
Final
Environmental Assessment
Proposed Joint Permanent Air Facility
United States Customs and Border Protection
Office of Air and Marine At Libby Army Airfield
Fort Huachuca, Sierra Vista, Cochise County, Arizona



Prepared for:



**U.S. Customs and
Border Protection**

**United States Customs and Border Protection
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July 2015

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Environmental Assessment
Proposed Joint Permanent Air Facility
United States Customs and Border Protection Office of Air and Marine
Libby Army Airfield, Fort Huachuca, Sierra Vista, Cochise County, Arizona

PROJECT HISTORY: The Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP) proposes to construct, operate, and maintain a joint permanent CBP Office of Air and Marine (OAM) facility at Libby Army Airfield (LAAF), Fort Huachuca, Arizona. The mission of CBP OAM is to protect the American people and Nation's critical infrastructure through the coordinated use of integrated air and marine forces to detect, interdict and prevent acts of terrorism and the unlawful movement of people, illegal drugs and other contraband toward or across the borders of the United States. CBP OAM performs this critical mission by providing real-time surveillance information and maritime and aerial support to the homeland security efforts of DHS, as well as to those of Federal, State, local, and tribal agencies.

CBP OAM, formerly part of U.S. Border Patrol (USBP) Air Operations, has operated at LAAF on Fort Huachuca since 1999, providing support to the USBP's Tucson Sector mission to manage operational control of the border. CBP OAM currently operates from a temporary facility, constructed in 2008, that is located on the southeast side of LAAF.

To comply with the requirements of the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) Regulations for implementing NEPA, and DHS Management Directive (MD) 023-01, the Environmental Assessment (EA) has been prepared in coordination with Federal and State agencies to identify and assess potential impacts associated with construction and operation of the proposed facility.

PROJECT LOCATION: The preferred alternative is located on the south side of LAAF, Fort Huachuca, Arizona, on the southwest end of the airfield. The project area comprises approximately seven acres of land located on a tarmac and taxi way shared by Arizona and Missouri Air National Guard facilities. The existing temporary facility is located on a similar property located on the southeast end of the airfield.

PURPOSE AND NEED: The purpose of this action is to establish a joint permanent air operations facility at LAAF, Fort Huachuca, Arizona to support the USBP's Tucson Sector mission to manage operational control of the border. CBP OAM provides air support to USBP Tucson Sector ground units and other law enforcement agencies to interdict foreign national smuggling operations, detect and report other illegal air or ground activities, and engage in Search and Rescue (SAR) operations.

The primary project need is for sufficient land with access to a taxi strip that will allow for development of a facility to support current helicopter and unmanned aircraft systems (UAS) operations. The facility will need to have the capacity to accommodate at least six aircraft and 69 personnel. At a minimum, the facility would require hangars, support buildings, vehicle and aircraft parking, and related utilities and ancillary features. The airport and associated airspace

must be able to support unmanned aircraft system (UAS) operations and provide proximity to the U.S. - Mexico International Border in the Tucson Sector.

The facility site must have a high level of physical security and 24-hour occupational access will be required to meet mission objectives and protect enforcement assets. The site must be cost effective to improve. All construction and operations must be consistent with Fort Huachuca Real Property Master Plan.

ALTERNATIVES:

Alternative 1: Proposed Action

CBP proposes relocating operations to a joint permanent air operations facility to fulfill its mission along the U.S. – Mexico International Border. Under Alternative 1, CBP would have a real estate permit with Fort Huachuca for about seven acres of land at the southwest end of the South Taxiway for the construction and operation of the proposed joint permanent facilities (**Figure ES-1**).

The proposed action would include the construction of a joint permanent facility for 69 personnel to support the existing Sierra Vista Air Unit (SVAU) and UAS operations and would provide office space. The SVAU assigned to Fort Huachuca will consist of three AS-350 helicopters. The UAS Squadron permanently assigned to the Installation will consist of three MQ-9 Predator aircraft. Fort Huachuca's Real Property Master Plan Update (2007) estimates current combined flight operations (departures and landings) of 160,000 per year at LAAF and SVMA. Air operations for the proposed action may occur on a 24 hour/day, 7 day/week basis, resulting in approximately 22 air operations daily for a total 8,030 air operations annually (U.S. Army 2007b). This would represent 5 percent of the current flight operations at the LAAF/SVMA airport.

At present, joint permanent facility planning is in progress (**Figure ES-2**). Therefore, this EA considers a conceptual alternative that will allow for environmental clearance of the maximum area required to meet the project's purpose and need. The following facilities description was prepared for the Description of Proposed Action and Alternatives (DOPAA): 40,000-square feet (SF) of hangar area, 14,000-SF Administration/Operation Center, 44,250-SF Apron/Ramp, 20,000-SF of paved parking, 5,000-SF for storage parking, 43,250-SF of hardstand, and a 5,200-SF utilities building. The proposed Air Facility would require additional utilities including, but not limited to, electrical/data quad duct, electrical, communications dish(s), and antenna(s). Other supporting items such as fencing, sidewalks and lighting may be required. Planning for facility space also takes into account the possibility that operation and mission requirements may dictate the need to host temporarily a wide variety of other aircraft.

Seven acres of land is available from AANG for site planning and design. All of the seven acres of land could be disturbed during facility construction, including excavation, grading, paving and landscaping. It is estimated that heavy construction equipment could operate for up to four weeks during the site preparation stage. Construction materials are anticipated to be supplied by local or regional vendors. Total construction time could be two years.

The proposed action includes transfer of the existing temporary facility. The disposition of the temporary facility will include removal of some operational structures including the above ground ancillary structures, storage buildings, satellite dishes, and antennae. The fabric hangars and the mobile administrative buildings will remain in place, as well as the concrete apron and taxiway. All removed structures will be either re-used on the new facility or disposed of as surplus property or waste.

