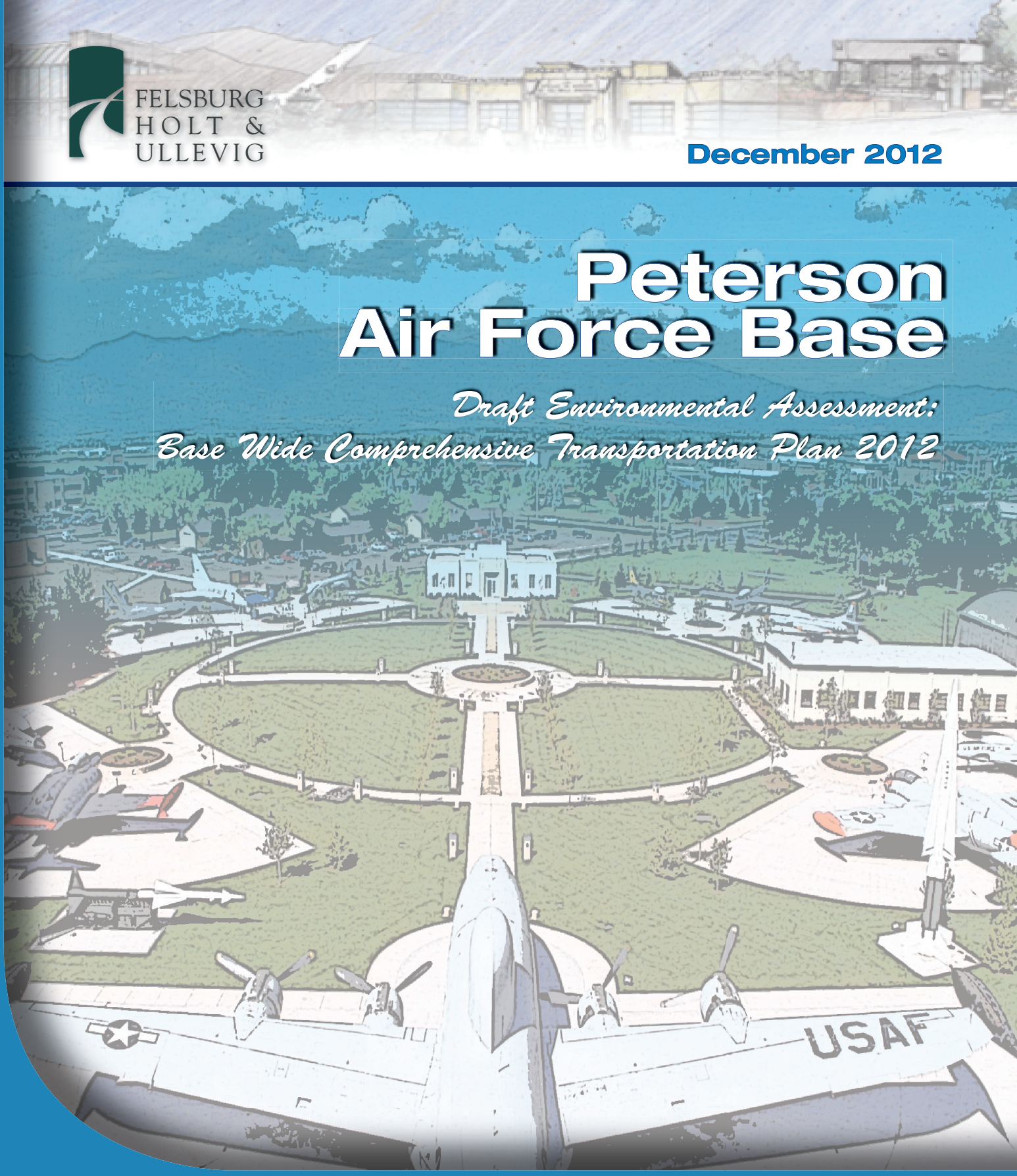
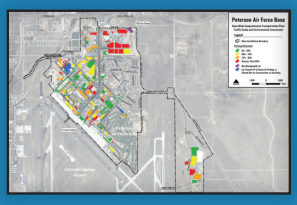
FELSBURG HOLT & ULLEVIG

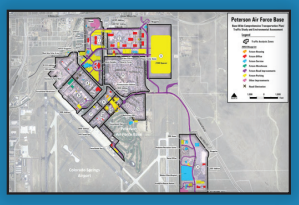
December 2012

Peterson Air Force Base

Draft Environmental Assessment: Base Wide Comprehensive Transportation Plan 2012







PETERSON AIR FORCE BASE
BASE WIDE COMPREHENSIVE TRANSPORTATION PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

Prepared for:

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LIST OF ACRONYMS

21 SW	21st Space Wing
AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zone
APEN	Air Pollution Emissions Notice
APZ	Accident Potential Zone
ARSTRAT	Army Strategic Command
AST	Aboveground Storage Tank
AT/FP	Antiterrorism/Force Protection
BMPs	Best Management Practices
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CCR	Colorado Code of Regulations
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CH_4	Methane
CNHP	Colorado National Heritage Program
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COS	Colorado Springs Airport
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel
dnl	Day-night average noise level
DOPAA	Description of the Proposed Action and Alternatives
EA	Environmental Assessment
ECF	Entry Control Facilities
ECP	Entry Control Point
ECOS	Environmental Conservation Online System
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FE	Federally Endangered
FT	Federally Threatened
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gases
GP5	Final EA and FONSI, General Plan, Five-Year
HQAFSPC	Headquarters Air Force Space Command
IPaC	Information, Planning, and Conservation System
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act

N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NORAD	North American Aerospace Defense
NORTHCOM	Northern Command
NWI	National Wildlife Inventory
O_3	Ozone
OEI	One Engine Inoperative
Pb	Lead
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter 2.5 microns or less
PM_{10}	Particulate Matter 10 microns or less
PMJM	Preble's Meadow Jumping Mouse
ppb	Parts per million
ppm	Parts per billion
RCRA	Resource Conservation and Recovery Act
ROG	Reactive Organic Gases
RPZ	Runway Protection Zone
SE	State Endangered
SO_2	Sulfur Dioxide
SO_X	Sulfur Oxides
SPCC	Spill Prevention and Countermeasure Control Program
SSC	State Special Concern
ST	State Threatened
TNC	The Nature Conservancy
tpy	Tons per year
$\mu g/m^3$	Micrograms per cubic meter
µm	Micrometers
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USSPACECOM	United States Space Command
VOCs	Volatile Organic Compounds
vph	Vehicles per hour

1.0 PURPOSE AND NEED FOR ACTION

This document was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, (42 USC 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Revisions of NEPA; Regulations established by the CEQ (40 Code of Federal Regulations [CFR] 1500-1508); and 32 CFR Part 989, et deq., *Environmental Impact Analysis Process*.

NEPA established a mandate for federal agencies to consider the potential environmental consequences of their proposed actions, to document the analysis, and to make the information available to the public for comment prior to implementation. In accordance with NEPA and related regulations, Peterson Air Force Base (AFB) is preparing this Environmental Assessment (EA) to support the implementation of the Preferred Alternative.

This EA will evaluate the impacts of implementing the Preferred Alternative recommendation from the *Peterson AFB Base Wide Comprehensive Transportation Plan 2012* (2012 Transportation Plan) (FHU, 2012) and establish whether there will be significant adverse impacts associated with the implementation. If there are no significant impacts, a Finding of No Significant Impact (FONSI) will be prepared. If the results of the EA indicate that there will be significant adverse impacts, an Environmental Impact Statement (EIS) will be prepared rather than concluding the environmental process with a FONSI.

1.1 Project Location

Peterson AFB is located in central Colorado, on the southeast side of Colorado Springs in El Paso County (**Figure 1-1**). Peterson AFB is bordered by the Colorado Springs Municipal Airport on the south, Platte Avenue (U.S. Highway 24) on the north, Powers Boulevard on the west and Marksheffel Road on the East. Peterson AFB encompasses approximately 1,457 acres of land, of which 218 acres are fee owned and 1,209 acres are leased from the City of Colorado Springs.

Peterson AFB is home to the United States Space Command (USSPACECOM), North American Aerospace Defense (NORAD), Northern Command (NORTHCOM), Army Strategic Command (ARSTRAT), Headquarters Air Force Space Command (HQAFSPC), the 21st Space Wing (21 SW), and the 302nd Air Lift Wing. USSPACECOM is one of nine Unified (multi-service) Combatant Commands in the Department of Defense. The 21 SW is responsible for worldwide missile warning and space control working at what is referred to as the Peterson Complex, which includes Peterson AFB, Schriever AFB, and Cheyenne Mountain Air Station.

Figure 1-1 Vicinity Map

1.2 Planning Context

Several documents support the selection of the Preferred Alternative. These documents are discussed below.

1.2.1 BluePrint - 2050 Plan *Envisioning the Future*

The Peterson AFB BluePrint - 2050 Plan is part of the General Base Plan and was prepared in 2007 in response to the projected growth anticipated by 2050 for Peterson AFB and Colorado Springs (**Figure 1-2**). Peterson AFB is a desirable base for military missions to operate. As such there are many defense related functions that potentially may relocate to Peterson AFB. If these functions relocated to Peterson AFB, then on-base personnel could grow significantly from its current population of 13,300 personnel. However, Peterson AFB currently has a limited amount of land available for expansion and new development.

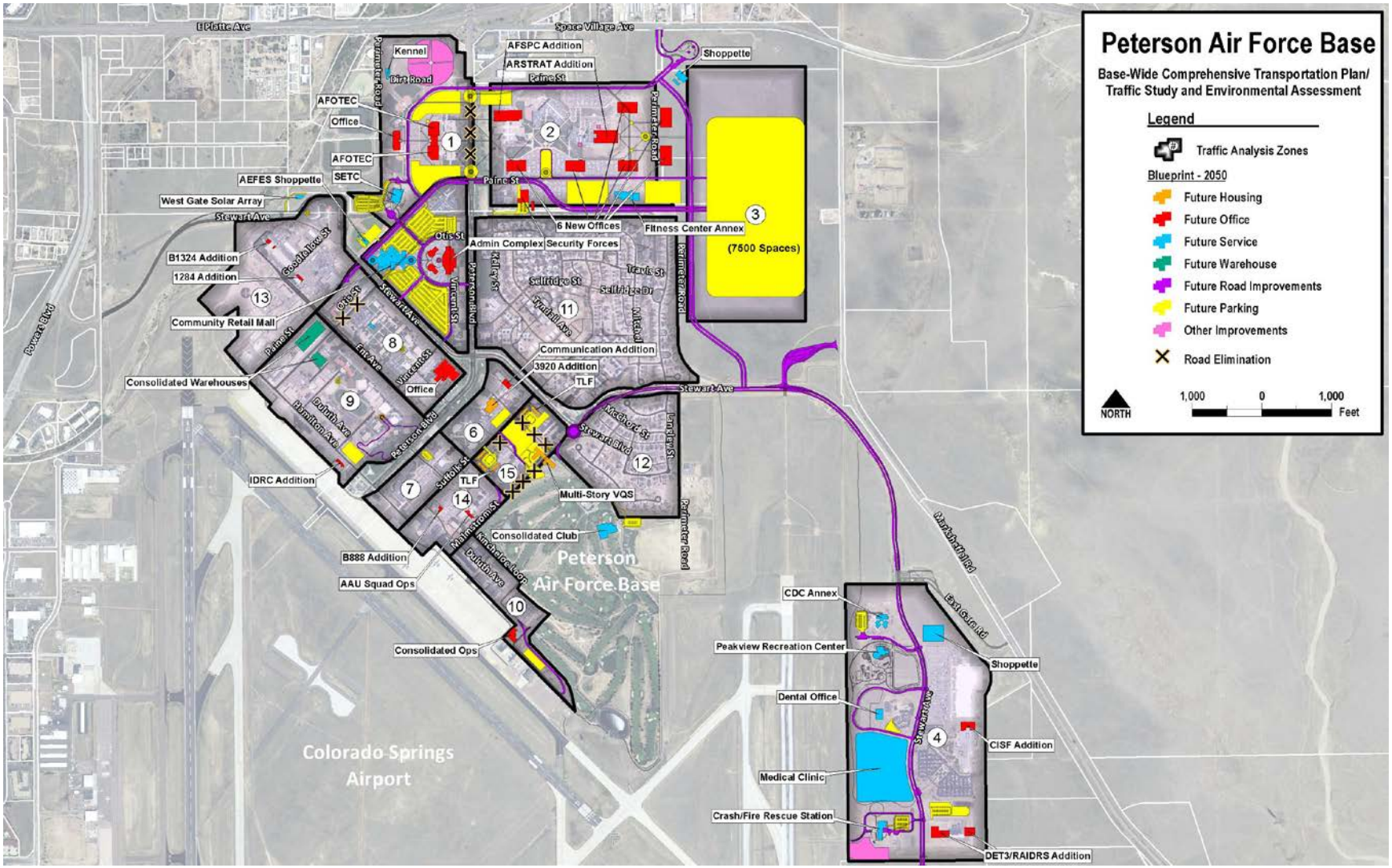
Since Peterson AFB is limited in its ability to increase its land area to accommodate new facilities, the BluePrint - 2050 Plan relocates a significant portion of on-base parking lots to remote parking lots in order to provide opportunities to in-fill existing base land with new buildings and services. As a result of this approach, Peterson AFB traffic demand increases as new personnel are added to while simultaneously concentrating Peterson AFB to a few specific locations. The potentially developable land on Base is currently being utilized for surface parking lots.

In an effort to solidify the safety and security of Peterson AFB in the future, the BluePrint - 2050 Plan was developed. The plan is to lessen encroachment issues, deter potential terrorist attacks, establish more defensive security measures, and allow for sustainable growth of existing and future missions. There are three facets to the BluePrint - 2050 Plan:

- **Installation area** – The assessment of potential expansion areas outside of the existing Peterson AFB installation area has been assessed to identify areas where procurement of land for future expansion may occur.
- **Internal base layout** – Peterson AFB is focusing on a smarter base layout that adheres to the sustainability goals and objectives Peterson AFB has established.
- **Traffic access and interface** – This focuses on the safe and expeditious entrance and exit off of Peterson AFB through entry control facilities (ECF) and interfaces with the local transportation network.

The BluePrint - 2050 Plan identified high level recommendations within the three facets: community facilities such as a future medical/dental clinic, and fire station; relocation of both the north and east gate, future airport land lease; and numerous future major facility sitings and a supporting base-wide roadway network.

Figure 1-2 BluePrint - 2050 Plan



1.2.2 Peterson AFB Base Wide 2012 Comprehensive Transportation Plan

The 21st Civil Engineering Squadron is preparing the 2012 Transportation Plan concurrently with this EA. The purpose of the 2012 Transportation Plan was to investigate whether the transportation solutions proposed in the BluePrint - 2050 Plan would support the land use recommendations of the BluePrint - 2050 Plan. It was concluded that some elements of the BluePrint - 2050 Plan could not accommodate the anticipated increase in traffic and that further analysis is needed to determine whether future gates have sufficient inbound and outbound capacity to process the volume of traffic coming into and out of Peterson AFB. Since completion of the 2050 evaluation, several variables have changed including:

- An update of the Pikes Peak Area Council of Governments long range plan to 2035.
- New interchange configurations are being investigated at the Powers and Stewart intersection.
- The ability of Peterson AFB to expand outside of their existing boundaries has changed.
- El Paso County is evaluating potential improvements to Marksheffel Road.

