Natural Heritage Program
Corps	United States Army Corps of Engineers
CWA	Clean Water Act
DNL	Day-night Average Sound Level
EA	Environmental Assessment
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GHG	Greenhouse gas
IF	Isolated Find
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMCI	Northern Monument Creek Interceptor
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OAHP	Office of Archaeology and Historic Preservation
POTW	Publicly Owned Treatment Works
PPACG	Pikes Peak Area Council of Governments
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SHPO	Colorado State Historic Preservation Officer
THPO	Tribal Historic Preservation Officer
TIN	Total inorganic nitrogen
TN	Total nitrogen
TP	Total phosphorus
tpy	Tons per year
USAF	United States Air Force
USAFA	United States Air Force Academy
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Utilities	Colorado Springs Utilities
WRRF	Water resource recovery facility
WWTF	Wastewater treatment facility

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

Colorado Springs Utilities (Utilities) is proposing to construct the Northern Monument Creek Interceptor (NMCI), a new wastewater conveyance pipeline from the existing Upper Monument Creek Regional Wastewater Treatment Facility (Upper Monument Creek WWTF) approximately 8.6 miles south to the J.D. Phillips Water Resource Recovery Facility (J.D. Phillips Water Resource Recovery Facility [WRRF]) in Colorado Springs (Figure 1-1). The NMCI would provide service for two northern sanitary sewer service providers: Forest Lakes Metropolitan District and Tri-View Metropolitan District (the Northern Entities). The NMCI would also allow for the closure of several of Utilities' lift stations and would include about 1.5 mile of lateral pipeline connections.

Because most of the length of the proposed alignments for the NMCI would traverse the United States Air Force Academy (USAFA), the United States Air Force (USAF) is preparing an environmental assessment (EA) to consider how the project would affect the human and natural environment. Construction and operation of the NMCI would require approval of easements or other real property agreements between USAFA and Utilities. Portions of the proposed alignments would also traverse nonfederal lands north and south of the USAFA. This EA is an evaluation of environmental impacts that would occur if the NMCI is constructed.

The Council on Environmental Quality (CEQ) issued new NEPA regulations on September 14, 2020 (40 CFR 85 1684-1730). The CEQ also issued revisions to the NEPA regulations in April 2022, which became effective on May 20, 2022 (87 FR 23466 (April 20, 2022). The 2022 NEPA regulations included a reversal of several of the changes made under the 2020 NEPA regulations. For NEPA reviews in process that agencies began before September 14, 2020, agencies may choose whether to apply the revised regulations or proceed under the 1978 NEPA regulations (43 FR 55978 (Nov. 29, 1978)) or the 2022 NEPA regulations, and their existing agency NEPA procedures. Under USAF policy, actions initiated prior to the September 14, 2020 effective date of the 2020 CEQ regulations fall under the 1978 CEQ regulations. This EA conforms to the 1978 NEPA regulations and is consistent with the 2022 NEPA regulations. This EA is 75 pages or shorter using the definition in 40 CFR Section 1508.1, where a page is 500 words and does not include explanatory maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information.

1.2 PURPOSE OF THE ACTION

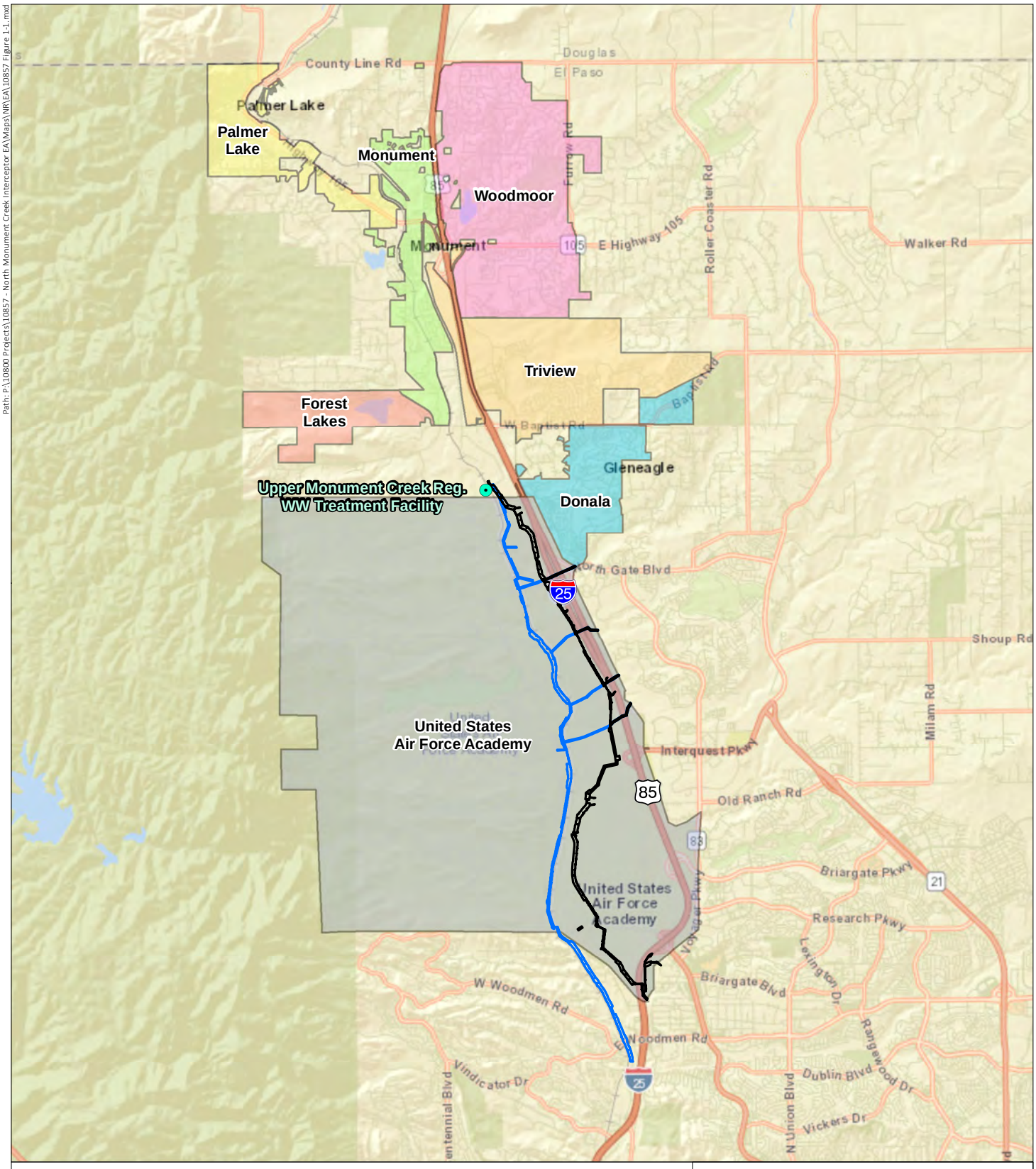
The purpose of the NMCI (or Proposed Action) is for Utilities and the Northern Entities to consolidate wastewater treatment systems into a centralized system that is environmentally and fiscally responsible, provides for increased system reliability, accommodates future growth, and maintains compliance with more stringent water quality regulations.

1.3 NEED FOR THE ACTION

The need for the Proposed Action is to comply with water quality regulations by consolidating regional providers within the upper Monument Creek watershed, meet future treatment capacity limits, and improve system reliability and sustainability.

1.3.1 Compliance with Water Quality Regulations by Consolidating Sanitary Sewer Treatment within the Upper Monument Creek Watershed

Monument Creek is on the 303(d) List of Impaired Water Bodies under the Clean Water Act (CWA). The 303(d) list provides guidance for determining if a waterbody meets water quality standards and whether it supports its designated use. In 2012, the Colorado Department of Public Health and Environment (CDPHE) adopted Regulation 85 (5 Code of Colorado Regulations (CCR) 1002-85) establishing total inorganic nitrogen (TIN) and total phosphorus (TP) effluent requirements for large facilities and reporting requirements for all facilities. In 2012, the CDPHE announced revisions to Regulation 31 (5 CCR 1002-31) developing stream-based surface water quality regulations that will be used starting in 2027 to potentially apply more stringent total nitrogen (TN) and TP standards to facilities (targeting large facilities first).



Northern Monument Creek Interceptor Environmental Assessment

- Existing Treatment Facility
- Alternative 2
- Alternative 3

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Figure 1-1
The Northern Entities, Upper Monument Creek Regional WWTP, and USAFA

Prepared for: Colorado Springs Utilities
File: 10857 Figure 1-1.mxd (GS)
December 11, 2023

ERO Resources Corp.

Beginning November 1, 2020, the CDPHE requires that TP effluent limits be met to comply with Regulation 85. The Forest Lakes Metropolitan District and Triview Metropolitan District wastewater is treated at the Upper Monument Creek WWTF administered under Colorado Discharge Permit CO0042030. The permit requires TIN monitoring for two days per month and has a daily maximum effluent TIN requirement. The TIN requirement will be subject to more stringent effluent requirements with Regulation 85 and Regulation 31 starting in 2027.

Meeting these nutrient requirements would be challenging for many small Publicly Owned Treatment Works (POTW) facilities, such as those operated by the Northern Entities, without significant plant upgrades to Biological Nutrient Removal treatment configurations. Installation of the infrastructure to mitigate constituents of concern will be costly for smaller operations. Consolidation of POTW facilities would benefit a larger ratepayer base and would allow the Northern Entities to more easily implement the technology and infrastructure required to meet future Regulation 85 and Regulation 31 requirements.

In addition to complying with state regulations, Utilities is cognizant of local guidance from the Pikes Peak Area Council of Governments (PPACG) (updated in 2020) that states: “Where site conditions require wastewater collection and central treatment, efforts should be made to consolidate treatment plants” and “Every effort should be made to consolidate management agencies and special district boundaries where possible and financially feasible” (PPACG 2020). Through the consolidation of treatment facilities, a larger ratepayer base could more easily implement the technology and infrastructure required to meet future regulations.

1.3.2 Meet Future Treatment Capacity Limits

El Paso County has a current population of approximately 675,000 and has grown steadily in the past decade (State Demographer data 2010-2018). The population in El Paso County is anticipated to continue to grow, requiring investment in wastewater system capacity upgrades to convey and treat increased flow.

1.3.3 Improve System Reliability and Sustainability

Utilities operates several wastewater lift stations in the upper Monument Creek watershed. A lift station uses mechanical operations to increase pressure and convey wastewater to a point in the system where gravity flow can occur. Because of the mechanical nature of lift stations, there is inherently more risk of a sanitary sewer overflow resulting from equipment failures than in gravity systems. Ultimately, the goal of the NMCI is to invest in consolidating the treatment of wastewater, currently performed by multiple wastewater treatment plants, into a larger integrated collection and treatment system transported by gravity and to eliminate several of Utilities’ lift stations to create a more reliable and sustainable system to meet new water quality regulations.

1.4 COOPERATING AGENCY AND INTERGOVERNMENTAL COORDINATION/ CONSULTATIONS

1.4.1 Cooperating Agency – U.S. Army Corps of Engineers

In February 2020, the U.S. Army Corps of Engineers Albuquerque District, Southern Colorado Regulatory Branch (Corps) became a cooperating agency in the preparation of this EA. The

USAF has obtained technical input from the Corps to prepare this EA. The USAF works cooperatively with the Corps to ensure that adoption of the findings of this EA will consider impacts on wetlands and other waters of the United States.

1.4.2 Interagency and Intergovernmental Coordination and Consultations

Federal, state, and local agencies with jurisdiction that could be affected by the alternative actions were notified and consulted during the development of this EA.

Appendix A contains the list of agencies consulted during this analysis and copies of correspondence.

1.4.3 Government-to-Government Consultations

The National Historic Preservation Act Section 106, its implementing regulations at 36 CFR Part 800, Executive Order 13175 (Consultation and Coordination With Indian Tribal Nations), and Department of the Air Force Instruction 90-2002, Interactions with Federally Recognized 25 Tribes (updated and published 24 August 2020), direct the Air Force to consult with federally-recognized Native American tribal governments who are historically affiliated with federally administered lands in the area of potential effects (APE) for the undertaking. To comply with legal mandates, federally recognized tribes that are affiliated historically with the USAFA geographic region have been invited to consult on the project. The tribal coordination process is distinct from the National Environmental Policy Act (NEPA) consultation or the Interagency/ Intergovernmental Coordination for Environmental Planning processes and requires separate notification of all relevant tribes consistent with *NEPA and NHPA, A Handbook for Integrating NEPA and Section 106* (2013). The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The USAFA point-of-contact for Native American tribes is the Installation Commander or their designated representative. The USAFA point-of-contact for consultation with the Tribal Historic Preservation Officer (THPO) and the Advisory Council on Historic Preservation is the Installation Tribal Liaison Officer with advisement from the Cultural Resources Manager.

The Native American tribal governments that were coordinated with regarding this action are listed in Appendix A.

1.5 PUBLIC AND AGENCY REVIEW OF EA

This EA will be released for a 30-day public comment period. A Notice of Availability (NOA) of the Draft EA and FONSI/Finding of No Practicable Alternative (FONPA) will be published in the newspapers of record (listed below) and on the USAFA news website at https://www.usafa.af.mil/News/, announcing the availability of this EA and the draft FONSI/FONPA for review. The NOA will invite the public to review and comment on the Draft EA and FONSI/FONPA.

The NOA will be published in the following newspapers: the *Colorado Springs Gazette*, Colorado Springs, Colorado and *Our Community News,* Monument, Colorado.

Copies of the Draft EA and FONSI will also made available for review at the following locations:

https://www.usafa.af.mil/Units/10th-Air-Base-Wing/Mission-Support-Group/Civil-Engineer-Squadron/Installation-Management/Environmental-Management/

Library 21C
1175 Chapel Hills Drive
Colorado Springs, CO 80920

Base Library
5136 Redtail Drive
USAFA, CO 80840

Monument Library
1706 Lake Woodmoor Drive
Monument, CO 80132

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 SELECTION STANDARDS

NEPA and the Council on Environmental Quality (CEQ) regulations mandate the consideration of reasonable alternatives for the proposed action. “Reasonable alternatives” are those that also could be used to meet the purpose of and need for the proposed action. Per the requirements of 32 Code of Federal Regulations (CFR) 989, the USAF Environmental Impact Analysis Process regulations and selection standards are used to identify alternatives for meeting the purpose and need for the USAF action.

Utilities developed site selection screening criteria to compare potential sites within the identified geographic area, and explain of why the criteria were selected, providing alternative ways of fulfilling the objectives of the Proposed Action in accordance with 32 CFR 989.8(c). A routing study was developed that identified selection criteria related to engineering, construction, environmental and cultural, and social factors. Categories and key factors were established to guide planners and engineers in the evaluation and selection of an alternative that would best meet the purpose and need for the project. The following criteria were considered in the routing study (AECOM 2020).

2.1.1 Engineering (30% of score)

- Maximize alignment access and suitability.
- Maximize engineering and construction feasibility.
- Minimize stream crossing impacts.
- Minimize impacts from lift station lateral connections.
- Minimize impacts on flight operations, including Accident Potential Zones and the Clear Zone at the USAFA Davis Airfield.

2.1.2 Construction (30% of score)

- Minimize total construction costs.
- Minimize operations and maintenance costs.

2.1.3 Environmental and Cultural (25% of score)

- Minimize floodplain impacts.
- Minimize wetland and waters of the U.S. impacts.
- Minimize impacts on threatened and endangered species, primarily known habitat for Preble’s meadow jumping mouse (Preble’s).
- Minimize impacts on known cultural resources.

2.1.4 Social (15% of score)

- Minimize construction impacts on the public, including visitors to the USAFA, and residents and businesses along the route.
- Minimize the need for permanent or temporary easements.
- Minimize impacts on recreation users, including New Santa Fe Regional Trail users.
- Minimize impacts on traffic from road closures and detours.
- Minimize impacts on safe and adequate access to the USAFA and residences and businesses in the local area.

2.2 SCREENING OF ALTERNATIVES

Utilities and USAFA developed options for pipeline alignments that meet the purpose and need for Utilities and the Northern Entities to consolidate wastewater treatment into a centralized system. Although two northern alignments (North 1 and North 2) from the Tri-Lakes WWTF to the Upper Monument Creek WWTF were initially considered in screening, the northern alignments have been eliminated from consideration because the Monument Sanitation District, Palmer Lake Sanitation District, and Woodmoor Water and Sanitation District No. 1, which operate the Tri-Lakes WWTF, have opted not to participate in the NMCI project. The following southern alignment segments were considered, from the Upper Monument Creek WWTF to the J.D. Phillips WRRF (AECOM 2020):

1) **Segment South 1: I-25 Alignment** – Located south of the northern USAFA property boundary, this alignment would extend through the USAFA property and connect to the existing Pine Creek Interceptor. Segment South 1 would convey flow along I-25 and would be close to Utilities' lift stations, allowing for shorter lift station lateral connections as well as connections to the Upper Monument Creek WWTF.
2) **Segment South 2: Central Alignment** – Located south of the northern USAFA property boundary, this alignment differs from Segment South 1 only for a short section on the northern portion of USAFA and was developed early in the design process.
3) **Segment South 3: Monument Creek Alignment** – Located south of the northern USAFA property boundary, this alignment would extend through the USAFA property and connect to the existing Monument Creek Interceptor. Segment South 3 would parallel Monument Creek and the Union Pacific Railroad and is the westernmost alignment. Lateral connections would be extended to Utilities' lift stations, which would require additional Monument Creek crossings.
4) **Segment South 4: I-25/Monument Creek Alignment** – Located south of the northern USAFA property boundary, this alignment would extend through the USAFA property and connect to the existing Pine Creek Interceptor. The alignment route along I-25 would be close to Utilities' lift stations, allowing for shorter connections. Segment South 4 considers USAFA Davis Airfield operations and minimizes impacts

by avoiding higher risk airfield zones. Lateral connections would be extended to Utilities' lift stations.

The six segments described above were combined to form preliminary alignments, each including a north segment and a south segment. The preliminary alignments evaluated in screening are shown in Table 2-1 and on Figure 2-1.

Table 2-1. NMCI Alignments and Segments Considered in Screening.

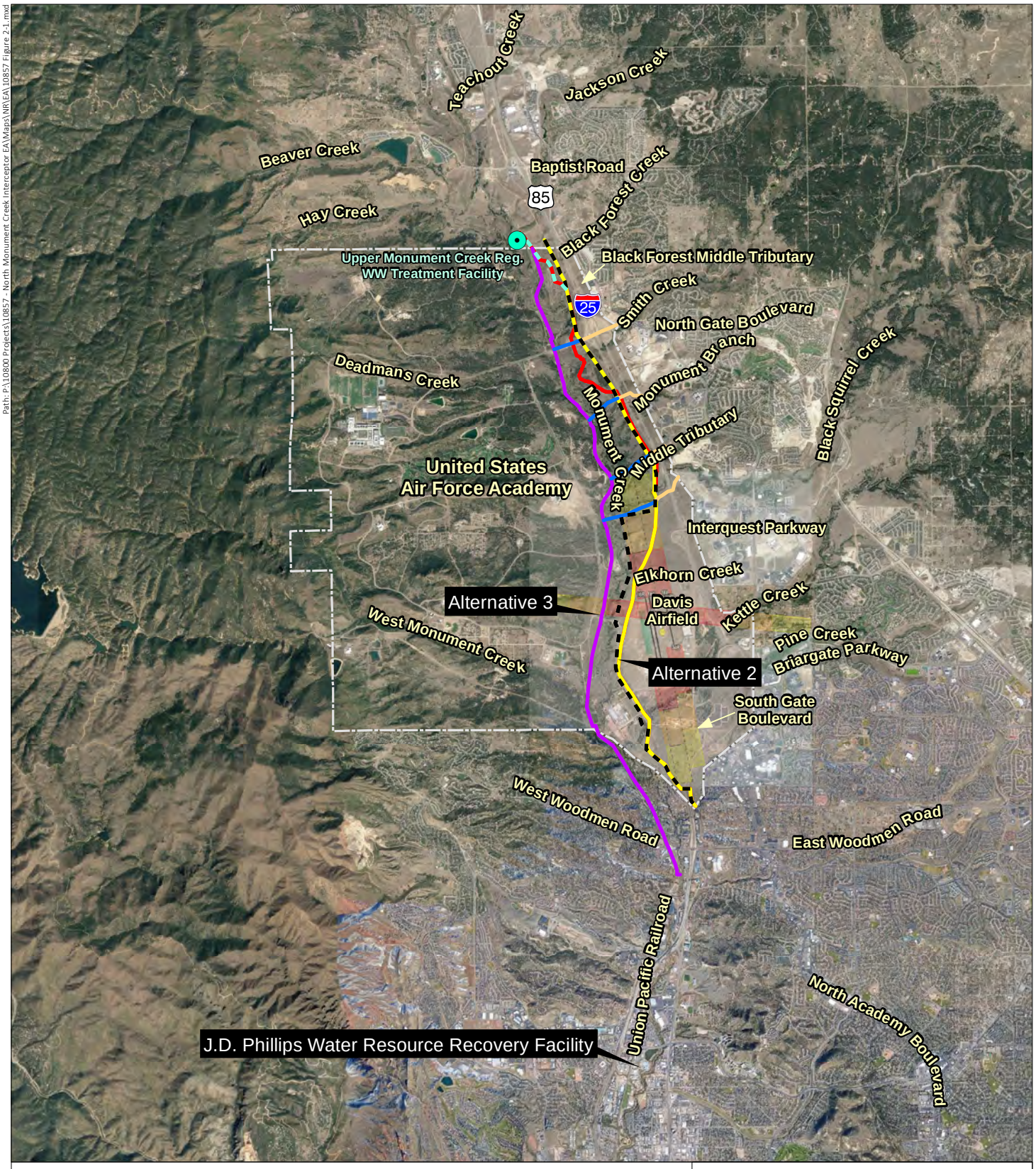
NMCI Alignment	Segment Considered in Screening
I-25 Alignment	South 1
Central Alignment	South 2
Monument Creek Alignment	South 3
I-25/Monument Creek Alignment	South 4

Source: AECOM 2020.

The selection standards described in Section 2.2 were applied to these alternatives to determine which alternatives could allow Utilities and the Northern Entities to consolidate wastewater treatment into a centralized system and would fulfill the purpose and need for the action. An alternatives decision matrix was used to rank the preliminary alternatives (AECOM 2020). The preliminary alternatives developed in the routing study were evaluated by an interdisciplinary team consisting of planners, engineers, and subject matter experts from USAFA and Utilities.

The outcome of this analysis was that Segments South 1 and South 2 were eliminated as described below under Section 2.5 *Alternatives Eliminated from Further Consideration*. During further development of the EA, Segment South 4 was carried forward for analysis in the EA as Alternative 2. Alternative 2 was further refined to avoid the USAFA landfill site, as described below under Section 2.5 *Alternatives Eliminated from Further Consideration*. Segment South 3 was carried forward as Alternative 3 in the EA. In summary, two alternatives, in addition to the No Action Alternative, were identified for evaluation in this EA (Figure 2-2):

- Alternative 1 – No Action Alternative
- Alternative 2 – Eastern Alignment (modified from South 4)
- Alternative 3 – Western Alignment (South 3)



Northern Monument Creek Interceptor Environmental Assessment

- Existing Treatment Facility
- South 1 Segment
- South 2 Segment
- South 3 Segment
- South 4 Segment
- I-25 Lateral
- Monument Lateral
- N2 to S4 Transition
- Accident Potential Zone I
- Accident Potential Zone II
- Clear Zone

0 4,500 9,000 Feet

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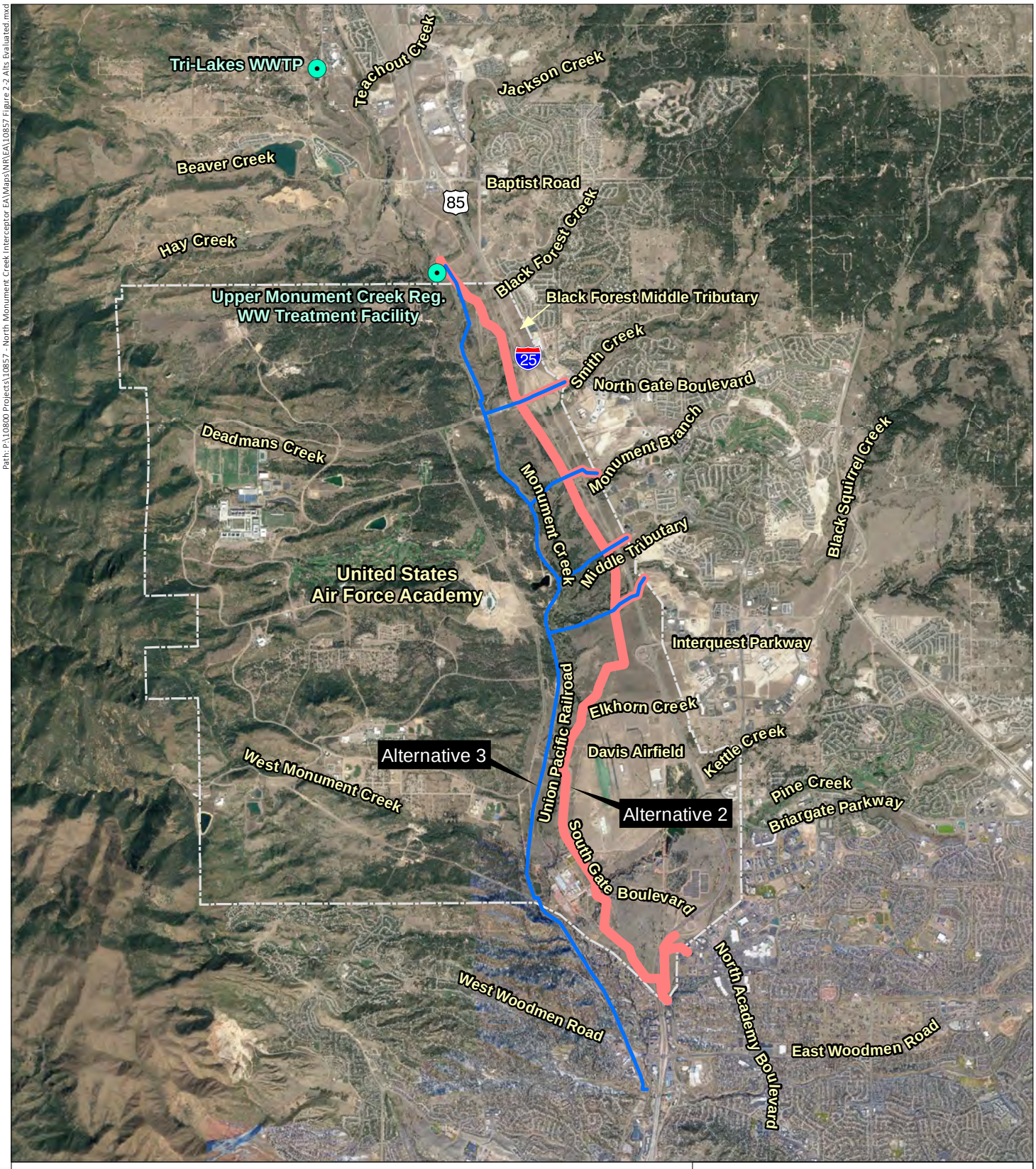
Figure 2-1
NMCI Alignments and Segments Considered in Screening

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figure 2-1.mxd (GS)
November 10, 2022

ERO Resources Corp.



Northern Monument Creek Interceptor Environmental Assessment

Existing Treatment Facility

Alternative 2 Eastern Alignment

Alternative 3 Western Alignment

Image Source: Google Earth©, October 2019

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Figure 2-2
Alignment Alternatives
Evaluated in the EA

Prepared for: Colorado Springs Utilities
File: 10857 Figure 2-2 Alts Evaluated.mxd (GS)
October 2, 2023

ERO Resources Corp.

Path: P:\10800 Projects\10857 - North Monument Creek Interceptor EA\Maps\NR\EA\10857 Figure 2-2 Alts Evaluated.mxd

2.3 DETAILED DESCRIPTION OF THE ALTERNATIVES

The No Action Alternative and four Action Alternatives are analyzed in the detailed description of the alternatives.

2.3.1 Alternative 1 – No Action Alternative

The No Action Alternative is the continuation of existing conditions of the affected environment (without implementation of the Proposed Action). The No Action Alternative serves as a benchmark against which the Action Alternatives can be evaluated. A no action alternative is required by CEQ regulations and will be carried forward for further analysis in this EA.

In the No Action Alternative, the USAF would not approve the construction, operation, and maintenance of the NMCI and associated facilities within the USAFA boundary, and the NMCI would not be constructed. The Northern Entities and Utilities would continue their current operations by operating and maintaining their existing facilities. The Northern Entities and Utilities would improve their respective WWTFs as needed to meet future hydraulic and organic loadings, and to comply with future regulations. Under the No Action Alternative, the existing Upper Monument Creek WWTF would need to be upgraded at some time in the future to meet Regulation 31 and to have sufficient capacity to meet regulatory needs and population growth. In addition, it is likely that the Northern Entities would eventually reuse their effluent flows as water needs increase in the future. The timing and method of this reuse are unknown. Utilities would maintain its lift stations and increase its respective capacities to meet future flow requirements.

2.3.2 Features Common to the Action Alternatives

The two alternatives carried forward for analysis in this EA (the Action Alternatives) have several features in common. Under both Action Alternatives, wastewater flows would be conveyed from the Northern Entities south to the J.D. Phillips WRRF in Colorado Springs via the NMCI pipeline. It is assumed that the Upper Monument Creek WWTF would continue to be operated by the Donala Water and Sanitation District.

Alternative elements under the Action Alternatives would include:

- Approximately 10.1 to 12.4 miles of new pipeline constructed from between the Northern Entities' wastewater collection systems and the J.D. Phillips WRRF
- Lateral connections constructed for Smith Creek, Monument Branch, Middle Tributary, and Black Squirrel Creek No. 2 (the Farm) lift stations
- Access and staging areas used during construction
- Permanent easements for operation and maintenance of the NMCI, temporary easements during construction, and permanent easements established after construction

2.3.2.1 Pipeline Construction

The NMCI pipeline would be constructed with 30-inch- and 36-inch-diameter pipe. Generally, the pipeline would be constructed within a 100-foot-wide permanent easement and supplemented by a variable temporary construction easement, as necessary. It is anticipated

that the NMCI would generally be constructed on a 25-foot offset of the easement boundary, though this may change based on location-specific engineering and construction requirements. The amount of permanent and temporary easement required to construct the pipeline is based on the depth of the pipeline. The average depth would be 17 to 18 feet and the typical width of temporary disturbance would be 85 to 120 feet. About 500 feet of open trench would typically be present at any time during construction. One pipeline section north of South Gate Boulevard and west of the USAFA Davis Airfield would have a depth of approximately 40 feet and a width of temporary disturbance of approximately 180 feet. Another section just north of South Gate Boulevard would be approximately 30 feet deep with a width of temporary disturbance of approximately 150 feet. Temporarily disturbed areas used for pipeline installation would be reclaimed with native vegetation following construction. Revegetation within the USAFA would follow USAFA revegetation specifications (USAFA 2019). A typical cross section of pipeline construction is shown on Figure 2-3.