Alternative 2: No Action Alternative

Under Alternative 2, the No Action Alternative, CBP OAM would continue the operation and maintenance of the existing temporary facility south of the Southeast Taxiway at LAAF. No new facilities would be constructed and existing personnel and air operations would continue. However, the lease agreement on the current, existing temporary CPB OAM facility is set to expire. CBP OAM was notified that LAAF does not intend to consider renewal of the lease, citing long-range land use planning conflicts. A new lease agreement on the existing site will be required, despite the land use planning conflicts, to accommodate the No Action Alternative. In the worst case the existing facilities will no longer be available for use, CBP will have to vacate the facility, and CBP operations will terminate.

The existing facility is comprised of an airfield apron and taxiway, temporary hangars with ancillary structures, temporary office structures and parking area. The hangar area specifically includes two hangars of canvas or fabric skin construction. One hangar houses predator drones, and the other hangar houses helicopters. The concrete apron supports the hangars and other ancillary structures that are all temporary in nature, including: mobile flight operation command centers, mobile fuel tankers in secondary containment, storage buildings, and predator drone and helicopter staging. Adjacent to the concrete apron are three mobile diesel powered generators, satellite dishes, and other antenna structures. The administrative complex consists of mobile offices with associated utilities, small storage buildings, and a gravel parking area. Alternative 2 currently accommodates 69 personnel and six aircraft (three AS-350's and three MQ-9).

The No Action Alternative does not satisfy purpose and need. Since CBP OAM was notified that LAAF does not intend to consider renewal of the lease, it is likely that the existing facilities will no longer be available for use, and CBP operations will be disturbed.

ENVIRONMENTAL CONSEQUENCES: The following paragraphs provide a summary of the affected environment and consequences associated with the No Action and Proposed Action Alternatives.

Alternative 1: Proposed Action Alternative

Alternative 1, the Proposed Action Alternative would include construction and operation of a joint permanent CBP OAM facility at LAAF. Alternative 1 would allow for relocation of existing CBP OAM operations to meet mission requirements.

Alternative 1 would result in no impact or negligible impact to surface waters, floodplains, vegetation, wildlife, cultural resources, climate, noise, roadways and traffic, aesthetic and visual resources, hazardous materials, socioeconomics, or environmental justice and the protection of

children. Alternative 1 may result in minor permanent impacts to land use, soils, and sustainability and greening as a result of facility construction on approximately seven acres. Minor temporary construction impacts are also anticipated to wildlife, air quality, noise, and health and human safety.

Alternative 1 could result in direct, indirect, and cumulative impacts related to groundwater use. Total water use associated with 69 personnel at the CBP OAM facility, their household domestic use, and induced water use generated by the presence of CBP OAM operations is estimated to result in 43.91 acre feet per year (AF/YR) of groundwater withdrawal from the Sierra Vista Subwatershed. A portion of this water use would affect natural discharge, ultimately resulting in a 0.08 percent decrease in the baseflow of the San Pedro River. Additionally, one-time construction use would result in 6.74 AF of groundwater withdrawal.

Over time, this small reduction in baseflow may increase potential for degradation of riparian vegetation and instream habitat, specifically in the San Pedro River National Conservation Area (SPRNCA). This potential habitat loss could affect water related species, including threatened and endangered species. Therefore, CBP is obligated under Section 7 of the Endangered Species Act to implement conservation and mitigation measures which will offset adverse effects associated with its proposed action on threatened and endangered species. CBP has contracted with the Army Corps of Engineers to help acquire conservation easements. In addition, CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures.

Alternative 2: No Action Alternative

Alternative 2, the No Action Alternative, serves as a baseline for evaluation of the impacts of the Proposed Action Alternative. Alternative 2 would result in the continuation of existing CBP OAM operations at LAAF, with a renegotiated lease. As Alternative 2 would not expand existing operations or result in new construction, no additional impacts are anticipated compared to existing conditions.

With either Alternative 1(Proposed Action) or Alternative 2 (No Action), CBP will need to mitigate 24.78 AF/YR to offset potential impacts related to groundwater use. CBP has contracted with the Army Corps of Engineers to help acquire conservation easements for mitigation. Other specific water conservation measures will be determined as appropriate based on continued coordination with the USFWS. CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures. Measures will likely include a combination of water conservation, rainwater harvesting, and/or detention basin recharge to meet sustainability requirements.

MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES:

CBP will follow design criteria to reduce adverse environmental impacts and subsequently would implement mitigation measures to offset adverse environmental impacts. Design criteria to reduce adverse environmental impacts include avoiding or minimizing physical disturbance and construction to sensitive resources, consulting with Federal and State agencies and other stakeholders, and developing appropriate Best Management Practices (BMPs).

BMPs would be implemented as standard operating procedure during all construction activities, and would include proper handling, storage, and/or disposal of hazardous and/or regulated materials. Standard procedures will include the implementation of an Arizona Construction General Permit and Stormwater Pollution Prevention Plan (SWPPP); Spill Prevention Control and Countermeasures Plan (SPCC); Dust Control Plan; Fire Prevention and Suppression Plan; and inadvertent discovery procedures from the Installation Cultural Resource Management Plan (ICRMP).

CBP will acquire water conservation easements to offset anticipated water demand within the Sierra Vista Subwatershed that would be associated with the proposed project. With either Alternative 1 (Proposed Action) or Alternative 2 (No Action), CBP will need to mitigate 24.78 AF/YR to offset potential impacts related to groundwater use. During construction of Alternative 1, it will be necessary to also mitigate for construction induced net water use for 3.90 AF, as a one-time water use event (total of 28.68 AF/YR for the construction year). CBP has contracted with the Army Corps of Engineers to help acquire conservation easements for mitigation. Other specific water conservation measures will be determined if possible. CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures. Measures will likely include a combination of water conservation, rainwater harvesting, and/or detention basin recharge to meet sustainability requirements.