These changes and others are incorporated into the 2012 Transportation Plan. The 2012 Transportation Plan includes an existing conditions parking assessment, a list of immediate or short-term transportation improvements, and a detailed evaluation of a range of transportation alternatives. These transportation alternatives incorporate not only roadway and intersection improvements but also include recommendations related to transit systems, bike and pedestrian facilities, parking lot locations, and sustainability guidelines.

In preparation for the potential implementation of the improvements from the 2012 Transportation Plan, this EA evaluates the environmental impacts related to the Preferred Alternative and other alternatives considered.

1.3 Purpose of and Need for the Project

The purpose of the project is to improve existing and projected traffic operational and safety issues associated with future personnel increases, at Peterson AFB.

The project is needed to accommodate future personnel increases, future development, and expansion of mission-critical facilities at Peterson AFB. The need is driven by current and future US Air Force (USAF) requirements to replace aging facilities with out-of-date technology and/or expansion of mission-critical operations. Currently, Peterson AFB does not have enough developable space to accommodate anticipated future development to support the 21 SW expanding responsibilities and various mission requirements without having to further consolidate existing facilities and uses. This limitation would adversely affect the 21 SW operational functionality.

Specific needs include:

- **Improve Entry Control Facilities (ECF)** – Existing ECF need upgrades to meet current military design standards and to meet existing and future traffic demands.
- **Address Operational and Safety Issues in the Near-Term** – Base staff has identified existing and potential near-term safety and traffic operational issues on base where near-term projects are identified. In addition, intersection evaluations have identified other existing safety and operational issues at base intersections.

- **Accommodate Future Personnel Growth** – Recent planning has estimated Peterson AFB could see personnel growth from approximately 13,300 to 30,000 personnel. Such a substantial increase in personnel would force the relocation of a significant amount of on-base parking. In addition, a nearly threefold increase in personnel would overwhelm the existing transportation system. The 2012 Transportation Plan found that with nearly 20,000 new personnel base intersections would fail and gates, even with improvements to meet current Air Force standards, could not process peak hour traffic without excessive delay. For example, the relocated north gate was projected to have a peak hour inbound flow of over 5,000 vehicles per hour (vph). This far exceeds the 1,200 vph capacity of a gate with four inbound lanes.

  Under the BluePrint - 2050 Plan, if fully implemented, Peterson AFB wide trip generation would increase from 3,400 vph to 7,400 vph. Given current vehicle processing rates at gates, it would require at least 23 processing lanes spread out among installation gates to process the peak vehicle demand with a delay of less than five minutes per vehicle. Between spaces lost and additional spaces required by new facilities the BluePrint - 2050 Plan would require 7,600 spaces in remote parking lots served by a shuttle system.
- **Identify Motorized and Non-Motorized Transportation Systems** – Future personnel growth cannot solely be accommodated by upgrading the existing transportation system. Under the scenario of significant personnel increases, most personal vehicle parking must occur in satellite lots. This situation generates the following needs of this planning effort.
  - Develop a periphery transportation (including ECP changes) and parking systems to efficiently move passenger cars to and from satellite parking areas. These systems will need to integrate with existing on base roadways since there will still be a need to access existing base facilities via personal vehicle.
  - Develop a transit system to move personnel from satellite parking lots to on base facilities.
  - Identify non-motorized vehicle system to complement the motorized vehicle systems operating on base.
  - Develop a conceptual system of way-finding and variable message signs to enhance the recommended transportation alternative.
- **Identify Projects of Independent Utility** – It is likely that the recommended transportation system would be implemented in phases. There is a need to develop a Preferred Alternative that identifies smaller transportation projects that could be constructed as the need develops.

2.0 DESCRIPTION OF THE PREFERRED ALTERNATIVE AND ALTERNATIVES

In accordance with NEPA standards, a broad range of alternatives was initially developed prior to the Preferred Alternative being selected. The full range of alternatives is documented in detail in the 2012 Transportation Plan. A multi-level screening process resulted in the identification of the Preferred Alternative. This chapter presents each alternative considered and the Preferred Alternative.

2.1 Alternative Development

During the alternatives development the BluePrint - 2050 Plan was utilized as the existing condition around which alternatives were developed. Alternatives were developed by focusing on two goals:

- process the peak vehicle demand at gates with a reasonable level of delay, and
- provide at least 7,600 remote parking spaces in order to accommodate the growth and to replace parking spaces lost by locating the new facilities identified in the BluePrint - 2050 Plan.

The two goals are not mutually exclusive. For example, locating remote parking outside of the installation gates and using shuttles to transport personnel onto the Peterson AFB reduces vehicle demand at gates and fewer processing lanes are required. This means that processing the peak vehicle demand at the gates becomes the key component in developing alternatives. Alternatives development focused on processing the peak vehicle demand effectively and efficiently as possible which can be accomplished using either approach or a combination of the two approaches described below:

- **Increase the Number of Processing Lanes**. This approach simply adds vehicle processing lanes to Peterson AFB by increasing the number of processing lanes at existing gates and/or by providing new gates.
- **Reduce Vehicle Demand at Gates**. This approach reduces peak vehicle demand at the gates by positioning remote parking areas outside of Peterson AFB installation areas. In this scenario, vehicles would enter remote parking areas via unsecured access points and ID's would be checked as passengers boarded the Base Wide shuttle system. Shuttles would then transport personnel to on-base facilities. Remote parking and introduction of a shuttle system effectively reduces vehicle demand at the gates because some passenger cars would no longer need to travel through a gate.

2.2 Alternative Evaluation

Seven alternatives (Alternatives 1 through 7) and a No Action Alternative were initially developed to address the purpose and need for the project. Early screening determined that of these alternatives only four (Alternatives 1, 2, 3, and 4) had merit to continue through the screening process to be considered for the Preferred Alternative. A full description of the No Action Alternative, Preferred Alternative, and other alternatives considered is provided in **Sections 2.3** through **Section 2.5**, including reasoning for dismissal or continuation for further consideration.

All of the alternatives had two common characteristics – gates and remote parking as described below.

Gates

Each alternative has sufficient gate capacity to reasonably accommodate the projected traffic demand at the gates for that alternative. All alternatives keep the existing gates on base (West, North, and East). If an alternative recommends the addition of new gates, these gates would have standard gate requirements including:

- Gatehouse
- Vehicle processing lanes
- Overwatch tower
- Constructed to comply with all Antiterrorism / Force Protection (AT / FP) requirements

Remote Parking

Every alternative identified locations for an additional 7,600 remote parking spaces. These remote parking spaces are provided on Peterson AFB property either inside the proposed security boundary or outside the installation boundary. For the purposes of alternative development, the installation area is defined as the perimeter where access onto Peterson AFB requires an identification check. Alternative options create a realigned proposed security boundary in some instances. Other alternatives consider remote parking spaces on property not currently under the jurisdiction/ownership of Peterson AFB.

All proposed remote parking lots would be served by a shuttle system. The 2012 Transportation Plan (FHU, 2012) has detailed information on the operations of the proposed shuttle system such as the numbers of shuttles, shuttle routes, shuttle headway, and service hours.

Remote parking areas outside of the installation area would have unsecured access points to adjacent public roadways (such as Marksheffel Road). Since shuttle passengers will be outside of the proposed security boundary, identification checks would occur prior to boarding the shuttles. For remote parking areas inside of the installation area, identification checks would occur when personnel enter Peterson AFB through a gate in their private automobile.

Remote parking areas would be designed to meet AT / FP requirements, including standards for site fencing, lighting and standoff distances to nearby structures. Electrical utilities to support lighting would connect to the nearest existing available electrical utility tie-in.

2.3 No Action Alternative

The No Action Alternative would not provide any major improvements beyond continuing the existing level of maintenance and repair of the existing transportation and parking system. The No Action Alternative is the alternative that would be selected if Peterson AFB chooses not to implement the Preferred Alternative. Although future development of Peterson AFB would be concentrated within the existing footprint, if the No Action Alternative were selected, Peterson AFB would be limited by space restrictions, inefficient land uses, and potential future encroachment issues. These deficiencies would greatly hinder Peterson AFB's ability to support its current and future mission responsibilities.

Therefore, the No Action Alternative does not meet the purpose and need for the project. However, the alternative is carried forward in the analysis in accordance with CEQ requirements. The No Action Alternative has been fully assessed as an alternative and is used as a baseline comparison for environmental analysis purposes.

2.4 Preferred Alternative (Alternative 1)

Alternative 1 is depicted in **Figure 2-1** and has the following elements.

- **Gates** – This alternative utilizes the existing west, north and east gates. Each of these gates would require modifications in the number of processing lanes and in the number of roadway lanes entering and exiting the gate. The alternative has a new gate on Marksheffel Road north of the existing east gate.
- **Remote Parking** – The alternative includes two remote parking areas. These areas are as follows:
    - **Northeast Parking Area**. This 3,600 space parking area is inside the proposed security boundary and is located at the southwest corner of the Space Village Avenue and Marksheffel Road intersection.
    - **West Off-Base Parking Area**. This is the main remote parking area of this alternative. This proposed parking area would be located outside of the west gate on land currently not under control of Peterson AFB. This parking area would consist of 4,000 parking spaces and several accesses would be provided along Stewart Avenue.
- **Roadway** – **Table 2-1** lists new roadway facilities and modifications to existing roadways facilities proposed for Alternative 1.

Table 2-1 Preferred Alternative (Alternative 1) Roadway Changes

Roadway	Segment		Proposed Typical Section
	Beginning	End	
Paine Street	Peterson Boulevard	East Road	4-Lane
Paine Street	East New Road	Marksheffel Road	6-Lane
East Road	Vandenberg Street	Stewart Avenue	4-Lane
Patrick Street	Vandenberg Street	Paine Street	4-Lane
Vandenberg Street	Peterson Boulevard	East New Road	2-Lane
Ent Avenue	Goodfellow Street	Peterson Boulevard.	2-Lane
Peterson Boulevard	Interchange	Patrick Street	6-Lane
Peterson Boulevard	Vandenberg Street	Paine Street	Close
Peterson Boulevard	Paine Street	Hamilton Avenue	2-Lane
Stewart Avenue	Visitor Center Access	Paine Street	6-Lane
Stewart Avenue	Malmstrom Street	Pete East	4-Lane
East Gate Road	Marksheffel Road	Stewart Avenue	6-Lane
North Parking Area Roadways	East Road	East Road	2-Lane

Alternative 1 was carried forward for further continued evaluation and was identified as the Preferred Alternative.

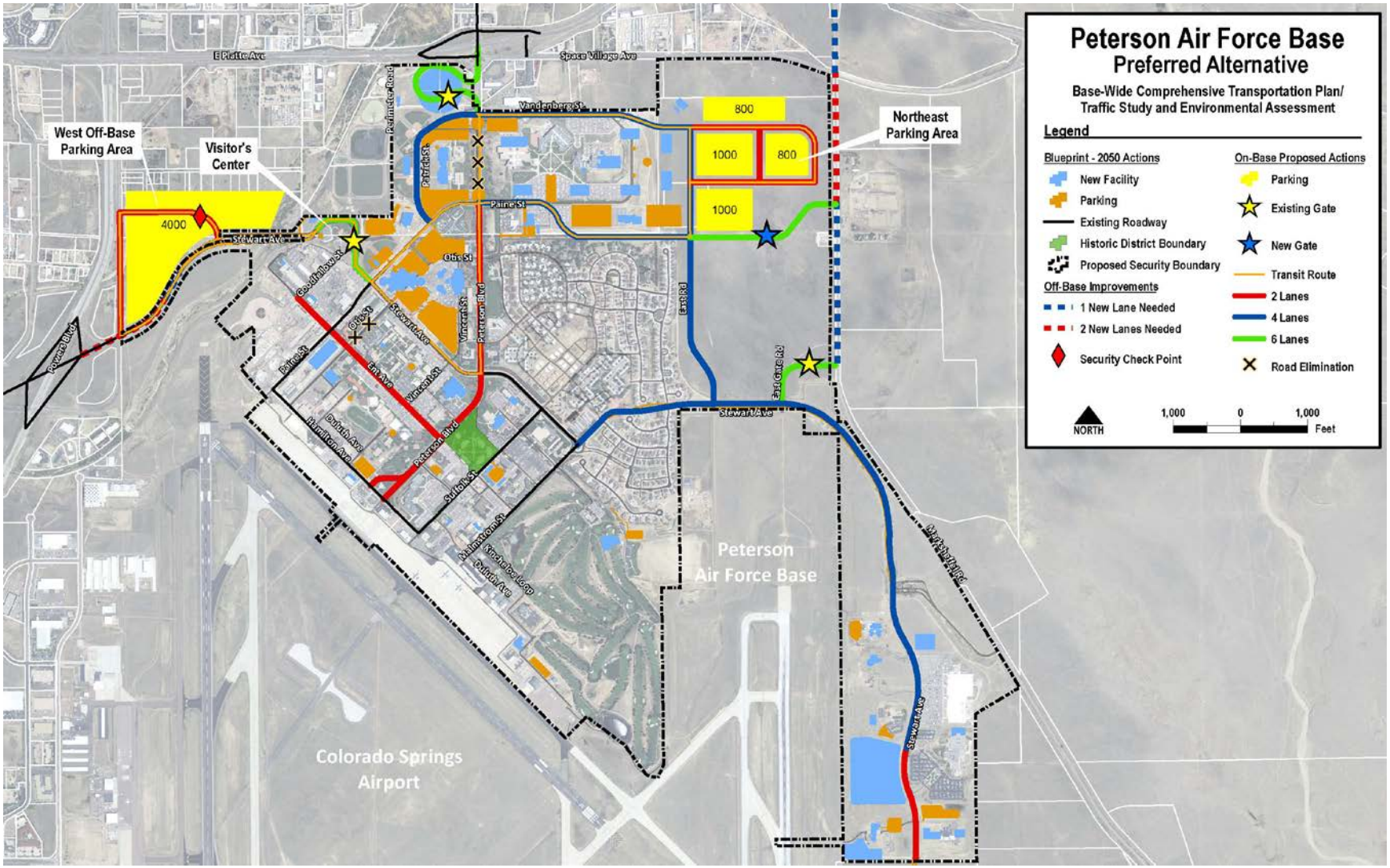
2.5 Other Alternatives Considered

Section 2.5.1 through **2.5.6** details individual specifics of each of the other alternatives evaluated.

2.5.1 Alternative 2

Alternative 2 is depicted in **Figure 2-2** and has the following elements.