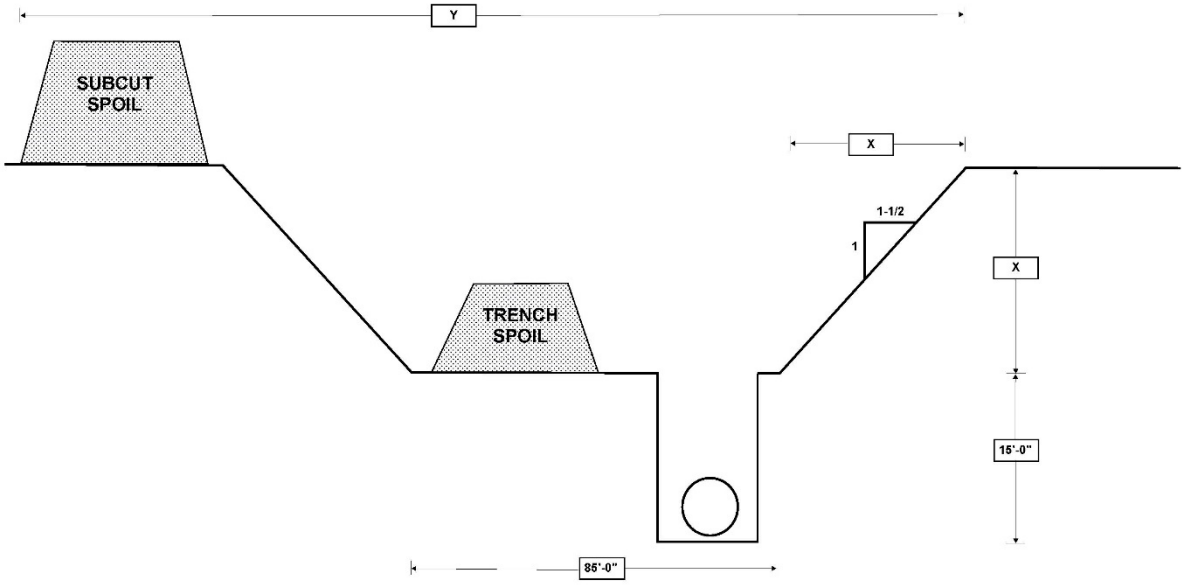


Figure 2-3. NMCI Pipeline Typical Cross Section.

Several bores and inverted siphons would be required at road or stream crossings to minimize impacts on traffic during construction and reduce impacts on natural and cultural resources. Inverted siphons would be directionally drilled and would be constructed with triple barrel consisting of three high-density polyethylene (HDPE) pipes. Siphons are depressed sewers that would remain full with no flow. They are used to cross obstacles like streams and roads where maintaining constant grade is impractical or impossible. Using inverted siphons would reduce the depth of excavation, which would reduce the overall surface disturbance. Bored sections underneath major roads and streams would be constructed with bored pipe with steel pipe encasement. Directionally drilled bores and siphons would not result in surface

disturbance along the length of the drilled area; however, a pit and construction area would be required at one end of each directionally drilled area. An area of approximately 80 by 200 feet would be temporarily disturbed at each directional drilling site to accommodate the pit and drilling equipment during construction. The temporarily disturbed areas would be reclaimed with native vegetation following construction.

2.3.2.2 Lateral Construction

Laterals would consist of 12-inch-diameter pipe constructed with a 50-foot-wide permanent easement and a temporary construction easement ranging from 25 to 50 feet depending on pipe depth and required area for construction. The width of disturbance would generally be the same as described above for the main alignment of the NMCI. An area of approximately 80 by 200 feet would be temporarily disturbed to accommodate the pit and drilling equipment during construction for each bored section. Temporarily disturbed areas would be reclaimed with native vegetation following construction following USAFA revegetation specifications (USAFA 2019). The existing lift stations would eventually be decommissioned after completion of the NMCI and laterals. Because the timing and method of decommissioning are unknown, decommissioning of these facilities is not analyzed in this EA.

2.3.2.3 Access and Staging

Access during construction would generally be from existing roads and within a 150-foot-wide temporary construction easement. The construction easement may be wider in select areas as needed to accommodate areas where the pipe is deeper than 30 feet or where access is needed for directional drilling. Staging would generally occur within the 150-foot-wide temporary construction easement (described below); however, staging and access would also extend beyond this area in select locations as needed.

2.3.2.4 Schedule

Due to budget constraints, construction would occur over about 17 months likely beginning in 2027 or 2028. The typical rate of pipeline installation would be 80 feet per day per crew. The Western Alignment (Alternative 3) would likely take longer due to the longer length and more challenging terrain and is expected to take about 12 to 14 months.

2.3.2.5 Easements

Temporary construction easements would be needed during construction, and would be acquired along the alignment, as necessary. Easements would generally be 150 feet wide but may need to be wider in select locations where the width of disturbance is larger, such as areas where the pipeline is more than 30 feet deep.

Permanent easements would be purchased or acquired along the alignment, as necessary. Permanent easements would be 100 feet wide and would be used for operation and maintenance access. Gravity-fed pipelines generally require little maintenance; the pipeline would need to be cleaned once every 10 years. No road would be needed for permanent access, except as described for a crossing of Monument Creek as described in Alternative 3.

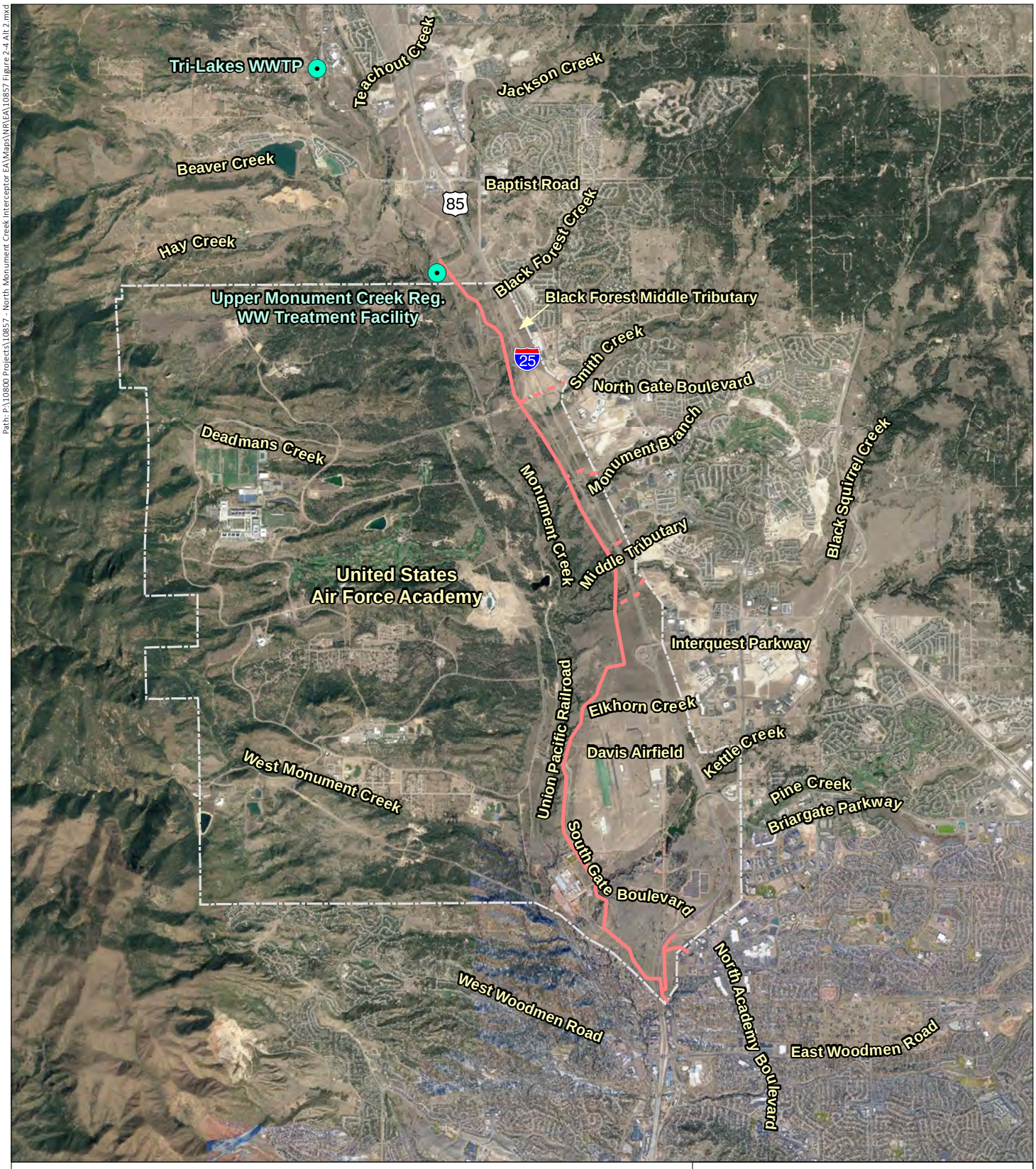
The number of easements varies between the alternatives, and all Action Alternatives would require an easement or similar property right from the USAFA.

2.3.3 Alternative 2 – Eastern Alignment (Preferred Alternative)

Under Alternative 2, Utilities would construct the NMCI along the Segment South 4 alignment south of the USAFA northern boundary, for a total length of approximately 10.1 miles including laterals (Figure 2-4).

2.3.3.1 Pipeline Construction

The alignment for Alternative 2 would start at the Upper Monument Creek WWTF intake. From the USAFA northern boundary, the pipeline would be constructed west of I-25 adjacent to the El Paso County Regional New Santa Fe Regional Trail to the northern side of the USAFA Davis Airfield. At this point, the pipeline would cross perpendicularly through Accident Potential Zone I and the Clear Zone at the airfield. The pipeline would continue south along the eastern side of Monument Creek and then turn east, cross I-25, and connect to the existing Pine Creek Interceptor (Figure 2-4). Construction of Alternative 2, including the NMCI pipeline, laterals, and access and staging would result in about 163 acres of temporary disturbance and 0.25 acre of permanent disturbance.



Northern Monument Creek Interceptor Environmental Assessment

Existing Treatment Facility

Alternative 2 Eastern Alignment

Lateral

Image Source: Google Earth©, October 2019

0 3,500 7,000 Feet

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Figure 2-4
Alternative 2 Eastern Alignment

Prepared for: Colorado Springs Utilities
File: 10857 Figure 2-4 Alt 2.mxd (GS)
October 2, 2023

ERO Resources Corp.

Alternative 2 would include four inverted siphons and six bored sections (not including laterals). Siphons and bores are summarized in Table 2-2.

Table 2-2. Alternative 2 Siphon and Bore Locations.

Siphon or Bore	Location (North to South)
Bore	Black Forest Creek
Bore	North Gate Boulevard
Bore	Smith Creek
Siphon	Monument Branch
Siphon	Middle Tributary
Siphon	Black Squirrel Creek
Bore	South Gate Boulevard
Bore	Elkhorn Creek
Siphon	Kettle Creek
Bore	I-25

In addition to the inverted siphon creek crossings shown in Table 2-2, Alternative 2 would require a creek crossing at Black Forest Middle Tributary. This creek crossing would be an open-cut trench and would be restored to preconstruction contours after construction and reclaimed with native vegetation.

2.3.3.2 Lateral Construction

Alternative 2 would include construction of at least one lateral connection to the NMCI from the Middle Tributary lift station. Up to three other lateral connections to the NMCI from the Smith Creek, Monument Branch and Black Squirrel Creek No. 2 (the Farm) lift stations would possibly be built in the future.

- Middle Tributary Lateral – The Middle Tributary Lateral would extend approximately 1,300 feet from the Middle Tributary lift station to connect with the NMCI just west of I-25. The Middle Tributary Lateral would include a bore under I-25.
- Smith Creek Lateral – The Smith Creek Lateral would extend approximately 4,120 feet from the Smith Creek lift station to connect with the NMCI just west of I-25. The Smith Creek Lateral would include bores under Struthers Road, the I-25 on-ramp, I-25, and the I-25 off-ramp.
- Monument Branch Lateral – The Monument Branch Lateral would extend approximately 1,864 feet from the Monument Branch lift station to connect with the NMCI just west of I-25. The Monument Branch Lateral would include a bore under I-25.
- Black Squirrel Creek No. 2 Lateral – The Black Squirrel Creek No. 2 Lateral would extend approximately 2,700 feet from the Black Squirrel Creek No. 2 (the Farm) lift station to connect with the NMCI west of I-25. The Black Squirrel Creek No. 2 Lateral would include a bore under I-25.

2.3.4 Alternative 3 – Western Alignment

Under Alternative 3, Utilities would construct the NMCI along the Segment South 3 alignment south of the USAFA northern boundary (Figure 2-5). Alternative 3 would parallel Monument Creek and the Union Pacific Railroad and follows a more western alignment than Alternative

2. The total length of the NMCI under Alternative 3 would be approximately 12.4 miles including laterals. The Smith Creek, Monument Branch, Middle Tributary, and Black Squirrel Creek No. 2 laterals would be longer than in Alternative 2 because they would be extended further west to connect to the more western location of the NMCI and would require additional crossings of Monument Creek.

2.3.4.1 Pipeline Construction

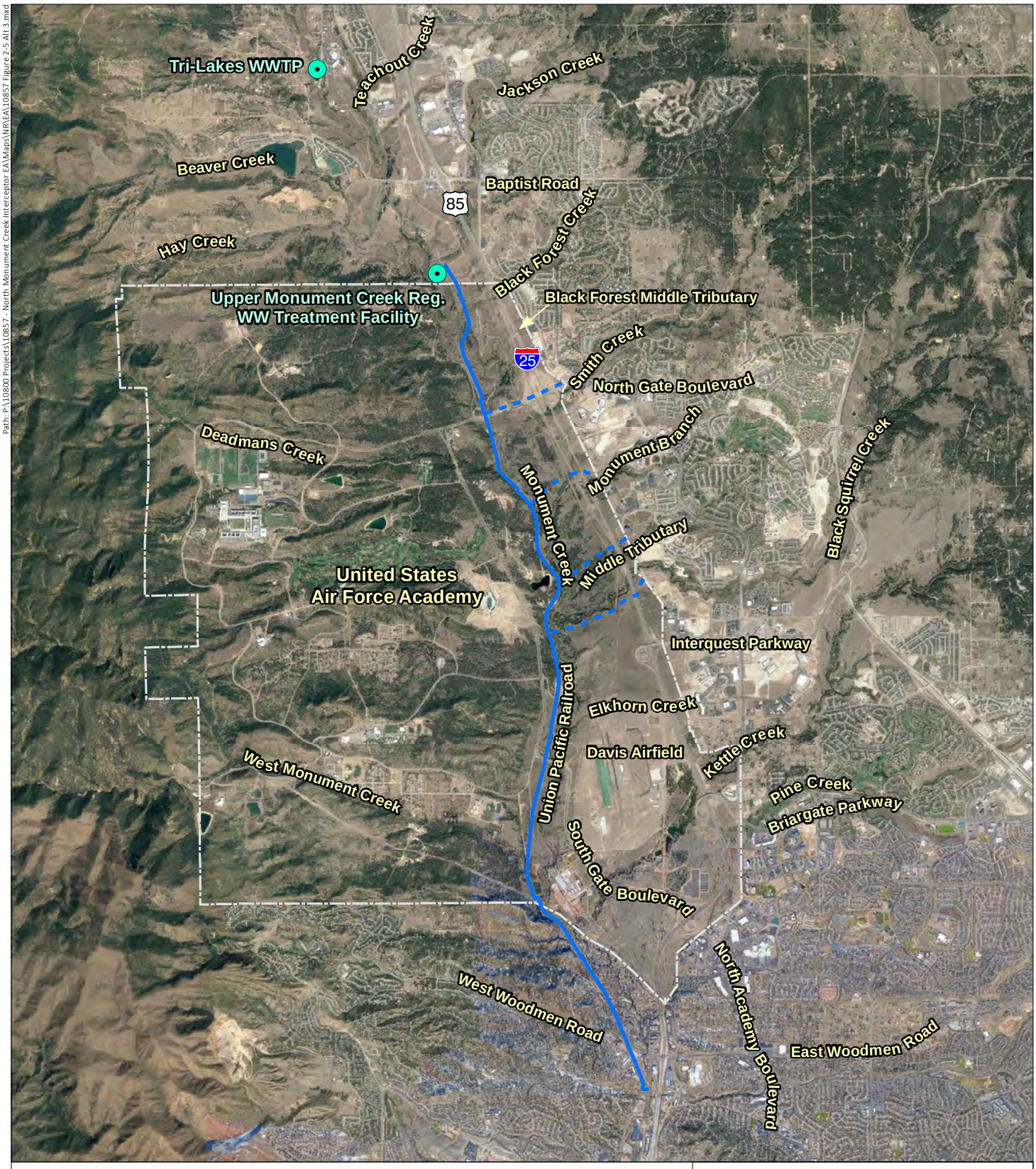
The alignment for Alternative 3 would convey flows from the Upper Monument Creek WWTF intake and would continue south following Segment South 3. Pipeline size and construction methods would be the same as described for Alternative 2. Construction of Alternative 3, including the NMCI pipeline, laterals, and access and staging would result in about 193 acres of temporary disturbance and 2.8 acres of permanent disturbance.

Alternative 3 would include 1 inverted siphon and 9 bored sections along the NMCI, not including the laterals. Siphons and bores are summarized in Table 2-3.

Table 2-3. Alternative 3 Siphon and Bore Locations.

Siphon or Bore	Location (North to South)
Siphon	Monument Creek
Bore	Union Pacific Railroad
Bore	Black Forest Creek
Bore	North Gate Boulevard
Bore	Deep Section (40 feet)
Bore	Deep Section (50 feet maximum)
Bore	Deep Section (60 feet maximum)
Bore	South Gate Boulevard
Bore	Union Pacific Railroad

In addition to the inverted siphon creek crossing shown in Table 2-3, Alternative 3 would require creek crossings at Deadmans Creek, two unnamed tributaries to Monument Creek, and West Monument Creek. These creek crossings would be open-cut trenches and would be restored to preconstruction contours after construction and reclaimed with native vegetation.



Path: P:\10800 Projects\10857 - North Monument Creek Interceptor EA\Maps\NR\EA\10857 Figure 2-5 Alt 3.mxd

Northern Monument Creek Interceptor Environmental Assessment

Existing Treatment Facility

Alternative 3 Western Alignment

Lateral

Image Source: Google Earth©, October 2019

0 3,500 7,000 Feet

N

Figure 2-5
Alternative 3 Western Alignment

Prepared for: Colorado Springs Utilities
File: 10857 Figure 2-5 Alt 3.mxd (GS)
November 8, 2022

ERO Resources Corp.

2.3.4.2 Lateral Construction

Alternative 3 would include construction of four lateral connections to the NMCI from the Smith Creek, Monument Branch, Middle Tributary, and Black Squirrel Creek No. 2 (the Farm) lift stations; however, the laterals would be longer than for Alternatives 2 and 3 because they would cross Monument Creek to connect with the NMCI.

- Smith Creek Lateral – The Smith Creek Lateral would extend approximately 5,941 feet from the Smith Creek lift station to connect with the NMCI just west of Monument Creek. The Smith Creek Lateral would include bores under Struthers Road, the I-25 on-ramp, I-25, and the I-25 off-ramp and an inverted siphon under Monument Creek.
- Monument Branch Lateral – The Monument Branch Lateral would extend approximately 4,198 feet from the Monument Branch lift station to connect with the NMCI just west of Monument Creek. The Monument Branch Lateral would include a bore under I-25 and an inverted siphon under Monument Creek.
- Middle Tributary Lateral – The Middle Tributary Lateral would extend approximately 4,262 feet from the Middle Tributary lift station to connect with the NMCI just west of Monument Creek. The Middle Tributary Lateral would include a bore under I-25 and an inverted siphon under Monument Creek.
- Black Squirrel Creek No. 2 Lateral – The Black Squirrel Creek No. 2 Lateral would extend approximately 6,109 feet from the Black Squirrel Creek No. 2 (the Farm) lift station to connect with the NMCI west of Monument Creek. The Black Squirrel Creek No. 2 Lateral would include a bore under I-25 and an inverted siphon under Monument Creek.

2.3.4.3 Additional Disturbance for Access

In addition to the access and staging areas previously described, Alternative 3 would require construction of a permanent crossing of Monument Creek to access a section of proposed pipeline that is situated between the railroad alignment and Monument Creek just north of North Gate Boulevard. A bridge or culverted creek crossing and access road would be required to construct this section and would need to be maintained as a permanent easement to provide access to this section of the pipeline. The access road would be constructed in a corridor about 30 feet wide and about 1,000 feet long. These impacts are included in the 2.8 acres of permanent disturbance described above.

2.4 RESOURCE PROTECTION MEASURES

Utilities, with cooperation from USAFA, would be responsible for implementing, funding, and monitoring the following resource protection measures and standard Best Management Practices (BMPs) into the project design to reduce environmental impacts. Construction specifications developed during final design would include detailed requirements for implementing these measures. Specific mitigation measures to address impacts on federally listed threatened and endangered species and cultural resources are also listed below.

2.4.1 General Measures

General construction-related measures would be:

- Silt fences would be used to protect wetlands and other sensitive sites.
- Construction staging areas would be limited to areas of disturbance.
- Equipment would not be serviced or refueled near streams, and all chemicals and petroleum products would be stored and contained away from water sources.
- Vehicle tracking control devices would be placed at the site entrance(s).
- Biodegradable erosion-control blankets would be placed on newly seeded steep slopes to control erosion and promote vegetation establishment.
- When conducting future inspections on manholes and accessways, different routes would be used for access to avoid forming roads.
- All hazardous material use would require contractor compliance with applicable federal and state laws.
- Prior to construction of project facilities, a more detailed hazardous materials assessment in conformance with the scope and limitations of DAFI32-7020: Environmental Restoration Program dated December 15, 2020 would be conducted to identify sites with soil or groundwater contamination that are not documented in readily ascertainable agency files (DAF 2020).
- If soil or groundwater contamination is encountered during construction of project facilities, mitigation procedures would be implemented to minimize the risk to construction workers and to the future operation of the project. Vehicle traffic would be managed within the construction zone and contractor hauling of materials, supplies, and equipment would be controlled.
- A risk assessment would be prepared by USAFA, in cooperation with Utilities, to assess and evaluate risks to aviation in the Air Installation Compatible Use Zones (AICUZ). The risk assessment would require approval by the USAFA superintendent and airfield leadership and would consider the length of time for construction within the AICUZ, type of equipment, number of workers, and mitigation measures. Mitigation measures would be developed as part of the risk assessment and could include night work or other restrictions on timing of work and high visibility flagging on equipment.
- Should any cultural resources, other than those previously recorded, be uncovered during construction, work would stop at the subject site, and the site would be evaluated in accordance with 36 CFR 800.13 of the National Historic Preservation Act (NHPA) prior to continuing work in the affected area. If the resource is determined significant, adverse effects on the resource would be resolved in a method appropriate for the resource (e.g., data recovery excavation or Office of Archaeology and Historic Preservation (OAHP) Level II Historic Resource Documentation) in accordance with

36 CFR 800.6 of the NHPA. In addition, any mitigation measures developed during tribal and Colorado State Historic Preservation Officer (SHPO) consultation would be implemented to protect cultural resources.

- Methods for prevention and noxious weed management described in the Integrated Noxious Weed Management Plan (Smith et al. 2015) would be implemented during and following construction. The site would be monitored following construction to manage potential infestations.
- Areas of removed vegetation would be revegetated with native seed mixes according to the USAFA's *Section 01351 Site Restoration, Revegetation and Tree Care Specifications* (USAFA 2019). Seed mixes for upland grasslands and riparian/wetland areas are provided in the BA (ERO 2021).
- A Stormwater Pollution Prevention Plan would be prepared, and a Notice of Intent would be filed with the CDPHE for coverage under the United States Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities #COR10000F.
- An Air Pollutant Emission Notice would be submitted to the CDPHE if required.
- Surveys for nesting birds would be conducted in areas proposed for disturbance and, if active nests are identified in the disturbance area, ground-disturbing activities would be delayed until the nesting and fledging process is complete; or alternatively, a Depredation Permit would be obtained from the USFWS.
- The USAFA would adhere to the terms and conditions of the Preble's Conservation Agreement (U.S. Fish and Wildlife Service (USFWS) 2009).

2.4.2 Mitigation Measures from the Biological Assessment

The USAFA and Utilities would adhere to all additional Preble's conservation measures developed during consultation with the USFWS would be implemented, including meeting specific success criteria in Preble's habitat as outlined in the Biological Assessment (BA; ERO Resources Corporation (ERO) 2023):

- All temporary impacts on low-quality habitat will be mitigated at a 1:1 ratio by reseeding with a native seed mix as described in the BA.
- Utilities and USAFA would mitigate permanent and temporary impacts by installing mitigation over 2.1 acres of land (in addition to restoration in place). Utilities and USAFA would plant about 850 cottonwood and peachleaf willow trees over 2.1 acres of land on benches adjacent to Monument Creek in the northern portion of USAFA. Cottonwood and peachleaf willow poles would be planted at a density of about 8 feet-on center. Installation of woody vegetation would help stabilize portions of Monument Creek and provide habitat for several species in addition to Preble's. The exact location of tree and shrub plantings will be determined by representatives from the USFWS, USAFA, and Utilities in the field following construction.

- Monitoring and measured success criteria will be done in accordance with the existing MOU between the USAFA and Utilities (ERO 2011) as described below and will abide by the following parameters:
    - A qualified ecologist or landscape architect will supervise the implementation of restoration and enhancement.
    - Annual mitigation monitoring will be conducted during the growing season and an annual monitoring report will be submitted to USAFA and USFWS before December 1 of each year and will extend for five years after completion of the mitigation installation or until project regulators determine that the success criteria have been met.
    - Problems that could prevent or interfere with the establishment of the mitigation area will be brought to the attention of the project engineer and project regulators.
    - The project engineer will review and approve alterations to the mitigation area design necessary for successful mitigation.
    - All recommended remedial actions will be communicated to the project team and will be implemented after they have been approved by the project regulators.
- Minimum success criteria have been developed to quantify the progress and final attainment of Project mitigation. The mitigation metrics assume that after five years, the vegetation will likely be stable and regenerating so that a quality upland and riparian community will establish in the near term. The minimum success criteria are as follows:
    - Areas of temporarily disturbed woody vegetation must be revegetated with appropriate native woody vegetation.
    - Disturbed areas must be revegetated to a density of woody vegetation similar to the disturbed area prior to the disturbance.
    - The replanted area should generally be the same area that was disturbed.
- The following criteria will be used to assess the success of mitigation efforts. These minimum standards must be met at the end of two growing seasons for revegetation to be considered successful, and hence, to be released from monitoring requirements:
    - For upland areas, the combined canopy cover of grasses, forbs, and shrubs will be at least 70 percent of the preexisting cover. At least 50 percent of the canopy cover will consist of native perennial grasses and forbs.
    - Seventy percent of willow stake, willow bundles, pole plantings, and replacement trees and shrubs must survive at least two years.

- State-listed noxious weeds will be controlled following USAFA's Integrated Noxious Weed Management Plan (CNHP 2015) to prevent competition with the planted vegetation. Noxious weeds will not exceed 5 percent canopy cover in the revegetated areas.
- Upland sites will be adequately stabilized to prevent gullying, severe rill erosion, and stream sedimentation. Areas of soil instability will be promptly treated (e.g., riprap, silt fence, erosion matting, and hay bales) to prevent further site degradation beyond that found during preconstruction.

2.4.3 Mitigation Measures from the Section 106 Mitigation Memorandum of Agreement

The USAFA and Utilities would adhere to the Memorandum of Agreement among the SHPO, USAFA, Utilities and with the Southern Ute Indian Tribe as a concurring party (Appendix C). The Memorandum includes the following mitigation measures:

- Level II Documentation
  - Using one or more cultural resource professionals meeting the Secretary of the Interior's (SOI) Historic Preservation Professional Qualification Standards for the applicable field (see 48 FR 44716, September 29, 1983 and FR 33708, June 20, 1997), Utilities in close coordination with USAFA will complete Level II documentation of 5EP1003.6 and 5EP1003.24 as outlined in "Historic Resource Documentation Standards for Level I, II, and III Documentation" (Office of Archaeology and Historic Preservation Publication #1595). Rather than supplying film negatives, as specified within the guidelines, a digital copy of the images along with a photo inventory will be submitted on an archival quality CD.
  - As part of the Level II documentation, Utilities' cultural resource professional(s) will render a measured drawing depicting up to three representative elevations perpendicular to each segment's impacted grade and two elevations along center line of each segment's impacted grade. Measured drawings also will be rendered of the trestle bridge remains (F6, F9, and F11) of 5EP1003.6 and F3 (trestle bridge remains) and F4 (culvert) of 5EP1003.24, as those features exist today. Copies of historic engineering plans will also be included, if available from the Colorado State Archives, History Colorado, Denver Public Library, or the Colorado Railroad Museum.
  - The USAFA will review the draft Level II documentation and will submit a copy of the Level II documentation to the SHPO. The Level II documentation will be subject to SHPO review and approval. USAFA will provide SHPO 30 days from receipt of the documentation for review of and comment on the documentation. The SHPO will notify USAFA, copying Utilities, that the Level II documentation is approved or disapproved. Comments will be provided by the SHPO so that the USAFA and Utilities may revise such documentation, if applicable.

- After SHPO approval, Utilities will submit a final copy of Level II documentation to the USAFA and the SHPO for its records.
- Utilities will not commence construction and/or any earth disturbances at pertinent portions of 5EP1003.6 and 5EP1003.24 until the draft Level II documentation is approved by USAFA and SHPO.

- Public Interpretation
  - Using the Level II documentation, Utilities will design two durable, professional quality, interpretive signs. The signs will measure about 28 inches by 46 inches and will consist of a horizontal fiberglass sign with 2 inch by 4 inch aluminum tubing frame consistent with existing signage in the USAFA Cadet Look-out area. Sign 1 will portray the engineering design and significance of the Atchison, Topeka & Santa Fe Railroad (originally the Denver & Santa Fe Railroad) as an early transportation route across the state of Colorado. Sign 1 will also incorporate Indigenous perspective on railroad development along the Colorado Front Range and the development's impact on Indigenous communities. Sign 2 sign will portray the associated ranches (e.g., 5EP1992 and 5EP1574) and/or other contemporary land use activities that surrounded the railroad sidings such as East Husted (5EP2250) and discuss the importance of the railroad in relation to these resources. Archival photographs and engineering plans would be included, if available.
  - The USAFA will review draft sign designs and submit a copy of the draft sign designs and proposed installation locations to the SHPO and SUIT and provide SHPO and SUIT 30 days from receipt of the drafts for review of and comment on the drafts. Installation locations will be on USAFA property in areas accessible to the public. Possible locations include, but are not limited to, public parking areas or along publicly accessible recreational trails in the vicinity of the affected resources and thematically associated resources. SHPO will provide any comments to USAFA. The USAFA and Utilities will address any comments made and revise the drafts as necessary.
  - Once the drafts are agreed to by SHPO and USAFA, Utilities will install the interpretive signs within one year after completion of project construction.
  - Utilities will provide USAFA documented evidence of the installation within 30 days of it occurring. The USAFA will provide the SHPO with a copy of the documentation, and notification that the commitment of Stipulation II is complete.

- Monitoring and Reporting
  - Following execution of the MOA until it expires or is terminated, Utilities on behalf of USAFA annually (on or before January 31) will provide to the signatories a summary report detailing work undertaken pursuant to its terms. Utilities will include in this report a summary of the status and SHPO/USAFA

review of the Level II documentation, implementation of public interpretation as described under Stipulation II, any scheduling changes, problems encountered, and any disputes and objections received during Utilities' and USAFA's efforts to carry out the terms of the MOA.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

During the screening of alternatives described above, several components or options initially considered were eliminated. The alternatives or components described below have been eliminated from further consideration because of impacts on the AICUZ, because they would be poorly located to connect with existing and proposed sewer systems, because of potential impacts on the USAFA landfill site, or because they are no longer needed due to changes in the project scope.

2.5.1 Segment North 1

Located north of the USAFA property boundary, this alignment would convey Tri-Lakes WWTF wastewater flow southeast to align with various southern segment alignments through the USAFA property. This component was eliminated because Tri-Lakes WWTF and its operating entities opted not to participate in the NMCI project.

2.5.2 Segment North 2

Located north of the USAFA property boundary, this alignment would convey Tri-Lakes WWTF wastewater flow south to align with the various southern segment alignments through the USAFA property. This component was eliminated because Tri-Lakes WWTF and its operating entities opted not to participate in the NMCI project.

2.5.3 Segment South 1

Segment South 1 would follow an easterly alignment across the USAFA, just west of I-25. This alignment segment was eliminated due to encroachment within the Clear Zone during construction and resulting impacts on Davis Airfield operations. Segment South 4 was developed as a variation of this alignment that would have fewer impacts on airfield operations. Although the Preferred Alternative would also involve construction within the David Airfield Clear Zone, impacts would be less than Segment 1.