FINDING: Based upon the analyses of the Proposed Action and Alternatives in the EA including BMPs and mitigation measures to be incorporated as part of the Proposed Action, it has been concluded that the Proposed Action will not result in any significant adverse effects to the environment. Therefore, no further environmental impact analysis is warranted.

David Song
Branch Chief, Western Region
Air and Marine Facilities Program Management Office
U.S. Customs and Border Protection

Date

Karl Calvo
Executive Director
Facilities Management and Engineering
U.S. Customs and Border Protection

Date

EXECUTIVE SUMMARY

INTRODUCTION

The United States (U.S.) Department of Homeland Security (DHS) U.S. Customs and Border Protection (CBP) proposes to construct, operate, and maintain a joint permanent CBP Office of Air and Marine (OAM) facility at Libby Army Airfield (LAAF), Fort Huachuca, Arizona. The mission of CBP OAM is to protect the American people and Nation's critical infrastructure through the coordinated use of integrated air and marine forces to detect, interdict and prevent acts of terrorism and the unlawful movement of people, illegal drugs and other contraband toward or across the borders of the United States. CBP OAM performs this critical mission by providing real-time surveillance information and maritime and aerial support to the homeland security efforts of DHS, as well as to those of Federal, State, local, and tribal agencies.

CBP OAM has operated at LAAF on Fort Huachuca since 1999, providing support to the US Border Protection's (USBP) Tucson Sector mission to manage operational control of the border. CBP OAM currently operates from temporary facilities, constructed in 2008, that are located on the southeast side of LAAF.

To comply with the requirements of the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) Regulations for implementing NEPA, and DHS Management Directive (MD) 023-01, this Environmental Assessment (EA) has been prepared in coordination with Federal and State agencies to identify and assess potential impacts associated with construction and operation of the proposed facility.

DESCRIPTION OF PROPOSED ACTION

CBP proposes relocating operations to a joint permanent air operations facility to fulfill its mission along the U.S. – Mexico International Border. Current operations at LAAF include 69 personnel supporting jointly the Sierra Vista Air Unit (SVAU) and Unmanned Aircraft System (UAS) operations. Assets currently assigned to the SVAU program include three AS-350 helicopters. Assets currently assigned to the UAS operation include three MQ-9 Predator aircraft.

The proposed action would provide for the construction of a joint permanent facility for 69 personnel to support the existing SVAU and UAS operations including office space. The SVAU assigned to Fort Huachuca will consist of three AS-350 helicopters. The UAS Squadron permanently assigned to the Installation will consist of three MQ-9 Predator aircraft. Fort Huachuca's Real Property Master Plan Update (2007) estimates current combined flight operations (departures and landings of civilian and military aircraft) of 160,000 per year at LAAF and SVMA. Air operations for the proposed action may occur on a 24 hour/day, 7 day/week basis, resulting in approximately 22 air operations daily for a total 8,030 air operations annually (U.S. Army 2007b). This would represent 5 percent of the current flight operations at the LAAF/SVMA airport.

PURPOSE AND NEED

The purpose of this action is to establish a joint permanent air operations facility at LAAF, Fort Huachuca, Arizona to support the US Border Patrol's Tucson Sector mission to manage operational control of the border. CBP OAM provides air support to USBP Tucson Sector ground units and other law enforcement agencies to interdict foreign national smuggling operations, detect and report other illegal air or ground activities, and engage in Search and Rescue (SAR) operations.

The primary project need is for sufficient land with access to a taxi strip that will allow for development of a facility to support current helicopter and UAS operations. The facility will need to have the capacity to accommodate at least six aircraft and 69 personnel. At a minimum, the facility would require hangars, support buildings, vehicle and aircraft parking, and related utilities and ancillary features. The airport and associated airspace must be able to support UAS operations and provide proximity to the U.S. - Mexico International Border in the Tucson Sector.

The facility site must have a high level of physical security and 24-hour occupational access will be required to meet mission objectives and protect enforcement assets. The site must be cost effective to improve. All construction and operations must be consistent with Fort Huachuca Real Property Master Plan.

PROPOSED ACTION AND ALTERNATIVES CONSIDERED

CBP proposes to construct, operate, and maintain a permanent CBP OAM facility at Libby Army Airfield, located in the north-central portion of the Fort Huachuca Military Installation. LAAF is ideally located to support the USBP Tucson Sector's mission to manage operational control of the remote and rugged terrain along the southern U.S. border.

Additionally, the UAS mission must be flown from LAAF under an agreement between CBP and the Federal Aviation Administration (FAA) for the use of airspace. The LAAF/Sierra Vista Municipal Airport (SVMA) is a joint military/civil airport at the Fort Huachuca, Arizona, and is the only airport capable of supporting forward area CBP OAM operations within the Tucson Sector (INS, 2003). Therefore, locations outside the LAAF/SVMA were not considered in this EA. **Figure ES-1** shows the proposed locations of the proposed action alternative, no action alternative, and alternatives considered and eliminated.

Alternative 1: Proposed Action Alternative

CBP proposes relocating operations to a joint permanent air operations facility to fulfill its mission along the U.S. – Mexico International Border. Under Alternative 1, CBP would have a real estate permit with Fort Huachuca for about seven acres of land at the southwest end of the South Taxiway for the construction and operation of the proposed joint permanent facilities (see **Figure ES-1**).