Figure 2-1 Preferred Alternative (Alternative 1)



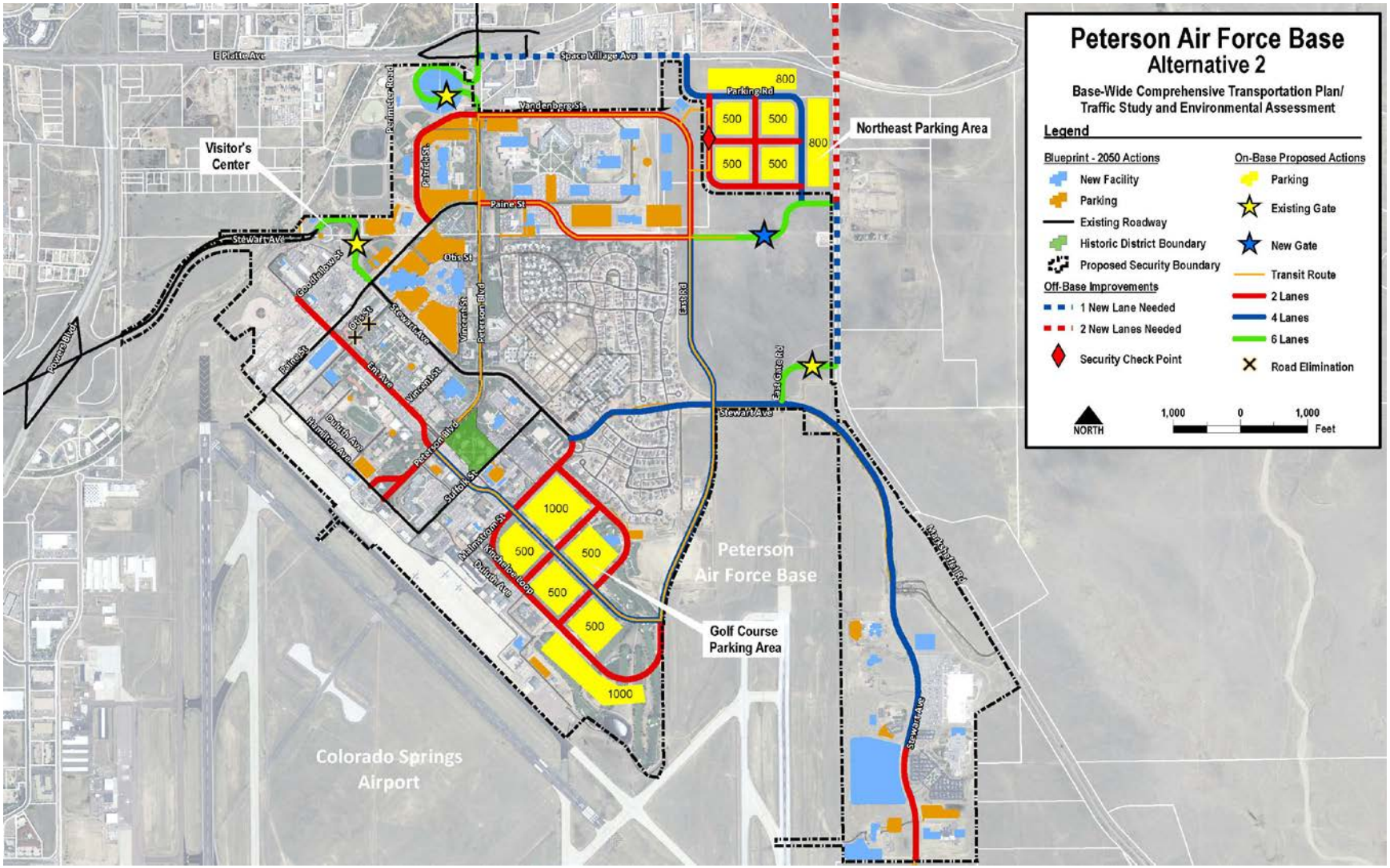
- **Gates** – This alternative utilizes the existing west, north and east gates. Each of these gates would require modifications in the number of processing lanes and in the number of roadway lanes entering and exiting the gate. The alternative has a new gate on Marksheffel Road north of the existing east gate.
- **Remote Parking** – The alternative includes two remote parking areas. These areas are as follows:
    - **Northeast Parking Area**. This parking area would consist of 3,600 spaces and would be located outside of the proposed security boundary. It would be served by unsecured access points from Marksheffel Road and Space Village Avenue. Given the proximity to the existing runway, the elevation for this parking area would need to be significantly lowered to abide by Federal Aviation Administration (FAA) One Engine Inoperative (OEI) requirements.
    - **Golf Course Parking Area**. This parking area would consist of 4,000 spaces and would be located in the area that is currently utilized as the 18-hole Silver Spruce Golf Course. Access to this parking area would be provided from roads within the installation perimeter.
- **Roadway** – **Table 2-2** lists new roadway facilities and modifications to existing roadways facilities proposed for Alternative 2.

Table 2-2 Alternative 2 Roadway Changes

Roadway	Segment		Proposed Typical Section
	Beginning	End	
Paine Street	Peterson Boulevard	East Road	2-Lane
Paine Street	East New Road	Marksheffel Road	6-Lane
East Road	Vandenberg Street	Paine Street	2-Lane
East Road	Paine Street	Ent Ave. Extension	4-Lane
Patrick Street	Paine Street	Peterson Boulevard	2-Lane
Vandenberg Street	Peterson Boulevard	East Road	2-Lane
Ent Avenue	Goodfellow Street	Peterson Boulevard	2-Lane
Ent Avenue Extension	Peterson Boulevard	East Road	4-Lane
Peterson Boulevard	Platte Avenue Interchange	Vandenberg Street	6-Lane
Peterson Boulevard	Vandenberg Street	Ent Avenue	4-Lane
Peterson Boulevard	Ent Avenue	Hamilton Avenue	2-Lane
Malmstrom Street	Kincheloe Loop	Stewart Avenue	2-Lane
Kincheloe Loop	Malmstrom Street	East Road	2-Lane
Stewart Avenue	Malmstrom Street	Pete East	4-Lane
Stewart Avenue	Visitor Center Access	Paine Street	6-Lane
East Gate Road	Marksheffel Road	Stewart Avenue	6-Lane
Golf Course Parking Internal Roadways			2-Lane
Parking Road	Paine Street	Space Village Avenue	4-Lane
Northeast Parking Internal Roadways	Parking Road	Parking Road	2-Lane

Alternative 2 was carried forward for further consideration.

Figure 2-2 Alternative 2



2.5.2 Alternative 3

Alternative 3 is depicted in **Figure 2-3** and has the following elements.

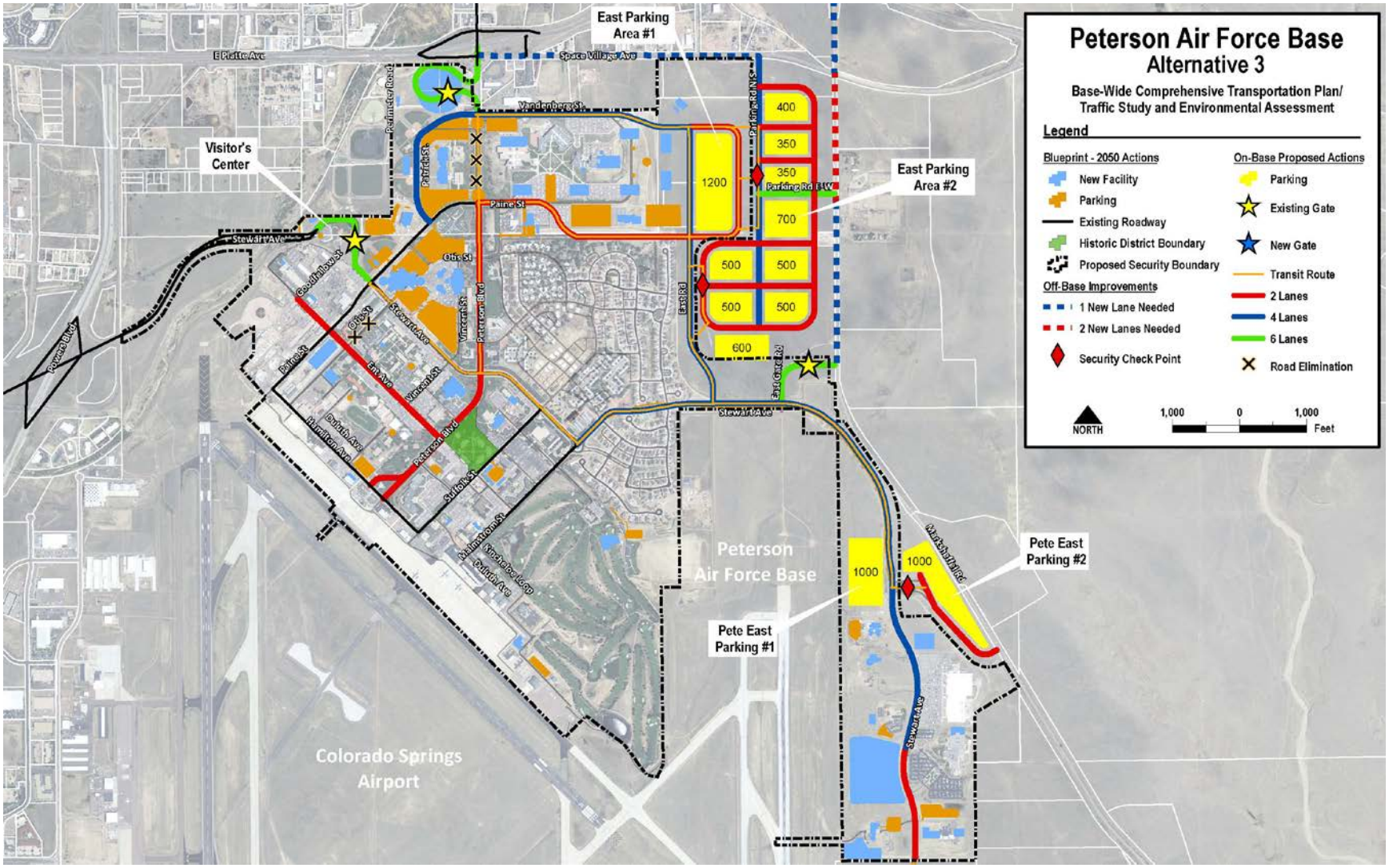
- **Gates** – This alternative utilizes the existing west, north and east gates. Each of these gates would require modifications in the number of processing lanes and in the number of roadway lanes entering and exiting the gate. The location of the old east gate would be converted to a security check point.
- **Remote Parking** – The alternative includes several remote parking areas as follows:
    - **East Area Parking #1**. This 1,200 space parking lot is inside the proposed security boundary and would be bordered by East Road, Vandenberg Street and Paine Street.
    - **East Area Parking #2**. This is the main remote parking area of this alternative. This proposed parking area would be bordered by Space Village Avenue to the north, Marksheffel Road on the east, Stewart Avenue on the south and East Road on the west. The entire parking area would consist of 4,400 parking spaces. Given the proximity to the existing runway, the elevation for this parking area would need to be significantly lowered to abide by FAA OEI requirements. Parking spaces within this lot would be outside of the proposed security boundary so vehicles would enter the parking area through unsecured access points on Space Village Avenue and Marksheffel Road.
    - **Pete East Parking #1**. This 1,000 space parking area is located north of Pete East and would be inside the proposed security boundary and be accessed by Stewart Avenue.
    - **Pete East Parking #2**. This 1,000 space parking lot would be outside of the proposed security boundary. Vehicles would access this lot via an unsecured access point off of Marksheffel Road.
- **Roadway** – **Table 2-3** lists new roadway facilities and modifications to existing roadways facilities proposed for Alternative 3.

Table 2-3 Alternative 3 Roadway Changes

Roadway	Segment		Proposed Typical Section
	Beginning	End	
Paine Street	Peterson Boulevard	East Road	2-Lane
East Road	Vandenberg Street	Stewart Avenue	4-Lane
Patrick Street	Peterson Boulevard	Paine Street	4-Lane
Vandenberg Street	Peterson Boulevard	East Road	4-Lane
Ent Avenue	Goodfellow Street	Peterson Boulevard	2-Lane
Peterson Boulevard	Platte Avenue Interchange	Vandenberg Street	6-Lane
Peterson Boulevard	Vandenberg Street	Paine Street	Close
Peterson Boulevard	Paine Street	Hamilton Avenue	2-Lane
Stewart Avenue	Visitor Center Access	Paine Street	6-Lane
Stewart Avenue	Malmstrom Street	Pete East	4-Lane
East Gate Road	Marksheffel Road	Stewart Avenue	6-Lane
Parking Road North-South	Space Village Avenue	South Most Lot	4-Lane
Parking Road East-West	Marksheffel Road	Parking Road N-S	6-Lane
East Parking Roadways	Parking Road N-S	Parking Road N-S	2-Lane
South Remote Parking Road	Marksheffel Road	Transit Connection	2-Lane

Alternative 3 was carried forward for further consideration.

Figure 2-3 Alternative 3



2.5.3 Alternative 4

Alternative 4 is depicted in **Figure 2-4** and has the following elements.