2.5.4 Segment South 2

Segment South 2 would cross the eastern portion of the USAFA and follow generally the same alignment as Segment 1, with some differences in the northern portion of USAFA. In addition, Segment South 2 was eliminated for the same reasons as Segment 1 South and because it scored lower than Segment 4 in the routing study due to greater natural and cultural resource impacts (AECOM 2020).

2.5.5 Kettle Creek Lateral

In the initial design evaluation, Utilities considered constructing a pipeline lateral to capture flows from the Kettle Creek lift station and convey them to the proposed NMCI. Through the

evaluation process, it was determined that the Kettle Creek lift station must remain in operation and not convey flows to the NMCI. The Kettle Creek sewer lateral was dismissed to reduce impacts on the USAFA Davis Airfield runway Clear Zone. Therefore, no sewer lateral is proposed for the Kettle Creek lift station.

2.5.6 Alignment through USAFA Landfill Site

A preliminary alternative was developed that would have crossed the Site 6 Landfill site (USAFA landfill site), which was operated as a municipal waste landfill from 1972 to 1978 and consists of about 15 acres. In December 2011, an environmental covenant was placed on the site that included use restrictions (CDPHE 2011) and groundwater and surface water monitoring. Although this alignment would have reduced encroachment within Air Installation Compatible Use Zones at the USAFA Davis Airfield, it would have also involved trenching through the landfill, with the potential to unearth debris, including potentially hazardous materials. This alignment was dismissed after an alternate alignment was identified that would not require excavation within the USAFA landfill site.

These alternatives are not carried forward for analysis in this EA.

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3.0 AFFECTED ENVIRONMENT

The Region of Influence for the Proposed Action is the limits of disturbance for the proposed construction of the pipeline, unless otherwise specified below for a particular resource area where a resource would have a different Region of Influence.

3.1 SCOPE OF THE ANALYSIS

This chapter describes the current conditions of the environmental resources, either man-made or natural, that would be affected by implementing the Action Alternatives or the No Action Alternative.

The following topics were carried forward for detailed analysis in this EA:

- Air Installation Compatible Use Zones
- Noise
- Air Quality
- Water Resources
- Hazardous Materials/Waste
- Biological/Natural Resources
- Cultural Resources
- Recreation

Based on the scope of the Proposed Action, issues with minimal or no impacts were identified through a preliminary screening process. The following describes those resource areas not carried forward for a detailed analysis, along with the rationale for their elimination. Regardless of the alternative selected, the following resources would not be affected by the Proposed Action and are not discussed in detail in this EA:

- ***Utilities/Transportation Resources:*** The Proposed Action would not involve disruption of utility services. Construction activity would result in minor increases to local traffic; however, these increases would be temporary and cease once the project is complete. As a result, the USAF anticipates no significant short- or long-term adverse impacts, and this resource area was not carried forward for detailed analysis. There would be no significant impacts on *Utilities/Transportation Resources*. For these reasons, utilities/transportation resources were not assessed further in this EA.
- ***Safety and Occupational Health:*** The contractor would develop a site-specific health and safety plan for the project. The contractor would safeguard USAFA personnel and the public through signage, security, and compliance with construction permits, as appropriate. Before construction, the contractor would ensure that a USAF Form 103, Base Civil Engineering Work Clearance Request, is coordinated through the USAFA, including the USAFA Safety Office. Flight safety would not be impacted because no part of the Proposed Action would employ or influence airspace operations or air traffic management at or around the USAFA. Flight safety is addressed in greater detail under Air Installation Compatible Use Zones. For these reasons, safety and occupational health was not analyzed in detail in this EA.
- ***Land Use:*** Construction of the NMCI would not affect land use. All surface disturbance would be temporary, except for small impacts from the addition of new manholes. As a

result, the USAF anticipates no significant short- or long-term adverse impacts, and this resource was not carried forward for detailed analysis in this EA.

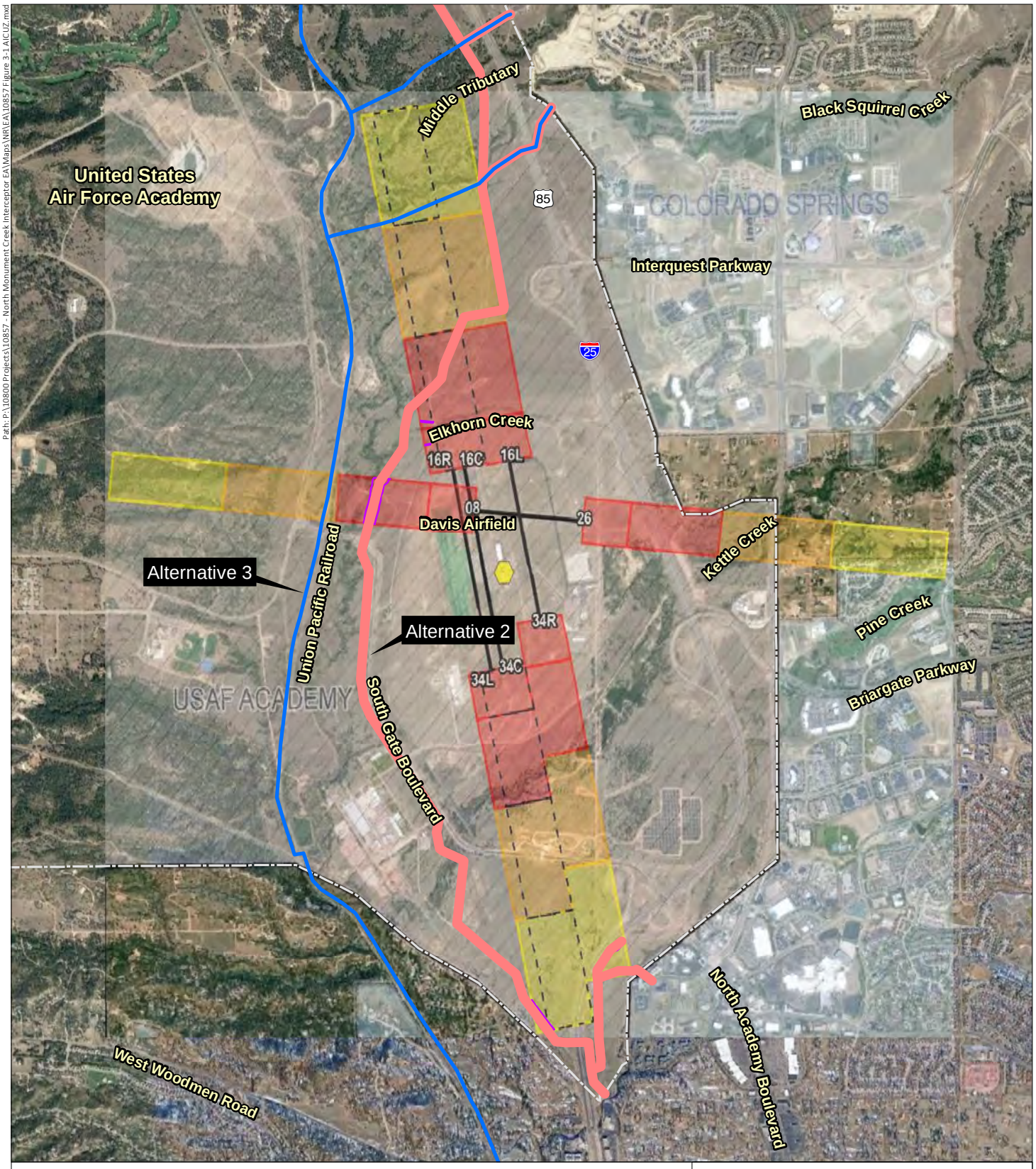
- ***Earth Resources:*** Earth resources include geology, soils, and topography. The Proposed Action would involve excavation and directional drilling. Any excess excavated soil or rock would be disposed of offsite. Standard BMPs would be implemented to minimize soil erosion during construction activities. Sedimentation patterns would not be notably altered and no structural movements or changes in seismicity would result. Therefore, there would be negligible impacts on geology and soils from implementing the Proposed Action. For these reasons, earth resources were not analyzed in detail in this EA.
- ***Paleontological Resources:*** Only one known paleontological locality is present in the vicinity of the NMCI. This known site is not within the limits of disturbance of any of the alternatives and would not be impacted by construction. Therefore, paleontological resources were not carried forward for detailed analysis in this EA.
- ***Socioeconomic Resources:*** Funding for construction of the NMCI is being provided by Utilities and the Northern Entities. Local construction crews would be used for construction. 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 NMCI would occur. For these reasons, socioeconomic resources were not assessed further in this EA.
- ***Environmental Justice:*** Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. None of the alternatives would have disproportionately high and adverse effects on minorities or low-income populations or communities. Consequently, this topic was dismissed from detailed analysis in this EA.

3.2 AIR INSTALLATION COMPATIBLE USE ZONES (AICUZ)

The USAFA Davis Airfield is located at the southeast end of the USAFA. The airfield has three parallel north–south runways (west, center, and east); a crosswind (east-west) runway; and an artificial turf sailplane landing area. Bordering the runways are the two primary areas for flight line buildings and hangars. This airfield is the primary location for cadet flight-related training, parachute training, and water survival training. The Aero Club uses the airfield as well, including times when the USAFA is not using it for training. The airfield only operates during daylight hours, and the airfield is closed for a 10-day window over the holidays.

In association with the airfield, the AICUZ program was developed to protect local citizens from noise and potential accidents associated with flying activities. The program also was intended to prevent degradation of the USAF's capability to achieve its mission by promoting compatible land use planning.

The USAFA has a Class A runway with a Clear Zone 500 feet to each side of the centerline and a 1,000-foot-wide corridor extending from the runway threshold along the extended runway centerline for 3,000 feet. Three zones were established based on crash patterns: the Clear Zone, Accident Potential Zone I, and Accident Potential Zone II (Figure 3-1). The Clear Zone starts at the end of the runway and extends outward 3,000 feet. Within the Clear Zone, most uses are incompatible with military aircraft operations. The Clear Zone has the highest accident potential of the three zones. The USAF has adopted a policy of acquiring property rights to areas designated as Clear Zones because of the high accident potential. In general, the USAF (or others under a USAF permit) must not plan, locate, or construct a new use or facility within the boundaries of the Clear Zone (USAF 2019). Rights-of-way for communications and utilities, provided all facilities are at grade level or underground, are an allowed use. For Class A runways, such as the existing USAFA runways, Accident Potential Zone I extends from the Clear Zone an additional 2,500 feet. Accident Potential Zone I includes an area of reduced accident potential. Accident Potential Zone II extends 2,500 feet from Accident Potential Zone I in an area of further reduced accident potential. The required width for all zones is 1,000 feet for a Class A runway.



Northern Monument Creek Interceptor Environmental Assessment

- Alternative 2 Eastern Alignment
- Alternative 3 Western Alignment
- Accident Potential Zone I
- Accident Potential Zone II
- Clear Zone

0 1,500 3,000 Feet

N

Figure 3-1
Air Installation Compatible Use Zones

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figure 3-1 AICUZ.mxd (GS)
September 29, 2023

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3.3 NOISE

Aircraft are the primary source of noise at the USAFA. Additional sources of noise in the project area include I-25 and other roads. The level of noise exposure from aircraft varies depending on the aircraft type, engine power setting, altitude flown, direction of the aircraft, flight track, temperature, relative humidity, frequency, and time of operation. The types of aircraft based at or operating transiently at the USAFA, the number of flights conducted at the airfield, and the resulting noise levels are described in detail in the AICUZ study (USAF 2019).

Noise exposure over time is measured at the USAFA using a metric called the “Day-night Average Sound Level” (DNL). DNL was created by the EPA and is used throughout the United States. The AICUZ study presents noise contours developed for the USAFA using the Department of Defense standard model for assessing noise exposure from military aircraft operations at air installations, NOISEMAP (USAF 2019). Noise modeling shows that aircraft noise levels exceeding 55 decibels (dB) DNL are limited to the areas surrounding the Davis Airfield and Bullseye Auxiliary Field and do not extend beyond the USAFA boundary, although aircraft noise does occur beyond these areas (USAF 2019).

Ambient noise levels for portions of the project area that are not near the AICUZ are generally less than 55 dB (USAF 2019). Daytime ambient noise levels in the project area have not been directly measured but are expected to be similar to other urban and rural areas. Typical ambient noise levels range from about 70 dB near busy streets (such as I-25), about 50 dB in quiet developed areas in the daytime, to about 25 dB in quiet rural areas during the nighttime.

3.4 AIR QUALITY

The EPA has established the National Ambient Air Quality Standards (NAAQS), which are maximum allowable atmospheric concentrations for several pollutants including carbon monoxide (CO), nitrogen dioxide, sulfur dioxide (SO_2), particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$), and ozone (O_3).

The project area is within the Pikes Peak region, which consists of El Paso and Teller Counties, and is one of eight multicounty areas used by the Colorado Air Pollution Control Division of the CDPHE to monitor local air pollution conditions within the state. The Pikes Peak region currently has four active monitoring stations, which monitor for one or more of CO, SO_2, PM_{10}, $PM_{2.5}$, and O_3 (CDPHE 2019). One of the four Pikes Peak region monitoring stations is located at the USAFA (near the south entrance along Monument Creek) and has monitored for O_3 since June 1996. The other three monitoring stations are located at Manitou Springs, Colorado College, and Highway 24 in Colorado Springs. The Pikes Peak region is currently in compliance with federal air quality standards. However, two exceedances of the SO_2 standard were observed at the Highway 24 monitoring station during 2014-2015. These elevated values have not resulted in a violation of the NAAQS, and SO_2 concentrations have been trending downward at the Highway 24 site since 2016 (CDPHE 2019).

The EPA General Conformity Rule, established under the Clean Air Act (Section 176(c)(4)), applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question. El Paso County is classified as a maintenance area for CO (carbon monoxide), with a general conformity threshold of 100 tpy. El Paso County is classified as an attainment area for all other criteria pollutants.

Air emission sources within and near the project area include vehicles entering the USAFA, vehicles using other local roads and I-25, boilers, water heaters, fuel storage tanks, fuel service stations, and paint booths.

3.5 WATER RESOURCES

Water resources include surface water and groundwater and the relationship to the Proposed Action and potential effects on Monument Creek hydrology and water quality.

Surface Water. The main surface water feature in the project area is Monument Creek, which flows north to south. Monument Creek is a perennial stream in the 148,830-acre Monument Creek watershed, which is part of the upper Arkansas River water basin. Streams in the project area flowing into Monument Creek include Beaver Creek, Hay Creek, Deadmans Creek, West Monument Creek, Black Forest Creek, Smith Creek, Black Squirrel Creek, Kettle Creek, Elkhorn Creek, Pine Creek, and Douglass Creek. Lehman Run, Black Forest Creek (Middle Tributary), unnamed creek north of north Gate, Middle Tributary, and Monument Branch. Monument Creek is a headwater stream and native flows display seasonal variations that are primarily related to snow melt and storm precipitation runoff. In addition to natural drainages flowing into Monument Creek, the creek receives wastewater treatment effluent discharge from WRRFs, including the Tri-Lakes WWTF and Upper Monument Creek WWTF, which currently discharge treated wastewater effluent into Monument Creek as part of normal operations. Within the project area, the United States Geologic Survey (USGS) maintains two monitoring/gage stations along Monument Creek: 07103780 located above North Gate Boulevard and 07104000 located at Monument Creek at Pikeview.

The CWA establishes federal limits, through the NPDES, on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the quality of the water. Section 303(d) of the CWA requires states to identify and develop a list of impaired water bodies where controls have not provided attainment of water quality standards. Monument Creek is on the 303(d) List of Impaired Water Bodies for the following water quality parameters: *Escherichia coli* (*E. coli*), manganese, macroinvertebrate (provisional), and temperature. Manganese is a naturally occurring pollutant in the environment while *E. coli* is primarily a nonpoint source pollutant. WRRF effluent discharges to Monument Creek can impact its temperature with typically higher temperatures compared to the receiving water. Effluent discharged from the J.D. Phillips WRRF typically has lower concentrations of total phosphorus and dissolved manganese, while effluent discharged from the Tri-Lakes and Upper Monument Creek WRRFs typically had lower concentrations of total nitrogen concentrations with *E. coli* concentrations similar in the effluent of the three WRRFs (Berleman 2020).

A hydrologic study modeled the streamflow conditions at several locations along Monument Creek in and near the project area (Confluence Water Consulting 2022). Streamflow in Monument Creek is cyclical, following seasonal rain and snow runoff events and is highly variable ranging from a low of 0.96 cfs (at Upper Monument Creek WWTF on August 24, 2003) to a high of 2,000 cfs (at Woodmen Road on April 30, 1999). Monument Creek streamflow increases from upstream to downstream with average streamflow ranging from 6.2 cfs at Tri-lakes WWTF to 27.7 cfs at Woodmen Road and with median streamflow ranging from 2.8 cfs at Tri-lakes WWTF to 16.0 cfs at Woodmen Road. Average and median stream flows in Monument Creek are shown in Table 3-1. Flows in Monument Creek have likely

increased, and will continue to increase over time, from increased runoff caused by upstream urban development.

Table 3-1. Monument Creek Streamflow.

Study Location	Average Streamflow (1996-2021) (cfs)	Median Streamflow (1996-2021) (cfs)
Tri-lakes WWTF	6.2	2.8
Upper Monument Creek WWTF	12.3	5.7
USAFA WWTF	15.3	7.9
Woodmen Road	27.7	16.0

Groundwater Aquifers. Groundwater underlies the project area at various depths below ground surface. The project area is on the western edge of the Denver Basin Aquifer, which consists vertically of several individual aquifers separated by confining layers. Groundwater present in these aquifers was deposited millions of years ago as the basin was formed. Due to the lack of connectivity between aquifers and to surface water (infiltration or recharge of aquifer from surface water), groundwater in the aquifers is not considered renewable.

3.6 HAZARDOUS MATERIALS/WASTE

"Hazardous materials" is a generic term that encompasses the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. CERCLA, commonly known as Superfund, was enacted by Congress in 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. The EPA is the lead agency in addressing CERCLA sites.

Hazardous materials include hazardous waste regulated under the Resource Conservation and Recovery Act (RCRA). Passed in 1976, RCRA established the framework for managing both solid and hazardous waste. In 1984, Colorado was authorized by the EPA to administer the hazardous waste management programs in lieu of the federal RCRA program. The laws governing the management of hazardous waste in the State of Colorado are contained in the Colorado Hazardous Waste Regulations (CDPHE 2020).

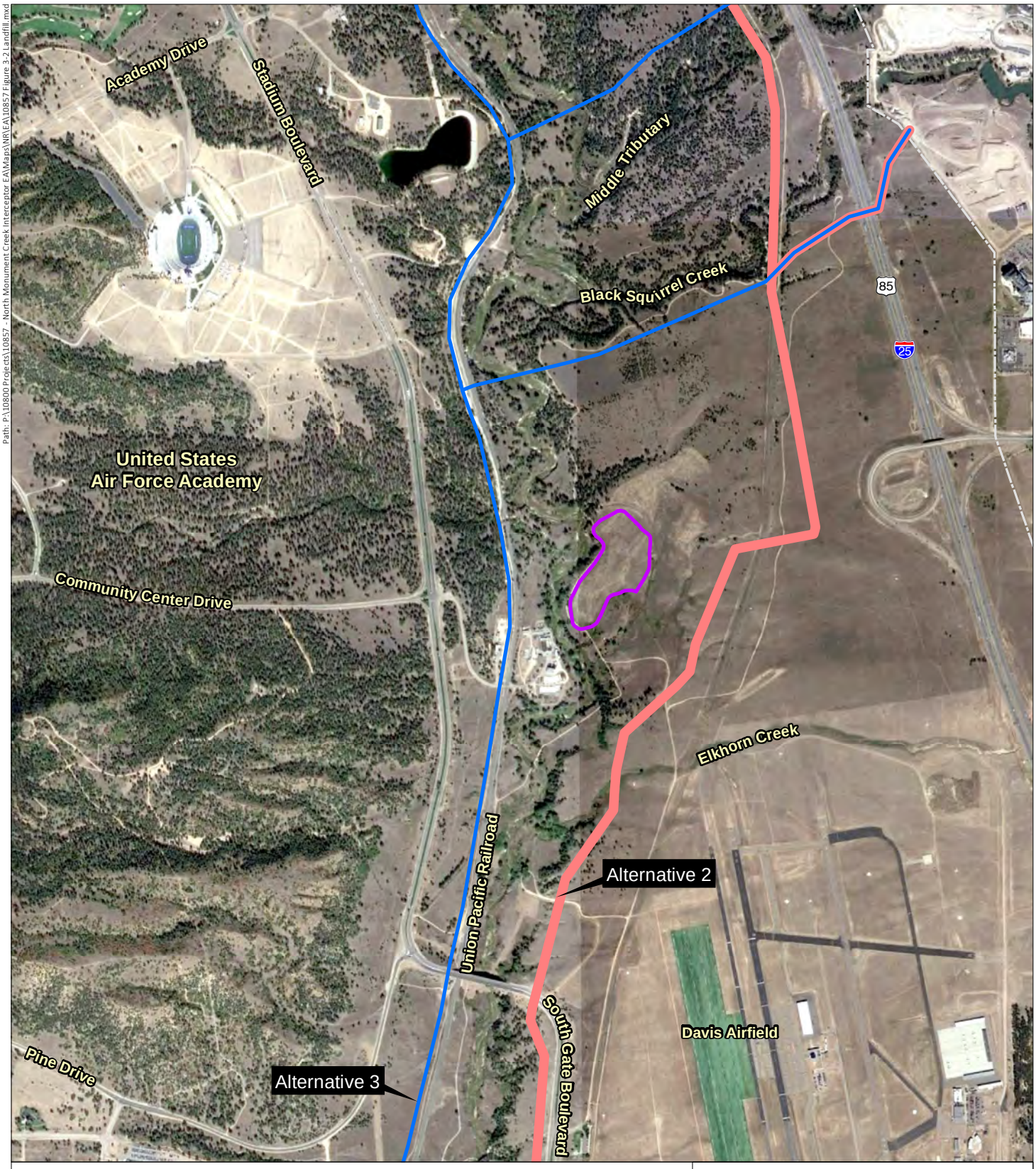
The analysis area for hazardous materials consists of a 0.5-mile buffer around all proposed project facilities. The methods consisted of a review of reasonably ascertainable records maintained by the EPA, CDPHE, and Colorado Department of Labor and Employment Division of Oil and Public Safety (CDLE/OPS).

The hazardous materials assessment was not exhaustive and does not eliminate the uncertainty that sites containing hazardous substances or petroleum products may be present in the NMCI project area. Sites not listed in the reasonably ascertainable records maintained by the EPA, CDPHE, and CDLE/OPS were not addressed by the assessment.

The records review identified the following sites within 0.5 mile of proposed project facilities: 2 sites investigated under the CERCLA Information System, 1 RCRA Corrective Action site, 12 leaking underground storage tank sites closed by CDLE/OPS, and 2 historical landfill sites. Based on a review of agency files, none of the identified sites are likely to have adversely affected the soil or groundwater at any of the proposed project facilities except for a historical landfill site on the USAFA property discussed below.

The Site 6 Landfill 1 site (USAFA landfill site) was operated as a municipal waste landfill from 1972 to 1978 and consists of about 15 acres. The site is located on the east side of Monument Creek directly northeast of the USAFA wastewater treatment plant (

Figure 3-2). The Preferred Alternative alignment footprint does not include the USAFA landfill site. Wastes were disposed in trenches measuring about 40 feet wide by 30 feet deep by 500 feet long. The trenches were backfilled with soil and the entire landfill area was covered with an earthen cap in 1997. In 1998, long-term surface water and groundwater monitoring began that included analysis for volatile organic compounds, arsenic, iron, manganese, phenols, and 1,4-dioxane. In 2005, a landfill cover was installed on the site and annual monitoring of the cover has been conducted since then (AECOM 2019).



Path: P:\10800 Projects\10857 - North Monument Creek Interceptor EA\Maps\NR\EA\10857 Figure 3-2 Landfill.mxd

Northern Monument Creek Interceptor Environmental Assessment

Alternative 2 Eastern Alignment

Alternative 3 Western Alignment

USAFA Solid Waste Landfill

Image Source: Google Earth©, October 2019

0 750 1,500 Feet

N

Figure 3-2
USAFA Landfill

Prepared for: Colorado Springs Utilities
File: 10857 Figure 3-2 Landfill.mxd (GS)
October 2, 2023

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3.7 BIOLOGICAL/NATURAL RESOURCES

3.7.1 Vegetation

The project area is located along the southern portion of the Palmer Divide, an east-west elevated landform characterized by higher ridges and valleys that separates the South Platte River watershed from the Arkansas River watershed. Tributaries and streams along the south face of the Palmer Divide drain into Monument Creek, which flows from north to south from the town of Monument, through the USAFA to Colorado Springs where it merges with Fountain Creek.

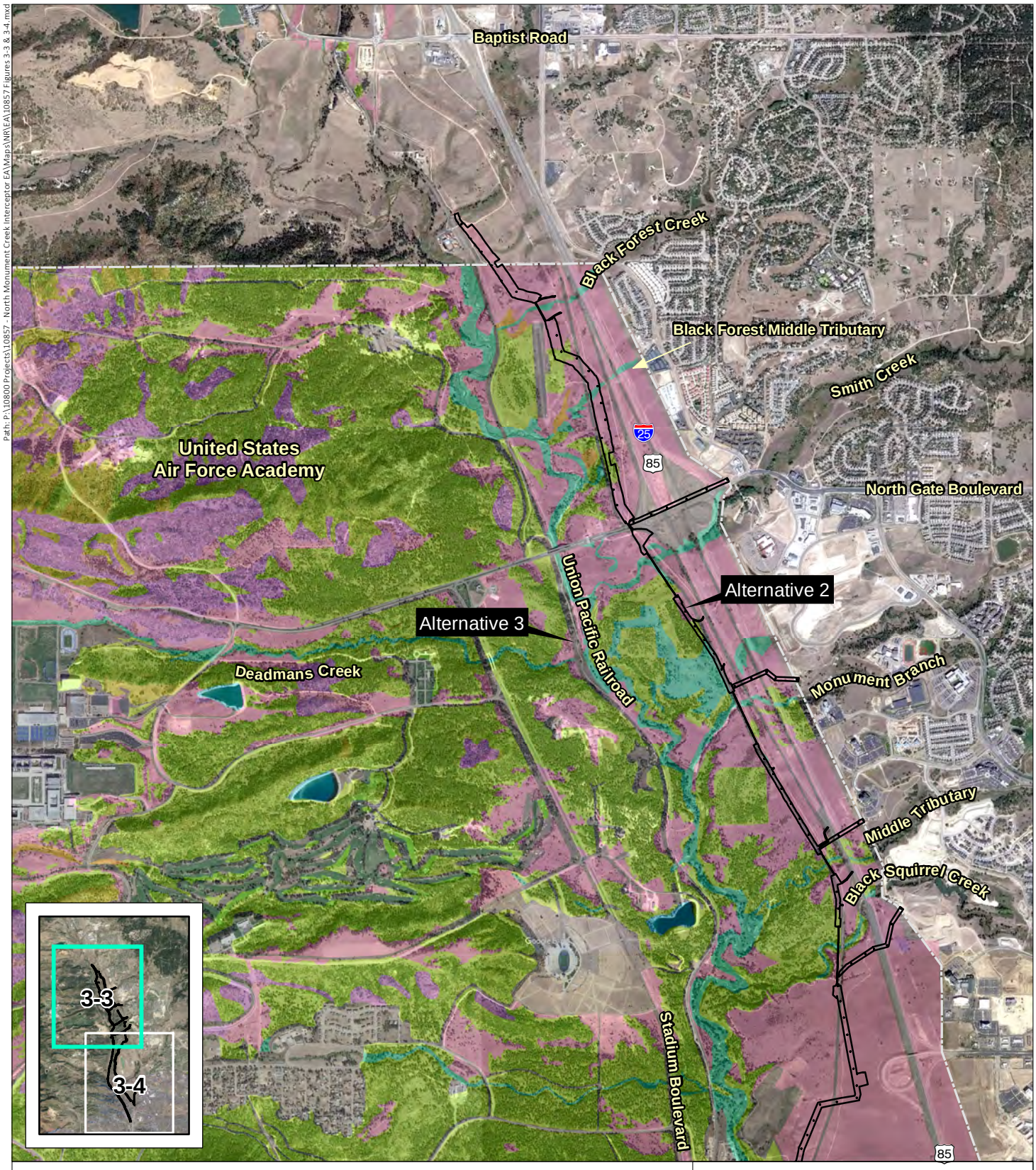
The project area is in a transitional zone due to the elevation gradient from high plains grassland habitat to high-elevation montane vegetation in the region. Due to topographic variation, the location at the convergence of north-south and plains-mountains transition zones, the presence of high-quality grassland and riparian habitat, and the proximity to the undeveloped forested expanses of the Pike National Forest, there are larger areas of native plant communities in the project area, particularly on the USAFA than would be expected in an area of equivalent size and proximity to an urban center.

Vegetation communities mapped in the project area include upland grassland, upland shrub/scrub, upland forest, riparian, and wetland (USAFA 2018). Most of the project area is within upland grassland habitat, which covers about 5,120 acres at USAFA (USAFA 2018) and covers most of the surrounding nonfederal lands. Common plants in upland grassland habitat include native and nonnative grasses such as smooth brome (*Bromus inermis*), sand dropseed (*Sporobolis cryptandrus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), buffalograss (*Bouteloua dactyloides*), little bluestem (*Schizachyrium scoparium*), Indian ricegrass (*Oryzopsis hymenoides*), and Indiangrass (*Sorghastrum nutans*). Other upland plants include wild licorice (*Glycyrrhiza lepidota*), fringed sage (*Artemisia frigida*), yucca (*Yucca glauca*), and prickly pear cactus (*Opuntia polyacantha*). Shrubs including rubber rabbitbrush (*Ericameria nauseosa*), three-leaf sumac (*Rhus trilobata*), and Gambel oak (*Quercus gambelii*) are common in upland shrub/scrub habitats. Upland forests include areas dominated by ponderosa pine (*Pinus ponderosa*), often with an understory of Gambel oak. Although uncommon in the project area, upland forests are common at USAFA, covering about 9,000 acres (USAFA 2018). Upland grassland – shrub/scrub mosaic and upland shrub/scrub – grassland mosaic are areas that contain both grassland shrub/scrub habitats intermingled.

Riparian and wetland areas are dominated by grasses and forbs including reed canarygrass (*Phalaris arundinacea*), redtop (*Agrostis gigantea*), switchgrass (*Panicum virgatum*), prairie cordgrass (*Spartina pectinata*), goldenrod (*Solidago canadensis*), Arctic rush (*Juncus arcticus*), Nebraska sedge (*Carex nebrascensis*), Emory's sedge (*Carex emoryii*), and cattail (*Typha* sp.). Woody plants that are common in riparian and wetland areas include plains cottonwood (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), peachleaf willow (*Salix amygdaloides*), and sandbar willow (*Salix exigua*). Wetlands and riparian areas in the project area are described in greater detail in the *Wetlands, Floodplains, and Riparian*

section of this EA. Vegetation communities in the project area are shown on Figure 3-3 and Figure 3-4.

Surveys conducted by the Colorado Natural Heritage Program (CNHP) have documented 25 noxious weed species at the USAFA, including widespread occurrences of yellow toadflax (*Linaria vulgaris*), leafy spurge (*Euphorbia esula*), diffuse knapweed (*Centaurea diffusa*), hoary cress (*Cardaria draba*), musk thistle (*Carduus nutans*), and Canada thistle (*Cirsium arvensis*) (Smith and Greenwell 2019). The USAFA actively controls noxious weeds within its boundaries in accordance with the USAFA Noxious Weed Management Plan (Smith et al. 2015). A complete list of noxious weeds found at the USAFA is found in Smith and Greenwell (2019). Noxious weeds are also present on nonfederal lands in the project area, north and south of the USAFA boundary.