The proposed action would provide for the construction of a joint permanent facility for 69 personnel to support the existing SVAU and UAS operations, including office space. The SVAU

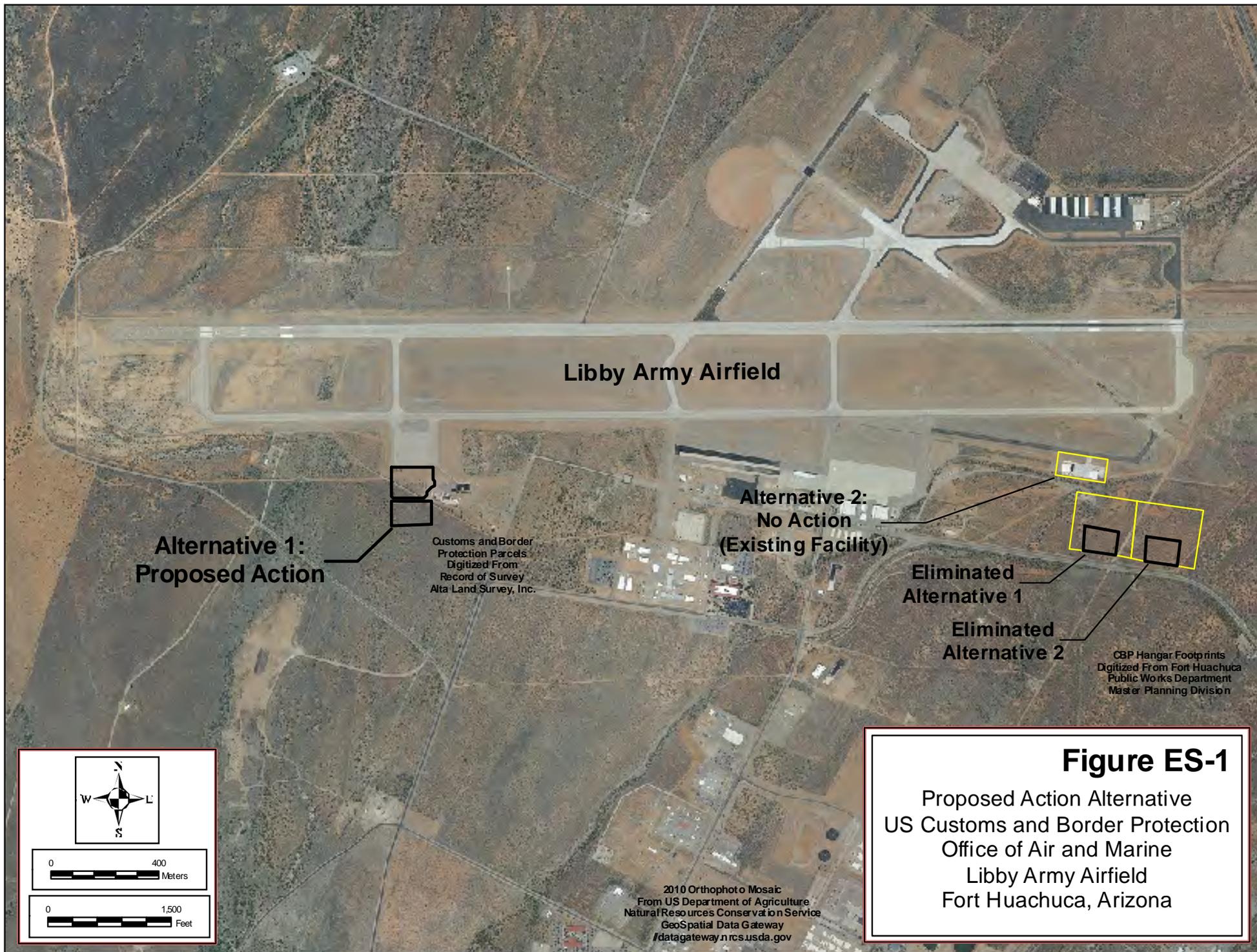


Figure ES-1
 Proposed Action Alternative
 US Customs and Border Protection
 Office of Air and Marine
 Libby Army Airfield
 Fort Huachuca, Arizona

assigned to Fort Huachuca will consist of three AS-350 helicopters. The UAS Squadron permanently assigned to the Installation will consist of three MQ-9 Predator aircraft. Fort Huachuca's Real Property Master Plan Update (2007) estimates current combined flight operations (departures and landings of military and civilian aircraft) of 160,000 per year at LAAF and SVMA. Air operations for the proposed action may occur on a 24 hour/day, 7 day/week basis, resulting in approximately 22 air operations daily for a total 8,030 air operations annually (U.S. Army 2007b). This would represent 5 percent of the current flight operations at the LAAF/SVMA airport.

At present, joint permanent facility planning is in progress (**Figure ES-2**). Therefore, this EA considers a conceptual alternative that would allow for environmental clearance of the maximum area required to meet the project's purpose and need. The following facilities description was prepared for the Description of Proposed Action and Alternatives (DOPAA): 40,000-square feet (SF) of hangar area, 14,000-SF Administration/Operation Center, 44,250-SF Apron/Ramp, 20,000-SF of paved parking, 5,000-SF for storage parking, 43,250-SF of hardstand, and a 5,200-SF utilities building. The proposed Air Facility would require additional utilities including, but not limited to, electrical/data quad duct, electrical, communications dish(s), and antenna(s). Other supporting items such as fencing, sidewalks and lighting may be required. Planning for facility space also takes into account the possibility that operation and mission requirements may dictate the need to temporarily host a wide variety of other aircraft.

Seven acres of land is available from AANG for site planning and design. All seven acres of land could be disturbed during facility construction, including excavation, grading, paving and landscaping. It is estimated that heavy construction equipment could operate for up to four weeks during the site preparation stage. Construction materials are anticipated to be supplied by local or regional vendors. Total construction time could be two years.

The proposed action includes transfer of the existing temporary facility. The disposition of the temporary facility would include removal of some operational structures including the above ground ancillary structures, storage buildings, satellite dishes, and antenna. The fabric hangars and the mobile administrative buildings would remain in place, as well as the concrete apron and taxiway. All removed structures would be either re-used on the new facility or disposed of as surplus property or waste.