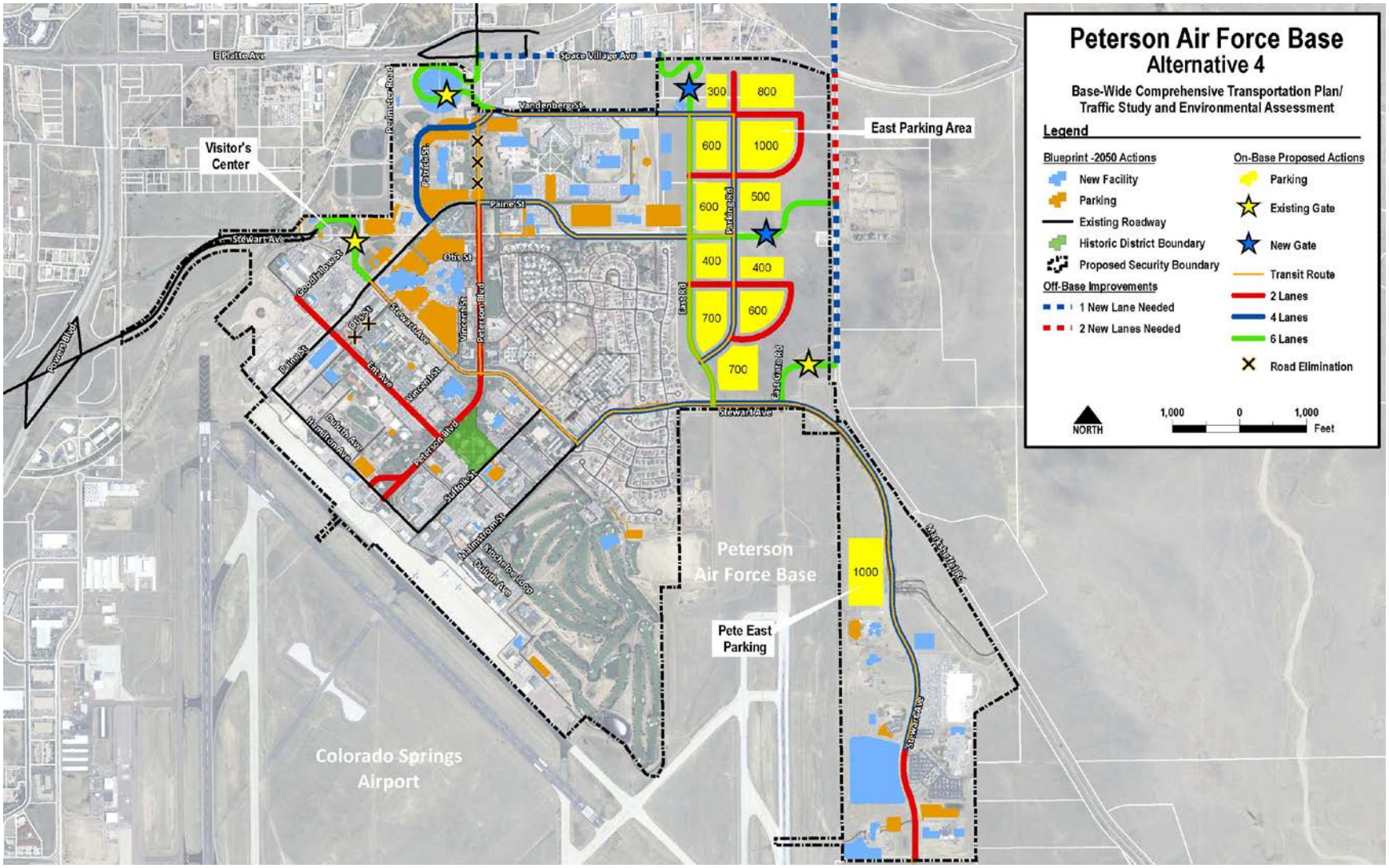
- **Gates** – This alternative utilizes the existing west, north and east gates. Each of these gates would require modifications in the number of processing lanes and in the number of roadway lanes entering and exiting the gate. The alternative has two new gates: one east of the existing north gate on Space Village Avenue and one on Marksheffel Road north of the existing east gate.
- **Remote Parking** – The alternative includes two remote parking areas. These areas are as follows:
    - **East Parking Area** – This is the main remote parking area in this alternative with 6,600 spaces. This proposed parking area is located inside the installation area and is bordered by Space Village Avenue, Marksheffel Road, Stewart Avenue and East Road. The entire parking area would consist of 6,600 parking spaces and its elevation would need to be lowered to abide by FAA OEI requirements.
    - **Pete East Parking Area** – This 1,000 space parking area is located north of Pete East and would be inside the proposed security boundary and have access to Stewart Avenue.
- **Roadway** – **Table 2-4** lists new roadway facilities and modifications to existing roadway facilities proposed for Alternative 4.

Table 2-4 Alternative 4 Roadway Changes

Roadway	Segment		Proposed Typical Section
	Beginning	End	
Paine Street	Peterson Boulevard	East Road	4-Lane
Paine Street	East Road	Marksheffel Road	6-Lane
East Road	Space Village Avenue	Stewart Avenue	6-Lane
Patrick Street	Vandenberg Street	Paine Street	4-Lane
Vandenberg Street	Patrick Road	East Road	2-Lane
Ent Avenue	Goodfellow Street	Peterson Boulevard	2-Lane
Peterson Boulevard	Platte Avenue Interchange	Patrick Street	6-Lane
Peterson Boulevard	Vandenberg Street	Paine Street	Close
Peterson Boulevard	Paine Street	Hamilton Avenue	2-Lane
Stewart Avenue	Visitor Center Access	Paine Street	6-Lane
Stewart Avenue	Malmstrom Street	Pete East	4-Lane
East Gate Road	Marksheffel Road	Stewart Avenue	6-Lane
Parking Road	Vandenberg Street	East Road	4-Lane
East Parking Area Roadways			2-Lane

Alternative 4 was carried forward for continued evaluation.

Figure 2-4 Alternative 4



2.5.4 Alternative 5

Alternative 5 (**Figure 2-5**) utilizes the existing gates and adds a new gate on Marksheffel Road. Roadway improvements and extensions would occur along the Vandenberg Street and Paine Street alignments. Peterson Boulevard would be closed and a new roadway would be constructed east of residential areas and the Command Area. The 7,600 remote parking spaces are provided in four areas with 2,900 spaces outside of the proposed security boundary. The remaining spaces are inside the proposed security boundary.

Alternative 5 was eliminated from further consideration because it was redundant with Alternative 2 with regards to remote parking located near the Marksheffel Road / Space Village Avenue intersection and the number of gates. Additionally, the 1,000 space parking area south of Stewart Avenue, adjacent to the east of base housing, is not feasible as this land is slated for future youth athletic fields.

Figure 2-5 Alternative 5

2.5.5 Alternative 6

Alternative 6 (**Figure 2-6**) utilizes the existing gates plus adds two new gates: one on Marksheffel Road and one on Space Village Avenue. Roadway improvements and extensions would occur along the Vandenberg Street, Paine Street and Patrick Street alignments. A new roadway would be constructed east of residential areas and the Command Area. The 7,600 remote parking spaces would be located inside the installation area on land that is currently the Silver Spruce Golf Course.

Alternative 6 was eliminated from further consideration because it is redundant with Alternative 2 with regard to remote parking on the Silver Spruce Golf Course. It is also redundant with Alternative 4 as each alternative has five gates. In addition, concentrating all remote parking to one area would overload the surrounding transportation system.

Figure 2-6 Alternative 6

2.5.6 Alternative 7

Alternative 7 (**Figure 2-7**) utilizes the existing west and east gates and relocates the north gate east to a new gate off of Space Village Avenue. Roadway improvements and extensions would occur along the Vandenberg Street, Paine Street and Patrick Street alignments. Peterson Boulevard would be closed and a new roadway would be constructed east of residential areas and the Command Area. The 7,600 remote parking spaces would be split between off-base and on-base lots. The off-base remote parking would be concentrated into one area of 4,000 spaces and would be located outside of the west gate on land currently not under the control of Peterson AFB. The remaining 3,600 remote parking spaces would be located in two areas on-base and inside the installation boundary.

Alternative 7 was eliminated from further consideration because it is redundant with the Preferred Alternative (Alternative 1) due to remote off-base parking areas and with Alternative 3 with regards to the number of gates. Additionally, the 1,000 space parking area south of Stewart Avenue, adjacent to the east of base housing, is not feasible as this land is slated for future youth athletic fields.

Figure 2-7 Alternative 7

2.5.7 Alternative Summary

Alternative 1 was identified as the Preferred Alternative to be carried forward for further detailed analysis. In addition, the No Action Alternative and Alternatives 2, 3, and 4 were retained for evaluation and consideration in this EA. Alternatives 5, 6, and 7 were eliminated from further consideration and are not evaluated further in this EA due to fatal flaws as discussed in **Section 2.5.4**, **2.5.5**, and **2.5.6**.

3.0 AFFECTED ENVIRONMENT

This chapter presents the results of the environmental analysis conducted for this EA. The resource areas that were studied were selected based on the characteristics of the areas surrounding the Preferred Alternative (Alternative 1) and other alternatives considered. The following resource topics were identified for analysis:

- Air Quality
- Hazardous Materials and Hazardous Waste Management
- Biological Resources
- Land Use
- Water Resources
- Noise
- Safety and Security

Per NEPA, those environmental resource areas that are anticipated to experience either no or negligible environmental impacts under implementation of the Description of the Proposed Action and Alternatives (DOPAA) are not discussed in detail as part of this EA. These environmental resources include:

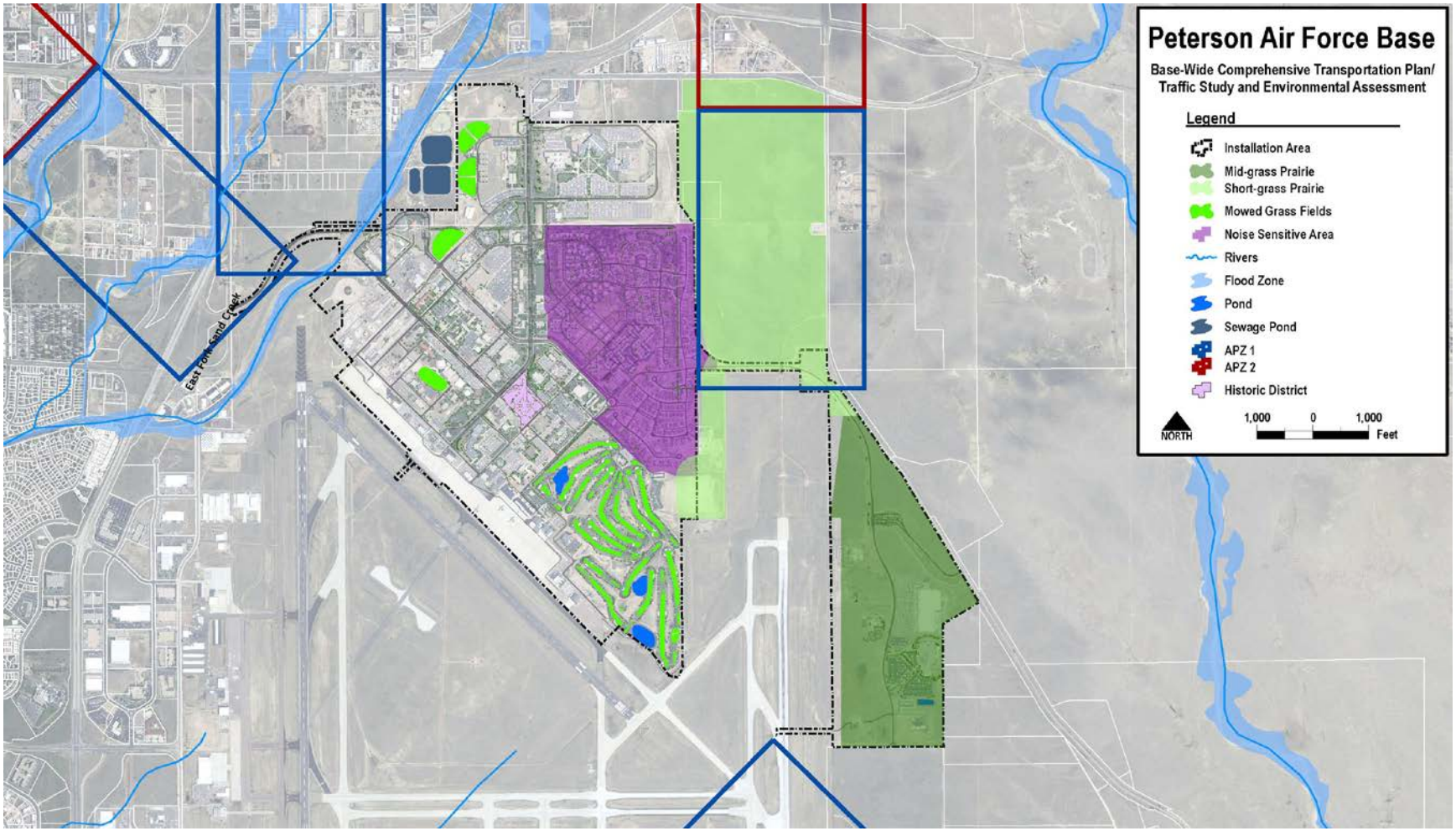
Airspace Management. Implementation of the Preferred Alternative (Alternative 1) and other alternatives considered would not result in any changes to aircraft operations at the Colorado Springs Municipal Airport or Peterson AFB and would have no impact on airspace management or aircraft. Prior to implementation, Peterson AFB will verify that construction activities will remain clear of protected airspace surfaces associated with runways at Colorado Springs Municipal Airport. FAA approvals and coordination with Colorado Springs Airport will be implemented prior to the installation of any project appurtenances. Therefore, no impacts will occur to airspace management and it was dismissed from detailed evaluation.

Environmental Justice. No major, adverse environmental impacts associated with the Preferred Alternative (Alternative 1) and other alternatives considered are anticipated to affect on- or off-base communities. Therefore, no populations (minority, low-income, or otherwise) would be disproportionately adversely impacted and no adverse impact with regard to environmental justice would result. In general, implementation of the Preferred Alternative (Alternative 1) and other alternatives considered would not result in increased exposure of children to environmental health risks or safety risks such as the generation, use, or storage of hazardous materials. Therefore, no environmental justice impacts will occur and it was dismissed from detailed evaluation.

Cultural Resources. The Colorado Springs Municipal Airport Historic District, located on Peterson AFB encompasses approximately 8.6 acres between Peterson Boulevard and Suffolk Street (**Figure 3-1**). The historic district was avoided in all of the alternatives. Therefore, no adverse environmental impacts will occur to the district and it was dismissed from detailed evaluation.

Transportation and Circulation. The 2012 Transportation Plan identifies in detail changes and enhancements to Peterson AFB transportation and circulation with respect to anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service, and changes to existing levels of transportation safety (FHU, 2012). The 2012 Transportation Plan discusses in detail impacts to surrounding off-base roadways, such as Space Village Avenue, Marksheffel Road and Stewart Avenue. The 2012 Transportation Plan also

Figure 3-1 Base Wide Environmental Conditions



discusses how the proposed shuttle system will be incorporated into the transportation system, as well as other proposed congestion relief measures.

This section presents the results of the analysis for each of the resource topics identified for analysis. Within each resource subsection, the existing conditions of the resource are introduced and followed by:

- **Environmental Consequences** – Discusses impacts on the resource that would be expected under the No Action Alternative and the Preferred Alternative (Alternative 1) and other alternatives considered.
- **Mitigation Measures** – Describes the mitigation measures that have been identified to address adverse impacts that would be expected with the Preferred Alternative (Alternative 1) and other alternatives considered.

3.1 Air Quality

Air quality is affected by a number of sources including stationary (e.g., industrial, residential, and commercial development) and mobile sources (e.g., automobiles, airplanes). Air quality at a specific location is a function of a number of factors including the type and quantity of pollutants emitted on a local and regional scale, and the rate of dispersion of the pollutants throughout the region.

This section discusses air quality standards, existing air pollutant sources, and regional air quality in the vicinity of Peterson AFB.

Criteria Pollutants

The National Ambient Air Quality Standards (NAAQS) define the maximum allowable concentrations of pollutants that may be reached but not exceeded within a given time period. They currently address six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), and lead (Pb). A summary of the NAAQS is presented in **Table 3-1**.