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Northern Monument Creek Interceptor Environmental Assessment

- Disturbance Boundary
- Wetland
- Lake/Pond
- Upland Forest
- Riparian Shrub/ Tree/Forb
- Upland Grassland
- Upland Grassland-Shrub/Scrub Mosaic
- Upland Shrub/Scrub Grassland Mosaic
- Developed/Disturbed/ Unvegetated

0 1,600 3,200 Feet

N

Figure 3-3
Vegetation Communities,
Northern Portion of Project Area

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-3 & 3-4.mxd (GS)
October 17, 2023

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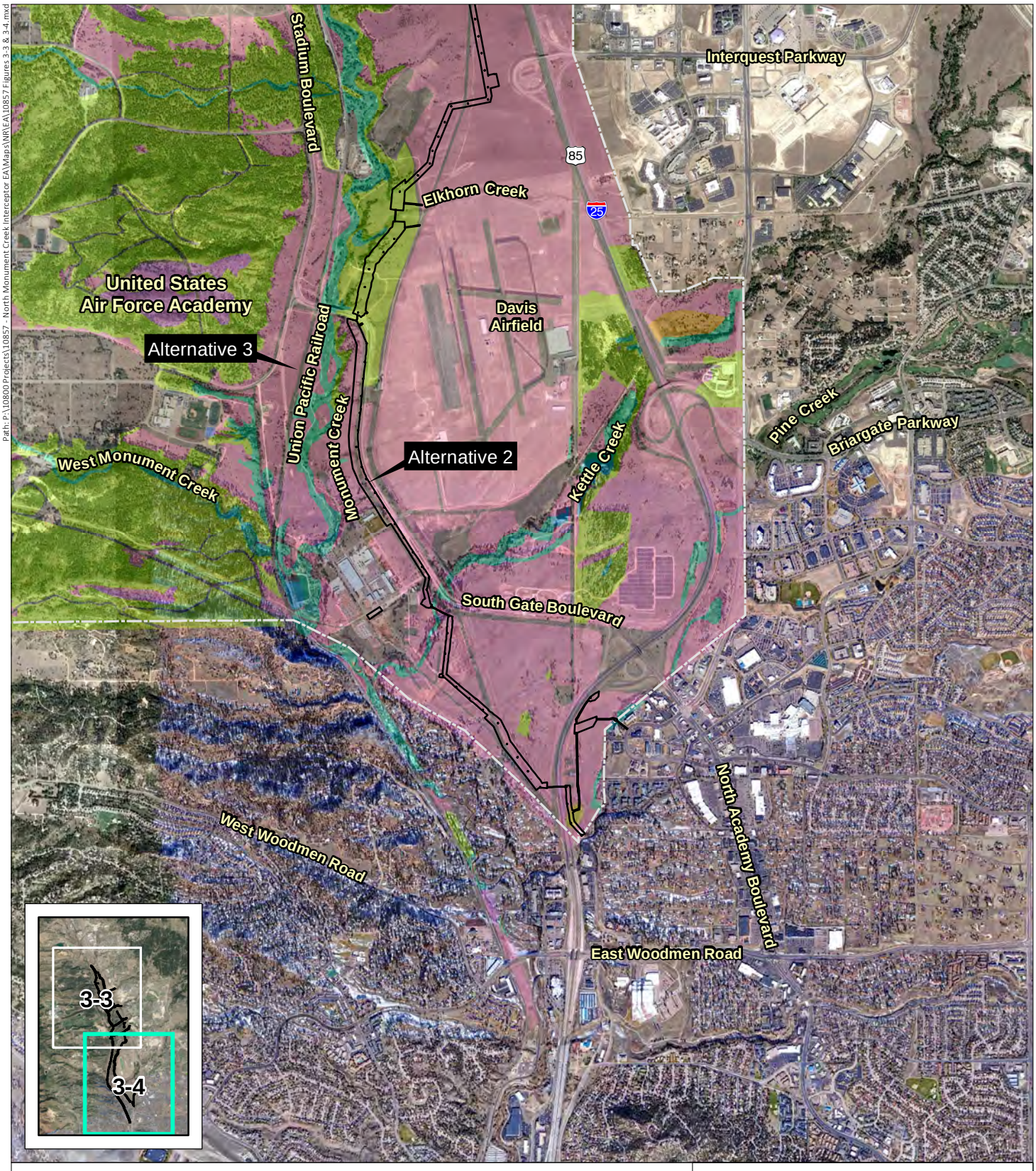

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Northern Monument Creek Interceptor Environmental Assessment

- Disturbance Boundary
- Wetland
- Lake/Pond
- Upland Forest
- Riparian Shrub/ Tree/Forb
- Upland Grassland
- Upland Grassland-Shrub/Scrub Mosaic
- Upland Shrub/Scrub Grassland Mosaic
- Developed/Disturbed/ Unvegetated

0 1,600 3,200 Feet

N

Figure 3-4
Vegetation Communities, Southern Portion of Project Area

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-3 & 3-4.mxd (GS)
October 17, 2023

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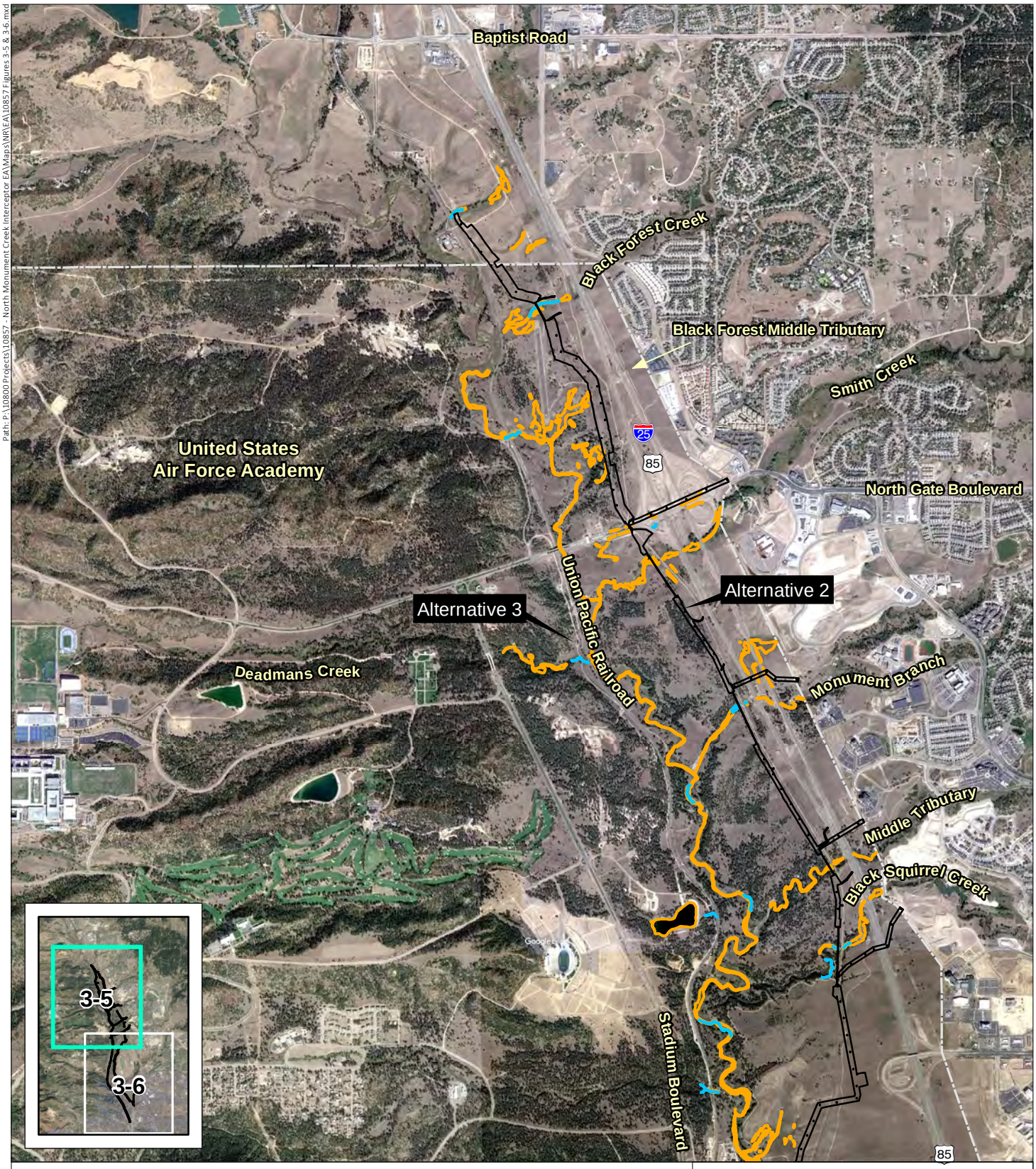
3.7.2 Wetlands, Floodplains, and Riparian

3.7.2.1 Wetland and Riparian Habitat

Wetlands in the project area were mapped between April 20 and August 14, 2020 (ERO 2021). Two general wetland communities are present in the project area: herbaceous grassland-forb wetland community and willow wetland community. Past mapping has identified about 104 acres of wetlands at USAFA (USAFA 2018 and ERO 2021).

The herbaceous grassland-forb wetlands occur most commonly as fringe wetlands along portions of some of the streams, especially in the northern portion of the project area along Teachout and Jackson Creeks. Species common in this community include reed canarygrass, Emory's sedge, Nebraska sedge, prairie cordgrass, broadleaf cattail (*Typha latifolia*), narrowleaf cattail (*Typha angustifolia*), soft-stem bulrush (*Schoenoplectus tabernaemontani*), and Arctic rush. Other species present, but not dominant, in this community include sandbar willow, redtop, and small amounts of upland grasses and forbs such as western wheatgrass, smooth brome, Canada thistle, and Kentucky bluegrass (*Poa pratensis*). The Cowardin et al. (1979) classification for the herbaceous grassland-forb wetland community is palustrine persistent emergent.

The willow wetland community is the most dominant wetland community in the project area. The majority of the streams in the project area contain sandbar willow shrubs as well as other riparian species such as narrowleaf cottonwood, peachleaf willow, and bluestem willow (*Salix irrorrata*). Understory species common in this community include Emory's sedge, Nebraska sedge, reed canarygrass, redtop, and Arctic rush. The Cowardin et al. (1979) classification for the willow-cottonwood wetland community is riverine scrub-shrub persistent emergent.
Riparian habitat consists of a transition zone between wetland habitat and upland habitat that often contains species from both communities. Past mapping has identified about 687 acres of riparian habitat at USAFA (USAFA 2018). Common shrubs in riparian areas include willow shrubs (sandbar and bluestem), three-leaf sumac, snowberry (*Symphoricarpos* sp.), chokecherry (*Prunus pensylvanica*), and American plum (*Prunus americana*). Herbaceous species include switchgrass, prairie cordgrass, smooth brome, little bluestem, common mullein (*Verbascum thapsus*), annual sunflower (*Helianthus annuus*), and Canada thistle. Portions of the NMCI pipeline alignments that intersect wetlands and waters of the U.S. are shown on Figure 3-5 and Figure 3-6.



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Northern Monument Creek Interceptor Environmental Assessment

Disturbance Boundary

Ordinary High Water Mark

Wetland

0 1,600 3,200 Feet

N

Figure 3-5
Wetlands,
Northern Portion of Project Area

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-5 & 3-6.mxd (GS)
October 17, 2023

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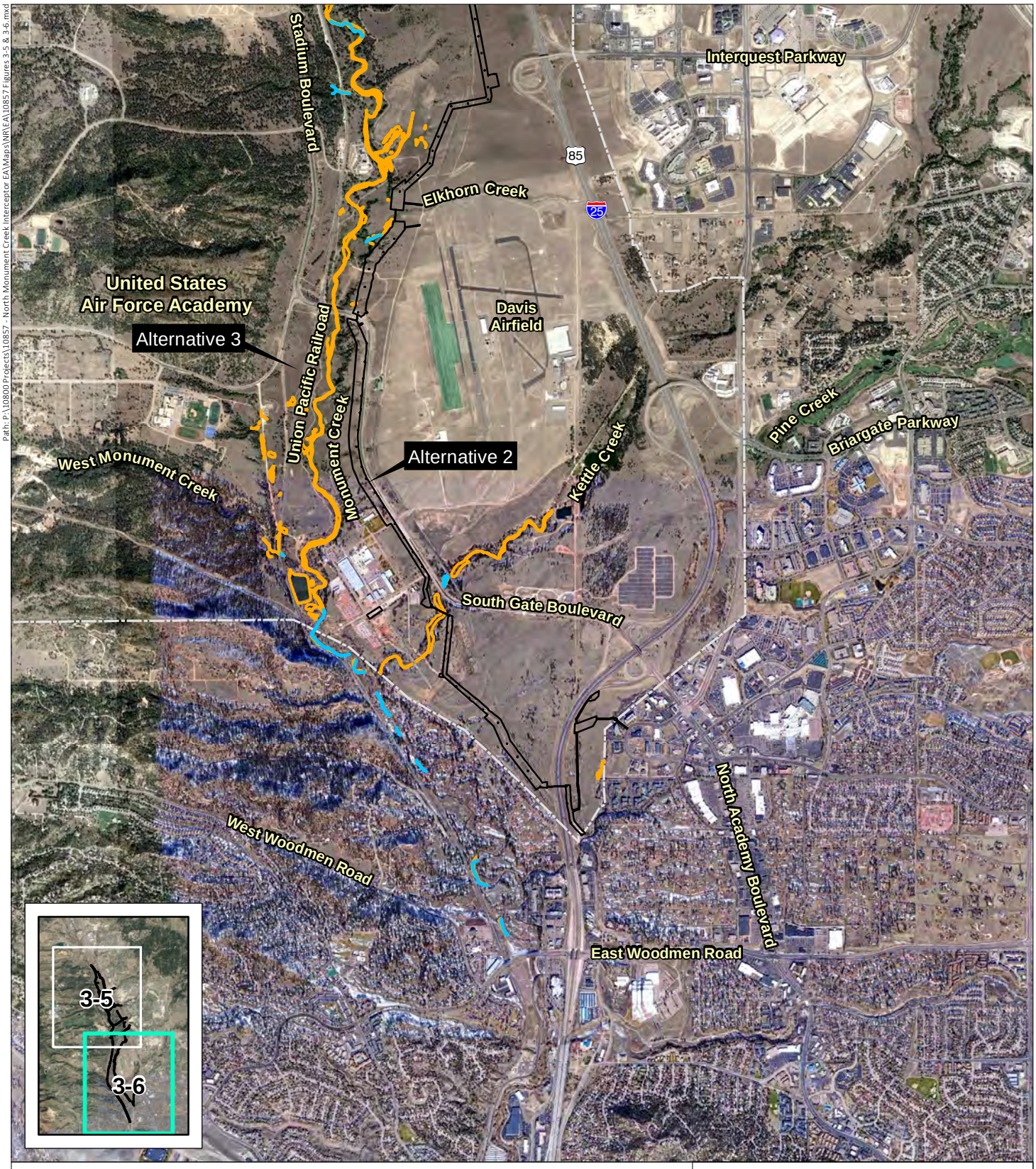

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Northern Monument Creek Interceptor Environmental Assessment

Disturbance Boundary

Ordinary High Water Mark

Wetland

0 1,600 3,200 Feet

N

Figure 3-6
Wetlands,
Southern Portion of Project Area

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-5 & 3-6.mxd (GS)
October 17, 2023

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3.7.2.2 Floodplains

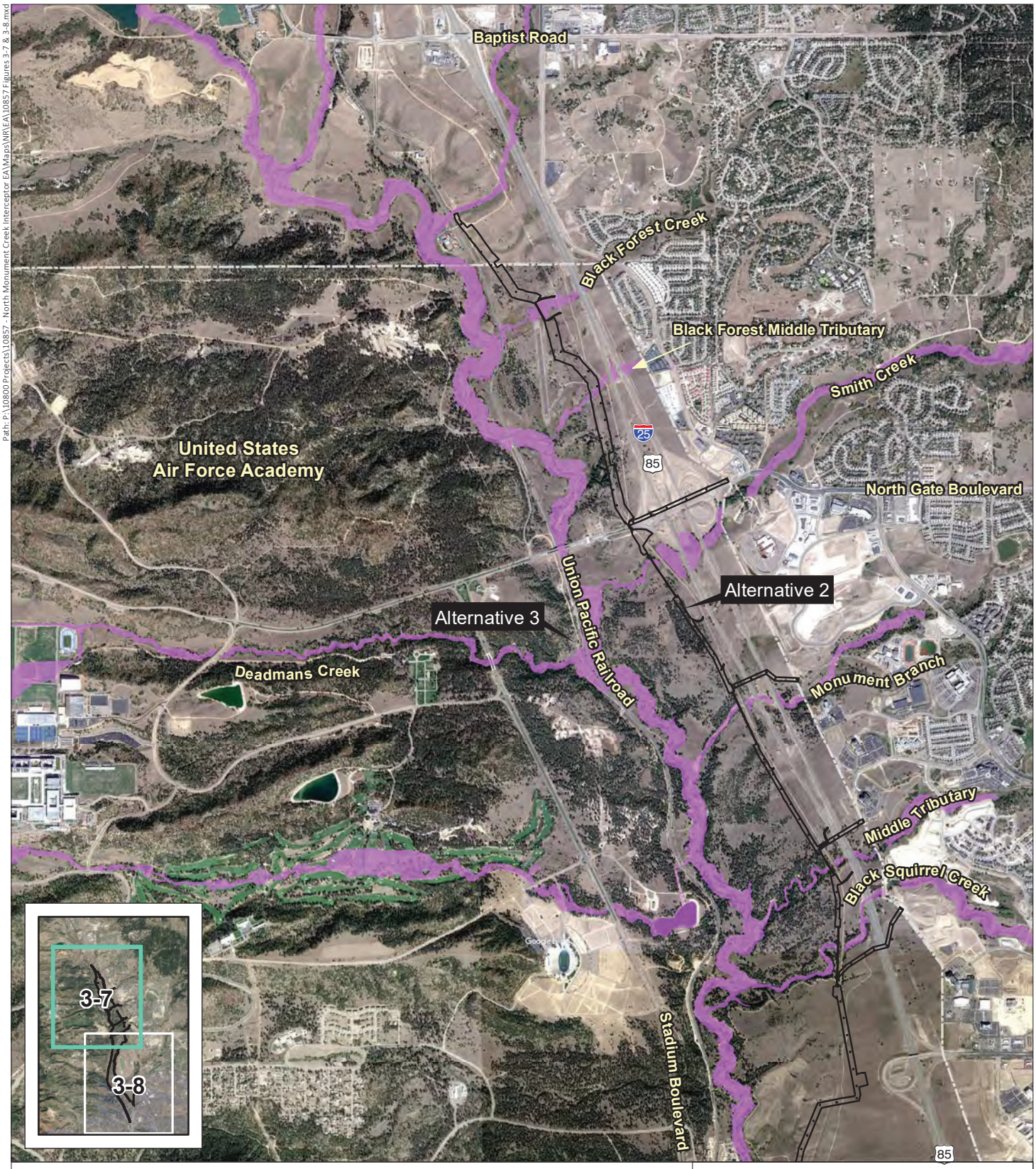
Floodplains associated with Monument Creek occur in the project area. The Monument Creek watershed has a total drainage area of about 236 square miles (Armstrong and Stevens 2002). The Monument Creek watershed is part of the Arkansas River drainage, Colorado's largest river basin, draining 24,904 square miles of land area, and is described in greater detail in the *Water Resources* section. The 100-year floodplain boundaries at the USAFA were mapped in 2003, and flood hazard zones, including the 100-year floodplain, on nonfederal lands in the project area have been mapped by the Federal Emergency Management Agency (FEMA 2018). Portions of the NMCI pipeline alignments are within the 100-year floodplain, as shown on Figure 3-7 and Figure 3-8.

3.7.3 Wildlife

The diverse vegetation communities including grasslands, riparian and wetland habitat, shrublands, and montane forested habitat that occur on the USAFA and surrounding project area supports a wide variety of wildlife. Monument Creek and its tributaries provide riparian habitat and serve as migration corridors important to wildlife such as white-tailed deer, amphibians, neotropical migratory birds, and native fish species. Grassland and shrubland habitat in the project area provides nesting habitat for several migratory bird species including prairie falcon, western scrub jay, spotted towhee, meadowlark, and western kingbird. Common large and small mammals include species such as mule deer, western harvest mouse, spotted ground squirrel, coyote, and red fox. Some reptiles including short-horned lizard and bullsnake are also found in these habitats. Mid-sized mammals, such as coyote, red fox, striped skunk, and raccoon, occur throughout the project area (USAFA 2018). Fisheries surveys conducted on the USAFA in 2014 and 2018 on Monument Creek, West Monument Creek, Stanley Creek, and Kettle Creek yielded six species: white sucker, brook stickleback, fathead minnow, longnose dace, creek chub, and brook trout. Each of the six species, with the exception of brook trout, were captured on Monument Creek near the project area. In 2018 the creek chub was the most abundant fish sampled with 438 individuals captured, while fathead minnow were the least abundant with a total of four captures (USFWS 2019).

3.7.4 Special Status Species

Special status species including those that are listed under the Endangered Species Act (ESA) of 1973, as amended (16 United States Code 1531 et seq.), and state sensitive species (including species of greatest conservation need outlined in the 2015 State Wildlife Action Plan (CPW 2016) occur throughout portions of the USAFA and project area.



Northern Monument Creek Interceptor Environmental Assessment

Disturbance Boundary

100-Year Floodplain

0 1,600 3,200 Feet

N

Figure 3-7
100-Year Floodplains,
Northern Portion of Project Area

Image Source: Google Earth©, October 2019

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File: 10857 Figures 3-7 & 3-8.mxd (GS)
October 17, 2023

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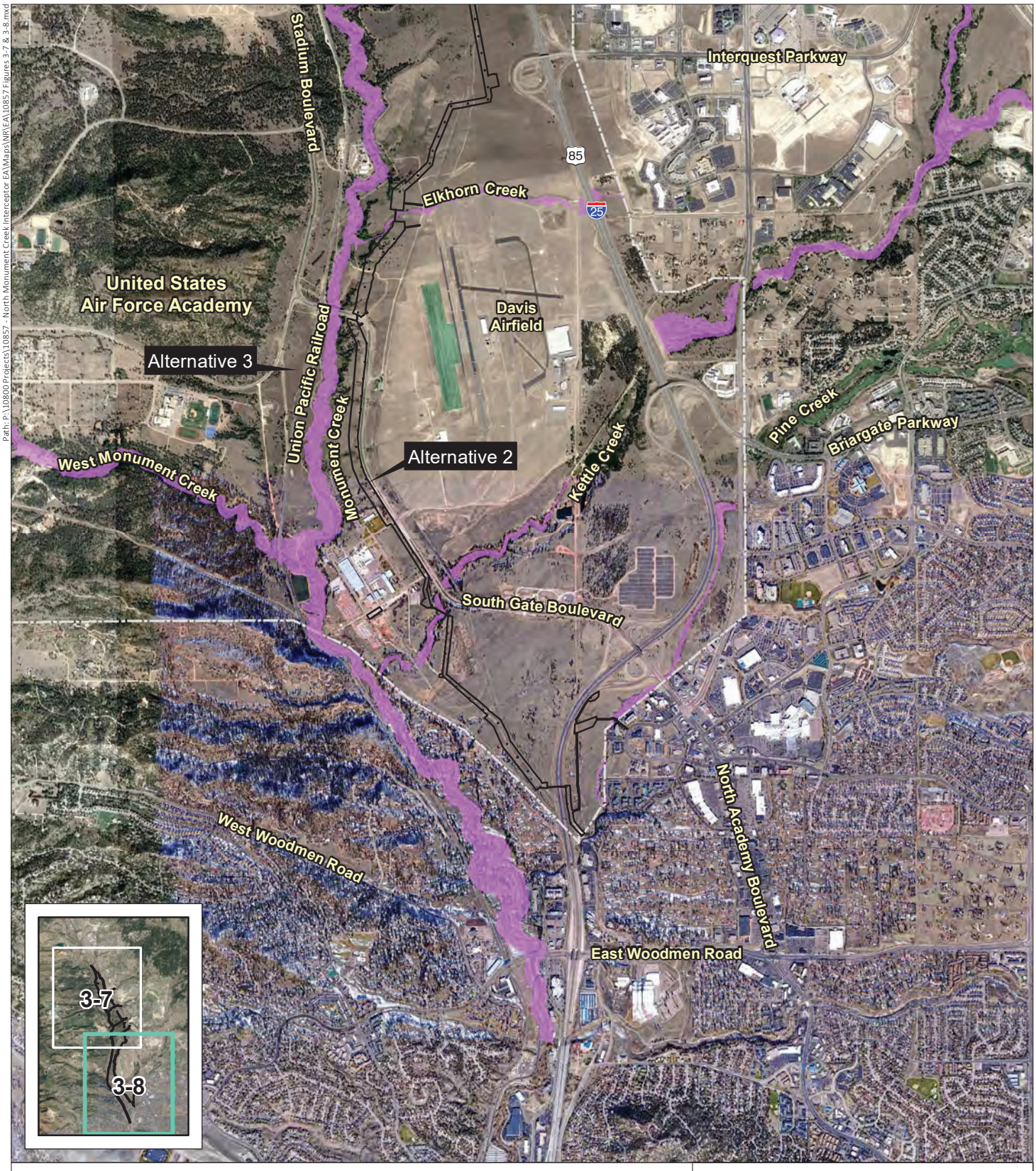

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Northern Monument Creek Interceptor Environmental Assessment

Disturbance Boundary

100-Year Floodplain

0 1,600 3,200 Feet

N

Figure 3-8
100-Year Floodplains,
Southern Portion of Project Area

Image Source: Google Earth©, October 2019

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-7 & 3-8.mxd (GS)
October 17, 2023

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3.7.4.1 Federally Threatened and Endangered Species

According to the USFWS's Information for Planning and Consultation (IPaC) website, 10 federally threatened or endangered species potentially occur in, or are affected by projects near, the project area in El Paso County (USFWS 2021) (Table 3-2). The project area does not fall within USFWS habitat or survey guidelines for most of the species listed in Table 3-2.

Table 3-2. Federally Threatened, Endangered, and Candidate Species Potentially Found in El Paso County or Potentially Affected by Projects in El Paso County.

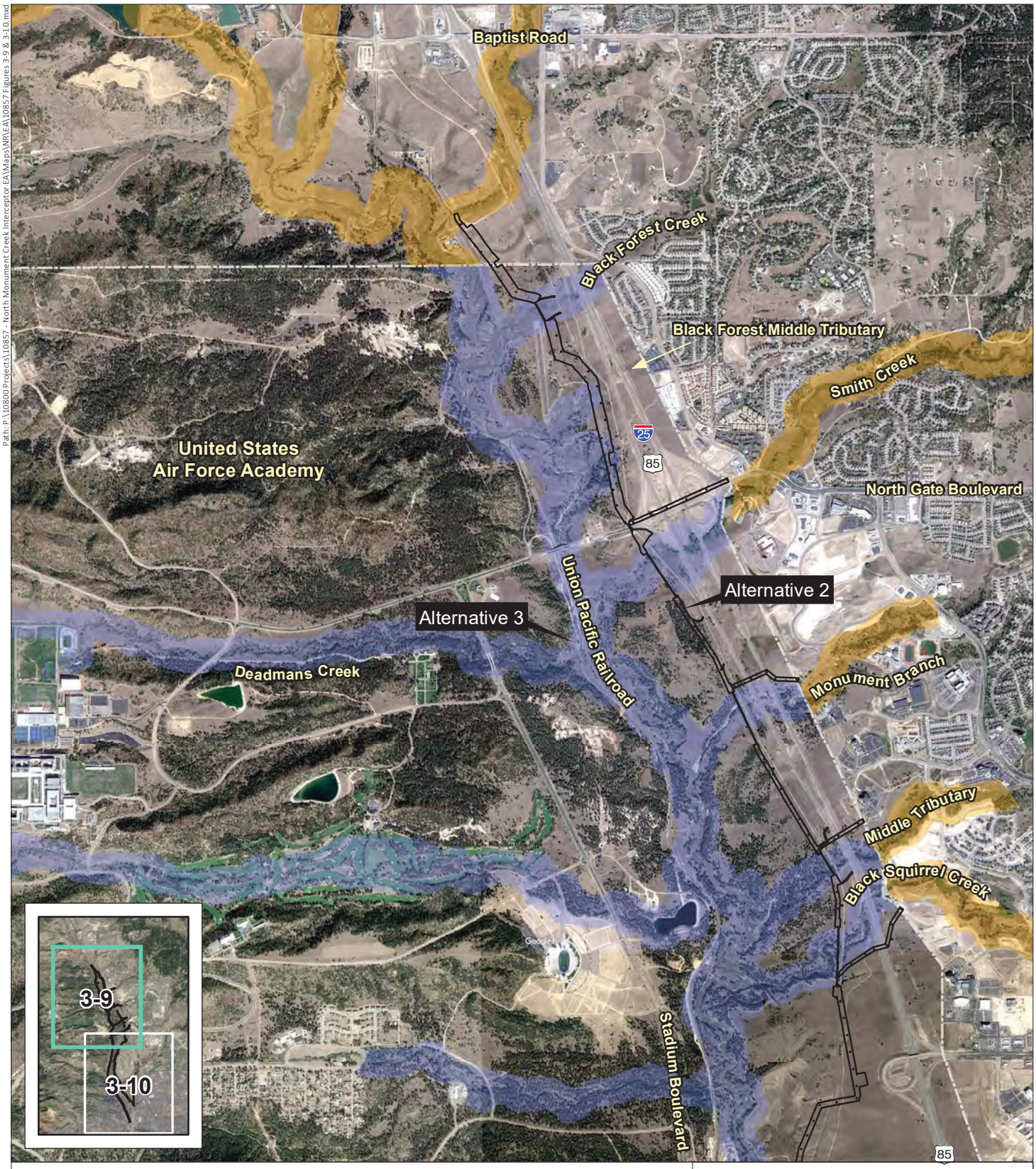
Species (Common Name)	Scientific Name	Listing Status[1]	Habitat	Habitat Present
Birds				
Eastern black rail	*Laterallus jamaicensis jamaicensis*	T	Expansive wetlands and marshes with dense emergent vegetation	Potential – unlikely due to small wetland sizes in project area
Mexican spotted owl	*Strix occidentalis lucida*[2]	T	Closed canopy forests in steep canyons	No
Piping plover	*Charadrius melodus*[3]	T	Sandy lakeshore beaches and river sandbars	No habitat; no depletions anticipated
Whooping crane	*Grus americana*[3]	E	Mudflats around reservoirs and in agricultural areas	No habitat; no depletions anticipated
Mammals				
Gray wolf	*Canus lupis*	E	Temperate forests, mountains, tundra, taiga, grasslands, and deserts	No
Tricolored bat	*Perimyotis subflavus*	PE	Forests, culverts, caves, mines	Potential
Preble's meadow jumping mouse (Preble's)	*Zapus hudsonius preblei*[2]	T	Shrub riparian/wet meadows	Yes
Insects				
Pawnee montane skipper	*Hesperia leonardus montana*	T	Meadows dominated by blue grama and gayfeather (*Liatris punctata*) in areas surrounded by pine/fir forests	No
Fish				
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	T	Gravelly headwater streams or mountain lakes	No
Pallid sturgeon	*Scaphirhynchus albus*[3]	E	Large, turbid, free-flowing rivers with a strong current and gravelly or sandy substrate	No habitat; no depletions anticipated
Plants				
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 7,800 feet in elevation	No
Western prairie-fringed orchid	*Platanthera praeclara*[3]	T	Mesic and wet prairies, sedge meadows	No habitat; no depletions anticipated

[1]T = Threatened Species, E = Endangered Species.
[2]There is critical habitat for the species in the county.
[3]Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.
Source: USFWS 2021.