US Army Garrison
 Directorate of Public Works
 Fort Huachuca, Arizona
 Master Planning
 Division

**Conceptual Proposed
 AZ Air National Guard
 214th RG & CBP Joint Use
 Site Relocation Study Map**

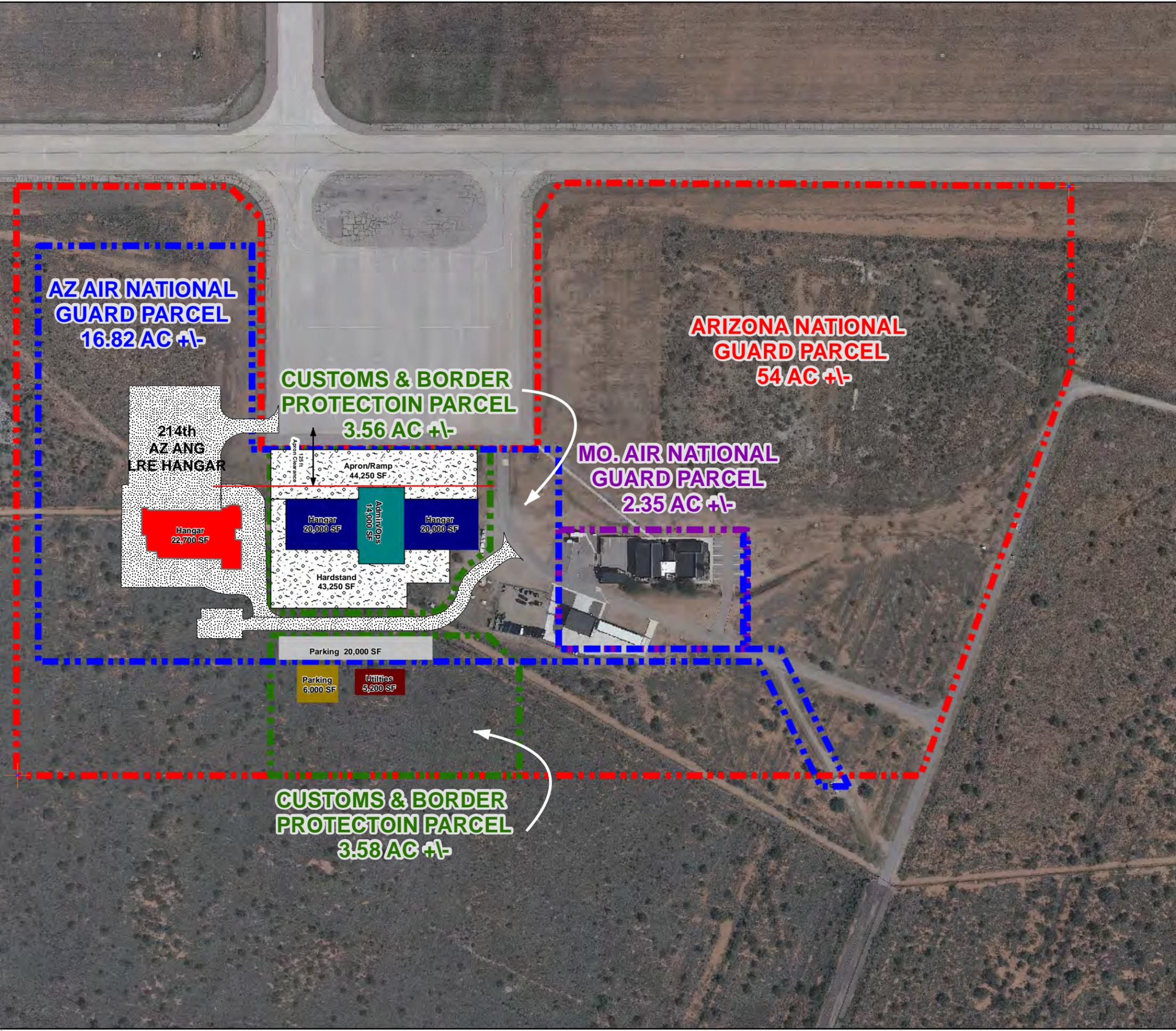
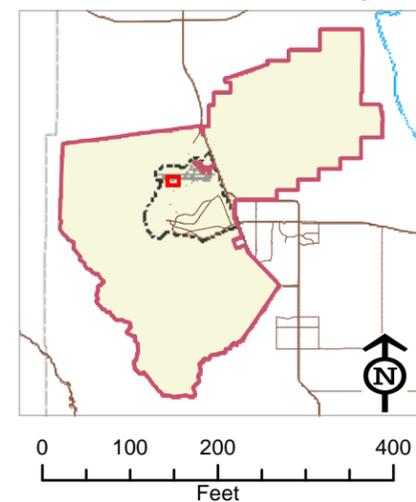
Legend

- PERMIT AREA**
- AZANG
 - AZNG
 - CBP (PROPOSED)
 - MOANG

CBP Site Layout

- Apron/Ramp
- Hardstand
- Hangar
- Storage Hangar
- Admin/Ops
- Parking
- Storage
- Utilities

Location Map



Created By: Kacey Carter
 DPW-Master Planning Division
 13 March 2013
 520.533.5125

Path: E:\DESKTOP FOLDERS\MPL-DPW PROGRAMS\DD 1391 - Work in Progress\CBP Perm Facility Information\CBP - New Construction\Correspondence & Information\2012 Correspondence & Information\CBP_Shared_Site_2013.mxd

Alternative 2: No Action Alternative

Under Alternative 2, the No Action Alternative, CBP OAM would continue the operation and maintenance of the existing temporary facility south of the Southeast Taxiway at LAAF. No new facilities would be constructed and existing personnel and air operations would continue. However, the lease agreement on the current, existing temporary CPB OAM facility is set to expire. CBP OAM was notified that LAAF does not intend to consider renewal of the lease, citing long-range land use planning conflicts. A new lease agreement on the existing site will be required, despite the land use planning conflicts, to accommodate the No Action Alternative. In the worst case the existing facilities will no longer be available for use, CBP will have to vacate the facility, and CBP operations will terminate.