Table 3-1 National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	Primary Standard
Carbon Monoxide (CO)	8 hours	9 ppm
	1 hour	35 ppm
Sulfur Dioxide (SO_2)	Annual	0.03 ppm
	24 hours	0.14 ppm
	1 hour	75 ppb
Ozone (O_3)	8 hour	0.075 ppm
Particulate Matter <10 µm (PM_{10})	24 hours	150 µg/m^3
Particulate Matter <2.5 µm ($PM_{2.5}$)	Annual	15 µg/m^3
	24 hours	35 µg/m^3
Nitrogen Dioxide NO_2	Annual	53 ppb
	1 hour	100 ppb
Lead	Quarterly	0.15 µg/m^3

Source: EPA, 2011.
ppb = parts per billion µm = micrometers
ppm = parts per million µg/m^3 = micrograms per cubic meter

Areas that meet the NAAQS standard for a criteria pollutant are designated as being in "attainment" while areas where criteria pollutant levels exceed the NAAQS are designated as "non-attainment". A maintenance area is an area that has recently been re-designated as an attainment area from a former non-attainment area. However, during the maintenance period, most of the Clean Air Act (CAA) rules for a non-attainment area are still applicable to a maintenance area. All Colorado communities are currently in attainment and or maintenance of all NAAQS.
The Colorado Springs area (including Peterson AFB) is currently in attainment for all criteria pollutants (United States Environmental Protection Agency [USEPA], 2010). As part of the re-designation as a CO attainment area, the Colorado Springs area is under a maintenance plan until 2015 to demonstrate compliance with the CO standard (CDPHE, 2009). Under this maintenance plan, the Colorado Springs maintenance area has a mobile sources emissions budget of 531 tons per day from 2010 to 2015 (CDPHE, 2008).

Emissions at Peterson AFB

The Preferred Alternative (Alternative 1) and other alternatives considered will only impact mobile sources due to the transportation related nature of the improvements. Mobile sources are considerable components of total base air emissions. These emissions are periodically inventoried as part of Peterson AFB's air quality management program. Typical emissions from mobile sources include CO, NOx, Pb, sulfur oxides (SOx), PM10, and volatile organic compounds (VOCs).

Greenhouse gases (GHGs) are compounds found naturally within the Earth's atmosphere. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The primary greenhouse gas emitted by human activities in the U.S. was CO_2, representing approximately 85 percent of total GHG emissions. Because CO2 emissions comprise approximately 85 percent of GHGs and moreover CO_2 emission factors are readily available for many sources including construction equipment, CO_2 is considered the representative GHG emission in this EA.

Construction of the Preferred Alternative (Alternative 1) and other alternatives considered is intended to benefit regional transportation, as it would enhance the function of surrounding infrastructure features. The potential improvements may help to alleviate some traffic congestion on adjacent roads. Improved traffic flow generally leads to fewer emissions from mobile sources, and this may lead to reduced emissions over the long term even with more vehicles in the area. The Preferred Alternative (Alternative 1) may generate additional vehicle trips during construction and require some traffic rerouting, but these should be temporary and not create substantial adverse effects.

3.1.1 Environmental Consequences

The alternatives being considered would likely require an Air Pollutant Emissions Notice (APEN). The need for an APEN is limited to earthmoving activities taking longer than six months and disturbing more than 25 acres without erosion control measures being implemented.

Fugitive Dust Emissions
Fugitive dust emissions would be generated during ground clearing and grading activities, as well as combustion emissions from construction related vehicles and equipment. Dust emissions generated by such activity can vary substantially depending of levels of activity, specific operations and prevailing meteorological conditions. Using conservatively high estimates (based on moderate activity levels, moderate silt content in affected soils, and a temperate climate) the standard dust

emission factor for construction activity is estimated at 1.2 tons of dust generated per acre per month of activity (USEPA, 1995). Consequently, the calculated fugitive dust emissions calculated are conservatively high estimates.

Based on this conservatively high factor, fugitive dust emissions were calculated using the assumption that the project acreage would be disturbed simultaneously (approximately 160 acres each alternative). **Table 3-3** depicts the contribution of the calculated fugitive dust emission in tons per month for each of the Alternatives.

It is important to note that the emission factors (and the resulting emission rates) were determined nearly 20 years ago. Vehicles and combustion engines have generally become more efficient, so **Table 3-2** represents conservative estimates that could be lower by the time the Preferred Alternative (Alternative 1) is constructed.

Table 3-2 Fugitive Dust

	Disturbed Area (Sq Ft)	Disturbed Area (acres)	Construction Time (Months)	Uncontrolled PM (tons per month [tpm])	Controlled PM (tpm)
Preferred Alternative (Alternative 1)	6,095,200	139.9	12	167.9	42.0
Alternative 2	7,164,400	164.5	12	197.4	49.4
Alternative 3	6,771,300	155.4	12	186.5	46.6
Alternative 4	6,732,600	154.5	12	185.4	46.4

Alternative 2 would generate the greatest amount of fugitive dust due to the size of the improvements. The Preferred Alternative (Alternative 1) would generate the smallest amount.

Combustion Emissions

Combustion emissions associated with construction-related vehicles and equipment under each alternative would be minimal because most vehicles would be driven to and kept at the work site for the duration of the construction activities. Emissions generated by construction equipment would be temporary and short-term; therefore, no major impact to air quality would occur as a result of use and maintenance of construction related vehicles or equipment. Emission factors presented in **Table 3-3** were representative of fleet wide average with a standard equipment list for construction equipment anticipated to be used.

Table 3-3 Emission Factors for Combustion Sources*

	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
Grader	0.57	1.62	0.08	0.08	0.28	0.15
Loader	0.42	0.86	0.09	0.08	0.12	0.13
Bobcat	0.27	0.51	0.05	0.05	0.00	0.09
Dozer	1.21	3.04	0.12	0.11	0.45	0.23
Paving Equip	0.42	0.96	0.07	0.06	0.14	0.12
Paver	0.45	0.89	0.07	0.06	0.17	0.12
Excavator	1.30	4.60	0.32	0.31	0.74	0.34

*units are pounds per hour (lbs/hr)
Source: USEPA, 1995.
ROG - Reactive Organic Gases

Projected combustion emissions under the implementation of the proposed construction plan are listed in **Table 3-4**, and are based on assumed construction schedule assumptions of 10 hours per day, 5 days per week and 48 weeks per year. The assumption is the same for each of the alternatives.

Table 3-4 Emissions for Combustion Sources per Year*

	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG
Grader	1,368	3,888	192	192	672	360
Loader	1,008	2,064	216	192	288	312
Bobcat	648	1,224	120	120	0	216
Dozer	2,904	7,296	288	264	1080	552
Paving Equip	1,008	2,304	168	144	336	288
Paver	1,080	2,136	168	144	408	288
Excavator	3,120	11,040	768	744	1776	816
Total (tons per year [tpy])	5.57	15.0	1.0	0.90	2.28	1.42

*units are pounds per year (lbs/yr)

General Conformity

A local carbon monoxide conformity analysis was completed for the Powers Boulevard Corridor, located adjacent to the west side of Peterson AFB (CDOT, 2010). The conformity analysis examined the future traffic conditions at intersections with a Level of Service (LOS) of D, E or F, current emissions factors, and determined the carbon monoxide concentrations at those intersections. Future traffic data indicated that nearly all of the intersections along the Powers corridor would operate at a LOS F in the future. Several intersections around Peterson AFB would also operate at LOS F in future conditions (FHU, 2012), although base-wide daily traffic volumes are approximately one quarter or less of the Powers Boulevard Traffic Volumes. The results of the analysis showed that none of the intersections along Powers Boulevard (including those operating at LOS F would exceed the level allowed by the NAAQS. The intersection with the highest CO concentration would be 6.0 parts per million (ppm), two-thirds of the NAAQS (9.0 ppm). Criteria pollutant emissions resulting for the proposed construction plan would not

exceed 10 percent of the regional emission inventories. Therefore, implementation of the proposed construction plan would result in minor impacts.

No Action Alternative

No temporary air quality impacts would occur if the No-Action Alternative was selected. Air quality conditions and emissions associated with ongoing operations at Peterson AFB would remain as described above.

Preferred Alternative (Alternative 1)

The Preferred Alternative (Alternative 1) would result in the least amount of fugitive dust compared to the other alternatives. The impacts would be temporary; mitigation measures are presented in **Section 3.1.1** that should be implemented to lessen the impacts.

Combustion emissions would be approximately equal for all alternatives.

Alternative 2

Alternative 2 would result in the highest amount of fugitive dust compared to the other alternatives. The impacts would be temporary; mitigation measures are presented in **Section 3.1.2** that should be implemented to lessen the impacts.

Combustion emissions would be approximately equal for all alternatives.

Alternative 3

Alternative 3 would result in less fugitive dust compared to the Alternative 2. The impacts would be temporary; mitigation measures are presented in **Section 3.1.2** that should be implemented to lessen the impacts.

Combustion emissions would be approximately equal for all alternatives.

Alternative 4

Alternative 4 would result in less fugitive dust compared to the Alternative 2. The impacts would be temporary; mitigation measures are presented in **Section 3.1.2** that should be implemented to lessen the impacts.

Combustion emissions would be approximately equal for all alternatives.

3.1.2 Mitigation Measures

No Action Alternative

No mitigation measures are required if the No Action Alternative is chosen. Air quality conditions and emissions associated with ongoing operations at Peterson AFB would remain as described above.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

Increased fugitive dust emission resulting from the Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4 would involve short -term impacts that could be reduced through best management practices for dust control (i.e. regulation watering of exposed soil, soil stockpiling and soil stabilization, among others). These best management practices generally provide a reduction of fugitive dust emissions by 75 percent.

3.2 Hazardous Materials and Hazardous Waste Management

This section discusses hazardous materials and waste issues at Peterson AFB related to construction of the Preferred Alternative (Alternative 1) and other alternatives considered. The objective of this section is to provide information needed for planning efforts related to sites that pose a potential risk of environmental contamination from hazardous materials.

Hazardous materials and hazardous waste management activities at Peterson AFB are subject to several specific environmental regulations. For the purpose of this analysis, the term hazardous material or hazardous waste will mean those substances defined as hazardous by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC Section 9601, *et seq*., as amended, and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 USC Sections 6901-6992, as amended. In general, these include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health, welfare, or the environment when released into the environment. The state regulations, which are at least as stringent as the federal regulations, are found in 6 CCR 1007.

Portions of Peterson AFB were constructed as early as the 1930s and early 1940s. Asbestos was widely used in building materials prior to 1980. Lead based paint was also a common component of interior and exterior paint prior to 1978. Given the construction date of Peterson AFB, building facilities on Peterson AFB can be expected to contain asbestos and lead based paint.

There are several bulk fuel tanks on the west side of Peterson AFB. These tanks have associated pipelines and pumping equipment associated with them. Other storage tanks are located on base. There are no environmental restoration programs at Peterson AFB.

Hazardous materials will be utilized during construction of the Preferred Alternative (Alternative 1) and other alternatives considered. Diesel fuel will be used by construction equipment during active construction. Construction equipment may also require periodic maintenance which may include the use of engine oil, coolant, or other fluids. Contractors may use other hazardous materials during construction. The utilization of temporary or permanent ASTs to store diesel fuel for equipment refueling may occur during construction.

3.2.1 Environmental Consequences

No Action Alternative

Hazardous material and hazardous waste management would remain unchanged under the No Action Alternative.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

There are no structures anticipated to be demolished and therefore no anticipated impacts are expected from asbestos or lead based paint. No impacts are expected from fueling facilities and associated pipelines and pumping stations. No other hazardous material or waste impacts are expected from the Preferred Alternative (Alternative 1) or other alternatives considered.

Hazardous materials utilized during construction have the potential to leak or spill within project areas unless properly managed.

3.2.2 Mitigation Measures

No Action Alternative

No mitigation measures are required for the No Action Alternative.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

Construction activities will follow an established Spill Prevention and Countermeasure Control Program (SPCC) to avoid spills or leaks of hazardous materials. Hazardous materials used during the construction and operation of the Preferred Alternative (Alternative 1) can be managed effectively using existing management plans and by adhering to federal, state, and local regulations. The construction contractor would be responsible for following applicable regulations for management of any hazardous waste generated. Any spills or releases of fuel or oil from equipment would be cleaned up by the contractor. Best management practices would be utilized to minimize the likelihood of spills. The contractor would be responsible for the off-site disposal of any hazardous waste (including construction debris) generated on the property in accordance with applicable regulations. Because hazardous waste would be managed in accordance with applicable regulations, no significant impacts are anticipated.

3.3 Biological Resources

Biological resources include the native and non-native plants and animals that make up natural communities. The natural communities are closely linked to the climate, soil, and topography of the area. Biological resources discussed below include vegetation, wildlife, special status species, and wetlands.

3.3.1 Existing Conditions

Vegetation

Peterson AFB lies along the western edge of the Great Plains and along the eastern foothills of the Rocky Mountains. The majority of lands on Peterson AFB have been impacted by construction activities (e.g., excavation, grading, and bulldozing) and landscaping practices. These activities have permanently altered the native habitats on base.

Of the 1,399-acres on Peterson AFB, 903-acres are improved grounds (landscaped, irrigated, and intensively mowed), 490-acres are semi-improved (planted with native grasses, mowed, and weeds are suppressed), and 6-acres are aquatic. Most of Peterson AFB consists of a mosaic of highly managed traditional turf, shrub and tree landscaping, interspersed with lower maintenance areas featuring swathes of rock mulch or xeric grasses and native forbs. The natural vegetation of

Peterson AFB, which exists only on portions of Peterson East, is comprised of mid- to tallgrass prairie, Blue grama (*Bouteloua gracilis*) and Buffalograss (*Buchloe dactyloides*), within a life zone largely dominated by shortgrass plains. The undeveloped areas to the north of Peterson East between Marksheffel Road and the installation area are classified as tallgrass/short-grass prairie type (**Figure 3-1**). Due to the proximity to Peterson AFB runways, the grasslands are regularly mowed to reduce attractiveness to wildlife that would result in bird-aircraft strike hazards. This disturbance and habitat modification limits the value of these grasslands for wildlife and native vegetation. (Peterson AFB, 2011a)

Wildlife

A majority of Peterson AFB provides limited quality habitat for wildlife; however, many species of mammals and more than 29 species of birds occur on base. The fauna of Peterson AFB and surrounding area is a mixture typical of both the foothills of the Southern Rocky Mountains and the western edge of the high plains.

Typical wildlife occurrences on Peterson AFB include Pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*) and coyote (*Canis latrans*). Red fox (*Vulpes vulpes*) actually live on the Silver Spruce Golf Course (USAF, 2003b). Several active prairie dog (*Cynomys ludovicianus*) holes were observed at Peterson East during August 2012. Eastern cottontail (*Sylvilagus floridanus*) is present extensively in base housing, while plains pocket gopher (*Geomys bursarius*), Ord's kangaroo rat (*Dipodomys ordi*), prairie and meadow voles (*Microtus ochrogaster* and *M. pennsylvanicus*, respectively) and deer mice (*Peromyscus spp*.) are present at least in neighboring grassland as are reptiles and amphibians that have the potential to occur on Peterson AFB include the western hognose snake (*Heterodon nasicus*), western rattlesnake (*Crotalus viridis*), many-lined skink (*Eumeces multivirgatus*), and plains spadefoot (*Spea bombifrons*) (Peterson AFB, 2011a).