The eastern black rail (EBR) is a small marsh bird that inhabits wetland complexes. The EBR is known to occur east of the project area, particularly near John Martin Reservoir in Bent

County. The EBR was recently detected at Fort Carson Army Base, south of Colorado Springs in 2022. EBR has not been detected on the USAFA. The tricolored bat (TCB) has been detected in recent year further west than previously know, including in Boulder County near the foothills (Adams et al. 2018). The TCB has not been detected in El Paso County, but could occur in forested habitat near the project area.

Preble's is the only federally listed species with potential to occur in the project area. Preble's was initially found on the USAFA and nearby tributaries in 1994 by the CNHP and listed as threatened in 1998 by the USFWS (63 FR 26517 (May 13, 1998)). In response to the listing, the USAFA prepared a Conservation and Management Plan (conservation plan) for Preble's to provide guidance for management decisions on the USAFA (USAFA 1999). The conservation plan included designating a buffer around Monument Creek and its tributaries that extends 300 feet from the 100-year floodplain. The USFWS accepted the conservation plan and renews it on a five-year basis. The conservation plan is currently in the process of being renewed. USAFA has requested re-initiation of consultation on the Conservation Agreement to address increased habitat restoration needs, authorize habitat restoration performed on USAFA by off-base partners, and to better track and account for "incidental take" from military training and natural resources management activities. No Preble's critical habitat exists on any of the USAFA property. Critical habitat does not need to be designated on Department of Defense property if the installation's Integrated Natural Resource Management Plan provides sufficient conservation benefit and management for the species (Section 4(a)(3)(B)(i) of the ESA and AFMAN32-7001). Critical habitat for Preble's exists along most tributaries to Monument Creek, and Monument Creek itself, outside of the USAFA (Figure 3-9 and Figure 3-10).



Northern Monument Creek Interceptor Environmental Assessment

Disturbance Boundary

Preble's Critical Habitat

Preble's Conservation Zone

Image Source: Google Earth©, October 2019

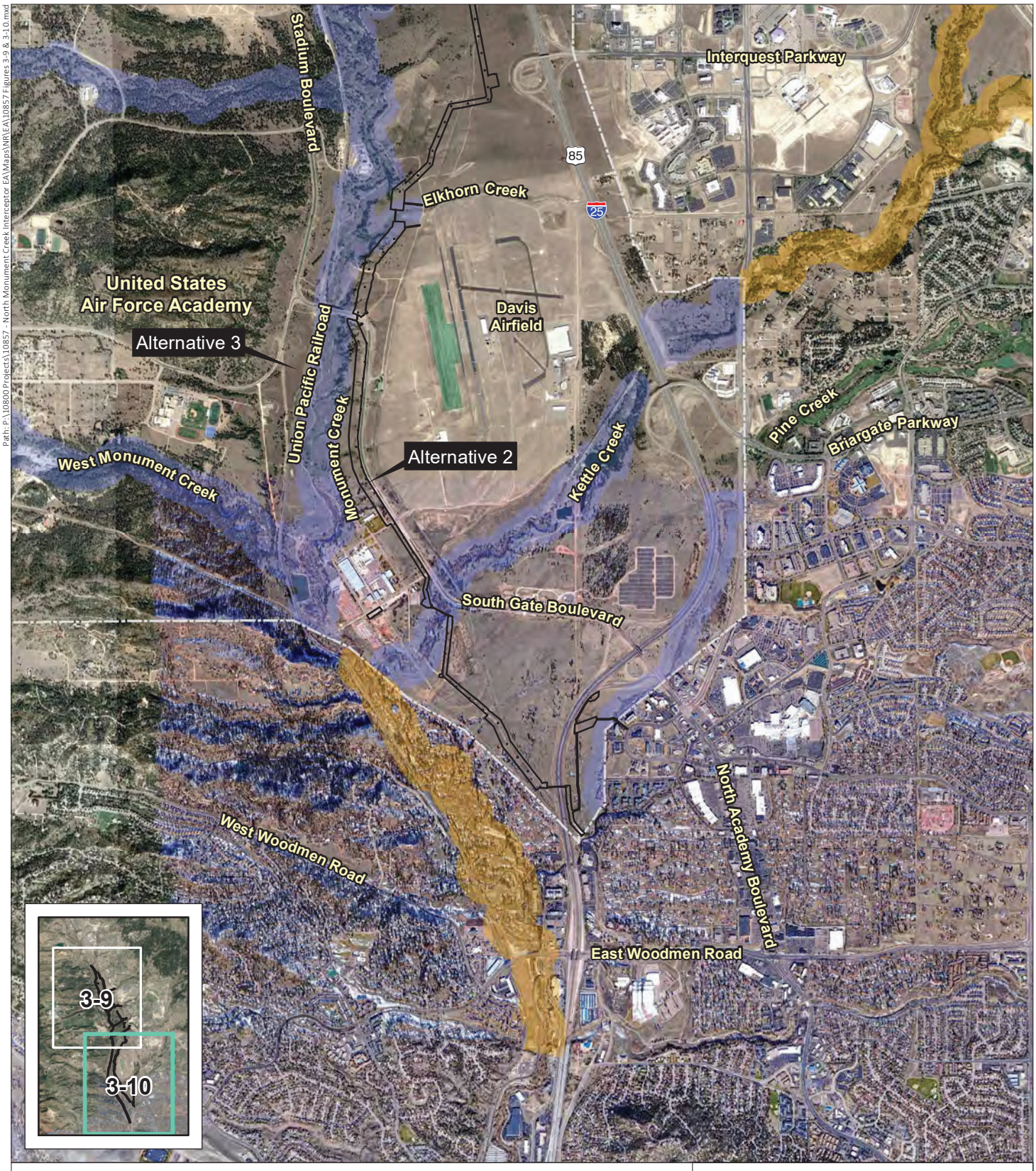
0 1,600 3,200 Feet

N

Figure 3-9
Preble's Meadow
Jumping Mouse Habitat,
Northern Portion of Project Area

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-9 & 3-10.mxd (GS)
October 17, 2023

ERO Resources Corp.



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Northern Monument Creek Interceptor Environmental Assessment

Disturbance Boundary

Preble's Critical Habitat

Preble's Conservation Zone

Image Source: Google Earth©, October 2019

0 1,600 3,200 Feet

N

Figure 3-10
Preble's Meadow
Jumping Mouse Habitat,
Southern Portion of Project Area

Prepared for: Colorado Springs Utilities
File: 10857 Figures 3-9 & 3-10.mxd (GS)
October 17, 2023

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3.7.4.2 Other Sensitive Species

One state threatened and four state species of concern have potential to occur in or adjacent to the project area. Additionally, five Tier 1 species (excluding those that are both state species of concern and Tier 1 species) in the State Wildlife Action Plan and two species considered imperiled by the CNHP have been documented or have potential to occur in the project area (Table 3-3).

Table 3-3. State Threatened, Endangered, Species of Concern, Tier 1 Species, and CNHP Imperiled Species Potentially Found in the Project Area or Potentially Affected by Projects in the Project Area.

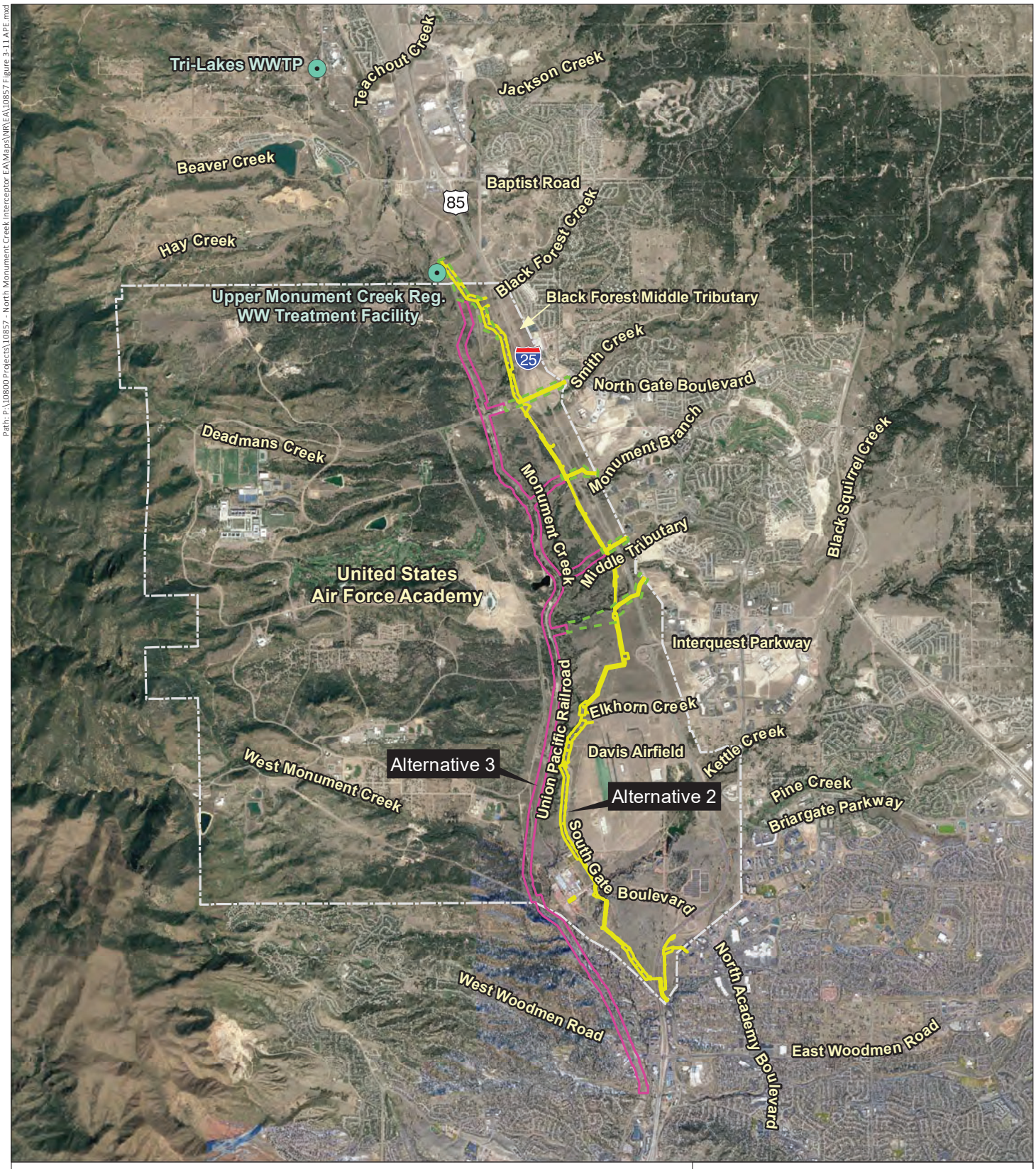
Species (Common Name)	Scientific Name	Status[1]	Habitat	Habitat Present in Project Area
Amphibians				
Northern leopard frog	*Lithobates pipiens*	SC, Tier 1	Wetlands, marshes, ponds, and streams	Yes
Birds				
Ferruginous hawk	*Buteo regalis*	SC	Northwestern, eastern Colorado; open grasslands and shrub-steppe communities	Yes
Ovenbird	*Seiurus aurocapilla*	S2	Deciduous and coniferous forests on the western portions of the USAFA	No
Mammals				
Fringed myotis	*Myotis thysanodes*	Tier 1	Coniferous forests above 7,500 feet in elevation	No
Little brown myotis	*Myotis lucifugus*	Tier 1	Occurs statewide; prefers wooded areas, buildings, woodpiles, and occasionally caves or mines	Yes
Northern pocket gopher	*Thomomys talpoides macrotis*	SC	Grasslands, shrublands, upward to montane areas; *T.t. macrotis* is only known to occur in Douglas County	Yes
Olive-backed pocket mouse	*Perognanthus fasciatus*	Tier 1	Grasslands, shrublands, semi-desert, and lower foothills	Yes
Townsend's big-eared bat	*Corynorhinus townsendii*	SC, Tier 1	Open montane areas, shrublands, woodlands with caves, mines, and rocky outcrops	No
Insects				
Hops azure	*Celastrina humulus*	S2	Riparian areas containing wild hops	Yes
Fish				
Arkansas darter	*Etheostoma cragini*	ST, Tier 1	Shallow first and second order streams with sandy, silty bottoms; known to occur on Fountain Creek south of the USAFA	No
Southern red-bellied dace	*Phoxinus erythrogaqster*	Tier 1	Clear, shallow, sandy, and spring-fed streams; known to occur on Fountain Creek near Pueblo	No

ST – State Threatened; SC – State Species of Concern; Tier 1 – Species of highest conservation priority per the 2015 State Wildlife Action Plan. S2 – Considered imperiled; at risk of extirpation in the state.
Sources: CPW 2016, 2021; NatureServe 2021; Schorr and Smith 2019.

The northern leopard frog and hops azure have been documented on the USAFA near the project area. Additionally, habitat for ferruginous hawk, little brown myotis, northern pocket gopher, and olive-backed pocket mouse exists in portions of the project area. The ovenbird, fringed myotis, and Townsend's big-eared bat have been documented in the western portions of the USAFA near the Pike National Forest boundary. The Arkansas darter and southern red-bellied dace occur downstream of the USAFA, but have not been documented on the USAFA (Kennedy 2019).

3.8 CULTURAL RESOURCES

USAFA property and the private property north and south of the USAFA contain a variety of plant and animal communities that reflect diverse mountain, plains, and riparian environments. This diversity and direct access to water from Monument Creek and its tributaries would have provided an abundance of resources for Native American and recent historic occupants. All of the Action Alternatives parallel Monument Creek but there is variation between the alternatives in the kinds of landforms they would traverse and the direct impacts on cultural resources, historic properties (cultural resources eligible for listing in the National Register of Historic Places [NRHP]), or landforms that might contain buried cultural resources. Section 106 of the National Historic Preservation Act (NHPA) is the primary structure for analysis of cultural resources for this project's planning. Impacts are assumed to potentially take place at any location in the proposed APE designated for Section 106 of the NHPA. Participants in the Section 106 process are consulted in developing the APE for the project included the Colorado SHPO and the tribal agencies listed in Table 6-1. The APE is shown in Figure 3-11. While Section 106 consultation is ongoing for purposes of this draft EA released for public comment, the cultural resource inventory for affected environment is unlikely to change. That includes that a small amount of the project area required additional (and final) cultural resource survey in summer 2023, due to a minor change in the preferred routing of the pipeline. The Section 106 mitigation Memorandum of Agreement (Appendix C) documents finalization of the project's APE, and completeness of CR inventory.



Northern Monument Creek Interceptor Environmental Assessment

Existing Treatment Facility

Shared Alignment

Preferred Alignment

Alternative Alignment APE

Image Source: Google Earth©, October 2019

0 3,500 7,000 Feet

N

Figure 3-11
Area of Potential Effect

Prepared for: Colorado Springs Utilities
File: 10857 Figure 3-11 APE.mxd (GS)
October 2, 2023

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In 2020, a Class I file search and literature review was conducted for the entire APE. A Class I file search and literature review is a desktop analysis of existing state and federal cultural resource databases as well as a thorough review of historical maps, aerial images, land patent documents, and property records. The goal of a Class I file search and literature review is to obtain a full scope all previous cultural surveys, previously documented cultural resources, and potential undocumented resources. Also reviewed are geological maps that identify landforms where archaeological sites may be buried. The Colorado OAHP Database and USAFA files indicate 42 surveys and 317 previously recorded resources are in or overlap a 1-mile buffer of Alternatives 2 and 3 (Hedlund et al. 2021). Files obtained from the USAFA include survey reports and GIS data that have not yet been made available by the OAHP. Data from the recent surveys include an additional 5 surveys and 19 resources. The previous surveys cover 77.11 percent of the project area. Two surveys completed by the University of Colorado – Colorado Springs – Cultural Resources Survey of the United States Air Force Academy Including Farish Memorial Recreation Area (EP.AF.R19) and Cultural Resources Survey of Jack's Valley Training Area, United States Air Force Academy (EP.AF.R13) – covered large portions of the alternatives in 1995 and 1992, respectively (Arbogast et al. 1993; Arbogast et al. 1996). Other surveys, including five surveys associated with the I-25 corridor (EP.CH.NR21, EP.CH.NR9, EP.CH.R2, EP.CH.R40, and EP.CH.R48), also cover significant portions of the project area and overlap much of the two previously mentioned surveys. Additional linear and block surveys, associated with transmission line, hydroelectric, road, and trail projects, cover minor portions of the alternatives project area and overlap much of the previously described surveys.

In 2020, a Class III cultural resource pedestrian survey, exploratory testing, and evaluative testing of the Alternative 2 – Eastern Alignment A was completed in compliance with Section 106 of the NHPA (Cultural Resource Report for the NMCI Pipeline Project (Cultural Resources Report)) (Hedlund et al. 2021). A pedestrian survey entails teams of archaeologists walking systematic transects across the survey area to identify cultural resources. Later, teams of archaeologists hand excavated shovel tests to evaluate the potential for buried cultural resources not visible on the ground surface. The Cultural Resource Report was completed specifically for the NMCI project in an APE that exceeded the limits of disturbance by 577.2 acres so that as many identified historic proprieties could be avoided as possible. Unshared unique alternative alignments were not subject to the same level of review because review beyond a Class I file search and literature review was not necessary for the alternatives to be equally compared and allowed for project redesign in the Preferred Alternative to minimize impacts.

Sixty-eight (68) cultural resources, including 28 linear segments or entire linear resources (e.g., roads, railroads, ditches, or wagon roads), 12 Native American archaeological sites, 21 historical archaeological sites (e.g., the remains of ranches, homesteads, trash dumps, or other structures), 5 multicomponent archaeological sites (e.g., cultural resources that contain Native American and non-Native American cultural material), and 2 bridges were documented. Of these, 29 cultural resources (also referred to as “sites”) were previously documented and 3 sites were not relocated. The Cultural Resources Report also documented

24 isolated finds (IFs) (one or two isolated artifacts), although 7 previously documented IFs were not relocated. Cultural resources intersected by the alternatives and associated laterals are listed in Appendix C.

Historical resources are primarily related to transportation, but also present are water conveyance structures and historical archaeological sites related to habitation and ranching. Transportation resources generally fall into three categories: wagon roads that predate railroads; railroad segments, sidings, and roads that functioned concurrently with the railroad; and roads constructed as part of the USAFA campus design. The transportation resources have varying levels of physical integrity, but the majority no longer serve their original transportation function. For instance, much of the Atchison, Topeka, & Santa Fe (AT&SF) Railroad (5EP1003) now serves as a recreation trail or vehicle access.

Water conveyance resources are related to the conveyance of water (e.g., ditches) or the control of water to reduce erosion. All documented ditch segments are abandoned and, in many cases, difficult to identify in the field. Erosion-control structures were built during USAFA development and retain varying levels of physical integrity.

Historical archaeological sites are typically the remains of ranches or agricultural complexes that have been completely or nearly completely destroyed during USAFA development. No intact features remain and all that remains of once larger structures or buildings are generally scattered rubble or foundation remnants. Trash dumps are typically concentrated areas of historical refuse that are often found in gullies. Most of the trash dumps date to the 1940s or 1950s. Artifact scatters are typically broad and sparse and likely represent an activity area of some kind rather than one or two dumping episodes and are often associated with late 1800s to early 1900s activities. One gravel pit (5EP8879) is present that dates to USAFA development in the 1950s to 1960s. Also present is the limited remains of a small townsite called Breed (5EP1628).

Native American archaeological sites are small simple lithic scatters consisting primarily of debitage and an occasional tool. Only a few fragments of ground stone are present, and indications of thermal features (such as fire-cracked rock) are also rare. No diagnostic artifacts such as ceramics or projectile points are present. Sites are primarily located on the western margins of Pleistocene-age terraces that overlook Monument Creek to the west. The small sites with limited assemblages suggest that upper terraces were primarily used for short-term individual tasks rather than sustained or intensive processing or habitation. The latter activities may have happened closer to Monument Creek. Five tested sites (5EP2326, 5EP8873, 5EP8874, 5EP8877, and 5EP8391) and two IFs (5EP8949 and 5EP8950) confirmed that sites situated on older Pleistocene-age landforms do not have potential to contain buried cultural deposits unless there is evidence of eolian or another form of deposition on the Pleistocene-age surface. Only two sites, 5EP8874 and 5EP8877, buried in Holocene-age alluvium, yielded significant subsurface cultural deposits.

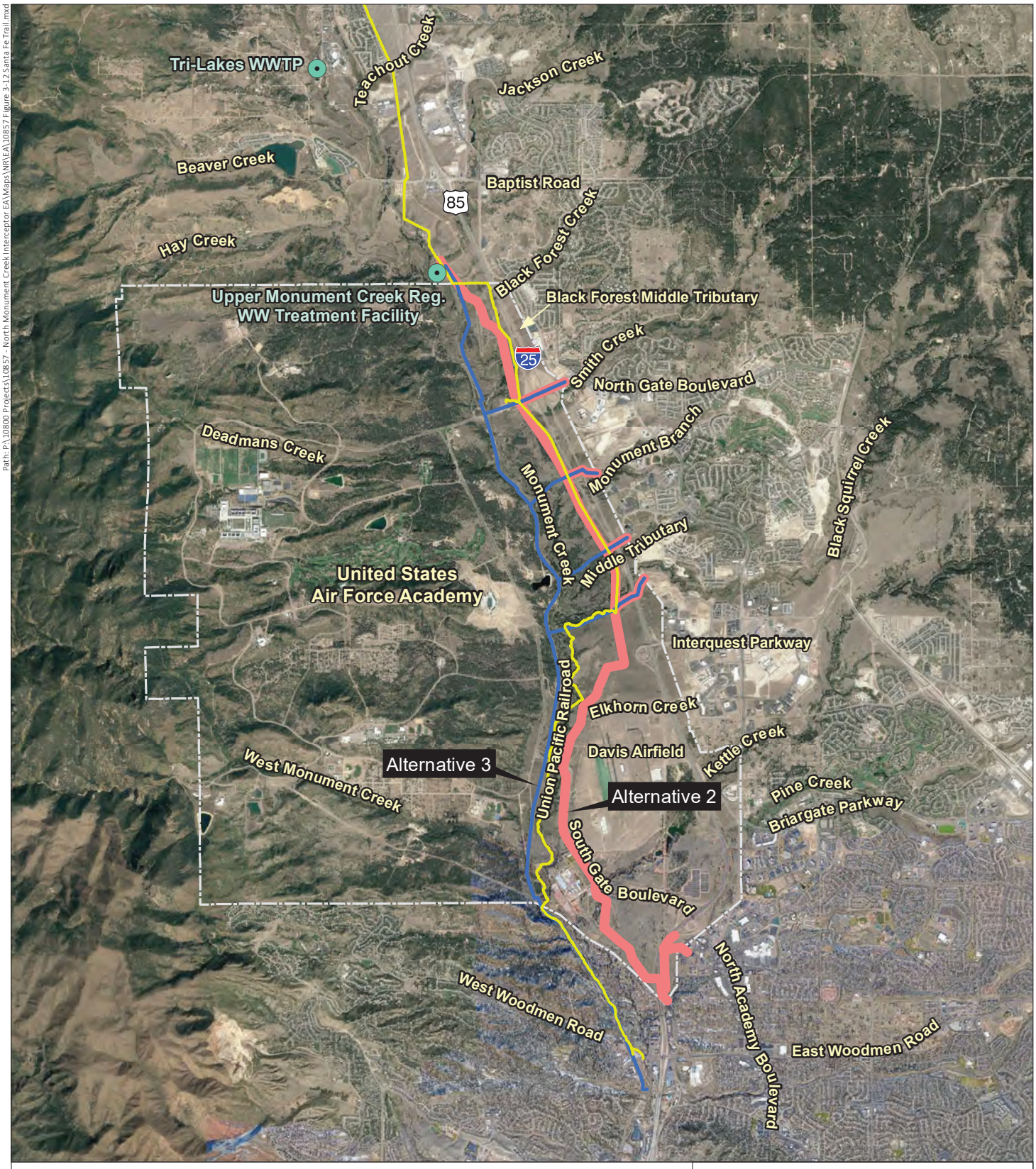
The Cultural Resources Report did not include unshared portions of Alternatives 4 and 5 beyond a Class I file search and literature review because there are no anticipated effects under Section 106 of the NHPA. Despite different review methods, comparison can be

achieved despite the following challenges: more data and more refined data for the preferred alignment including subsurface exploratory testing have been collected and no previous exploratory testing has occurred along the alternative alignment; and the alternative alignment has been almost completely previously surveyed on the USAFA, but not on private property.

3.9 RECREATION

The USAFA property contains more than 23 miles of paved and unpaved trails, including the New Santa Fe Regional Trail, Falcon Trail, Stanley Canyon Trail, and West Monument Creek Trail. The New Santa Fe Regional Trail is the only trail that would be crossed by the proposed alignments (Figure 3-12). The New Santa Fe Regional Trail is maintained by El Paso County and extends from the Palmer Lake Recreation Area in northern El Paso County, connecting the Tri-Lakes area (Palmer Lake, Woodmoor, and Monument) and northern Colorado Springs. The trail is also part of the Pikes Peak Greenway and Front Range Trail systems and provides the only nonmotorized connection between Colorado Springs, Monument, and Palmer Lake. Sections of the New Santa Fe Regional Trail are a cultural resource (see Section 3.8 *Cultural Resources*). The trail also serves as a commuter route for individuals traveling to and from work or school. This gravel surface regional trail generally follows a straight and level course for the first 6.5 miles beginning at Palmer Lake. An easement agreement by the USAFA provides access to a 6.9-mile stretch of this trail. Trail users are prohibited from leaving the 6-foot-wide trail surface as it passes through the USAFA. The section of the trail through the USAFA is also subject to closure for security reasons. Portions of the trail also follow the right-of-way of the historic AT&SF railroad. The wide gravel trail offers a panoramic view of the Rampart Range, USAFA grounds, and riparian habitat along Monument Creek. The New Santa Fe Regional Trail is used for running, hiking, and biking; however, the USAFA and El Paso County do not collect use statistics for the trail.

Trailheads for the New Santa Fe Regional Trail are located at Palmer Lake, Third Street in Monument, and at Baptist Road. Other trail access points are located at Highway 105 in Monument, North Gate Road Boulevard, and Ice Lake at the USAFA. The trailhead at Baptist Road, in the northern portion of the project area, has a parking area and restroom. The parking area outside the USAFA North Gate entrance is planned to permanently close to allow construction of the new USAFA Visitor's Center. Edmondson trailhead at Woodmen Road south of the project area also has a small parking area.



Northern Monument Creek Interceptor Environmental Assessment

Existing Treatment Facility

New Santa Fe Regional Trail

Alternative 2 Eastern Alignment

Alternative 3 Western Alignment

Image Source: Google Earth©, October 2019

0 3,500 7,000 Feet

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Figure 3-12
New Santa Fe Regional Trail

Prepared for: Colorado Springs Utilities
File: 10857 Figure 3-12 Santa Fe Trail.mxd (GS)
October 3, 2023

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the potential environmental consequences that are likely to occur as a result of implementation of all alternatives that are being considered and analyzed. Impacts described in this chapter are evaluated in terms of type (positive/beneficial or adverse); context (setting or location); intensity (none, negligible, minor, moderate, or severe); and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of an impact on a resource are explained under each resource area. Unless otherwise noted, short-term impacts are those that would result from the activities associated with a project's construction or demolition phase, and that would end upon completion of those phases. Long-term impacts are generally those resulting from the operation of a proposed project.

4.2 AIR INSTALLATION COMPATIBLE USE ZONES

4.2.1 Alternative 1 – No Action Alternative

In the No Action Alternative, the NMCI would not be constructed and there would be no new impacts on the Davis Airfield flight operations.

4.2.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Alternative 2 would require construction activities to occur within the Airspace of Davis Airfield, and within Safety Zones and under Imaginary Surfaces as set forth in UFC 3-260-01 (Airfield and Heliport Planning and Design). The pipeline alignment would cross about 1,196 linear feet of Accident Potential Zone II and 1,879 linear feet of the Clear Zone north of the USAFA Davis Airfield (Figure 3-1). The depth of the trench in this area would be about 10 feet. The pipeline would also cross about 1,042 linear feet of the Clear Zone for the smaller east-west runway to the west of the airfield. The depth of the trench in this area would be about 25 to 40 feet. South of the airfield, the pipeline and associated temporary access routes would cross about 2,232 linear feet of Accident Potential Zone II. The depth of the trench would be about 20 to 25 feet. The estimated working time in the Accident Potential Zones and Clear Zone would be 20 working days for the section north of the airfield, 19 working days for the section to the west, and 10 working days for the section to the south. The tallest equipment needed in the Accident Potential Zones/Clear Zone would be an excavator; no cranes would be required.

Construction activity, including equipment and open trenches in safety zones, are considered “obstructions” to airfield operations. However, utility lines are considered an acceptable use provided that the facilities are constructed at grade (USAF 2019). The north-south runways are used much more often than the smaller east-west runway, and construction within the Clear Zone of the north-south runways would be a much greater safety concern. Because of this concern, work within the Clear Zone for the north-south runways under Alternative 2 would be carefully monitored and restricted to avoid hazards to airfield operations. Work within the Clear Zone and Accident Potential Zones would be carefully coordinated with airfield operations to avoid conflicts. The work would be scheduled for times when the airfield is not in use. Operations of the airfield may be briefly adversely affected during construction. Utilities would work closely with the construction contractor and the airfield to minimize disruptions. Procedures for coordination would be determined in a risk assessment, as described below.

The east-west (Cross Wind) runway is used much less often than the north-south runways. Construction activity and related obstructions in the Clear Zone west present a potential risk to flight operations, but mitigation controls that would be applied to construction activity would likely be sufficient for the ABW Commander to accept the operational risks. In addition, utility lines are considered an acceptable use provided that the facilities are constructed at grade (USAF 2019).

An Airfield Construction Waiver and risk assessment would be prepared by USAFA 10 CES personnel in cooperation with the CSU, to assess and evaluate risks to flight operations. The

risk assessment would require approval by the 10 ABW Commander and would consider all obstructions and risks caused by construction activity. Mitigation measures would be developed as part of the risk assessment and could include night work or other restrictions on timing of work and high visibility flagging on equipment.

Overall, impacts on the AICUZ would be temporary and minor. Impacts would be minor because the project would not result in an unacceptable increase in risk to flight operations with the implementation of design measures such as timing restrictions on construction in the AICUZ at the airfield, and implementation of additional mitigation measures developed through the risk assessment.

4.2.3 Alternative 3 – Western Alignment

Alternative 3 would require construction activities to occur within the Airspace of Davis Airfield, and within Safety Zones and under Imaginary Surfaces as set forth in UFC 3-260-01 (Airfield and Heliport Planning and Design). The Black Squirrel Creek No. 2 lateral pipeline alignment would cross about 2,302 linear feet of Accident Potential Zone II north of the airfield (Figure 3-1). The pipeline would also cross about 1,030 linear feet of Accident Potential Zone I for the smaller east-west runway to the west of the airfield. The estimated working time within the Accident Potential Zones and Clear Zone would be 20 working days for the section in Accident Potential Zone II north of the airfield and 19 working days for the section to the west. The tallest equipment needed in the Accident Potential Zones/Clear Zone would be an excavator; no cranes would be required.

As described above for Alternative 2, there are risks to flight operations from the proposed presence of construction equipment and open trenches within airfield safety zones. As previously described, utility lines are considered an acceptable use provided that the facilities are constructed at grade (USAF 2019). Additionally, the construction activity within the Clear Zone is considered to be the greatest related risk of the project. However, operation and mitigation controls that will be applied to construction activity will likely be sufficient for the ABW Commander to accept the operational risks.

If this alternative were selected, a risk assessment would be prepared by Utilities, in cooperation with the USAFA, to assess and evaluate risks to aviation, and mitigation measures would be developed as part of the risk assessment as described above for Alternative 2.

Overall, impacts on the AICUZ would be temporary and minor. Impacts would be minor because the project would not result in an unacceptable increase in risk to flight operations with the implementation of design measures such timing restrictions on construction in the AICUZ at the airfield, and implementation of additional mitigation measures developed through the risk assessment.