The existing facility is comprised of an airfield apron and taxiway, temporary hangars with ancillary structures, temporary office structures and parking area. The hangar area specifically includes two hangars of canvas or fabric skin construction. One hangar houses predator drones, and the other hangar houses helicopters. The concrete apron supports the hangars and other ancillary structures that are all temporary in nature, including: mobile flight operation command centers, mobile fuel tankers in secondary containment, storage buildings, and predator drone and helicopter staging. Adjacent to the concrete apron are three mobile diesel powered generators, satellite dishes, and other antenna structures. The administrative complex consists of mobile offices with associated utilities, small storage buildings, and a gravel parking area. Alternative 2 currently accommodates 69 personnel and six aircraft (three AS-350's and three MQ-9).

The No Action Alternative does not satisfy purpose and need. A new lease agreement on the existing site will be required to accommodate the No Action Alternative, despite the stated intent to not renew. Since CBP OAM was notified that LAAF does not intend to consider renewal of the lease, it is likely that the existing facilities will no longer be available for use, and CBP operations will be disturbed.

In this document, it is assumed that existing operations continue in the existing location as the No Action Alternative, and that is the baseline against which the impacts of the Proposed Action Alternative will be evaluated. The No Action Alternative is carried forward as an alternative in this EA.

Alternatives Eliminated From Further Consideration

Alternatives outside of the Sierra Vista Subwatershed were not considered for further evaluation because of the unique airspace requirements of UAS operations. The UAS mission on the southern border is flown from LAAF under an agreement between CBP and the Federal Aviation Administration (FAA) for the use of airspace. This FAA certification is required to ensure that UAS operations will not interfere with commercial and general aviation aircraft operations or the safety of other airborne vehicles or persons and property on the ground.

CBP discussed placement at two alternative locations in an effort to identify the best site location for the joint permanent air facility (see **Figure ES-1**). These two potential alternatives, located adjacent to each other at the southeast end of LAAF near the current temporary Air facilities, had

been previously determined as potential locations for the permanent facility. However, these alternative locations have since been determined to be no longer available due to conflicts with the Fort Huachuca RPMP.

AFFECTED ENVIRONMENT AND CONSEQUENCES

The following paragraphs provide a summary of the affected environment and consequences associated with the No Action and Proposed Action Alternatives. A detailed discussion is provided in **Section 3** of this EA.

Alternative 1: Proposed Action Alternative

Alternative 1, the Proposed Action Alternative would include construction and operation of a joint permanent CBP OAM facility at LAAF. Alternative 1 would allow for relocation of existing CBP OAM operations to meet mission requirements.

Alternative 1 would result in no impact or negligible impact to surface waters, floodplains, vegetation, wildlife, cultural resources, climate, noise, roadways and traffic, aesthetic and visual resources, hazardous materials, socioeconomics, or environmental justice and the protection of children. Alternative 1 may result in minor permanent impacts to land use, soils, and sustainability and greening as a result of facility construction on approximately seven acres. Minor temporary construction impacts are also anticipated to wildlife, air quality, noise, and health and human safety.

Alternative 1 could result in direct, indirect, and cumulative impacts related to groundwater use. Total water use associated with 69 personnel at the CBP OAM facility, their household domestic use, and induced water use generated by the presence of CBP OAM operations is estimated to result in 43.91 acre feet per year (AF/YR) of groundwater withdrawal from the Sierra Vista Subwatershed. A portion of this water use would affect natural discharge, ultimately resulting in a 0.08 percent decrease in the baseflow of the San Pedro River. Additionally, one-time construction use would result in 6.74 AF of groundwater withdrawal.

Over time, this small reduction in baseflow may increase potential for degradation of riparian vegetation and instream habitat, specifically in the San Pedro River National Conservation Area (SPRNCA). This potential habitat loss could affect water related species, including threatened and endangered species. Therefore, CBP is obligated under Section 7 of the Endangered Species Act to implement conservation and mitigation measures which will offset adverse effects associated with its proposed action on threatened and endangered species. CBP is proposing water resource mitigation to replace the water use for this facility.

Alternative 2: No Action Alternative

Alternative 2, the No Action Alternative, serves as a baseline for evaluation of the impacts of the Proposed Action Alternative. Alternative 2 would result in the continuation of existing CBP OAM operations at LAAF, with a renegotiated lease. As Alternative 2 would not expand existing operations or result in new construction, no additional impacts are anticipated compared to existing conditions.

With either Alternative 1(Proposed Action) or Alternative 2 (No Action), CBP will need to mitigate 24.78 AF/YR to offset potential impacts related to groundwater use. CBP has contracted with the Army Corps of Engineers to help acquire conservation easements for mitigation. Other specific water conservation measures will be determined as appropriate based on continued coordination with the USFWS. CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures. Measures will likely include a combination of water conservation, rainwater harvesting, and/or detention basin recharge to meet sustainability requirements.

SUMMARY OF MITIGATION ACTIONS

CBP will follow design criteria to reduce adverse environmental impacts and subsequently will implement mitigation measures to offset adverse environmental impacts. Design criteria to reduce adverse environmental impacts include avoiding or minimizing physical disturbance and construction to sensitive resources, consulting with Federal and State agencies and other stakeholders, and developing appropriate Best Management Practices (BMPs).

BMPs should be implemented as standard operating procedure during all construction activities, and would include proper handling, storage, and/or disposal of hazardous and/or regulated materials. Standard procedures will include the implementation of an Arizona Construction General Permit and Stormwater Pollution Prevention Plan (SWPPP); Spill Prevention Control and Countermeasures Plan (SPCC); Dust Control Plan; Fire Prevention and Suppression Plan; and inadvertent discovery procedures from the Installation Cultural Resource Management Plan (ICRMP).