The grassland areas support a variety of small mammals. Rodents include the thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), black-tailed prairie dog (*Cynomys ludovicianus*), eastern fox squirrel (*Sciurus niger*), and western harvest mouse (*Reithrodontomys megalotis*). The olive-backed pocket mouse (*perognathus fasciatus*), black tailed jackrabbits (*Lepus californicus*) and desert cottontails (*Sylvilagus audubonii*) also utilize the grasslands. Preble's meadow jumping mouse (*Zapus hudsonius preblei*) may occur onsite, although none have been observed in surveys completed by the Colorado Natural Heritage Program (CNHP) in 2004. Large herbivores on base are generally absent due to conflicts with aircraft on the runways but an occasional mule deer (*Odocoileus virginianus*) may be found. Predators include the red fox (*Vulpes vulpes*), the swift fox (Vulpes velox), and coyote (*Canis latrans*). (Peterson AFB, 2011a)

Special Status Species

The Endangered Species Act (ESA) requires that any action authorized by a Federal agency shall not jeopardize the continued existence of a threatened, endangered, and candidate species, or result in the destruction or modification of designated critical habitat of such species. In May 2012 an assessment was conducted to collect data from the US Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) - Information, Planning, and Conservation System (IPaC) database to identify threatened, endangered, and proposed species, designated critical habitat, and candidate species that may potentially occur within the boundary of Peterson AFB (**Table 3-5**).

Table 3-5 Sensitive Species Potentially Occurring on Peterson AFB*

Common Name	Scientific Name	Status	Potential for Occurrence on Sites
Birds			
Ferruginous Hawk	*Buteo regalis*	SSC	Potentially present foraging for small mammals, including black-tailed prairie dogs
Mountain Plover	*Charadrius montanus*	SSC	Present as rare migratory transient
Whooping Crane	*Grus Americana*	FE, SE	No permanent habitat on Base but may migrate through area
Western Burrowing owl	*Athene cunicularia*	ST	Present in prairie areas March through October in abandoned prairie dog burrows
Plants			
Ute ladies'-tresses	*Spiranthes diluvialis*	FT	
Western Prairie Fringed Orchid	*Platanthera praeclara*	FT	
Mammals			
Black-tailed prairie dog	*Cynomys ludovicianus*	SSC	Present in prairie areas year round
Preble's Meadow Jumping Mouse (PMJM)	*Zapus hudsonius preblei*	FT, ST	No critical habitat is present, trapped drainages in 2004 show that the PMJM was not found
Black-footed ferret	*Mustele nigripes*	FE, SE	No live ferrets have been found in Colorado, or on Base
Swift fox	*Vulpes velox*	SSC	Potentially present as a transitory resident

* The species list is not entirely based upon the current range of a species but may also take into consideration actions that affect a species that exists in another geographic area. For example, certain fish appear on this list because a project could affect the species downstream (USFWS, 2012).

SSC – State special concern
FE – Federally endangered
FT – Federally threatened
SE – State endangered
ST – State threatened

Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by federal or state rulings. Sensitive habitats also include plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer/winter habitats), and wetlands. In a 1996 survey, the CNHP located a small remnant (<6 acre) of imperiled native northern sandhill prairie community consisting of big bluestem (*Andropogen gerardii*) and prairie sandreed (*Calamovilfa longifolia*). This habitat is located at Peterson East north of Fire Station 2 adjacent to the stormwater detention low area. This prairie grass ecosystem is monitored by The Nature Conservancy (TNC).

Migratory birds, including raptors, as listed in 50 CFR § 10.13, are ecologically and economically important to the U.S., and recreational activities such as bird watching, studying, and feeding are practiced by many Americans. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC §§ 703-712). The eggs and active nests of migratory

birds are also protected under the MBTA. Activities that may harm or harass migratory birds during the nesting and breeding season are prohibited by the MTBA. This includes the removal of active nests, which could result in the loss of eggs or young. In 2001, Executive Order (EO) 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to ensure that Federal agencies consider environmental effects on migratory bird species and, where feasible, implement policies and programs which support the conservation and protection. The Cliff swallows (*Hirundo pyrrhonota*) has been identified on base. Additionally, bird species associated with surface water resources on base (e.g., lakes, ponds, streams) include mallards (*Anas platyrhynchos*), Canada geese (*Branta canadensis*), northern shoveler (*Anas clypeata*), great blue heron (*Ardea herodias*), brewer's blackbird (*Euphagus cyanocephalus*), and killdeer (*Charadrius vociferus*).

Common prairie-based migratory birds are found at and in the vicinity of Peterson AFB include the horned lark (*Eremophila alpestris),* western meadowlark (*Stuirnella neglecta),* house finch (*Carpodacus mexicanus),* black-billed magpie (*Pica pica),* American robin (*Turdus migratorius)*, and lark bunting (*Calamospiza melanocorys)*. Birds of prey present at Peterson AFB include the red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), and American kestrel (*Falco sparverius*). None of the birds identified were considered rare, threatened or endangered by state or federal agencies. The birds of most conservation concern and potential to occur on Peterson AFB are the grasshopper sparrow (*Ammodramus savannarum*), the golden eagle (*Aquila Chrysaetos*), the burrowing owl (*Athene cunicularia*), and the ferruginous hawk (*Buteo regalis*). The mountain plover (*Charadrius montanus*) is found in nearby southern and eastern El Paso County, but is not likely to inhabit Peterson AFB because of the lack of bare ground and height of grasses. These birds, their eggs, and nests are protected by the MBTA (USAF, 2010).

Wetlands and Other Waters of the United States

Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE, 1987).

Wetlands are protected as a subset of the *Waters of the U.S.* under Section 404 of the Clean Water Act (CWA); the United States Army Corps of Engineers (USACE) requires a permit for any activities crossing wetlands or other Waters of the U.S. Jurisdictional waters, including perennial, intermittent, and ephemeral streams, wetlands, and other special aquatic sites, are defined by 33 CFR Part 328.3 et al. and are protected by Section 404 and other applicable sections of the Clean Water Act (e.g., 33 USC 1344 et al.), which is administered and enforced by the USACE as well as other federal and state government agencies.

Golf Course Ponds Nos. 1, 2, and 3 were listed on the National Wetlands Inventory interactive web Map; however, they are not considered wetlands since they are man-made impoundments with no naturally occurring wetland vegetation or hydric soils, and they are rubber-lined (NWI, 2012). The East Branch of Sand Creek, which crosses the northwest corner of Peterson AFB, did not meet the USACE wetland criteria.

The East Branch of Sand Creek, flowing through the northwest corner of Peterson AFB, is considered waters of the U.S., and is subject to regulatory authority under Section 404 of the CWA. Any proposed activities in this area would have to be approved by the USACE.

3.3.2 Environmental Consequences

No Action Alternative

No adverse impacts to biological resources are expected under the No Action Alternative as no roadways or parking facilities would be constructed.

Preferred Alternative (Alternative 1)

Vegetation – Implementation of the Preferred Alternative (Alternative 1) would have an additional 153 acres of pavement, much of which would be in areas that are currently mowed/maintained vegetated areas. Approximately 64 acres will be impacted that are designated as tallgrass/short-grass prairie. Impacts to vegetation would be direct and long-term in duration. Disturbance during construction would also increase the potential for introduction or spread of noxious weeds such as Russian olive (*Elaeagnus angustifolia*), field bindweed (*Convolvulus arvensis*) and Canada thistle (*Cirsium arvense*).

Wildlife – Impacts to wildlife species from construction would include habitat loss, disturbance (avoidance and displacement) from construction and permanent presence, and mortality to small-sized animals from crushing, burial, or lethal prairie dog removal. Habitat loss would result from permanent removal of existing vegetation and replacement with pavement for parking lots and roadway networks; habitat loss may be temporary in areas that are revegetated after construction. Impacts to shortgrass prairie and mid-grass prairie have greater impacts to wildlife than mowed and maintained areas. The destruction of black-tailed prairie dog colonies would result in the permanent loss of habitat for species dependent on prairie dog colonies for food or shelter.

Construction activity is likely to temporarily displace many animals due to noise, human presence, and heavy equipment. The duration and distance an animal is displaced is generally dependent on the individual or species, and an individual's response to disturbance may change with time. Direct impacts from mortality to smaller, less mobile species would occur during construction from ground clearing and earth-moving.

Special Status Species – Nearly all bird species present around Peterson AFB are protected by the MBTA. Vegetation-clearing, earth-moving, and other construction activities have the potential to destroy nests of bird species protected under the MBTA, particularly in areas that are undeveloped or that have tree cover.

Wetlands and Other Waters of the United States – Wetlands may be present within the vicinity of East Sand Creek near the West Off-Base Parking Area. During design of the parking area efforts will be made to avoid and minimize impacts to any wetlands.

Alternative 2

Vegetation – Implementation of Alternative 2 would have an additional 162 acres of pavement. Of the 162 acres, much of the areas are currently mowed/maintained, such as the Silver Spruce Golf Course. However, approximately 68 impacted acres are undeveloped vegetated areas classified as tallgrass/short-grass prairie type located to the east of Peterson AFB. Impacts to vegetation would be direct and long-term in duration. Disturbance during construction would also increase the potential for introduction or spread of noxious weeds such as Russian olive (*Elaeagnus angustifolia*), field bindweed (*Convolvulus arvensis*) and Canada thistle (*Cirsium arvense*).

Wildlife – Impacts to wildlife similar to those presented in Preferred Alternative (Alternative 1).

Special Status Species – Impacts to special status species would be similar to those presented in Preferred Alternative (Alternative 1).

Wetlands and Other Waters of the United States – No wetlands are anticipated to be impacted, as there are no wetlands present on Peterson AFB.

Alternative 3

Vegetation – Implementation of Alternative 3 would have an additional 154 acres of pavement. Approximately 107 acres of the impacts are located in areas that are currently undeveloped vegetated areas designated as tallgrass/short-grass prairie. Impacts to vegetation would be direct and long-term in duration. Disturbance during construction would also increase the potential for introduction or spread of noxious weeds such as Russian olive (*Elaeagnus angustifolia*), field bindweed (*Convolvulus arvensis*) and Canada thistle (*Cirsium arvense*).

Wildlife – Impacts to wildlife similar to those presented in Preferred Alternative (Alternative 1).

Special Status Species – Impacts to special status species would be similar to those presented in Preferred Alternative (Alternative 1).

Wetlands and Other Waters of the United States – No wetlands are anticipated to be impacted, as there are no wetlands present on Peterson AFB.

Alternative 4

Vegetation – Implementation of Alternative 4 would have an additional 153 acres of pavement. Approximately 116 of the impacts are located in areas that are currently undeveloped vegetated areas designated as tallgrass/short-grass prairie. Impacts to vegetation would be direct and long-term in duration. Disturbance during construction would also increase the potential for introduction or spread of noxious weeds such as Russian olive (*Elaeagnus angustifolia*), field bindweed (*Convolvulus arvensis*) and Canada thistle (*Cirsium arvense*).

Wildlife – Impacts to wildlife would be similar to those presented in Preferred Alternative (Alternative 1).

Special Status Species – Impacts to special status species would be similar to those presented in Preferred Alternative (Alternative 1).

Wetlands and Other Waters of the United States – No wetlands are anticipated to be impacted, as there are no wetlands present on Peterson AFB.

3.3.3 Mitigation Measures

No Action Alternative

No mitigation is required for the No Action Alternative.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

Vegetation – Adverse impacts to vegetation would be minimized by revegetation of disturbed areas not planned for parking lots, roadway network improvements, or landscaping.

Wildlife – Adverse impacts to wildlife would be minimized by implementing planting native trees and shrubs, as well as seeding and regarding where possible.

Special Status Species – To avoid potential adverse impacts to ground-nesting birds and to comply with the MBTA, all vegetation should be cleared prior to 01 March or after 31 October. If construction occurs during the nesting season and vegetation has not been cleared, surveys for active ground nests should be conducted (including ground nests). If active nests occur on site, protective buffers should be implemented in coordination with USFWS.

Wetlands and Other Waters of the United States – During final design of the West Off-Base Parking Area wetlands associated with the East Branch of Sand Creek will be surveyed and avoidance and minimization opportunities will be identified.

3.4 Land Use

This section describes existing land use on Peterson AFB and presents information pertaining to the Preferred Alternative (Alternative 1) and other alternatives considered and their impact or change, if any, on land use. Land use categories on Peterson AFB include administration, community commercial, industrial, airfield operations/reserve, space operations, medical/dental, training/education, dorms/lodging, community housing, recreation, open space, transportation.

Land uses were derived from the BluePrint - 2050 Plan (**Figure 1-2**).

3.4.1 Environmental Consequences

No Action Alternative

There would be no changes to land use under the No Action Alternative, land use would remain as is until altered or replaced by other land uses in response to base expansion.

Preferred Alternative (Alternative 1)

Under the Preferred Alternative (Alternative 1) the following land uses deviate from the BluePrint - 2050 Plan:

- The proposed Northeast parking area exceeds the parking footprint in the BluePrint - 2050 Plan
- Baseball complex near Space Village Avenue is converted to a new gate and roadway
- West off-base parking area is outside base boundary

Alternative 2

Under Alternative 2 the following land uses deviate from the BluePrint - 2050 Plan:

- The Northeast parking area exceeds the parking footprint in the BluePrint - 2050 Plan
- Silver Spruce Golf Course is converted to a designated parking area
- Baseball complex near Space Village Avenue is converted to a new gate and roadway

Alternative 3

Under Alternative 3 the following land uses deviate from the BluePrint - 2050 Plan:

- The proposed East parking area exceeds the parking footprint in the BluePrint - 2050 Plan
- The proposed Pete East parking develops undeveloped land
- Baseball complex near Space Village Avenue is converted to a new gate and roadway

Alternative 4

Under Alternative 4 the following land uses deviate from the BluePrint - 2050 Plan:

- The East parking area exceeds the parking footprint in the BluePrint - 2050 Plan
- Baseball complex near Space Village Avenue is converted to a new gate and roadway
- Undeveloped land to the north of Pete East is converted to designated parking

3.4.2 Mitigation Measures

No Action Alternative

There are no mitigation measures required for the No Action Alternative.

Preferred Alternative (Alternative 1) and Alternatives 2, 3 and 4

Coordination with Peterson AFB planning department would need to occur for all the alternatives in order to accommodate the Preferred Alternative (Alternative 1) as well as the BluePrint - 2050 Plan. Coordination would occur under all of the alternatives.

3.5 Water Resources

Water resources analyzed in this study include groundwater, surface water, groundwater, and floodplains. Water resources include surface and groundwater sources located within Peterson AFB as well as watershed areas affected by existing and potential runoff from Peterson AFB, including floodplains.

3.5.1 Existing Conditions

Groundwater

Groundwater comprises subsurface water resources that are interlaid in layers of rock and soil and recharged by surface water seepage. Colorado Springs lies on the southern edge of the Denver Basin Aquifer System. This system is comprised of four aquifers (Dawson, Denver, Arapahoe, and Laramie-Fox Hills) in five geologic formations and is up to 3,000 feet thick. At the outer edge of the system lies the Laramie-Fox Hills Aquifer, this underlies most of Peterson AFB. The Laramie-Fox Hills Aquifer varies between 50 and 100 feet in thickness and ranges between 600 and 700 feet deep along the northern edge of Peterson AFB (USGS, 1984). The southern boundary of the Arapahoe Aquifer is about 2,000 feet north of the North Gate (about 1,000 feet north of the proposed site for the access road). The Denver Aquifer is about two miles north of the North Gate and the Dawson Aquifer is about six miles to the north (USGS, 1984).