4.3 NOISE

4.3.1 Alternative 1 – No Action Alternative

In the No Action Alternative, the NMCI would not be constructed and there would be no change in noise levels in the project area.

4.3.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Impacts on the USAFA ambient noise environment would occur from operation of construction equipment as well as the increase in construction vehicle traffic noise along roads used for access. Noise levels from construction would vary depending on the types of equipment being used on a given day, the topography of the area where the project would occur, the distance of the receptor from the generating source, and the presence of trees or buildings. Because the USAFA has two active airfields, the temporary increases in construction noise would be a fraction of the noise generated routinely at the USAFA.

L_{max} is the maximum sound energy over a given period. The L_{max} analysis allows for a comparative analysis of maximum potential noise impacts, such as for construction equipment noise that is limited in duration. Predicted noise levels from construction equipment are shown in Table 4-1.

Table 4-1. Noise Produced by Typical Construction Equipment.

Equipment	L_{max} at 50 feet (dBA)	L_{max} at 250 feet (dBA)	L_{max} at 500 feet (dBA)	L_{max} at 0.5 mile (dBA)
Excavator	81	67	61	47
Dozer	82	68	62	48
Grader	85	71	65	51
Scraper	84	70	64	50

Source: Federal Highway Administration 2006.

The alignment for Alternative 2 would generally be more than 0.5 mile from residential areas or would be separated from residential areas by I-25. However, the limits of disturbance would be within 250 feet of residences at the southern end of the project area. In these areas, construction-related noise could temporarily be up to 67 to 71 dBA. For comparison, 70 dBA is comparable to the noise level near a busy street, while 60 dBA is comparable to a normal conversation or an automobile at 100 feet, while 50 dBA is comparable to the noise level from moderate rainfall. For residences east of I-25, noise levels would be less than noise levels from the highway. These increases above average daytime noise levels (around 55 dB or less as previously described) would be short-term, lasting only during the construction period, and would only be within 0.5 mile of residences for a period of about one to two weeks for each residence.

No long-term impacts on the ambient noise environment of the project area would occur from operation of the proposed NMCI. Impacts would be short-term, minor, and adverse and would last only for the 12-month duration of construction. Impacts would be minor because noises during operation of the proposed NMCI would not be appreciably louder than existing conditions in the project area.

4.3.3 Alternative 3 – Western Alignment

Noise levels under Alternative 3 would be the same as described for Alternative 2; however, the impacts on nearby residents would be greater because there would be more private residences affected by elevated noise levels during construction. Alternative 3 would include a section through a narrow area constrained by the railroad, Monument Creek, and surrounding residential development on nonfederal land south of the USAFA boundary, thus resulting in increased impacts compared to Alternative 2. As previously described, noise levels for residences east of I-25 would be less than noise levels from the highway. Overall, noise impacts during construction would be short-term and minor, and would be greater than under Alternative 2 because there would be more residences within 500 feet of the construction area.

As described for the Alternative 2, no long-term impacts on the ambient noise environment of the project area would occur from operation of the proposed NMCI under Alternative 3. Impacts would be minor because noises during operation of the proposed NMCI would not be appreciably louder than existing conditions in the project area.

4.4 AIR QUALITY

4.4.1 Alternative 1 – No Action Alternative

If the No Action Alternative is selected, the NMCI would not be constructed and there would be no new impacts on air quality.

4.4.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

During construction, motorized equipment would emit gaseous emissions, and surface disturbance would generate dust. The project would have a short-term impact on air quality, lasting for the approximately 1.4 year construction period. Criteria pollutant and greenhouse gas (GHG) air emissions would be produced from the combustion of fuels in heavy equipment. Particulate matter air emissions, such as fugitive dust, would be produced from ground-disturbing activities and from the combustion of fuels in heavy equipment. Fugitive dust air emissions would result from ground disturbance and excavation for trenching and would vary depending on the work phase, level of activity, and prevailing weather conditions. Construction would incorporate BMPs and environmental control measures such as wetting the ground surface to minimize fugitive particulate matter air emissions. Construction workers commuting daily to and from the job sites in their personal vehicles and vehicles hauling construction materials to and from the job site would also result in criteria pollutant and GHG air emissions. All impacts on air quality would be temporary and no new long-term impacts on air quality would occur.

Pollutant emissions were calculated using the USAF Air Conformity Applicability Model. Emissions calculations are summarized in Appendix B. Pollutants emitted would include volatile organic compounds (VOC), nitrogen oxides (NO_x), CO, sulfur oxides (SO_x), PM_{10}, $PM_{2.5}$, ammonia (NH_3), and carbon dioxide (CO_2). Table 4-2 summarizes the criteria pollutant and GHG air emissions resulting from Alternative 2 and the applicable general conformity threshold for CO (carbon monoxide). Overall, impacts on air quality would be short-term, lasting only during construction, and minor. Impacts would be minor because the project would not result in exceedance of the general conformity *de minimis* threshold for any of the criteria pollutants. Although construction activities associated with implementation of the preferred alternative would contribute GHG emissions, such emissions would be short-term, ending with construction completion. Any effects of construction related GHG emissions on climate change would not be discernible at a regional scale.

Table 4-2. Pollutant Emissions and General Conformity Threshold.

Pollutant	Emissions (tpy*)	General Conformity	
		Threshold (tpy)	Exceedance (Yes or No)
VOC	3.946	250	No
NO_x	1.902	250	No
CO	3.396	100	No
SO_x	0.007	250	No
PM_{10}	33.854	250	No
$PM_{2.5}$	0.069	250	No
Lead	0.000	25	No
NH_3	0.010	250	No
CO_2	739.7	N/A	N/A

*Tpy = tons per year.

4.4.3 Alternative 3 – Western Alignment

As described for Alternative 2, Alternative 3 would have a short-term impact on air quality, lasting for the construction period. Impacts would be the same as described for Alternative 2, except that there would be slightly more ground disturbance, resulting in slightly more fugitive dust. The length of construction, type and number of construction vehicles, and other sources of air pollution would be the same as described for Alternative 2, except that construction could take about 15 to 17 months. The project would not result in exceedance of the general conformity *de minimis* threshold for any of the criteria pollutants; therefore, impacts on air quality would be minor. As described for the other alternatives, impacts from GHG emissions would be short term and would not be discernable at a regional scale.

4.5 WATER RESOURCES

4.5.1 Alternative 1 – No Action Alternative

In the No Action Alternative, the NMCI would not be constructed and there would be no impact on water resources from the proposed project. The Northern Entities and Utilities would continue their current operations by operating and maintaining their existing facilities and improving their respective WWTFs as needed to meet future hydraulic and organic loadings, and to comply with future regulations. Current water quality conditions, including impairment for *E. coli*, manganese, macroinvertebrate (provisional), and temperature would continue.

4.5.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

NMCI pipeline construction would disturb soils and increase the potential for erosion and sedimentation. Resource protection measures and BMPs implemented as part of a Stormwater Pollution Prevention Plan would minimize related storm water pollution and surface water runoff. Directional drilling for construction of inverted siphons would minimize surface disturbances and would minimize impacts on streams. Pipeline construction disturbances would be temporary and following construction completion and reclamation, no additional impacts on water resources are expected to occur. The average depth of the pipelines would not likely encounter groundwater, but if encountered, groundwater would be temporarily impacted but longer term impacts are not expected.

Following completion of the NMCI, wastewater flows from the Tri-View and Forest Lakes wastewater districts that were formerly treated at the Upper Monument Creek WWTF would flow into the NMCI pipeline and would be treated at the J.D. Phillips WRRF by Utilities. This would both reduce stream flows and point source pollutants in upper Monument Creek where the current WWTF discharges but could result in a small or negligible increase in stream flows and point source pollutants discharged into lower Monument Creek where discharges from the J.D. Phillips WRRF occur. Modeled expected changes in streamflow in Monument Creek are summarized in Table 4-3 (Confluence Water Consulting 2022).

Table 4-3. Pre-Project and Post-Project Streamflow for Monument Creek .

Study Location	Average Streamflow (1996-2021)			Median Streamflow (1996-2021)		
	Pre-Project (cfs)	Post-Project (cfs)	Reduction	Pre-Project (cfs)	Post-Project (cfs)	Reduction
Tri-Lakes WWTF	6.2	6.2	0.0%	2.8	2.8	0.0%
Upper Monument Creek WWTF	12.3	11.8	4.4%	5.7	5.2	9.2%
USAFA WWTF	15.3	14.7	3.5%	7.9	7.3	6.8%
Woodmen Road	27.7	27.2	1.9%	16.0	15.5	3.4%

Impacts on water resources would be as follows:

- If Upper Monument Creek WWTF effluents are removed, average Monument Creek flows would be reduced at Woodmen Road by 0.5 cfs, representing a 1.9 percent decrease on average (Table 4-3).
- Average flow reductions would be greatest at Upper Monument Creek WWTF, where the average flow reduction would be 4.4 percent (Table 4-3).
- Monument Creek is unlikely to be reduced to zero flow at any time because stream flow modelling did not identify any expected time periods with no flow (Confluence Water Consulting 2022).
- Reduced flow would reduce the dilution effect and likely increase the concentrations of manganese and *E. coli* in the creek (Berleman 2020). These increases would be small, due to the relatively small reduction in average stream flow.
- Potential benefits to Monument Creek include temperature reduction. Since WRRF effluents have higher temperatures compared to the receiving water in the creek, removal of a portion of the effluent from the Upper Monument Creek WWTF to Monument Creek would result in a reduction of stream temperatures, most notable in the winter.
- Specific to Utilities, which diverts water from Monument Creek to Pikeview Reservoir, reducing flows on the upper reaches of Monument Creek would have minimal impact on the diversion at Pikeview Reservoir as native flows at any time of the year are above 80 percent. However, a reduction in nutrients from wastewater effluent could improve Pikeview Reservoir water quality since it is prone to algae blooms.
- Additionally, GEI Consultants (GEI) reviewed the project area and used existing gauge data and rating curves to evaluate whether surface flow reductions would reduce groundwater levels (GEI 2021). GEI concluded that stream sections where Monument Creek is gaining, groundwater levels are likely higher than the stream channel and where it is losing, groundwater is likely lower that the stream channel. GEI also concluded that a reduction in surface flows that results in a few inches of decreased water level, would not likely alter groundwater levels (GEI 2021).

4.5.3 Alternative 3 – Western Alignment

Water resource impacts related to this alternative would be the same as for Alternative 2. Although Alternative 3 would vary in length and location compared to Alternative 2, resource protection measures and BMPs would minimize short-term impacts related to construction of the pipeline. Monument Creek flow impacts would be same as Alternative 2 since varying the alignment locations would not alter the changes in effluent discharge locations associated with the WWTF.

4.6 HAZARDOUS MATERIALS/WASTE

4.6.1 Alternative 1 – No Action Alternative

If the No Action Alternative is selected, the NMCI would not be constructed and there would be no new impacts on hazardous materials and waste.

4.6.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Under Alternative 2, short-term, minor, and adverse cumulative impacts from the use of hazardous materials and the generation of hazardous wastes would occur during construction. All hazardous materials, petroleum products, and hazardous wastes supporting construction would be contained and stored appropriately in accordance with state and federal regulations to minimize the potential for releases. Impacts would be minor because the NMCI is not expected to result in noncompliance with applicable federal or state regulations, disturb or create contaminated sites resulting in negative effects on human health or the environment, or make it substantially more difficult or costly to remediate existing contaminated sites.

As previously described, a review of reasonably ascertainable records did not identify any sites likely to have adversely affected the soil or groundwater at any of the proposed project facilities. The Preferred Alternative alignment would avoid the landfill site, as previously described. Operation and maintenance of the pipeline would not affect the landfill site.

All solid waste generated during construction would be removed by the contractor and disposed of at an appropriate disposal facility outside of the USAFA. The contractor would be required to comply with all applicable state and federal laws related to hazardous material use. Potential impacts would be reduced or avoided by implementing the measures described in Section 2.4 *Resource Protection Measures.*

In addition, prior to construction of project facilities, a more detailed hazardous materials assessment in conformance with the scope and limitations of DAFI32-7020: Environmental Restoration Program dated December 15, 2020 would be conducted to identify sites with soil or groundwater contamination that are not documented in readily ascertainable agency files (DAF 2020). If soil or groundwater contamination is encountered during construction of project facilities, mitigation procedures would be implemented to minimize the risk to construction workers and to the future operation of the project. The proposed resource protection measures would identify areas of potential contamination from hazardous materials and would remediate the soil and groundwater if any contamination were identified. Overall adverse effects are expected to be minor because implementation of resource protection measures would minimize the risk to construction workers and to the future operation of the project, and because there would be no long-term effects on the landfill.

4.6.3 Alternative 3 – Western Alignment

Impacts and resource protection measures under Alternative 3 would be the same as described for Alternative 2.

4.7 BIOLOGICAL/NATURAL RESOURCES

4.7.1 Vegetation

4.7.1.1 Alternative 1 – No Action Alternative

If the No Action Alternative is selected, the NMCI would not be constructed and there would be no new impacts on vegetation.

4.7.1.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Alternative 2 would result in temporary impacts on about 140.6 acres and permanent impacts on 0.196 acre of vegetation communities in the project area. Vegetation impacts are summarized in Table 4-4.

Table 4-4. Alternative 2 Vegetation Impacts.

Vegetation Community	Temporary Impact (acres)	Permanent Impact (acres)
Upland grassland	108.664	0.162
Upland shrub/scrub	0	0
Upland grassland – shrub/scrub mosaic	0	0
Upland shrub/scrub – grassland mosaic	1.077	0.004
Upland forest	28.566	0.026
Riparian	2.285	0.004
Wetland	0	0
Total disturbance – vegetated areas	**140.592**	**0.196**
Developed/disturbed/unvegetated	31.288	0.057

All temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation per USAFA Erosion Control Revegetation, and Tree Care Standards (USAFA 2019) and the BA (ERO 2023). Utilities does not anticipate that a high number of trees or shrubs would be removed. Native shrub plantings would be included in the seed mixes. If necessary, native tree and shrub planting locations would be determined in the field following construction. Seed mixes for upland grasslands and riparian/wetland areas are provided in the BA (ERO 2023). Temporarily disturbed grasslands would be expected to recover to preconstruction conditions in about two to five years. Upland shrub/scrub communities would likely take longer to recover due to the slow-growing nature of upland shrubs in the dry climate of the project area. Upland forest areas could take decades to recover to preconstruction conditions. Restoration of riparian and wetland areas would be subject to additional success criteria and monitoring as required by Section 404 permitting and consultation for impacts on Preble's habitat as described in the *Wetlands, Floodplains, and Riparian* and *Special Status Species* sections of this EA.

Disturbance from construction activities or trenching could increase the abundance and diversity of noxious weeds. Methods for prevention and noxious weed management described in the Integrated Noxious Weed Management Plan (Smith et al. 2015) would be

implemented during and following construction. The site would be monitored following construction to manage potential infestations.

Overall, with implementation of the restoration and resource protection measures described above, Alternative 2 would result in temporary, moderate impacts on vegetation. The 140 acres of temporary vegetation impacts would be a relatively small impact compared to the 18,445 acres contained within USAFA and the many thousands of additional acres of mostly upland grasslands also found on surrounding nonfederal lands. The impacts would be moderate because the existing vegetation is common locally and Alternative 2 would only remove a small percentage of similar vegetation available in the surrounding area. Permanent impacts on vegetation would occur in a small area (0.196 acre) and would result mostly from permanent manholes placed in upland grasslands throughout the pipeline alignment.

4.7.1.3 Alternative 3 – Western Alignment

As described for Alternative 2, Alternative 3 would result in impacts on vegetation communities in the project area, as summarized in Table 4-5.

Table 4-5. Alternative 3 Vegetation Impacts.

Vegetation Community	Temporary Impact (acres)	Permanent Impact (acres)
Upland grassland	59.020	1.686
Upland shrub/scrub	0	0
Upland grassland – shrub/scrub mosaic	3.980	0.004
Upland shrub/scrub – grassland mosaic	0	0
Upland forest	45.641	0.363
Riparian	25.973	0.570
Wetland	2.007	0.045
Total disturbance – vegetated areas	**136.621**	**2.668**
Developed/disturbed/unvegetated	56.129	0.123

As described for Alternative 2, temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation following USAFA requirements (USAFA 2019). Seed mixes for upland grasslands and riparian/wetland areas are provided in the BA (ERO 2023). Restoration and monitoring requirements would be the same as described for Alternative 2, and methods for prevention and noxious weed management described in the Integrated Noxious Weed Management Plan (Smith et al. 2015) would be implemented during and following construction.

Overall, with implementation of the restoration and resource protection measures described above, Alternative 3 would result in temporary and permanent moderate impacts on vegetation. As previously described, temporary impacts would be moderate because the existing vegetation is common locally and the amount of vegetation affected (about 137 acres) would be a small percentage of similar vegetation available in the surrounding area. Permanent impacts on vegetation would result mostly from construction of a permanent access road and crossing of Monument Creek just north of North Gate Boulevard, which

would affect upland grassland, upland forest, and riparian habitats. Permanent vegetation loss would be about 2.624 acres, which would be substantially more permanent impacts than Alternative 2 (permanent impacts of 0.191 acre).

4.7.2 Wetlands, Riparian, and Floodplains

4.7.2.1 Wetlands and Riparian

4.7.2.1.1 Alternative 1 – No Action Alternative

If the No Action Alternative is selected, the NMCI would not be constructed and there would be no new impacts on wetland or riparian habitat.

4.7.2.1.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Alternative 2 would result in temporary surface disturbance from trenching on 2.285 acres of riparian habitat and 0.10 acre of wetlands along tributaries. There would also be temporary impacts on 0.07 acre of wetlands that are isolated along North Gate Boulevard. No stream channels would be impacted under this alternative. For comparison, there are about 687 acres of riparian habitat and about 104 acres of wetlands within the USAFA boundary, and an unknown area of riparian habitat, waters of the U.S., and wetlands on nonfederal lands in the surrounding area. Alternative 2 would not permanently impact any waters of the U.S. or wetlands. Resource protection measures discussed in Section 2.4 *Resource Protection Measures* would minimize impacts on water quality from sedimentation during construction, thus no impacts on wetlands from changes in water quality are expected.

All temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation per USAFA Erosion Control Revegetation, and Tree Care Standards (USAFA 2019). Utilities does not anticipate that a high number of trees or shrubs would be removed from wetland and riparian areas. Native shrub plantings would be included in the seed mixes. Seed mixes for riparian/wetland areas are provided in the BA (ERO 2023). Temporarily disturbed herbaceous wetlands would be expected to recover to preconstruction conditions in about two to five years. Riparian and wetland willow communities would likely take longer to recover since willow shrubs would take longer to mature. Restoration of riparian and wetland areas would be subject to additional success criteria and monitoring as required by Section 404 permitting and consultation for impacts on Preble's, which is typically a duration of five years.

Overall, with implementation of the restoration and resource protection measures described above, Alternative 2 would result in temporary minor impacts on riparian habitat. The impacts would be minor because Alternative 2 would only affect a small percentage of similar riparian habitat available in the surrounding area. Permanent impacts on riparian habitat would occur in a small area (0.004 acre) and would result mostly from permanent manholes placed throughout the pipeline alignment. No permanent impacts would occur to wetlands under Alternative 2 (see Table 4-4).

4.7.2.1.3 Alternative 3 – Western Alignment

Alternative 3 would result in temporary surface disturbance from trenching on 25.973 acres of riparian habitat, 1.336 acres of waters of the U.S., and 2.007 acres of wetland habitat. Alternative 3 would not permanently impact any waters of the U.S. but would permanently impact 0.570 acre of riparian habitat and 0.045 acre of wetland habitat (see Table 4-5). As previously described, resource protection measures discussed in Section 2.4 *Resource Protection Measures* of this EA would minimize impacts on water quality from sedimentation during construction, thus no impacts on wetlands from changes in water quality are expected.

As described for the other Action Alternatives, temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation following USAFA requirements (USAFA 2019). Restoration and monitoring requirements would be the same as described for Alternative 2.

Overall, with implementation of the restoration and resource protection measures described above, Alternative 3 would result in temporary and permanent moderate impacts on riparian and wetland vegetation. The impacts would be moderate because, although only a small percentage of similar wetlands and riparian habitat available in the surrounding area would be affected, temporary impacts would be substantially greater than under Alternative 2. Permanent impacts on riparian and wetland habitat would result mostly from construction of a permanent access road and crossing of Monument Creek just north of North Gate Boulevard. Permanent impacts on riparian and wetland habitat would be 0.615 acre. This would be substantially more permanent impacts than Alternative 2, which would not permanently impact wetlands and would permanently impact 0.004 acre of riparian habitat (see Table 4-4).

4.7.2.2 Floodplains

4.7.2.2.1 Alternative 1 – No Action Alternative

If the No Action Alternative is selected, the NMCI would not be constructed and there would be no new impacts on floodplains.

4.7.2.2.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Alternative 2 would result in temporary surface disturbances to 0.872 acre and permanent disturbance to 0.002 acre within the 100-year floodplain. The permanent surface disturbance would result from placing manholes and would not affect surface elevations. Measures would be implemented to minimize adverse effects on floodplains; these resource protection measures are discussed in Section 2.4 *Resource Protection Measures*.

The floodplain would be slightly negatively impacted during construction due to the presence of staging areas, construction equipment and materials in the floodplain and possible erosion from bare soils prior to revegetation. Construction activities would be monitored, and erosion- and sediment-control BMPs would be implemented to minimize erosion and sediment movement. Disturbed areas would be revegetated following construction, as described in Section *4.7.1 Vegetation*.

Alternative 2 would not have long-term impacts on floodplains following construction. The pipeline would be designed to withstand flood events without the need for maintenance and repairs, which would reduce impacts on the floodplain. Alternative 2 would not change surface elevations, would not substantially affect floodplain functions or increase the risk of flooding in the Monument Creek watershed, would minimize the impact of floods on human safety, and would be resilient against flooding. The overall effect on the Monument Creek floodplain would be temporary and minor because the surface contours would be restored to preconstruction conditions within floodplain areas and there would be no permanent impacts.

4.7.2.2.3 Alternative 3 – Western Alignment

As described for Alternative 2, Alternative 3 would result in temporary impacts on the 100-year floodplain during construction. Alternative 3 would temporarily disturb about 26.27 acres within the 100-year floodplain. Most impacts would be temporary; however, construction would result in 0.931 acre of permanent impacts on the 100-year floodplain. Most of this impact (about 0.911 acre) would result from construction of a permanent access road and creek crossing of Monument Creek. This impact would be required to construct a section of the pipeline that can only be accessed by crossing the creek and would need to be maintained as a permanent easement to provide access to this section of the pipeline, as described in Section 2.3.4.3 of this EA. The access road would be constructed in a corridor about 30 feet wide and about 1,000 feet long.

As described for Alternative 2, the floodplain would be slightly negatively impacted during construction due to the presence of staging areas, construction equipment, and materials in the floodplain and possible erosion from bare soils prior to revegetation. Construction activities would be monitored, and erosion- and sediment-control BMPs would be implemented to minimize erosion and sediment movement. Disturbed areas would be revegetated following construction.

Construction of a permanent access road and crossing of Monument Creek just north of North Gate Boulevard would result in a permanent change in the ground surface elevation within a 0.911-acre area of the 100-year floodplain. The new access road and crossing would be designed to avoid restricting flood flows and would be designed to avoid erosion or other damage to the floodplain. Because the section of Monument Creek within the USAFA contains about 820 acres of 100-year floodplain, the permanent alteration of 0.931 acre of floodplain would be a minor impact but would be greater than the permanent impacts under Alternative 2, which would not result in permanent alteration to surface elevations within the 100-year floodplain.

4.7.3 Wildlife

4.7.3.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the NMCI would not be constructed and there would be no new impacts on terrestrial or aquatic wildlife.

4.7.3.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

The NMCI may affect wildlife including terrestrial and aquatic species. Effects common to all species from the NMCI include temporary loss of habitat due to surface disturbances and vegetation removal; direct mortality or injury to wildlife; behavioral shifts that result in displacement of individuals; or disturbance of normal breeding, feeding, or sheltering behavior. Behavioral shifts in wildlife may result from increased noise, traffic, and human encroachment during construction, which would be common for all Action Alternatives. The effects on wildlife are generally related to impacts on plant communities, as described in Section 4.7.1 *Vegetation*. All temporarily affected areas would be restored with appropriate native vegetation following construction, which would offset some adverse impacts on wildlife.

In general, each Action Alternative would have similar effects on wildlife. Large game such as mule deer (*Odocoileus hemionus*) may be temporarily displaced to other areas adjacent to the project area. Mule deer are habitat generalists and ample nearby suitable habitat is available surrounding the project area. Elk (*Cervus canadensis*) may occasionally forage in the project area but are more common in higher elevations west of the project area. Effects on large game are generally expected to be temporary and minor. Impacts would be minor because the area affected would be small relative to the amount of nearby similar habitat.

Larger carnivores such as coyote (*Canis latrans*), black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), and mountain lion (*Puma concolor*) are somewhat nomadic in nature and pass through areas while foraging. Therefore, effects on carnivorous species are expected to be relatively temporary and minor. Individual animals may avoid the project area during construction, leading to temporary increases in competition in areas adjacent to the project area.

Effects on smaller mammals, including bats, small carnivores, and reptiles and amphibians, would be temporary and minor to moderate due to clearing of vegetation and excavation since many smaller animals use burrows for shelter. Impacts would be minor because the area affected would be small relative to the amount of nearby similar habitat. The pipeline would be constructed in segments, resulting in displacement of individual animals and possible localized populations in certain areas at certain times (versus the entire project area at once). Some small animals may be displaced to adjacent land, which could lead to increased competition. Generalist species may reestablish in disturbed areas more quickly than those with specialized habitat requirements.

Clearing of vegetation may result in abandonment by ground-, shrub-, and tree-nesting birds during construction. Removal of vegetation would temporarily reduce available habitat for breeding, roosting, and foraging songbirds and other avian species until restoration of habitat is complete. Loss of habitat would be temporary and minor. Impacts would be minor because the area affected would be small relative to the amount of nearby similar habitat. If possible, vegetation clearing would be done outside of the breeding and nesting seasons for most species. If some areas of vegetation removal cannot be done outside of the breeding and nesting seasons, breeding bird surveys would be conducted prior to land disturbance.

Under Alternative 2, temporary effects on about 141 acres and permanent effects on about 0.196 acre of wildlife habitat, represented in different vegetation communities, would occur. Temporary effects on about 109 acres and permanent effects on 0.162 acre of upland grassland and shrubland habitat would occur. This would result in mostly a temporary and minor loss of habitat for grassland species including habitat generalists such as mule deer, coyote, rabbit (*Sylvilagus* sp.), deer mouse (*Peromyscus maniculatus*), bullsnake (*Pituophis catinifer*), prairie rattlesnake (*Crotalus viridis*), red-tailed hawk (*Buteo jamaicensis*), American robin (*Turdus migratorius*), common nighthawk (*Chordeiles minor*), and mourning dove (*Zenaida macroura*). Habitat for specialized upland grassland or shrubland species such as pocket gopher (*Thomomys talpoides*), short-horned lizard (*Phrynosoma hernandesi*), eastern yellow-bellied racer (*Coluber coluber*), western meadowlark (*Sturnella neglecta*), and grasshopper sparrow (*Ammodramus savannarum*) would also be temporarily impacted. Alternative 2 would also temporarily impact about 29 acres and permanently impact 0.026 acre of upland forest habitat, which is located in the southern portions of the alignment. Species such as Abert's squirrel (*Sciurus aberti*), American kestrel (*Falco sparverius*), and mountain chickadee (*Poecile gambeli*) may inhabit these areas. Impacts on species that occur in this habitat would be temporary and minor. Impacts would be minor because the area affected would be small relative to the amount of nearby similar habitat. Utilities would minimize tree removal to the greatest extent possible.

As described in Section 4.7.1.1, wetland and riparian habitat impacts would be temporary and minor. Most wetland and riparian areas would be avoided. About 2.3 acres of riparian habitat would be temporarily impacted and 0.004 acre of riparian habitat would be permanently impacted under Alternative 2. Temporary impacts may affect habitat for species such as racoon (P*rocyon lotor*), vole (*Microtus* sp.), western terrestrial (*Thamophis elegans*) or plains gartersnake (*T. radix*), tiger salamander (*Ambystoma tigrinum*), northern harrier (*Circus cyaneus*), great-horned owl (*Bubo virginianus*), red-winged blackbird (*Agelaius phoeniceus*), and Bullock's oriole (*Icterus bullockii*). Alternative 2 would result in reduced flows to Monument Creek during certain times of the year, as described in Section 4.5 *Water Resources*. Reduced flows could limit aquatic species migration. Flow reductions would likely be most notable during the fall and winter months when the flows are lowest. The impacts on aquatic species would be permanent and minor. Impacts on aquatic species would be minor because, as described in Section 4.5.2, impacts on streamflow in Monument Creek would not be substantial.

As mentioned in Section 4.7.1 *Vegetation* and Section 4.7.2 *Wetlands, Riparian, and Floodplains,* all temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation per USAFA Erosion Control Revegetation, and Tree Care Standards (USAFA 2019). Seed mixes for riparian/wetland areas are provided in the BA (ERO 2021).

4.7.3.3 Alternative 3 – Western Alignment

The types of impacts from displacement and disturbance to wildlife would be the same under Alternative 3 as described for Alternative 2; however, the magnitude of impacts would be greater due to a higher acreage of disturbance in Alternative 3.

Permanent impacts on wildlife habitat would be higher under Alternative 3, 2.657 acres versus 0.227 acre under Alternative 2. Temporary impacts on wildlife habitat would be about 158 acres, which is similar to temporary impacts under Alternative 2. Temporary effects on about 81 acres and permanent effects on 1.719 acres of upland grassland and shrubland habitat would occur under Alternative 3. Additionally, about 45.6 acres of forest habitat and about 28 acres of wetland and riparian habitat would be temporarily impacted. Permanent impacts on forest habitat and wetland and riparian habitat would be slightly higher under Alternative 3, 0.363 and 0.571 acre, respectively, compared to those under Alternative 2. Impacts on wildlife species would be greater under Alternative 3 because of overall greater disturbance from a longer pipeline, staging, and access. Additionally, under Alternative 3, a permanent access and maintenance road would be required north of North Gate Boulevard, which would cross Monument Creek and would result in permanent loss of habitat. Impacts on wildlife would be mostly temporary and minor under Alternative 3 for the reasons described under Alternative 2, above.

As stated under the other Action Alternatives, all temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation per USAFA Erosion Control Revegetation, and Tree Care Standards (USAFA 2019).

4.7.4 Special Status Species

4.7.4.1 Federally Threatened and Endangered Species

Each Action Alternative would result in temporary and permanent impacts on Preble's habitat in the project area. No habitat for any other federally listed threatened or endangered species would be impacted under either Action Alternative. Preble's habitat impacts from each alternative are shown on Figure 3-9 and Figure 3-10. Much of the NMCI would be bored under streams and riparian areas known to contain populations of Preble's.

As stated under Sections *4.7.1 Vegetation*; *4.7.2 Wetlands, Riparian, and Floodplains*; and *4.7.3 Wildlife* of this EA, all temporary disturbances would be returned to preconstruction grade and revegetated with appropriate native vegetation per USAFA Erosion Control Revegetation, and Tree Care Standards (USAFA 2019). Native seed mixes would be used as described in the BA (ERO 2023).

4.7.4.1.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the NMCI would not be constructed and there would be no new impacts on threatened, endangered, or sensitive species habitat.

4.7.4.1.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Potential direct effects on individual Preble's could include being crushed by machinery or disruption of normal dispersal, foraging, breeding, or hibernation behaviors during construction from noise and increased human activity. Disruptions to normal behaviors could result in death or reduced productivity. The potential for direct effects on individual Preble's would be greatly reduced by avoidance measures such as directional drilling under most Preble's habitat in the project area.