CBP will implement local water mitigation to offset anticipated water demand within the Sierra Vista Subwatershed that would be associated with the proposed project. With either Alternative 1(Proposed Action) or Alternative 2 (No Action), CBP will need to mitigate 24.78 AF/YR to offset potential impacts related to groundwater use. During construction of Alternative 1, it will be necessary to also mitigate for construction induced net water use for 3.90 AF, as a one-time water use event (total of 28.68 AF/YR for the construction year). Specific water conservation and mitigation measures will be determined as appropriate. Measures will likely include a combination of water conservation, rainwater harvesting, conservation easements, and/or detention basin recharge. CBP has contracted with the Army Corps of Engineers to help acquire conservation easements as the method of mitigation. CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures.

FINDINGS AND CONCLUSIONS

Based upon the results of this EA and the mitigation measures to be implemented, the No Action and Proposed Action Alternatives would not have a significant effect on the environment. Therefore, no additional NEPA documentation (i.e. Environmental Impact Statement) is warranted.

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***APPENDIX B* BIOLOGICAL RESOURCE SURVEY 2014
(including Water Conservation Management Report 2010)**

***APPENDIX C* AIR QUALITY CALCULATIONS**

***APPENDIX D* DUE DILIGENCE DOCUMENTATION**

LIST OF ACRONYMS AND ABBREVIATIONS

AANG	Arizona Air National Guard
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AF/YR	Acre Feet per Year
APE	Area of Potential Effects
APZ	Accident Potential Zone
ARFF	Aircraft Rescue and Firefighting
ATC	Air Traffic Control
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CBP	U.S. Customs and Border Protection
CCAG	Arizona Climate Change Advisory Group
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CWA	Clean Water Act
DHS	Department of Homeland Security
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EDMS	Emissions and Dispersion Modeling System
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act of 2007
EO	Executive Order
EPA	Environmental Protection Agency
EPG	Electronic Proving Ground
ESA	Federal Endangered Species Act
ET	Evapotranspiration
EUL	Enhanced Use Lease
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FOSL	Finding of Suitability to Lease
GHG	Greenhouse Gas
GSA	General Services Administration
ICRMP	Installation Cultural Resource Management Plan
LAAF	Libby Army Airfield
LF	Linear Feet
LG ² ES	LG ² Environmental Solutions, Inc.
LRE	Launch and Recovery Element

MACT	Maximum Achievable Control Technology
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOI	Notice of Intent
NO _x	Nitrous oxides
OAM	Office of Air and Marine
OSHA	Occupational Safety and Health Administration
PEA	Preliminary Environmental Assessment
PM ₁₀	Particulate Matter, less than 10 microns
RICE	Reciprocating Internal Combustion Engine
ROI	Region of Influence
RPMP	Real Property Master Plan
SAR	Search and Rescue
SF	Square Feet
SIP	State Implementation Plan (air quality)
SPCC	Spill Prevention Control and Countermeasures [Plan]
SPRNCA	San Pedro River National Conservation Area
SWPPP	Stormwater Pollution Prevention Plan
SVAU	Sierra Vista Air Unit
SVMA	Sierra Vista Municipal Airport
UAS	Unmanned aircraft systems
UASOC	Unmanned Aircraft Surveillance Operations Center
USBP	United States Border Patrol
USFWS	United States Fish and Wildlife Service
USPB	Upper San Pedro River Basin
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

This Environmental Assessment (EA) addresses the United States Customs and Border Protection (CBP) Office of Air and Marine (OAM) Proposed Action to construct and operate a Joint Permanent Air Facility at Libby Army Airfield (LAAF), Fort Huachuca, in Sierra Vista, Cochise County, Arizona. As required by the National Environmental Policy Act (NEPA) of 1969 as amended (PL-90-190), the Council of Environmental Quality's (CEQ's) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (Title 40 Code of Federal Regulations (CFR) Parts 1500 – 1508), Department of Homeland Security (DHS) Management Directive (MD) 023-01, *Environmental Planning Program*, the National Historic Preservation Act (NHPA) of 1966 as amended (PL-96-515), DHS MD 017-01, *Historic Preservation in Asset Management*, and the ESA as amended (PL-93-205), , the potential environmental and socioeconomic effects on the human and natural environment, associated with implementation of the Proposed Action, are analyzed herein.

1.1 BACKGROUND

The mission of CBP OAM is to protect the American people and Nation's critical infrastructure through the coordinated use of integrated air and marine forces to detect, interdict and prevent acts of terrorism and the unlawful movement of people, illegal drugs and other contraband toward or across the borders of the United States. CBP OAM performs this critical mission by providing real-time surveillance information and maritime and aerial support to the homeland security efforts of DHS, as well as to those of Federal, State, local, and tribal agencies. Customs and Border Protection's (CBP) Office of Air and Marine (OAM) is the world's largest aviation and maritime law enforcement organization, a critical component of CBP's layered enforcement strategy for border security. With 1,200 federal agents, more than 250 aircraft and over 280 marine vessels operating from 83 locations throughout the United States and Puerto Rico, CBP detects, intercepts, and apprehends criminals in diverse environments at and beyond U.S. borders (CBP.gov, 2014).

CBP OAM has operated at LAAF on Fort Huachuca since 1999, providing support to the USBP's Tucson Sector mission to gain operational control of the border. LAAF is located in the north-central portion of Fort Huachuca. The airfield is approximately 70 miles southeast of Tucson, Arizona and 15 miles north of the U.S. – Mexico International Border. LAAF is one of 22 joint-use airports in the country where military runways also are used by a public airport, the Sierra Vista Municipal Airport (SVMA).

CBP OAM staff at LAAF work with Tucson Sector ground units and other law enforcement agencies to interdict foreign national smuggling operations, detect and report other illegal air or ground activities, and engage in Search and Rescue (SAR) operations. Currently, CBP OAM operations at LAAF include the Sierra Vista Air Unit (SVAU) and the unmanned aircraft systems (UAS) operations, which were deployed in 2005.