Several water wells are located within 1,000 feet of the West Gate, between Stewart Avenue and Platte Avenue, and north of Peterson AFB.

The area's principal unconfined aquifer is in the alluvial sediments of the Fountain Creek Valley. This shallow aquifer ranges in depth from 0.8 feet to more than 100 feet (USGS, 1995). This aquifer is hydraulically isolated from the Denver Basin aquifer system.

Stormwater

The East Branch of Sand Creek flows through the northwest corner of Peterson AFB. Peterson AFB lies within the Fountain Creek Watershed (USGS hydrologic unit catalog #11020003), which drains into the Arkansas River (located about 35 miles to the south of the project area).

Stormwater drainage on Peterson AFB base drains into a series of inlets and buried lines. Five stormwater outfalls provide drainage at Peterson AFB. Another outfall discharges into the airport detention pond. Stormwater runoff from the north part of Peterson AFB (Command Area and along Paine Street) flows from an outfall at East Branch Sand Creek near the West Gate. This outfall is located about 30 feet north of the existing bridge over East Branch Sand Creek. Stormwater runoff from the North Gate vicinity flows into a localized area of inlets and infiltrates into the ground. Infiltration into soils and the underlying sediments is generally rapid in the Blakeland soils covering most of Peterson East and moderately rapid in the Blendon soils in the northern part of Peterson East.

However, clay lenses occur in localized areas at a depth of 5 feet along Stewart Avenue north of the East Gate and sandy clay and clay lenses occur along Stewart Avenue south of the East Gate from 0 to 8 feet. These sandy clay and clay lenses inhibit the permeability and infiltration of water. Localized ponding occurs in many areas of Peterson East.

Floodplains

Peterson AFB includes 3.5 acres that are situated within a 100-year floodplain that has been delineated by the Federal Emergency Management Agency (FEMA)for the East Fork of Sand Creek, in the northwest corner of Peterson AFB (**Figure 3-1**) (FEMA, 2012). All of the floodplain in the vicinity of the West Gate has been designated as Zone AE, for which Peterson AFB flood elevations have been determined. The creek sustains year-round flow from the Cherokee Water and Sanitation District sewage lagoons.

Governmental policy guides the actions for construction in or near floodplains. Executive Order 11988 *Floodplain Management* requires federal agencies to avoid, to the extent possible long-term and short-term adverse impacts associated with the modification of floodplains and to avoid floodplain development wherever there is a practicable alternative. Additionally, AFI 32-7064, *Integrated Natural Resources Management*, lists three criteria that must be met for the USAF to construct in a floodplain: evaluate and document the potential effects of such actions through the environmental impact analysis process; consider alternatives to avoid these effects and incompatible development in the floodplain; and design or modify actions in order to minimize potential harm to or within the floodplain.

3.5.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, surface water, groundwater, and floodplains would remain unchanged from baseline conditions as described above, and no impacts would occur.

Preferred Alternative (Alternative 1)

Ground Water

The establishment of additional impermeable surface areas would also reduce regional groundwater recharge capabilities but not at a significant level. Due to the limited area of excavation, impacts to the hydrogeologic properties of the aquifers (recharge and hydraulic conductivity) associated with Peterson AFB would not be significant.

Stormwater

Ground-disturbing activities associated with Preferred Alternative (Alternative 1) would include demolition and modification of existing roadways, in addition to new construction. Site preparation activities (e.g., grading) and construction would result in temporary exposure and compaction of soils, affecting surface water drainage flow patterns and percolation rates. Increases in surface water runoff would result in increased sediment loading to on-base water quality treatment areas during periods of precipitation.

With regard to surface water, the effects of implementing any of the alternatives over the long term (including eventual expansion of the parking areas) would increase impermeable surface acreages.

Floodplains

A portion of the west off-base parking area is located in the floodplain for East Sand Creek. A floodplain development permit would be required during design to determine the effects of the parking lot on the floodplain.

Water Quality

The Preferred Alternative (Alternative 1) would impact the water quality through the addition of approximately 140 acres of impervious surfaces. The Preferred Alternative (Alternative 1) would add the least amount of impervious surfaces compared to the other alternatives.

Alternative 2

Ground Water

Impacts to ground water would be similar to those described in Preferred Alternative (Alternative 1).

Stormwater

Impacts to stormwater would be similar to those described in Preferred Alternative (Alternative 1).

Floodplains

There would be no impacts to floodplains under Alternative 2.

Water Quality

Alternative 2 would impact the water quality through the addition of approximately 165 acres of impervious surfaces. Alternative 2 would add the greatest amount of impervious surfaces compared to the other alternatives.

Alternative 3

Ground Water

Impacts to ground water would be similar to those described in Preferred Alternative (Alternative 1).

Stormwater

Impacts to stormwater would be similar to those described in Preferred Alternative (Alternative 1).

Floodplains

There would be no impacts to floodplains under Alternative 3.

Water Quality

Alternative 3 would impact the water quality through the addition of approximately 156 acres of impervious surfaces. Alternative 3 would add the less impervious surfaces than Alternative 2.

Alternative 4

Ground Water

Impacts to ground water would be similar to those described in Preferred Alternative (Alternative 1).

Stormwater

Impacts to stormwater would be similar to those described in Preferred Alternative (Alternative 1).

Floodplains

There would be no impacts to floodplains under Alternative 4.

Water Quality

Alternative 4 would impact the water quality through the addition of approximately 155 acres of impervious surfaces. Alternative 4 would add the less impervious surfaces than Alternative 2.

3.5.3 Mitigation Measures

No Action Alternative

Under the No Action Alternative, surface water, groundwater, and floodplains would remain unchanged from baseline conditions and no impacts would occur.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

Stormwater

Design of stormwater drainage systems associated with the Preferred Alternative (Alternative 1) and other alternatives considered would incorporate low-impact development measures wherever feasible and practical, which would maintain site runoff to pre-development conditions. These measures could include the installation of vegetated filter strips, rain gardens or other best management practices (BMPs) along the inner medians that incorporate curb-cuts at engineered intervals to allow inflow and detention. There would also be potential for ponding to occur in areas surrounding the proposed parking apron and road due to a large increase in runoff.

During construction phases, applying BMPs such as silt fencing, re-vegetation, and suspension of construction during rainy periods would mitigate the effects of increased surface water runoff and sedimentation.

Preferred Alternative (Alternative 1)

Floodplains

The Preferred Alternative (Alternative 1) is situated within portions of a floodplain. General Condition 26 of the nationwide permits requires the permittee to construct the activity in accordance with FEMA or FEMA-approved local floodplain construction requirements to minimize adverse effects to flood flows in 100-year floodplains. The Pikes Peak Regional Floodplain Administration reviews proposed construction in floodplains within El Paso County. The need for a permit depends upon the degree of impact to the floodplain from the Preferred Alternative (Alternative 1), if any. The criterion for a permit is zero rise in the floodplain height or width.

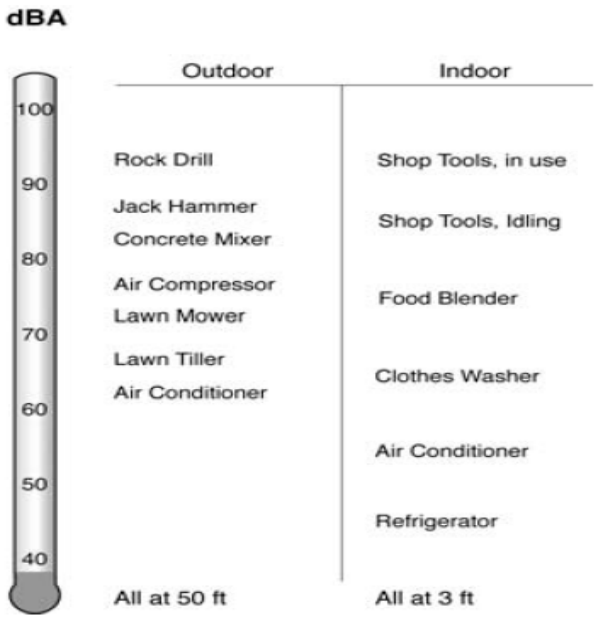
3.6 Noise

Noise can be defined as any unwanted sound that interferes with normal activities or in some way reduces the quality of the environment. Generally, noise levels at Peterson AFB and the surrounding areas result primarily from the operation of military and civilian aircraft at the three runways which Peterson AFB shares with the Colorado Springs Municipal Airport.

3.6.1 Noise Descriptors

The decibel (dB) is the unit used to quantify the intensity of sound throughout all frequencies. However, the human ear perceives only a relatively narrow range of sound frequencies. Therefore, the A-weighted decibel (dBA) is used to measure sound intensity for the purposes of protecting human health and the environment. The use of the dBA emphasizes the measurement of sound levels with frequencies in the range of human perception. **Figure 3-2** presents the typical decibel levels associated with the environment and industry.

Figure 3-2 Typical Sound Levels



The City of Colorado Springs owns and operates the three runways at Colorado Springs Municipal Airport and is therefore responsible for managing noise generated at that facility. The day-night average noise level (DNL) is computed by averaging individual dBA measurements and then making corrections to that average based on the number of noise events and the time of day they occurred.

Noise levels generated by aircraft at the airport range from 60 to more than 75 DNL in the immediate vicinity of the runways (Peterson AFB, 2011b). Peterson AFB shares the runway with the City of Colorado Springs and supports approximately 230,000 flights a year.

Other sources of noise at Peterson AFB include vehicular traffic, construction activities, and equipment operation. With the exception of the noise generated by aircraft, noise levels at Peterson AFB are generally lower than 65 dBA.

Air Installation Compatible Use Zone

The DoD developed the Air Installation Compatible Use Zone (AICUZ) Program to manage noise levels in and around its air installations and to promote land use compatibility between air installations and surrounding communities. The City of Colorado Springs operates the airfield; therefore Peterson AFB is not required to implement the AICUZ program and the Springs airport has chosen to follow FAA criteria instead of the AICUZ Program.

Sensitive Receptors

Sensitive receptors are facilities or land-use areas which are the most sensitive to noise in that quietness is necessary for appropriate use of these areas. Examples of sensitive areas include residential areas, schools, healthcare facilities, and childcare facilities. Sensitive receptors are located on Peterson AFB and include the residential area in the east-central portion of base, a childcare facility, two child development centers, and Peterson AFB chapel (**Figure 3-1**). There are numerous future receptors that may be present on base with the implementation of the BluePrint - 2050 Plan.

3.6.2 Environmental Consequences

Noise impact analyses, in general, evaluate potential changes to existing noise environments that would result from implementation of a proposed action. Potential changes in the noise environment may be beneficial (i.e., reducing the number of sensitive receptors exposed to undesirable noise levels), negligible (i.e., total area exposed to undesirable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure to unacceptable noise levels). An increase in noise levels due to introduction of a new noise source may constitute an impact on the surrounding environment.

Construction Related Impacts

Implementation of the Preferred Alternative (Alternative 1) or other alternatives considered would have minor, temporary increases in localized noise levels in the vicinity of the project area during construction. Peterson AFB is an active military facility that typically experiences high noise levels from daily flight operations. Use of construction and demolition equipment for site preparation and development (i.e., demolition, vegetation removal, grading, fill, and construction) would generate noise above typical ambient levels. However, noise would be similar to typical construction and

demolition noise. Noise would be confined to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.), last only the duration of the specific construction and demolition activities (short-term), and could be potentially reduced by the use of equipment sound mufflers.

Compared with aircraft noise, noise produced by construction and demolition of any proposed alternatives would be relatively lower in magnitude, and spread out during the day. Noise from truck traffic hauling construction materials to construction location and demolition materials away from the construction locations and the staging area would not affect base residents significantly. Any immediate noise disruptions would be temporary and would be limited to daytime hours; therefore, impacts are considered insignificant.

Operational Related Impacts

Construction of the proposed alternatives would not comprise a substantial source of new noise. Implementation of any one of the alternatives would likely increase traffic on Peterson AFB, however this would result in negligible localized noise impacts as the associated roadways and parking facilities would be similar to existing conditions and sited in an area where ambient noise levels are dominated by aircraft activity.

No Action Alternative

If the No-Action Alternative were selected, noise impacts anticipated to occur during implementation of the Preferred Alternative (Alternative 1) would not occur and noise levels associated with ongoing operations would be as described above.

Preferred Alternative (Alternative 1)

The Preferred Alternative (Alternative 1) would be constructed within an area that typically experiences noise levels of less than 65 day-night average sound level (DNL), no components of the Preferred Alternative (Alternative 1) would be considered sensitive receptors. Therefore, once operational, the Preferred Alternative (Alternative 1) would result in negligible impacts to noise resources over the long term.

Alternatives 2, 3, and 4

The proposed alternatives would increase the noise levels around the residential portions of Peterson AFB (**Figure 3-1**). However, the noise increases from Alternatives 2, 3, and 4 are negligible compared to the noise from the aircraft activity occurring on adjacent runways.

3.6.3 Mitigation Measures

No Action Alternative

No mitigation measures are required for the No Action Alternative.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

Due to the proximity of all of the alternatives to the aircraft activity, no mitigation measures are necessary.

3.7 Safety and Security

Ground, explosive and flight safety involving operations conducted by Peterson AFB are addressed in this section. The primary safety concern at facilities with aircraft operations is the potential for

aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes. Also considered in this section is the safety of personnel and facilities on the ground that may be placed at risk from flight operations. In the immediate vicinity of the runway, risks associated with safety-of-flight issues are interrelated with ground safety concerns. Any aircraft accident at the airfield would have direct impacts on the ground in the immediate vicinity of the mishap as a result of explosion, fire, and debris spread.

Accident Potential Zones (APZ) are the areas extending from the end of the runway that have been deemed as having accident potential based on historical crash data, and is considered the most hazardous area. Three APZs are present surrounding Peterson AFB – one on the east side extending from the north end of the Peterson AFB runway on the east of side to Stewart Avenue and two associated with the Colorado Springs Airport on the west side (**Figure 3-1**). APZs and noise zones together can result in areas that are not suited for some types of development.

One-Engine Inoperative (OEI) – This Federal Aviation (FAA) regulation states that an aircraft must be able to clear obstacles in the APZ in the event one of the engines on a typical multi-engine aircraft becomes inoperative during takeoff. Therefore, the FAA defines obstacle free areas in the APZ as 35 feet vertically or 300 feet horizontally in the event of an OEI situation on takeoff. These obstacle free areas may not be suitable for some types of development.

3.7.1 Environmental Consequences

No Action Alternative

There would be no safety and security changes under the No Action Alternative.

Preferred Alternative (Alternative 1)

The Preferred Alternative (Alternative 1) Northeast parking area is situated within the APZ extending north from the Peterson AFB runway.