Under Alternative 2, temporary impacts would occur on 24.486 acres of Preble's habitat along Jackson Creek, Black Forest Creek, Smith Creek, Monument Branch, Middle Tributary, Black Squirrel Creek, Monument Creek, Elkhorn Creek, Kettle Creek, and two unnamed tributaries to Monument Creek. For comparison, there are about 3,238 acres of Preble's habitat in the conservation zone at USAFA and an additional 3,294 acres of Preble's critical habitat along Monument Creek and its tributaries on nonfederal land near USAFA. Permanent and temporary impacts from the project add up to 24.526 acres of direct impacts, including 24.084 acres in the USAFA conservation zone and 0.442 acre of critical habitat. Of the 24.526 acres of direct impacts, about 0.040 acre would be impacted permanently from placement of manhole covers, including 0.038 acre in the USAFA conservation zone and 0.002 acre of critical habitat. All manhole covers would be placed in low-quality upland habitat and would be located out of critical habitat and the USAFA conservation zone where possible. The remaining acreage would be temporarily impacted from trenching and access.

A BA has been prepared for the Preferred Alternative, which describes conservation measures that would be implemented to avoid, minimize, and mitigate impacts on Preble's (ERO 2023). The BA determined that the NMCI project "may affect, is likely to adversely affect" Preble's and "may affect, not likely to adversely affect" its critical habitat and would have no effect on other federally listed species. The USFWS concurred with this determination in a Biological Opinion dated March 11, 2024. Mitigation measures would include boring under most drainages where Preble's occurs to avoid and minimize impacts on Preble's and its habitat. The USAFA would adhere to the terms and conditions of the Preble's Conservation Agreement (USFWS 2009), and all additional Preble's conservation measures developed during consultation with the USFWS would be implemented, including meeting specific success criteria in Preble's habitat as outlined in the BA (ERO 2023). Under Alternative 2, impacts would be mostly temporary and minor to moderate because only a small portion of the Preble's habitat at USAFA and nearby nonfederal lands would be affected, and the project would not jeopardize the continued existence of Preble's at the USAFA. All temporarily impacted areas would be restored to preconstruction conditions and revegetated areas in Preble's habitat would be monitored following construction.

4.7.4.1.3 Alternative 3 – Western Alignment

The types of potential direct effects on Preble's under Alternative 3 would be the same as those described under Alternative 2. The potential for direct effects would be greater because there would be more project work within Preble's habitat, as described below.

Alternative 3 would have a higher impact on Preble's habitat compared with Alternative 2. Under Alternative 3, temporary impacts would occur on 101.76 acres of Preble's habitat along Black Forest Creek, Smith Creek, Monument Branch, Middle Tributary, Black Squirrel Creek, Monument Creek, Elkhorn Creek, Kettle Creek, and two unnamed tributaries to Monument Creek, including 53.32 acres in the USAFA conservation zone and 48.43 acres of critical habitat on nonfederal lands. Although impacts would be reduced by boring under most drainages occupied by Preble's, the total amount of impacts on Preble's habitat from Alternative 3 would be more than three times the amount of Preble's habitat affected under Alternative 2. About 1.88 acres of Preble's habitat would be impacted permanently from placement of manhole covers and a permanent access and maintenance road north of North Gate Boulevard, which would cross Monument Creek and result in permanent loss of habitat. Permanent impacts would include 1.83 acre in the conservation zone and 0.047 acre of critical habitat. The remaining acreage would be temporarily impacted from trenching and access. Impacts would be mostly temporary and moderate under Alternative 3 because only a small portion of the more than 6,500 acres of Preble's habitat at USAFA and nearby nonfederal lands would be affected. All temporarily impacted areas would be restored to preconstruction conditions and monitored following construction.

4.7.4.2 Other Sensitive Species

4.7.4.2.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the NMCI would not be constructed and there would be no new impacts on any sensitive species habitat.

4.7.4.2.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

As discussed in Section 4.7.3, effects on sensitive species are generally the same for all wildlife species from the NMCI including temporary loss of habitat due to surface disturbances and vegetation removal, direct mortality or injury to wildlife from construction activities, and behavioral shifts that result in displacement of individuals or disturbance of normal breeding, feeding, or sheltering behavior. Behavioral shifts in wildlife may result from increased noise, traffic, and human encroachment during construction, which would be common for all Action Alternatives. While the impacts may result in behavioral changes or displacement of individuals during construction, impacts are not expected to result in a trend toward federal listing of any sensitive species that may occur in the project area.

Alternative 2 would temporarily impact some sensitive species habitat. The project would temporarily impact about 109 acres and permanently impact about 0.20 acre of grassland habitat, which could result in temporary minor to moderate impacts on species such as ferruginous hawk, northern pocket gopher, and olive-backed pocket mouse. Impacts would be minor because, as previously described, there is about 5,120 acres of upland grassland habitat at USAFA, and an unknown amount of additional upland grasslands on nearby nonfederal lands. Alternative 2 would also temporarily impact 2.6 acres of wetland and riparian habitat that provide habitat for the northern leopard frog and hops azure. No wetlands would be permanently impacted, and 0.004 acre of riparian habitat would be impacted. The

2.6 acres of temporary impacts would likely have minor impacts on wetland and riparian species. Impacts would be minor because, as previously described, there is about 687 acres of riparian and 104 acres of wetland habitat at USAFA, with additional habitat on nearby federal lands, Alternative 2 would also temporarily impact about 29 acres and permanently impact about 0.03 acre of upland woodland habitat that provides habitat for sensitive bats that may roost in trees. Temporary impacts on upland woodlands would result in minor effects on woodland species since there is an abundance of woodland habitat adjacent to the project area. Effects would be minor because, as previously described, there are more than 9,000 acres of upland woodland habitat at USAFA.

Alternative 2 would permanently impact about 0.19 acre of habitat throughout the project area, mainly from manhole placement. All temporarily affected areas would be restored with appropriate native vegetation following construction, which would offset some adverse impacts on wildlife.

4.7.4.2.3 Alternative 3 – Western Alignment

The types of potential effects on sensitive species under Alternative 3 would be the same as those described under Alternative 2; however, Alternative 3 would impact a higher amount of habitat for sensitive species compared to Alternative 2. The project would temporarily impact less grassland habitat than Alternative 2 (59 acres versus 97 acres for Alternative 2). Alternative 3 would temporarily impact 28 acres of wetland and riparian habitat and permanently impact 0.045 acre of wetland habitat and 0.57 acre of riparian habitat. Alternative 3 would also temporarily impact 46 acres and permanently impact 0.3 acre of upland forest habitat. Generally, impacts on sensitive species would be slightly higher under Alternative 3 than Alternative 2. Temporary impacts on 26 acres of riparian habitat and 46 acres of upland forest habitat would have a possible moderate effect on riparian and forest sensitive species in the project area.

All temporarily impacted areas would be revegetated following construction. The impacts under Alternative 3 may result in behavioral changes or displacement of individuals but would not result in a trend toward federal listing of any sensitive species that may occur in the project area.

4.8 CULTURAL RESOURCES

4.8.1 Alternative 1 – No Action Alternative

In the No Action Alternative, the NMCI would not be constructed and there would be no impacts on historic properties (i.e., cultural resources eligible or potentially eligible for listing in the NRHP).

4.8.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Under Alternative 2, direct impacts on cultural resources would occur in the project limits of disturbance, and Alternative 2 would have an adverse impact on one historic property. Alternative 2 crosses a variety of landforms ranging from Holocene-age channel alluvium that flanks most of the spring-fed and perennial drainages to pre-Holocene deposits of Pleistocene-age alluvium or earlier bedrock deposits on the upper landforms. Many of these landforms have been heavily disturbed by historical and modern development, terraforming, and tree plantations.

Undisturbed Holocene-age alluvial deposits are present on Jackson Creek, Black Forest Creek, Smith Creek, and Kettle Creek; however, exploratory archaeological testing demonstrates that there are no buried cultural resources at the proposed pipeline bore locations. No archaeological exploratory testing was conducted across the upper landforms because testing at Native American archaeological sites on the upper landforms demonstrated that there is little to no potential for buried cultural material in upper landform settings.

Alternative 2 generally crosses upper landforms mostly composed of pre-Holocene age alluvium and bedrock above and east of Monument Creek (Thorson et al. 2001; Thorson and Madole 2003). The upper landforms were deposited before the generally accepted age of human occupation in Colorado and, consequently, the potential for intact buried Native American cultural deposits is very low. Holocene-aged deposits that could contain buried Native American cultural deposits flank Monument Creek and the tributaries of Monument Creek; however, these deposits would be bored. Holocene-aged deposits would largely be avoided, and therefore direct effects would largely be avoided. Boring beneath historic properties like Native American archaeological sites would, however, still be considered by the SHPO an adverse effect under Section 106 of the NHPA. Laterals extending east from Alternative 2 would not impact any Holocene-age sediments and are mostly characterized by existing I-25 right-of-way and associated disturbance.

Under Alternative 2, 33 sites or segments of linear resources and 9 IFs are located in the limits of disturbance and would be partially or entirely directly impacted. Most of these resources are not eligible or potentially eligible for listing in the NRHP. Alternative 2 limits of disturbance were modified to completely avoid two Native American archaeological sites that are potential historic properties (5EP8874 and 5EP8877). Efforts were made to reduce the limits of disturbance near other resources regardless of their significance.

Three historic properties would be directly impacted under Alternative 2. The resources are three segments of the AT&SF Railroad (5EP1003.6, 5EP1003.23, 5EP1003.24), one segment of the Great North & South Highway (5EP5133.6) and one segment of Park Drive 5EP8927.1. During Section 106 consultation, the Colorado SHPO advised and USAFA agreed and determined that the project would have an adverse effect on 5EP1003.6, 5EP1003.23, and 5EP1003.24. USAFA executed a Memorandum of Agreement among the SHPO, USAFA, Utilities and with the Southern Ute Indian Tribe as a concurring party (Appendix C). The Memorandum of Agreement outlines how USAFA will resolve the adverse impacts on 5EP1003.

Impacts on 5EP1003.6 would affect about 0.75 mile of the trackbed north of Northgate Boulevard. Impacted features include pier remnants from two trestle bridges, a modern culvert, a concrete footer, a utility pole stump, and a portion of a borrow area.

Impacts on 5EP1003.23 are generally minimal except for impacts on the trackbed south of Black Squirrel Creek. No impacts on contributing features like culverts or bridges would occur.

Impacts on 5EP1003.24 would affect about 0.4 mile of the trackbed west of I-25. Impacted features include a wood box culvert and a concrete footer.

Impacts on 5EP5133.6 are limited to use of the former highway for construction access and would not alter or affect the resource.

Impacts on 5EP8927.1 include open cutting the road in areas previously cut by existing utilities and the road would be restored to its original condition.

Under Alternative 2, direct and permanent impacts on most potential historic properties would be minimized through complete or nearly complete avoidance or restoration. Exploratory testing demonstrates that Alternative 2 would not impact or bore beneath any historic properties buried in Holocene-age sediment. Alternative 2 would partially or completely directly impact 38 cultural resources that are not eligible or nonsupporting for listing in the NRHP. Overall, impacts would be permanent, but minor, because most impacts on cultural resources eligible or potentially eligible for listing in the NRHP (i.e., historic properties) would be avoided or minimized. Impacts on 5EP1003.6, 5EP1003.23, and 5EP1003.24, however, are unavoidable and those impacts in SHPO’s opinion are adverse; therefore there would be an adverse impact on historic properties.

4.8.3 Alternative 3 – Western Alignment

South of USAFA’s northern boundary, Alternative 3 would turn west, crossing Monument Creek, and then would parallel Monument Creek and the D&RGW Railroad until Alternative 3’s southern terminus. Outside of USAFA property, previous survey is only partial and primarily located near the southern end of Alternative 3.

Alternative 3 diverges from Alternative 2 where both alternatives enter USAFA property. Alternative 3 would impact several areas with identified Holocene-age deposits where there is potential for buried intact cultural deposits. Otherwise, Alternative 3 primarily crosses upper

landforms that have low potential to contain intact buried precontact cultural deposits or follow existing disturbance created by Denver & Rio Grande Western Railroad construction (Thorson et al. 2001; Thorson and Madole 2003). The laterals extending east from Alternative 3 would cross Monument Creek four times, increasing the potential that sediments containing buried archaeological sites would be impacted.

Based on previous survey on USAFA property, Alternative 3 and its associated laterals would partially or completely directly impact 46 cultural resources including 4 new sites, 7 new segments of linear resources, 2 new IFs, 18 previously recorded sites, 9 previously recorded segments of linear resources, and 6 previously recorded IFs. Most of these resources are not eligible or potentially eligible for listing in the NRHP. Table C-2 in Appendix C lists all of the documented cultural resources, their temporal period, and eligibility recommendations.

Two historic properties and three potential historic properties would be directly impacted under Alternative 3. The West Husted railroad siding (5EP2265) and the Edgerton townsite (5EP1627) are both officially eligible for listing in the NRHP and are located within the Alternative 3 limits of disturbance. The potential historic properties include a precontact culturally modified tree (5EP8295), a segment of the historical Denver to Pueblo Stage Road (5EP205.5), and a segment of the AT&SF Railroad (5EP1003.23). The culturally modified tree was recorded in 2018 by SWCA and is awaiting tribal consultation.

Impacts on 5EP205.5 would be limited to a section of the wagon road that does not convey any physical or historical integrity and, therefore, there would be no impacts on any of the aspects of integrity that contribute to the segment's ability to support the eligibility of the entire resource.

Impacts on 5EP1003.23 would be limited to disturbance associated with construction of the pipeline laterals and would only affect small portions of the railroad trackbed that contribute to the segment's ability to support the eligibility of the entire resource. Other contributing features like culverts or the elevated trackbed would not be impacted.

Although much of proposed Alternative 3 is previously surveyed, no exploratory testing has been conducted along the proposed alignment. Alternative 3 would impact multiple large deposits of untested Holocene-age alluvium that have potential to contain intact buried cultural deposits (Thorson et al. 2001; Thorson and Madole 2003). Holocene-age alluvium are mapped flanking Monument Creek north of North Gate Boulevard. South of North Gate Boulevard, Alternative 3 would impact mapped Holocene-age alluvium and slopewash along Deadmans Creek. South of Community Center Drive, Alternative 3 would impact a 1-mile-long stretch of mapped Pleistocene to Holocene-age colluvial sheetwash that overlooks Monument Creek to the east. Similar deposits have not been tested on the USAFA, but they have potential to contain buried cultural resources. South of South Gate Boulevard, Alternative 3 would impact additional deposits of colluvial sheetwash as well as large Holocene-age alluvial deposits on West Monument Creek near the creek's confluence with Monument Creek.

South of the USAFA, Alternative 3 would parallel the D&RGW Railroad's west side after which it would bore beneath the D&RGW Railroad and then would follow a narrow corridor between Monument Creek and the D&RGW Railroad for the remainder of Alternative 3's length. The final 2.5 miles of Alternative 3 would directly impact late Pleistocene and Holocene-age landforms likely to contain undocumented precontact and historical archaeological sites. Previous survey outside USAFA property is limited; however, one survey identified a historical site (5EP2184) and a precontact archaeological site (5EP2185) that would be impacted by Alternative 3. Nearby, but outside of Alternative 3, is the eligible Teachout Ranch and stage stop (5EP2182). These data indicate that additional cultural resources are likely present and would be directly impacted.

Under Alternative 3, four long laterals would extend east across the USAFA, each crossing Monument Creek. Monument Creek would likely be bored, but mapped and unmapped Holocene-age alluvium flanking Monument Creek would be impacted at all of the crossings except for the lateral at North Gate Boulevard. Currently, all tested Holocene-age alluvium occurred in tributaries of Monument Creek, but not along Monument Creek. Precontact site density increases in proximity to Monument Creek; therefore, greater numbers of buried archaeological sites likely occur and are more likely to be directly impacted under Alternative 3.

Alternative 3 would impact fewer known cultural resources but would have greater direct and permanent impacts on known historic properties than Alternative 2. There would be unavoidable permanent impacts on historic properties such as the Edgerton Townsite (5EP1627) and the Husted Siding (5EP2265). Unavoidable permanent impacts on a culturally modified tree (5EP8295) may also be present in the northernmost lateral. Further, four of the seven permanently impacted precontact archaeological sites have not been evaluated since the late 1990s. Modern review of these resources could result in revaluation of the eligibility of those resources. Alternative 3 would also impact greater areas of untested Holocene-age sediments compared to Alternative 2. This increased impact is due to the numerous Monument Creek crossings by the main alignment and the laterals as well as large Holocene-age deposits south of South Gate Boulevard. Although unconfirmed, it is likely that there are buried cultural resources contained in these deposits.

In summary, Alternative 3 is not completely surveyed for cultural resources; however, despite incomplete survey, Alternative 3 would have greater permanent impacts on historic properties or landforms potentially containing unknown historic properties than Alternative 2. Complete survey of Alternative 3 would not diminish those impacts.

4.8.4 Comparison of Alternatives

Although Alternative 2 has undergone more in-depth review and Alternative 3 will remain unsurveyed on private property, comparison between Alternative 2 and Alternative 3 is feasible. The Cultural Resources Report demonstrates three important conclusions. First, the previous surveys are largely reliable in terms of the presence or absence of sites and site NRHP eligibility recommendations. Therefore, there is no expectation for large numbers of unrecorded new sites on the USAFA, and the current site data allow for comparison. Second,

expectations on site locations can be established in unsurveyed areas based on the data from the previous surveys on the USAFA and the recent survey north of the USAFA on private property. Based on previous surveys, Native American archaeological sites are expected to be present on the margins of upper landforms overlooking Monument Creek, and historical sites are reliably identified through archival research. Subsurface exploratory testing demonstrates that buried cultural resources are present in Holocene-age sediments; therefore, buried sites are expected to be present in untested sediments along Alternative 3.

Based on this review of the alternatives, it can be concluded that although Alternative 2 will have adverse impacts on three segments of the AT&SF Railroad (5EP1003.6, 5EP1003.23 and 5EP1003.24), these adverse impacts will be less severe than the impact potential of Alternative 3.

4.9 RECREATION

4.9.1 Alternative 1 – No Action Alternative

In the No Action Alternative, the NMCI would not be constructed and there would be no impacts on recreation.

4.9.2 Alternative 2 – Eastern Alignment (Preferred Alternative)

Under Alternative 2, direct effects on the New Santa Fe Regional Trail would occur at several locations along the pipeline alignment. The NMCI would cross the trail just north of the USAFA boundary, impacting a 100-foot section of the trail. Within the USAFA property, the alignment would run parallel and just west of the New Santa Fe Regional Trail for about 3.6 miles in the northern portion of the USAFA, from the point where the alignment crosses the trail just north of the airfield. The portion of the New Santa Fe Regional Trail in the southern part of the USAFA would be directly affected in several sections north and west of the airfield. Impacts would occur to sections of the trail about 200, 300, 300, and 550 feet long, from north to south. Sections of the trail directly disturbed by trenching or damaged by construction traffic would be restored to preconstruction conditions following construction. Restoration of impacts would be done as part of Section 106 mitigation as described in Section 4.8 *Cultural Resources*.

Short-term moderate adverse impacts on recreational users would occur due to temporary closures of the New Sana Fe Trail during construction. Impacts would be moderate during construction because impacts on trail users from temporary closures would be unavoidable. Access and haul routes during construction would be along the pipeline route with occasional detours onto the New Santa Fe Regional Trail to go across drainages. As necessary, access restriction on the New Santa Fe Regional Trail would also be applied to the City's La Foret Trail connection. The timing of trail closures is difficult to predict but would include temporary closures especially in the northern portion of the project area. Trail closures could last hours or days depending on the type of work being completed along the trail. Trail closures are not expected to exceed a few days at a time. These periodic closures would have adverse impacts on recreational users of the New Santa Fe Regional Trail because they would affect access and the quality of visitors' experience. The USAFA and El Paso County would advertise trail closures in advance, which would reduce impacts on visitors by allowing visitors to adjust their plans. In addition to public notification of trail closures, mitigation measures would include the use of flaggers. All impacts on trail access would be temporary, occurring only during the construction period. Operation and maintenance of the NMCI would have very little impact on recreational users. Gravity-fed pipelines such as the NMCI generally require little maintenance; the pipeline would need to be cleaned once every 10 years, and no road would be needed for permanent access under Alternative 2.

4.9.3 Alternative 3 – Western Alignment A

Alternative 3 would directly affect the New Santa Fe Regional Trail at several locations along the pipeline alignment. The NMCI would cross a 100-foot section of the trail just north of the USAFA boundary. Within the USAFA, the alignment would be generally west of the New

Santa Fe Regional Trail, although the trail could be used for hauling or access during construction. All four of the proposed laterals would cross the New Santa Fe Regional Trail under Alternative 3, resulting in temporary impacts on short sections of the trail. From the southern boundary of the USAFA to the southern end of the NMCI, the alignment would traverse non-federal property and would directly or indirectly affect about 1.7 miles of the trail as it passes through a narrow area constrained by the railroad right-of-way, Monument Creek, and surrounding residential development.

As described for Alternative 2, impacts on recreational trail users would be short-term, moderate, and adverse. Temporary adverse impacts on recreational users would occur due to temporary closures of the New Sana Fe Trail during construction. As previously described, trail closures could last hours or days depending on the type of work being completed along the trail. Trail impacts and closures would be more extensive for the portion of the New Santa Fe Regional Trail south of the USAFA boundary, compared to Alternative 2, which would mostly affect the trail within the USAFA property. All impacts on trail access would be temporary, occurring only during the construction period.

4.10 OTHER NEPA CONSIDERATIONS

4.10.1 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 on resources and issues. 40 CFR 1508.27 specifies that a determination of significance requires consideration of context and intensity. Construction of the NMCI would impact the local project area at the USAFA and on nonfederal lands in the project area. The severity of potential impacts would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable short-term adverse impacts associated with implementing the Proposed Action would include: a temporary increase in fugitive dust and air emissions during construction, intermittent noise, temporary erosion and sedimentation from soil disturbance, temporary disturbance to vegetation and habitat for wildlife, temporary changes in access for recreational users during construction as described in Chapter 4.0 *Environmental Consequences*. However, these effects are considered minor and would be confined to the immediate area. Unavoidable long-term consequences would include permanent impacts on about 0.196 acre of vegetation and 0.023 acre of Preble's habitat. Unavoidable effects on water resources would include both a reduction in stream flows and point source pollutants in upper Monument Creek where the current WWTFs discharge and an increase in stream flows and point source pollutants discharged into lower Monument Creek where discharges from the J.D. Phillips WRRF occur. Use of resource protection measures described in Section 2.4 and implementing controls required in permits and approvals obtained would minimize these potential impacts. The SHPO advised, and USAFA agreed and determined that the Proposed Action would also have unavoidable permanent adverse effects on two segments of the AT&SF Railroad (5EP1003.6 and 5EP1003.24). These adverse effects would be resolved through the Section 106 process of the NHPA.

For the Proposed Action to be accomplished, these impacts would occur. The action is required to comply with water quality regulations by consolidating sanitary sewer treatment within the upper Monument Creek watershed, to meet future treatment capacity limits, and to improve system reliability and sustainability. No other alternatives would provide the engineering solution to meet these requirements.

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

The relationship between short-term uses and enhancement of 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 to construct the NMCI. The long-term effects on productivity would be those effects associated with operation and maintenance of the NMCI after construction.

No croplands, pastureland, or wetlands would be permanently modified or affected because of implementing the Proposed Action and, consequently, productivity of the area would not be degraded. The negative effects on productivity during construction activities would be minor.

4.10.3 Irreversible and Irretrievable Commitments of Resources

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action. The short-term irreversible commitments of resources that would occur would include planning and engineering costs, building materials and supplies and their cost, use of energy resources during construction, labor, generation of fugitive dust emissions, and creation of temporary construction noise. Long-term effects would include permanent loss of 0.023 acre of Preble's habitat and 0.196 acre of vegetation as previously described.

4.11 CUMULATIVE EFFECTS

This EA also considers the effects of cumulative impacts as required in 40 CFR 1508.7 and concurrent actions as required in 40 CFR 1508.25[1]. A cumulative impact, as defined by the CEQ (40 CFR 1508.7) is the "…impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Actions announced for the region of influence for the NMCI that could occur during the same period as the Proposed Action are:

- I-25 improvements including the construction of the Powers Boulevard and I-25 interchange
- Commercial and residential development along the I-25 corridor
- City of Colorado Springs' Monument Branch Creek restoration
- I-25/North Gate/Struthers storm drain network (future)
- TrueNorth Commons Development and USAFA Gateway visitor center (future)
- Kettle Creek Dry Dam repair (future)
- Prescribed fire near building 8120 (future)
- Channel stabilization and habitat restoration of Black Squirrel Creek, Monument Creek, and Pine Creek (future)
- Monument Creek Corridor Study (future)

For this EA analysis, these announced actions are addressed from a cumulative perspective and are analyzed in this section. These announced future actions would be evaluated under separate NEPA actions conducted by the appropriate involved federal agency. Based on the best available information for these proposals by others, the cumulative impact analysis considers them. The cumulative effects analysis also considers the potential effects of climate change. The cumulative region of influence (ROI) is the project area and the areas affected by the announced actions listed above.

Descriptions of the cumulative effects for the resource areas follow.

4.11.1 Alternative 1 – No Action Alternative

Although past, present, and reasonably foreseeable future actions have affected, and would continue to affect, AICUZ, air quality, water resources, hazardous materials, biological resources, cultural resources, and recreation, the No Action Alternative would have no effects on these resources and, therefore, would not contribute to cumulative effects.

4.11.2 Air Installation Compatible Use Zones

Past actions have had have minor effects on the AICUZ at the USAFA from construction of residential development in Accident Potential Zones I and II just east of the USAFA. Future residential or commercial development would not affect AICUZ because the land in these zones are either within the USAFA boundary or already developed (Figure 3-1). No other past, present, or reasonably foreseeable future actions are expected to affect the AICUZ. As previously described, the Action Alternatives would result in short-term minor impacts on aviation safety from the presence of construction equipment and open trenches during construction. Thus, when the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on the AICUZ would be adverse, with a small adverse incremental contribution from construction of the NMCI.

4.11.3 Noise

The impacts of past, present, and reasonably foreseeable future actions on noise levels in the project area would result from highway construction projects and construction of residential and commercial development along the I-25 corridor. These projects have had, and would continue to have, adverse effects on noise levels from use of construction equipment during construction and by increasing the amount of vehicle traffic. Overall, collective impacts from past, present, and reasonably foreseeable future actions would be adverse. The Action Alternatives would contribute some short-term adverse effects on noise levels during construction. Therefore, when the effects of the Action Alternatives are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts would continue to be adverse, with a moderate contribution from the NMCI during construction. Because there would be no long-term effects on noise levels from the NMCI, there would be no long-term cumulative effects.

4.11.4 Air Quality

Past, present, and reasonably foreseeable future actions would result in long-term adverse impacts on air quality from increased vehicle traffic resulting from residential and commercial development and beneficial effects from improved air quality resulting from improving traffic flow along I-25. Future actions such as construction of residential and commercial development, construction of the new USAFA visitor center, and use of prescribed fire near Building 8120 would result in short-term localized effects on air quality. Overall, long-term adverse cumulative impacts from past, present, and reasonably foreseeable future actions would occur, but would not cause air pollutant levels to exceed air quality standards. As previously described, the Action Alternatives would contribute short-term minor impacts from dust and emissions from equipment used during construction but would have no long-term effects on air quality. Thus, when the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on air quality would be adverse, with a small adverse incremental contribution during construction of the NMCI. There would be no long-term cumulative effects on air quality and regional air quality standards would continue to be met.

4.11.5 Water Resources

Past, present, and reasonably foreseeable future actions would result in an increase in the amount of relatively impermeable surfaces added to the project area from land development. This would result in reduced precipitation infiltrating the ground and recharging groundwater. For surface water, this would result in an increase in the amount of precipitation being directed to storm water outfalls that ultimately discharge to surface water. This could potentially result in larger fluctuations in surface water flows as precipitation is more efficiently conveyed to surface water. Future climate change is expected to result in changes in the timing of runoff and reduction in summer flows in the Monument Creek watershed and other streams in the region (Rood et al 2008; Grunau et al. 2017; Colorado State University 2021). As previously described, construction of the NMCI would reduce stream flows and point source pollutants in upper Monument Creek where the current WWTF discharges, but would increase stream flows and point source pollutants discharged into lower Monument Creek where discharges from the J.D. Phillips WRRF occur. Overall, past, present, and reasonably foreseeable future actions have the potential to counteract the flow reductions in upper Monument Creek and would increase the variability of the frequency and volume of future Monument Creek flows.

4.11.6 Hazardous Materials/Waste

Past, present, and reasonably foreseeable future actions would result in generation of hazardous materials and waste, but impacts would be mitigated by compliance with state and federal regulations. Overall, long-term adverse cumulative impacts from past, present, and reasonably foreseeable future actions would occur. As previously described, short-term, minor, and adverse impacts from the use of hazardous materials and the generation of hazardous wastes would occur during construction. All hazardous materials, petroleum products, and hazardous wastes supporting construction would be contained and stored appropriately in accordance with the state and federal regulations to minimize the potential for releases. The cumulative projects are not expected to have significant impacts on special hazards or any impact on existing contaminated sites. Therefore, no significant cumulative adverse impacts from hazardous materials and wastes would occur.

4.11.7 Biological/Natural Resources

4.11.7.1 Vegetation

Past development in and around the project area has resulted in the loss and degradation of native vegetation. Construction of the NMCI, under any of the Action Alternatives, would contribute to the cumulative losses and degradation of vegetation communities, especially upland grasslands at the USAFA. Future actions such as construction of residential and commercial development, future highway projects along the I-25 corridor, construction of the new USAFA visitor center, and use of prescribed fire near Building 8120 would result in both permanent losses of vegetation and short-term localized effects on vegetation. Overall, adverse cumulative impacts from past, present, and reasonably foreseeable future actions would be long-term and moderate. As described in Section 4.7.1 *Vegetation*, most impacts would be temporary and would be restored following construction. The long-term losses of

vegetation would be 0.196 acre under the Preferred Alternative. Cumulatively, the loss of 0.196 acre of the mostly upland grasslands in the project area would be insignificant relative to the total acreage of upland grasses in the cumulative ROI. With BMPs for noxious weed management during and after construction of the NMCI, the cumulative effects from noxious weeds would be insignificant. Thus, when the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on vegetation would be adverse, with a small adverse incremental contribution from construction of the NMCI.

4.11.7.2 Wetlands, Riparian, and Floodplains

Past development in and around the project area has resulted in the loss and degradation of native wetlands and riparian habitat. Similarly, development has encroached into floodplains in several locations in and near the project area. Construction of the NMCI, under the Action Alternatives, would contribute to the cumulative losses and degradation of wetland and riparian communities. Future actions such as construction of residential and commercial development, and future highway projects along the I-25 corridor, may result in permanent losses of wetland and riparian vegetation and modification of floodplains. Future climate change may result in changes in timing of runoff in Rocky Mountain streams, including a reduction in flows in summer that may result in loss of riparian forests region-wide (Rood et al. 2008). Overall, long-term adverse cumulative impacts from past, present, and reasonably foreseeable future actions would be long-term and moderate to high from residential and commercial development and climate change. As described in the W*etlands, Floodplains, and Riparian* section, most impacts would be temporary and would be restored following construction. The long-term losses of riparian habitat and floodplains would be 0.004 acre and 0.002, respectively, under the Preferred Alternative. Cumulatively, the loss of 0.004 and 0.002 acre of riparian habitat and floodplains in the project area would be insignificant relative to the total acreage of wetland and riparian habitat and floodplains in the cumulative ROI. When the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on wetlands and riparian habitat and floodplains would be adverse, with a small adverse incremental contribution from construction of the NMCI.