Alternative 2, 3, and 4

The Alternative 2 Northeast parking area, Alternative 3 East parking area #2, and Alternative 4 East parking area is situated within the APZ extending north from the Peterson AFB runway. Additionally, these alternative locations do not meet the clearance criteria required for the OEI as determined by the FAA.

3.7.2 Mitigation Measures

No Action Alternative

The No Action Alternative would not require mitigation as the Preferred Alternative (Alternative 1) would not be constructed.

Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4

The Preferred Alternative (Alternative 1) and Alternatives 2, 3, and 4 will require coordination with the FAA and Peterson AFB security and planning departments prior to construction and operation of the Preferred Alternative (Alternative 1) or other alternatives considered.

4.0 CUMULATIVE IMPACTS

This chapter outlines potential cumulative impacts related to the Preferred Alternative (Alternative 1) and other alternatives described in this EA. Cumulative Impacts are defined in the CEQ Guidance as:

"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 and regardless of what agency (Federal or Non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7)

The CEQ guidance limits cumulative impact analysis to "important issues of national, regional or local significance" (CEQ, 1997). The cumulative impacts analysis focuses on the resources that are directly impacted by the Preferred Alternative (Alternative 1) or other alternatives considered. If this project has no direct impacts to a resource, then it does not contribute to cumulative impacts to that resource, regardless of the effects of other past, present, or future projects.

Given the resource analysis and resulting impacts established in **Chapter 3**, the following resource areas were evaluated for potential cumulative impacts:

- Biological Resources
- Land Use

Based on the resource analysis and expected impacts established in **Chapter 3**, the following resources were determined not to contribute to cumulative impacts either because no impacts are associated with the resource or because implementation of the mitigation measures offsets the impact creating beneficial cumulative impacts:

- Air Quality
- Hazardous Materials and Hazardous Waste Management
- Water Resources
- Noise
- Safety and Security

4.1 Actions Considered

The projects and other activities considered for cumulative impact analyses include continued upgrades and expansion of Peterson AFB as well as continued community expansion in the areas of Colorado Springs surrounding the AFB.

4.2 Off-Base Activities

- *EA and FONSI for Powers Boulevard (SH 21) Between Woodmen Road and State Highway 16 in Colorado Springs, April 2010 (CDOT, 2010)*

  This 17-mile corridor EA identified significant transportation improvements at the Stewart Avenue and Powers Boulevard intersection in order to accommodate Peterson AFB related traffic. The Preferred Alternative in the Powers Boulevard EA identifies a grade-separated interchange at Airport/Stewart Road and Powers Boulevard. The interchange would allow traffic to cross under Powers Boulevard. The EA deemed the interchange a high priority

segment given that it serves Peterson AFB's main entrance that is currently congested with commuter traffic in the peak travel hours. Construction of the interchange is undefined at this time due to funding constraints.

- *Marksheffel - South Planning and Environmental Linkages Study El Paso County, in progress 2012*

  El Paso County has initiated a transportation corridor planning study for improvements to the Marksheffel Road corridor between Mesa Ridge Parkway and SH 94. The project began in 2012 and is in the early planning phases. The study is looking at defining the ultimate roadway section of Marksheffel Road, but is not considering realignment options. However, given the proximity of Marksheffel Road to Peterson AFB the results of this study are important to understand as they may directly influence some of the recommendations of this EA. However, given the early status of this study it is not further considered in the cumulative impacts discussion.

4.3 On-Base Activities

Two Peterson AFB projects were evaluated as a part of the cumulative impacts

- *Final EA and FONSI General Plan, Five-Year (GP5) Development Component for Peterson Air Force Base, Spring 2011 (Peterson AFB, 2011b)*

  The USAF requires more modern facilities and/or expansion of mission-critical operations and needs to provide infrastructure improvements necessary to support the mission of Peterson AFB and their tenants.

  The Proposed Action in the GP5 EA includes construction of 11 components including: an Outdoor Multi-functional Training Facility, a Security Forces Facility and companion facilities, Reserve Forces Training Facility and Command Complex Fire Station, a Military Working Dog Kennel, a Fitness Center Annex, Headquarters Air Force Space Command Annex, additions to / alterations of a communications facility, 36 two-bedroom apartments as part of a Temporary Living Facility, a 25kW Photovoltaic Solar Array, a Fire Station and Explosive Ordinance Disposal Facility, and Peak View Park and Family Camp.

- *EA and FONSI for Proposed Colorado Springs Airport for Proposed Colorado Springs Airport /El Paso County School District 11 Property Acquisition and Future Development at Peterson Air Force Base, February 2011 (Peterson AFB, 2011a)*

  The Proposed Action in the COSA EA comprises the acquisition of approximately 345 acres of land adjacent to Peterson AFB via long-term lease; four parcels comprise the acreage and are currently owned by Colorado Springs Airport and El Paso County School District 11. In addition, the USAF proposes relocation of the existing East Gate and associated roadway, and eventual development of a parking lot on a portion of the land proposed for acquisition. Three alternatives were developed for implementation of the Proposed Action. Under the Proposed Action the proposed land acquisition, construction of the Command Complex Shuttle Parking Lot to the east of the Command Complex Area, and relocation of the existing East Gate would be implemented; however, the location of the proposed new East Gate could vary.

The Proposed Action in the COSA EA covers the acquisition of the land (Parcels 2 and 8) to the east of Peterson AFB that the *Base Wide Comprehensive Transportation Plan* recommends for the future transportation enhancements discussed in this EA. Acquisition of this land is essential for the *Base Wide Comprehensive Transportation Plan* recommendations to be implemented.

4.4 Resources Evaluated for Cumulative Impacts

Past Cumulative Impacts

Biological Resources – Substantial wildlife habitat has been lost as a result of past development activities at Peterson AFB and surrounding areas, such as residential, commercial, recreational and military uses. Many species that avoid human presence were displaced from the areas long ago. Ranch land supporting wildlife habitat was sold off for development.

Land Use – After intermittent operations following World War II, Peterson Field was reactivated by the Air Force in 1951 at the Colorado Springs Airport. Following this reactivation, Peterson AFB had continued expansion including the municipal airport expansion and relocation of the terminal. Demand for development converted land uses from ranches to residential land uses. Between the mid-1950's and 2005, the population of El Paso County grew from 110,000 residents to 568,000 residents; thereby pressuring land use conversions to support growth.

Present and Future Cumulative Impacts

Final EA and FONSI General Plan, Five-Year (GP5) Development Component for Peterson Air Force Base, Spring 2011 (Peterson AFB, 2011b)

Biological Resources – The Proposed Actions of the GP5 EA would disturb areas that were previously developed, have currently experienced high levels of continual human activity, lack native terrestrial habitat, and exhibit a low level of biodiversity. No anticipated long-term habitat loss would be recognized under the Proposed Actions of the GP5 EA. Permanent development would constitute a reduction of approximately less than 3 percent of habitats found on the proposed GP5 component locations. This would be considered negligible due to the abundance of similar habitat present to the east and south of Peterson AFB.

Land Use – Implementation of the Preferred Alternative of the GP5 EA would result in beneficial impacts to land use at Peterson AFB. Construction of the GP5 components would provide upgrades to existing facilities that are designed to increase mission efficiencies, future development and expansion of mission-critical facilities. No changes in zoning would be required to implement the Preferred Alternative. Further, the Preferred Alternative as a whole would be consistent with the base's *General Plan* (Peterson AFB, 2009) and ADPs. Finally, the Preferred Alternative would not conflict with the designated airfield APZs and RPZs, and would not conflict with airfield planning criteria. Therefore, impacts to land use would be considered negligible over the long term.

EA and FONSI for Proposed Colorado Springs Airport for Proposed Colorado Springs Airport /El Paso County School District 11 Property Acquisition and Future Development at Peterson Air Force Base, February 2011 (Peterson AFB, 2011a)

Biological Resources – Implementation of the COSA EA Preferred Alternative would require construction activity that would result in vegetation and soil disturbance in previously undeveloped prairie communities. Phase I of the Proposed Action, would disturb approximately 32 acres of prairie, while Phase II would develop approximately 10 additional acres. The anticipated long-term

habitat loss under the Preferred Alternative would total approximately 36 acres. It should be noted that these impacts overlap with the impacts covered in the *Base Wide Comprehensive Transportation Plan EA.*

Land Use – Implementation of the Preferred Alternative in the COSA EA would result in beneficial impacts to land use at Peterson AFB. Acquisition of the proposed parcels would provide a buffer against future land-use encroachment threats posed by potential third party development of land adjacent to Peterson AFB, such as required AT/FP standoff distances associated with USAF facilities. Additionally, the relocation of the East Gate and the development of the Command Complex Shuttle Parking Lot would also create a centralized parking facility that would allow the 21 SW to reclaim land in the Headquarters Area that is currently utilized for parking for the efficient future development and expansion of mission-critical facilities. No changes in zoning would be required to implement the Preferred Alternative. Further, the Preferred Alternative as a whole would be consistent with the base's *General Plan* (Peterson AF, 2009). Finally, the Preferred Alternative would be compatible with the designated airfield APZs and RPZs, and would not conflict with airfield planning criteria. Therefore, impacts to land use would be considered minor over the long term.

EA and FONSI for Powers Boulevard (SH 21) Between Woodmen Road and State Highway 16 in Colorado Springs, April 2010 (CDOT, 2010)

Biological Resources – The Powers Boulevard EA Proposed Action would convert 260 acres of grassland to highway use between Woodmen Road and State Highway 16. The area of permanent vegetation loss would be within long narrow strips next to the highway. Wetland loss would be 0.12 acres. No effects to threatened, endangered or sensitive species are expected to occur. The freeway would make it more difficult for wildlife movement.

Land Use – The Powers Boulevard EA would require the relocation of 47 households and displacement of 17 businesses. These properties would be converted to transportation land uses throughout the 17 mile corridor.

4.5 Cumulative Impacts Summary

Biological Resources – Cumulative effects of the Preferred Alternative (Alternative 1) and the other alternatives considered for the *Peterson AFB Base Wide Comprehensive Transportation Plan 2012* (2012 Transportation Plan) (FHU, 2012), combined with past, present, and reasonably foreseeable future projects would represent a negligible contribution to the cumulative impacts discussed above and therefore do not require mitigation.

Land Use – Cumulative effects of the Preferred Alternative (Alternative 1) and the other alternatives considered for the *Peterson AFB Base Wide Comprehensive Transportation Plan 2012* (2012 Transportation Plan) (FHU, 2012), combined with past, present, and reasonably foreseeable future projects would represent a negligible contribution to these cumulative impacts and therefore do not require mitigation.

Other – In combination with the other projects, the following beneficial cumulative impacts would be expected:

- reduced existing and future traffic congestion within the vicinity of Peterson AFB
- improved water quality through water quality BMPs

5.0 SUMMARY OF FINDINGS

Environmental impacts anticipated to occur from implementation of the Preferred Alternative (Alternative 1) and other alternatives considered at Peterson AFB are summarized in **Table 5-1**. The following system was utilized to rank the level of impact:

- Fair – a fair impact indicated that implementation of the alternative had relatively little change on the resource as compared to existing conditions.
- Poor – a poor impact indicated that implementation of the alternative had negative impacts on a resource as compared to existing conditions and as compared to other alternatives.

Table 5-1 Summary of Environmental Impacts

Resource	Evaluation Criteria	Alternative				No Action
		Preferred Alternative (Alternative 1)	2	3	4	
Air Quality	Attainment / Maintenance/ Non-Attainment Area (NAAQS)	**Fair** Carbon Monoxide Maintenance Area	**Fair** Carbon Monoxide Maintenance Area	**Fair** Carbon Monoxide Maintenance Area	**Fair** Carbon Monoxide Maintenance Area	**Fair** Carbon Monoxide Maintenance Area
Hazardous Materials and Wastes	Presence of Asbestos or Lead Based Paint	**Fair** Chance of Asbestos and LBP	**Fair** Chance of Asbestos and LBP	**Fair** Chance of Asbestos and LBP	**Fair** Chance of Asbestos and LBP	**Fair** Chance of Asbestos and LBP
Biological Resources	Loss of Prairie/Wildlife Habitat	**Fair** Loss of 64 acres prairie/wildlife habitat	**Fair** Loss of 68 acres prairie/wildlife habitat	**Poor** Loss of 107 acres prairie/wildlife habitat	**Poor** Loss of 116 acres prairie/wildlife habitat	**No Change**
Land Use	Change in Land Use Type from BluePrint - 2050 Plan	**Poor** Recreation areas, off base land use converted	**Poor** Recreation areas, Silver Spruce Golf Course converted	**Fair** Recreation areas converted to parking lots and roads	**Fair** Recreation areas converted to parking lots and roads	**No Change**
Water Resources	Amount of Impervious Surface Requiring Treatment	**Poor** 140 Acres Impervious Surface Impacts floodplain	**Poor** 165 Acres Impervious Surface	**Fair** 156 Acres Impervious Surface	**Fair** 155 Acres Impervious Surface	**No Change** No new Impervious Surface
Noise	# of sensitive receptors within 500 feet of new or expanded Roadways	**Fair** 166 sensitive receptors	**Poor** 190 sensitive receptors	**Fair** 166 sensitive receptors	**Fair** 166 sensitive receptors	**No Change**

Resource	Evaluation Criteria	Alternative				No Action
		Preferred Alternative (Alternative 1)	2	3	4	
Safety and Security	Parking lots in APZ[2]	**Poor** Parking in APZ	**Fair** Parking in APZ	**Fair** Parking in APZ	**Fair** Parking in APZ	**No Change**
Summary of Results		Negative impacts to land use, floodplain, and safety and security	Negative impacts to land use, water resources, noise	Negative impacts to biological resources	Negative impacts to biological resources	Does not meet Purpose and Need

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APPENDIX A INTERAGENCY COORDINATION LETTERS

Interagency coordination is ongoing. Letters from agencies will be included in this appendix after they are received when the circulation of this Draft EA is complete.

APPENDIX B NOTICE OF AVAILABILITY (NOA) AND AFFIDAVIT OF PUBLICATION

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Notice of Availability
Draft Environmental Assessment (EA)
and Draft Finding of No Significant Impact
(FONSI)

Peterson Air Force Base
Base Wide Comprehensive
Transportation Plan
Peterson Air Force Base, Colorado

Felsburg Holt & Ullevig, on behalf of Peterson Air Force Base (PAFB), announces the availability of the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed Base Wide Comprehensive Transportation Plan.

An analysis of the environmental impacts of the Preferred Alternative is presented in a Draft EA and Draft FONSI, available for public review and comment. Copies may be reviewed at the Pikes Peak Library District - Penrose Library, 20 North Cascade Ave., Colorado Springs, CO 80903. Additionally, the document can be reviewed electronically at: http://www.fhueng.com/environmental/index.html

Written and substantive public comment concerning the Preferred Alternative is invited from November 30, 2012 and will be received until December 29, 2012. Comments or questions should be addressed in writing to PAFB, Attn: Keith Gramprie, 21CES/CENPL, 580 Goodfellow St., Peterson AFB, CO 80914-2370. For more information, please contact Mr. Gramprie at (719) 556 4136, or via email at keith.gramprie@peterson.af.mil.

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