4.11.7.3 Wildlife

Past development in and around the project area has resulted in the loss and degradation of native wildlife numbers and habitat. Construction of the NMCI, under the Action Alternatives, would contribute to the cumulative losses and degradation of wildlife habitat, especially upland grasslands at the USAFA. Future actions such as construction of residential and commercial development, future highway projects along the I-25 corridor, construction of the new USAFA visitor center, and use of prescribed fire near Building 8120 would result in both permanent losses of habitat and short-term localized effects on some wildlife populations, especially species such as small mammals, reptiles, and amphibians, which are not as mobile and able to flee as larger animals. Overall, long-term adverse cumulative impacts from past, present, and reasonably foreseeable future actions would be long-term and moderate. As

described in the *Wildlife* section, most impacts would be temporary and would be restored following construction. The long-term losses of wildlife habitat would be 0.2 acre under the Preferred Alternative. Cumulatively, the loss of 0.2 acre of the mostly upland grasslands in the project area would be insignificant relative to the total acreage of similar habitat in the cumulative ROI. Thus, when the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on wildlife would be adverse, with a small adverse incremental contribution from construction of the NMCI.

4.11.7.4 Special Status Species

Past development in and around the project area has resulted in the loss and degradation of sensitive species habitat. Construction of the NMCI, under any of the Action Alternatives, would contribute to the cumulative losses and degradation of sensitive species habitat, including riparian habitat for Preble's and hops azure and upland grasslands that provide habitat for sensitive migratory birds including the ferruginous hawk. Future actions such as construction of residential and commercial development, future highway projects along the I-25 corridor, construction of the new USAFA visitor center, and use of prescribed fire near Building 8120 would result in both permanent losses of habitat and short-term localized effects on sensitive wildlife habitats. Future climate change may result in changes in the timing and abundance of water in Monument Creek and its tributaries at USAFA, which could negatively impact riparian vegetation which supports Preble's (Rood et al 2008; Grunau et al. 2017; Colorado State University 2021). Overall, long-term adverse cumulative impacts from past, present, and reasonably foreseeable future actions would be long-term and moderate to high from residential and commercial development and climate change. As described in the *Wildlife* and *Special Status Species* sections, most impacts from the NMCI project would be temporary and would be restored following construction. The long-term losses of Preble's habitat would be 0.04 acre under the Preferred Alternative and 0.2 acre of vegetation in general. Cumulatively, the loss of 0.04 acre of sensitive species habitat in the project area would be insignificant relative to the total acreage of habitat for these species in the cumulative ROI. Thus, when the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on sensitive species would be adverse. The NMCI would provide a small adverse incremental contribution to other past, present and reasonably foreseeable future actions.

4.11.8 Cultural Resources

Past development in and around the project area resulted in direct impacts on known and unknown cultural resources and likely unknown historic properties. Future actions without federal, state, or local nexuses that require consideration of historic properties, such as residential and commercial development construction, would result in permanent impacts on cultural resources and potential adverse impacts on unknown historic properties. Construction of the new USAFA visitor center, future highway projects along the I-25 corridor, use of prescribed fire near Building 8120, and the Monument Branch Creek restoration could result in permanent impacts on cultural resources, but adverse impacts on historic properties would be

avoided, minimized, or treated under Section 106 of the NHPA. Construction of the NMCI, under any of the Action Alternatives, would contribute to cumulative direct and indirect impacts on known and unknown cultural resources. NMCI construction under Alternative 3 would contribute to cumulative adverse impacts on known and potentially unknown historic properties. In contrast, the Preferred Alternative's adverse impacts are limited to portions of the AT&SF Railroad (5EP1003); that would be resolved through treatment. Cumulative impacts from maintenance of the NMCI and use of the NMCI permanent easement for access would be insignificant because of prior direct and permanent impacts on cultural resources. Thus, when the effects of the construction of the Preferred Alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on historic properties would be adverse, with treated adverse impact contribution from construction of the Preferred Alternative. When the effects of construction of Alternative 2 are combined with past, present, and reasonably foreseeable future actions, the total cumulative impacts on more historic properties would be adverse, with a large contribution from construction of the NMCI.

4.11.9 Recreation

Past, present, and reasonably foreseeable future actions would result in possible short-term adverse impacts on recreation from construction activities associated with the TrueNorth Commons Development, USAFA Gateway visitor center, and construction of residential and commercial development on non-federal land north of the USAFA. Effects from future actions would be beneficial from construction of a 2,400-square-foot trailhead center for the New Santa Fe Regional Trail, which is proposed as part of the TrueNorth Commons Development and USAFA Gateway visitor center. Overall, cumulative impacts from past, present, and reasonably foreseeable future actions would be minor and adverse over the short term and would be beneficial over the long term. As previously described, the Preferred Alternative and the other Action Alternatives would contribute short-term moderate impacts from temporary closures that would reduce public access to the New Santa Fe Regional Trail and the City's La Floret Trail during construction. Thus, when the effects of construction of the NMCI are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on recreation would be minor and adverse, with a moderate adverse incremental contribution from construction of the NMCI. There would be no long-term effects on recreation from the NMCI; therefore, there would be no long-term cumulative effects on recreation.

5.0 LIST OF PREPARERS

This EA has been prepared by ERO Resources Corporation under the direction of USAF personnel. The individuals that contributed to the preparation of this EA are listed in Table 5-1.

Table 5-1. List of Preparers.

Name/Organization	Education	Years of Experience
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6.0 PERSONS AND AGENCIES CONSULTED/COORDINATED

The following persons and agencies (Table 6-1) were contacted in the preparation of this EA. Copies of correspondence are provided in Appendix A.

Table 6-1. Persons and Agencies Consulted/Coordinated.

Federal Agencies	
Ms. Leslie Ellwood U.S. Fish and Wildlife Service Colorado Ecological Services Field Office 134 Union Boulevard, Suite 670 Lakewood, CO 80228	Mr. Tony Martinez U.S. Army Corps of Engineers Albuquerque District Southern Colorado Regulatory Branch 201 West 8th Street, Suite 350 Pueblo, CO 81003
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Colorado Department of Transportation 1480 Quail Lake Loop #A Colorado Springs, CO 80906	Colorado Parks and Wildlife 4255 Sinton Road Colorado Springs, CO 80907
Colorado Water Quality Control Division 4300 Cherry Creek Drive South WQCD-B2 Denver, CO 80246	
Local Agencies	
City of Colorado Springs PO Box 1575, Mail Code 155 Colorado Springs, CO 80903	City of Monument 645 Beacon Lite Road Monument, CO 80132
Donala Water and Sanitation District 15850 Holbein Drive Colorado Springs, CO 80921	El Paso County Planning & Community Development 2880 International Circle Colorado Springs, CO 80910
El Paso County Parks 2002 Creek Crossing Colorado Springs, CO 80905	Forest Lakes Metropolitan District 2 N. Cascade Ave, Suite 1280 Colorado Springs, CO 80903
Monument Sanitation District PO Box 205 Monument, CO 80132	Palmer Lake Sanitation District PO Box 687 Palmer Lake, CO 80133
Pikes Peak Area Council of Governments 15 South 7th Street Colorado Springs, CO 80905	Pikes Peak Regional Building Department 2880 International Circle Colorado Springs, CO 80910
Town of Palmer Lake PO Box 208 Palmer Lake, CO 80133	Tri-View Metropolitan District PO Box 849 Monument, CO 80132
Woodmoor Water and Sanitation District PO Box 1407 Monument, CO 80132	

Persons and Agencies Consulted/Coordinated

Other Stakeholders	
Burlington Northern Santa Fe Railroad (BNSF) 3700 Globeville Road Denver, CO 80216	Western Museum of Mining and Industry 225 North Gate Boulevard Colorado Springs, CO 80921
Union Pacific Railroad DCPeters02@up.com	Mountain View Electric Association
Qwest/Century Link	
Tribal Agencies (all Federally Recognized Tribes)	
Apache Tribe of Oklahoma Bobby Komardley, Chairman and THPO PO Box 1330 Anadarko, OK 73005	Cheyenne River Sioux Tribe (CRST) of the Cheyenne River Reservation Steven Vance, THPO, CRST Preservation Office PO Box 590 Eagle Butte, SD 57625
Assiniboine and Sioux Tribe of the Fort Peck Indian Reservation Dyan Youpee, THPO PO Box 1027 Poplar, MT 59255	Comanche Nation of Oklahoma Martina M. Callahan, THPO Comanche Nation Historic Preservation Office PO Box 908 Lawton, OK 73507
Cheyenne & Arapaho Tribes of Oklahoma Max Bear, Director, Cultural, Acting THPO PO Box 167 Concho, OK 73022	Crow Nation William Big Day, THPO PO Box 159 Crow Agency, MT 59022
Eastern Shoshone Tribe (Wind River Reservation) Joshua Mann, THPO PO Box 538 Fort Washakie, WY 82514-0538	Flandreau Santee Sioux Tribe of South Dakota Garrie Kills A Hundred, THPO PO Box 283 Flandreau, SD 57028-0283
Fort Belknap Indian Community Michael J. Black Wolf, THPO 656 Agency Main Street Harlem, MT 59526	Fort Sill Apache Tribe Leland Darrow, Tribal Historian 43187 US Highway 281 Apache, OK 73006-8038
Jicarilla Apache Nation Jeffrey Blythe, Ph.D., THPO Office of Cultural Affairs PO Box 1367 Dulce, NM 87528	Kiowa Tribe of Oklahoma Phil Dupoint, Acting THPO and NAGPRA Representative PO Box 50 Carnegie, OK 73015
Lower Brule Sioux Tribe of the Lower Brule Reservation Clair Green, THPO PO Box 187 Lower Brule, SD 57548-0187	Mescalero Apache Tribe Holly Houghton, THPO PO Box 227 Mescalero, NM 88340
Navajo Nation Richard Begay, THPO PO Box 4950 Window Rock, AZ 86515	Northern Cheyenne Tribe Teanna Limpy, THPO PO Box 128 Lame Deer, MT 59043
Northern Arapaho Tribe Crystal C-bearing, THPO Director PO Box 396 Fort Washakie, WY 82514	Pawnee Nation of Oklahoma Matt Reed, THPO PO Box 470 Pawnee, OK 74058-0470
Oglala Sioux Tribe Thomas Brings, THPO PO Box 320 Pine Ridge, SD 57770	Pueblo de Cochiti Jacob Pecos, Historic Preservation Office PO Box 70 Cochiti Pueblo, NM 87072

Persons and Agencies Consulted/Coordinated

Pueblo of Picuris Cecilia Shields, Tourism Director Historic Preservation Office PO Box 127 Penasco, NM 87553	Pueblo of Santa Ana Timothy Menchego, THPO 2 Dove Road Santa Ana, NM 87004
Pueblo of Santa Clara Ben Chavarria, THPO PO Box 580 Española, NM 87532	Pueblo of Taos Bernard Lujan, War Chief (Historic Preservation) PO Box 2596 Taos, NM 87571-1846
Rosebud Sioux Tribe of the Rosebud Indian Reservation Benjamin K. Rhodd, THPO and NAGPRA Contact PO Box 809 Rosebud, SD 57570	San Ildefonso Pueblo Joseph Aguilar, Interim THPO 02 Tunyo Po Santa Fe, NM 87506
Santee Sioux Nation Thelma Thomas, THPO 425 Frazier Avenue North, Suite 2 Niobrara, NE 68760	Southern Ute Indian Tribe Cassandra Atencio, NAGPRA Coordinator PO Box 737 Ignacio, CO 81137
Spirit Lake Nation Eric Longie, Ph.D., THPO PO Box 76 Fort Totten, ND 58335	Standing Rock Sioux Tribe Jon Eagle, THPO PO Box D Fort Yates, ND 58538
Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation Pete Coffey, Acting THPO/Compliance Officer 404 Frontage Road New Town, ND 58763-9402	Upper Sioux Indian Community Samantha Odegard, THPO 5722 Travers Lane, PO Box 147 Granite Falls, MN 56241
Ute Indian Tribe of the Uintah & Ouray Reservation Betsy Chapoose, Director, Cultural Rights and Protection NAGPRA Representative PO Box 190 Fort Duchesne, UT 84026	Yankton Sioux Tribe Kip Spotted Eagle, THPO PO Box 1153 Wagner, SD 57380-1153
Ute Mountain Ute Tribe Terry Knight, Sr., THPO and NAGPRA Representative PO Box 468 Towaoc, CO 81334-0188	Pueblo of Zuni Kurt Dongoske, Acting THPO Zuni Heritage and Historic Preservation Office PO Box 1149 Zuni, NM 87327

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Appendix A Interagency/Intergovernmental Coordination

In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, emails were sent on May 4, 2020 to federal, state, and local agencies and other stakeholder entities soliciting comments concerning the proposed project and any potential environmental consequences of the action. Comments were requested within 30 days. The email also requested information regarding other recently completed, ongoing, or proposed projects in the vicinity that would create cumulative impacts in association with the alternatives. The Colorado State Historic Preservation Officer's staff have requested to be consulted only under provisions of National Historic Preservation Act, Section 106, and therefore History Colorado with its State Historic Preservation Office program is not listed below. The email was sent to the following entities:

- BNSF Railway (BNSF)
- City of Colorado Springs
- City of Monument
- Colorado Department of Public Health and Environment (CDPHE)
- Colorado Department of Transportation
- Colorado Parks and Wildlife (CPW)
- Colorado Water Quality Control Division
- Donala Water and Sanitation District
- El Paso County Planning and Community Development
- El Paso County Parks
- Forest Lakes Metropolitan District
- Monument Sanitation District
- Palmer Lake Sanitation District
- Pikes Peak Area Council of Governments (PPACG)
- Pikes Peak Regional Building Department
- Town of Palmer Lake
- Triview Metropolitan District (Triview)
- Union Pacific Railroad
- U.S. Army Corps of Engineers (Corps)
- U.S. Fish and Wildlife Service (USFWS)
- Western Museum of Mining and Industry
- Woodmoor Water and Sanitation District

An example email soliciting comments is attached below. Responses are also attached below. No response was received from the city of Monument, Colorado Water Quality Control Division, Donala Water and Sanitation District, Monument Sanitation District, or Pikes Peak Regional Building Department.

Copies of correspondence related to the May 4, 2020 email are attached below. Copies of NHPA Section 106-related correspondence with the SHPO and tribal agencies, initiated in May 2020, are also attached below.

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Appendix B Air Pollutant Emissions Calculations

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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 Manual 32-7002, Environmental Compliance and Pollution Prevention; 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: Northern Monument Creek Interceptor

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 1 / 2023

e. Action Description:

Colorado Springs Utilities (Utilities) is proposing to construct the Northern Monument Creek Interceptor (NMCI), a new wastewater conveyance pipeline from the existing Tri-Lakes Joint Use Authority Wastewater Treatment Facility (Tri-Lakes WWTF) and Upper Monument Creek Regional Wastewater Treatment Facility (Upper Monument Creek WWTF) approximately 10 miles south to the J.D. Phillips Water Resource Recovery Facility (J.D. Phillips Facility WRRF) in Colorado Springs. The NMCI would provide service for up to six northern sanitary sewer service providers: Donala Water and Sanitation District, Forest Lakes Metropolitan District, Monument Sanitation District, Palmer Lake Sanitation District, Triview Metropolitan District, and Woodmoor Water and Sanitation District No. 1 (the northern districts). The NMCI would also allow for the closure of several of Utilities' lift stations.
Because most of the length of the proposed alignments for the NMCI would traverse the United States Air Force Academy (USAFA), the United States Air Force (USAF) is preparing an environmental assessment (EA) to consider how the project would affect the human and natural environment. Portions of the proposed alignments would also traverse nonfederal lands north and south of the USAFA.

f. Point of Contact:

Name: Steve Butler
Title: Senior Biologist
Organization: ERO Resources Corp
Email: sbutler@eroresources.com
Phone Number: 303-830-1188

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

Conformity Analysis Summary:

2023

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF CONFORMITY ANALYSIS (ROCA)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Colorado Springs, CO			
VOC	3.946		
NOx	1.902		
CO	3.396	100	No
SOx	0.007		
PM 10	33.854		
PM 2.5	0.069		
Pb	0.000		
NH3	0.010		
CO2e	739.7		

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.

_____ _____

Steve Butler, Senior Biologist 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: Northern Monument Creek Interceptor

- Project Number/s (if applicable): N/A

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the NMCI is for Colorado Springs Utilities and Northern El Paso County sanitation providers to consolidate wastewater treatment systems into a centralized system that is environmentally and fiscally responsible, provides for increased system reliability, accommodates future growth, and maintains compliance with more stringent water quality regulations.

The need for the Proposed Action is to comply with water quality regulations by consolidating regional providers within the upper Monument Creek watershed, meet future treatment capacity limits, and improve system reliability and sustainability.

- Action Description:

Colorado Springs Utilities (Utilities) is proposing to construct the Northern Monument Creek Interceptor (NMCI), a new wastewater conveyance pipeline from the existing Tri-Lakes Joint Use Authority Wastewater Treatment Facility (Tri-Lakes WWTF) and Upper Monument Creek Regional Wastewater Treatment Facility (Upper Monument Creek WWTF) approximately 10 miles south to the J.D. Phillips Water Resource Recovery Facility (J.D. Phillips Facility WRRF) in Colorado Springs. The NMCI would provide service for up to six northern sanitary sewer service providers: Donala Water and Sanitation District, Forest Lakes Metropolitan District, Monument Sanitation District, Palmer Lake Sanitation District, Triview Metropolitan District, and Woodmoor Water and Sanitation District No. 1 (the northern districts). The NMCI would also allow for the closure of several of Utilities' lift stations.
Because most of the length of the proposed alignments for the NMCI would traverse the United States Air Force Academy (USAFA), the United States Air Force (USAF) is preparing an environmental assessment (EA) to consider how the project would affect the human and natural environment. Portions of the proposed alignments would also traverse nonfederal lands north and south of the USAFA.

- Point of Contact

Name: Steve Butler
Title: Senior Biologist
Organization: ERO Resources Corp
Email: sbutler@eroresources.com
Phone Number: 303-830-1188

- Activity List:

	Activity Type	Activity Title
2.	Degreaser	Degreaser
3.	Construction / Demolition	Pipeline construction
4.	Personnel	Construction Personnel
5.	Tanks	Storage tank use

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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.

2. Degreaser

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Degreaser

- Activity Description:
Pipe lubricant will be used at joints.

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.628250
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Total Emissions (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

2.2 Degreaser Assumptions

- Degreaser
Net solvent usage (total less recycle) (gallons/year): 500

- Default Settings Used: Yes

- Degreaser Consumption
Solvent used: Mineral Spirits CAS#64475-85-0 (default)
Specific gravity of solvent: 0.78 (default)
Solvent VOC content (%): 100 (default)
Efficiency of control device (%): 0 (default)

2.3 Degreaser Formula(s)

- Degreaser Emissions per Year
DE_{VOC}= (VOC / 100) * NS * SG * 8.35 * (1 - (CD / 100)) / 2000

DE_{VOC}: Degreaser VOC Emissions (TONs per Year)
VOC: Solvent VOC content (%)
(VOC / 100): Conversion Factor percent to decimal
NS: Net solvent usage (total less recycle) (gallons/year)
SG: Specific gravity of solvent
8.35: Conversion Factor the density of water
CD: Efficiency of control device (%)
(1 - (CD / 100)): Conversion Factor percent to decimal (Not effected by control device)
2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Pipeline construction

- Activity Description:
• Approximately 11.0 to 11.7 miles of new pipeline constructed from between the northern entities' wastewater collection systems and the J.D. Phillips Facility WRRF
• Lateral connections constructed for Smith Creek, Monument Branch, Middle Tributary, and Black Squirrel Creek No. 2 (the Farm) lift stations

- Activity Start Date
Start Month: 1
Start Month: 2023

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.306876
SO_x	0.006419
NO_x	1.802925
CO	2.173255
PM 10	33.850496

Pollutant	Total Emissions (TONs)
PM 2.5	0.065928
Pb	0.000000
NH_3	0.003369
CO_2e	630.2

3.1 Trenching/Excavating Phase

3.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2023

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Duration
Number of Month: 12
Number of Days: 0

3.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 283000
Amount of Material to be Hauled On-Site (yd^3): 36500
Amount of Material to be Hauled Off-Site (yd^3): 50800

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

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): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- 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 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0757	0.0014	0.4155	0.5717	0.0191	0.0191	0.0068	132.91
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0483	0.0012	0.2497	0.3481	0.0091	0.0091	0.0043	122.61
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0464	0.0007	0.2939	0.3784	0.0158	0.0158	0.0041	67.139
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1830	0.0024	1.2623	0.7077	0.0494	0.0494	0.0165	239.49
Scrapers Composite								

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1640	0.0026	1.0170	0.7431	0.0406	0.0406	0.0148	262.85
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0364	0.0007	0.2127	0.3593	0.0080	0.0080	0.0032	66.879

- 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

3.1.4 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

4. Personnel

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Construction Personnel

- Activity Description:
50 personnel estimated to commute to the site.

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.109571
SO_x	0.000753
NO_x	0.099280
CO	1.222699
PM 10	0.003033

Pollutant	Total Emissions (TONs)
PM 2.5	0.002730
Pb	0.000000
NH_3	0.006925
CO_2e	109.5

4.2 Personnel Assumptions

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- Number of Personnel

Active Duty Personnel:	0
Civilian Personnel:	0
Support Contractor Personnel:	50
Air National Guard (ANG) Personnel:	0
Reserve Personnel:	0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

Active Duty Personnel:	5 Days Per Week (default)
Civilian Personnel:	5 Days Per Week (default)
Support Contractor Personnel:	5 Days Per Week (default)
Air National Guard (ANG) Personnel:	4 Days Per Week (default)
Reserve Personnel:	4 Days Per Month (default)

4.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

4.4 Personnel Emission Factor(s)

- On Road Vehicle 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

4.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5. Tanks

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Storage tank use

- Activity Description:
Fuel will be stored onsite. Tanks will be double contained.

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2023

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.901485
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Total Emissions (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

5.2 Tanks Assumptions

- Chemical
Chemical Name: Gasoline (RVP 6)
Chemical Category: Petroleum Distillates
Chemical Density: 5.6
Vapor Molecular Weight (lb/lb-mole): 69
Stock Vapor Density (lb/ft^3): 0.0331725401626428
Vapor Pressure: 2.6533

Vapor Space Expansion Factor (dimensionless): 0.068

- Tank

Type of Tank:	Horizontal Tank
Tank Length (ft):	5.4
Tank Diameter (ft):	4
Annual Net Throughput (gallon/year):	112000

5.3 Tank Formula(s)

- Vapor Space Volume

$VSV = (PI / 4) * D^2 * L / 2$

VSV: Vapor Space Volume (ft^3)
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)
2: Convertion Factor (Vapor Space Volume is assumed to be one-half of the tank volume)

- Vented Vapor Saturation Factor

$VVSF = 1 / (1 + (0.053 * VP * L / 2))$

VVSF: Vented Vapor Saturation Factor (dimensionless)
0.053: Constant
VP: Vapor Pressure (psia)
L: Tank Length (ft)

- Standing Storage Loss per Year

$SSL_{VOC} = 365 * VSV * SVD * VSEF * VVSF / 2000$

SSL_{VOC}: Standing Storage Loss Emissions (TONs)
365: Number of Daily Events in a Year (Constant)
VSV: Vapor Space Volume (ft^3)
SVD: Stock Vapor Density (lb/ft^3)
VSEF: Vapor Space Expansion Factor (dimensionless)
VVSF: Vented Vapor Saturation Factor (dimensionless)
2000: Conversion Factor pounds to tons

- Number of Turnovers per Year

$NT = (7.48 * ANT) / ((PI / 4.0) * D * L)$

NT: Number of Turnovers per Year
7.48: Constant
ANT: Annual Net Throughput
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)

- Working Loss Turnover (Saturation) Factor per Year

$WLSF = (18 + NT) / (6 * NT)$

WLSF: Working Loss Turnover (Saturation) Factor per Year
18: Constant
NT: Number of Turnovers per Year
6: Constant

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- Working Loss per Year

WL_{VOC} = 0.0010 * VMW * VP * ANT * WLSF / 2000

0.0010: Constant
VMW: Vapor Molecular Weight (lb/lb-mole)
VP: Vapor Pressure (psia)
ANT: Annual Net Throughput
WLSF: Working Loss Turnover (Saturation) Factor
2000: Conversion Factor pounds to tons

Appendix C Documented Cultural Resources and Section 106 Memorandum of Agreement

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Appendix C. Resources Intersected by Alternative 2 (Preferred) Alignment and Laterals LOD

Smithsonian Site No.	Resource Name/Type	NRHP Eligibility Recommendation (Date)
5EP205.1	Historical – Denver to Pueblo Stage Road (segment)	Eligible, nonsupporting (2020)
5EP205.3	Historical – Denver to Pueblo Stage Road (segment)	Eligible, nonsupporting (2020)
5EP1003.6	Historical – Atchison, Topeka, and Santa Fe (AT&SF) Railroad (segment)	Eligible, supporting (2020)
5EP1003.23	Historical – Atchison, Topeka, and Santa Fe (AT&SF) Railroad (segment)	Eligible, supporting (2023)
5EP1003.24	Historical – Atchison, Topeka, and Santa Fe (AT&SF) Railroad (segment)	Eligible, supporting (2023)
5EP1574	Historical – Habitation	Not eligible (2020)
5EP1581	Historical – Habitation	Not eligible (2020)
5EP1583	Precontact – Open lithic scatter	Not eligible (2020)
5EP2246	Multicomponent – Historical artifact scatter/Open lithic scatter	Not eligible (2020)
5EP2250	Historical – East Husted railroad siding	Not eligible (2020)
5EP2264	Multicomponent – Historical artifact scatter/Open lithic scatter	Not eligible (2020)
5EP2296	Historical – Trash scatter	Not eligible (2023)
5EP2408	Precontact IF – Lithic	Not eligible (2023)
5EP2464	Precontact IF – Lithic	Not eligible (2020)
5EP8871	Historical – Habitation	Not eligible (2020)
5EP8879	Historical – Gravel pit	Not eligible (2020)
5EP8918.1	Historical – Road	Not eligible, nonsupporting (2020)
5EP8919.1	Historical – South Gate Blvd (segment)	Eligible, nonsupporting, contributes to 5EP595 (2020)
5EP8920.1	Historical – Monitor Extension Ditch (segment)	Eligible, nonsupporting (2020)
5EP8922	Historical – Edgerton Road	Not eligible, does not contribute to 5EP595 (2020)
5EP8925	Historical – Sagebrush Drive	Not eligible, does not contribute to 5EP595 (2020)
5EP8926.1	Historical – Industrial Drive (segment)	Eligible, nonsupporting, contributes to 5EP595 (2020)
5EP8927.1	Historical – Park Drive (segment)	Eligible, supporting, contributes to 5EP595 (2020)
5EP8928.1	Historical – East Husted - West Husted Road (segment)	Eligible, nonsupporting (2020)
5EP8929.1	Historical – Road	Eligible, nonsupporting (2023)
5EP8930	Historical – Erosion-control feature	Not eligible, does not contribute to 5EP595 (2020)
5EP8931	Multicomponent – Historical trash dump/Open lithic scatter	Not eligible (2020)
5EP8932	Precontact – Open lithic scatter	Not eligible (2020)
5EP8935	Historical – Erosion-control feature	Not eligible, does not contribute to 5EP595 (2020)
5EP8936	Historical – Erosion-control feature	Not eligible, does not contribute to 5EP595 (2020)
5EP8937	Historical – Erosion-control feature	Not eligible, does not contribute to 5EP595 (2020)
5EP8938	Historical – Road	Not eligible (2020)
5EP8939	Historical – Erosion-control feature	Not eligible (2020)
5EP8943	Precontact IF – Lithic	Not eligible (2020)
5EP8945	Precontact IF – Lithic	Not eligible (2020)
5EP8947	Historical IF – Benchmark	Not eligible (2020)
5EP8949	Precontact IF – Lithic	Not eligible (2020)
5EP8951	Precontact IF – Lithic	Not eligible (2020)
5EP9004	Precontact IF – Lithic	Not eligible (2020)
5EP9005	Precontact IF – Lithic	Not eligible (2020)
5EP9412	Historical – Trash dump	Not eligible (2023)
5EP9413	Historical – Trash dump	Not eligible (2023)

Appendix C. Resources Intersected by Alternative 3 and Laterals LOD.

Smithsonian Site No.	Resource Name/Type	NRHP Eligibility Status (Date)
5EP205.1	Historical — Denver to Pueblo Stage Road (segment)	Officially not eligible (1996)
5EP205.3	Historical — Denver to Pueblo Stage Road (segment)	Field eligible, nonsupporting (2020)
5EP205.5	Historical — Denver to Pueblo Stage Road (segment)	Field eligible, supporting (2020)
5EP205.6	Historical — Denver to Pueblo Stage Road (segment)	Field eligible, nonsupporting (2020)
5EP996	Historical — Ice making depressions	Officially not eligible (2019)
5EP1003.6	Historical — AT&SF Railroad (segment)	Field eligible, nonsupporting (2020)
5EP1003.18	Historical — AT&SF Railroad (segment)	Field eligible, nonsupporting (2019)
5EP1003.23	Historical — AT&SF Railroad (segment)	Field eligible, supporting (2020)
5EP1584	Precontact — Open lithic scatter	Officially not eligible (1999)
5EP1627	Historical — Edgerton townsite	Officially eligible (2019)
5EP1992	Historical — Habitation	Field not eligible (2021)
5EP2026	Precontact IF – Lithic	Field not eligible (1992)
5EP2181.2	Historical — D&RGW Railroad (segment)	Officially eligible (1996)
5EP2181.3	Historical — D&RGW Railroad (segment)	Officially eligible, field nonsupporting (2019)
5EP2181.5	Historical — D&RGW Railroad (segment)	Officially eligible (n.d.)
5EP2181.6/5EP8713	Historical — Water control berm	Officially not eligible (2019)
5EP2181.7/5EP8714	Historical — Water control berm	Officially not eligible (2019)
5EP2181.29	Historical — D&RGW Railroad (segment)	Officially eligible, field nonsupporting (2019)
5EP2183	Precontact IF – Lithic	Field not eligible (1994)
5EP2184	Precontact — Open lithic scatter	Officially not eligible (1997)
5EP2185	Historical IF — Animal control feature/ marker	Field not eligible (1994)
5EP2239	Precontact — Open lithic scatter	Field not eligible (2020)
5EP2250	Historical — East Husted railroad siding	Field not eligible (2020)
5EP2263	Precontact — Lithic quarry	Officially not eligible (1999)
5EP2265	Historical — West Husted railroad siding	Officially eligible (2013)
5EP2267	Historical — Trash dump	Field not eligible (2019)
5EP2268	Historical — Habitation	Officially not eligible (2019)
5EP2270	Precontact — Open lithic scatter	Field not eligible (1999)
5EP2324	Historical — Clay quarry	Officially not eligible (1999)
5EP2328	Precontact IF – Lithic	Officially not eligible (1994)
5EP2360	Historical IF — Railroad artifacts	Field not eligible (1994)
5EP2516	Precontact IF – Lithic	Field not eligible (1996)
5EP3551	Historical -- Air Force Academy Road Overpass H-17-BC	Officially not eligible (2019)
5EP3552	Historical -- Air Force Academy Road Overpass H-17-BD	Officially not eligible (2019)
5EP5133.7	Historical — GN&SH (segment)	Field eligible, nonsupporting (2020)
5EP8295	Precontact — Culturally modified tree	Field eligible (2018)
5EP8304.1	Historical — North Gate Blvd (segment)	Field eligible, nonsupporting, contributes to 5EP595 (2020)
5EP8878	Historical — Trash dump	Field not eligible (2020)
5EP8889.1	Historical — Unnamed ditch (segment)	Field eligible, nonsupporting (2020)
5EP8920.1	Historical — Monitor Extension Ditch (segment)	Field eligible, nonsupporting (2020)
5EP8929.1	Historical — Unnamed road (segment)	Field eligible, nonsupporting (2020)
5EP8930	Historical — Erosion-control feature	Field not eligible, does not contribute to 5EP595 (2020)
5EP8931	Multicomponent — Historical trash dump and precontact open lithic scatter	Field not eligible (2020)
5EP8932	Precontact — Open lithic scatter	Field not eligible (2020)
5EP8949	Precontact IF – Lithic	Field not eligible (2020)
5EP8955	Precontact IF – Lithic	Field not eligible (2020)

Appendix D Notice of Availability