CBP was officially notified on May 31, 2007 that they had to move all assets from the office space, Hangars 1 and 2, and ramp space occupied at LAAF because of the accelerated deployment of Project Warrior (training of company grade Army officers as Observer-Coach-Trainers at maneuver combat training centers). Subsequently, the U.S. Army allowed CBP to relocate and construct a new temporary facility approximately 2,000 feet east of the Hangar.

Construction of the existing facility began July 2008 and CBP OAM relocated to this facility in December 2008. **Figure 1-1** illustrates the pre-2008 location of CBP OAM operations at Hangar #1 and current existing facility for CBP OAM operations at LAAF. The lease agreement on the current, existing temporary CPB OAM facility is set to expire. CBP OAM was notified that LAAF does not intend to consider renewal of the lease, citing long-range land use planning conflicts.

1.2 PROPOSED ACTION

CBP proposes relocating its CBP OAM operations to a joint permanent air operations facility at LAAF in Fort Huachuca, Arizona, located in Cochise County just west of the City of Sierra Vista (**Figure 1-2** and **Figure 1-3**) to fulfill its mission along the U.S. – Mexico International Border. This mission includes detecting, interdicting, and preventing acts of terrorism and the unlawful movement of people, illegal drugs, and other contraband toward or across the U.S. border. This environmental assessment will evaluate the effects of constructing, operating, and maintaining a joint permanent CBP OAM facility.

Current operations at LAAF include 69 personnel supporting the SVAU and UAS operations. The proposed action would include the construction of a joint permanent air facility to support relocation of existing personnel and air operations.

1.3 PURPOSE AND NEED

The purpose of this action is to establish a joint permanent air operations facility at LAAF, Fort Huachuca, Arizona to support the US Border Patrol's Tucson Sector mission to manage operational control of the border. CBP OAM provides air support to USBP Tucson Sector ground units and other law enforcement agencies to interdict foreign national smuggling operations, detect and report other illegal air or ground activities, and engage in Search and Rescue (SAR) operations.

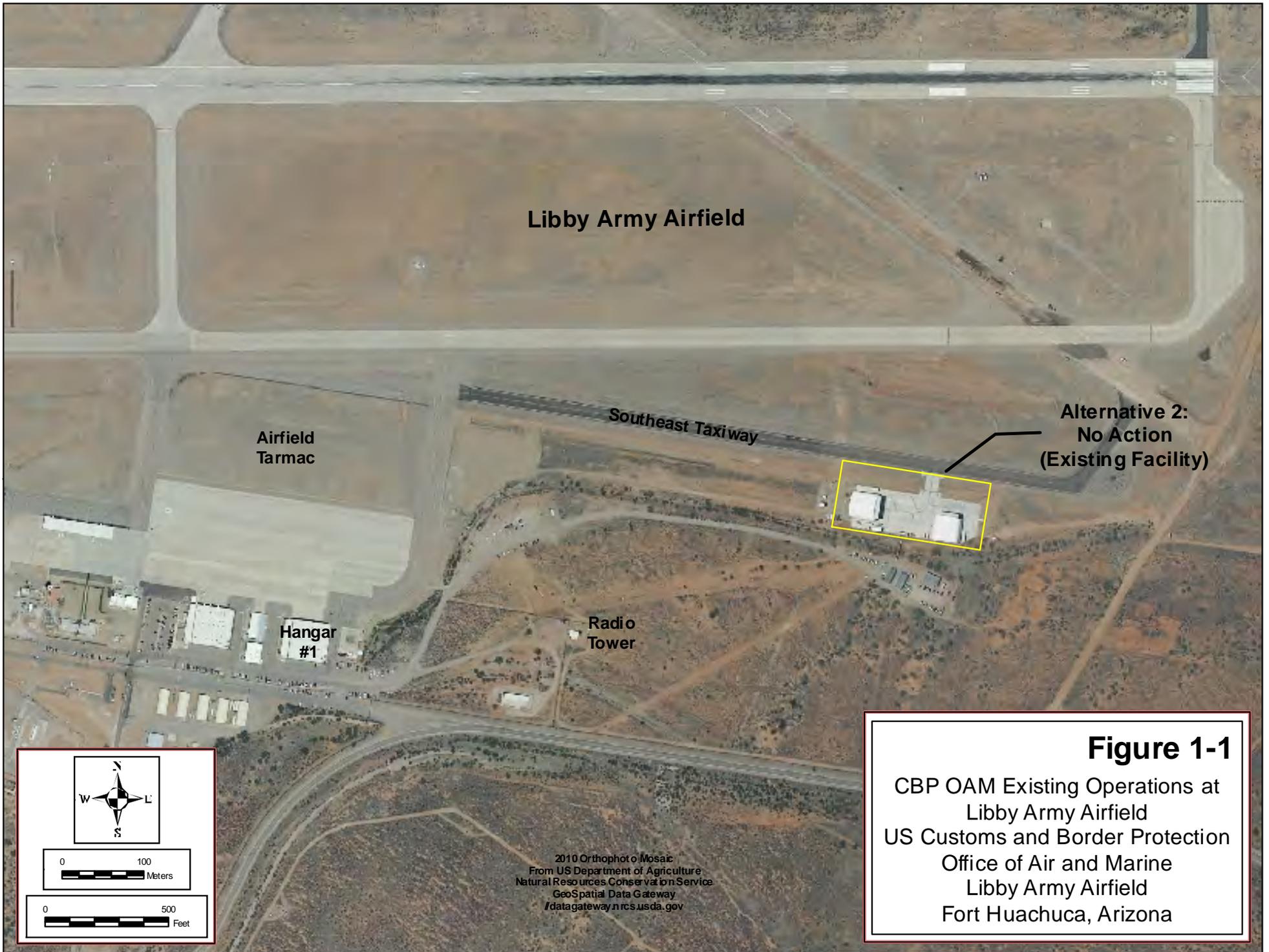
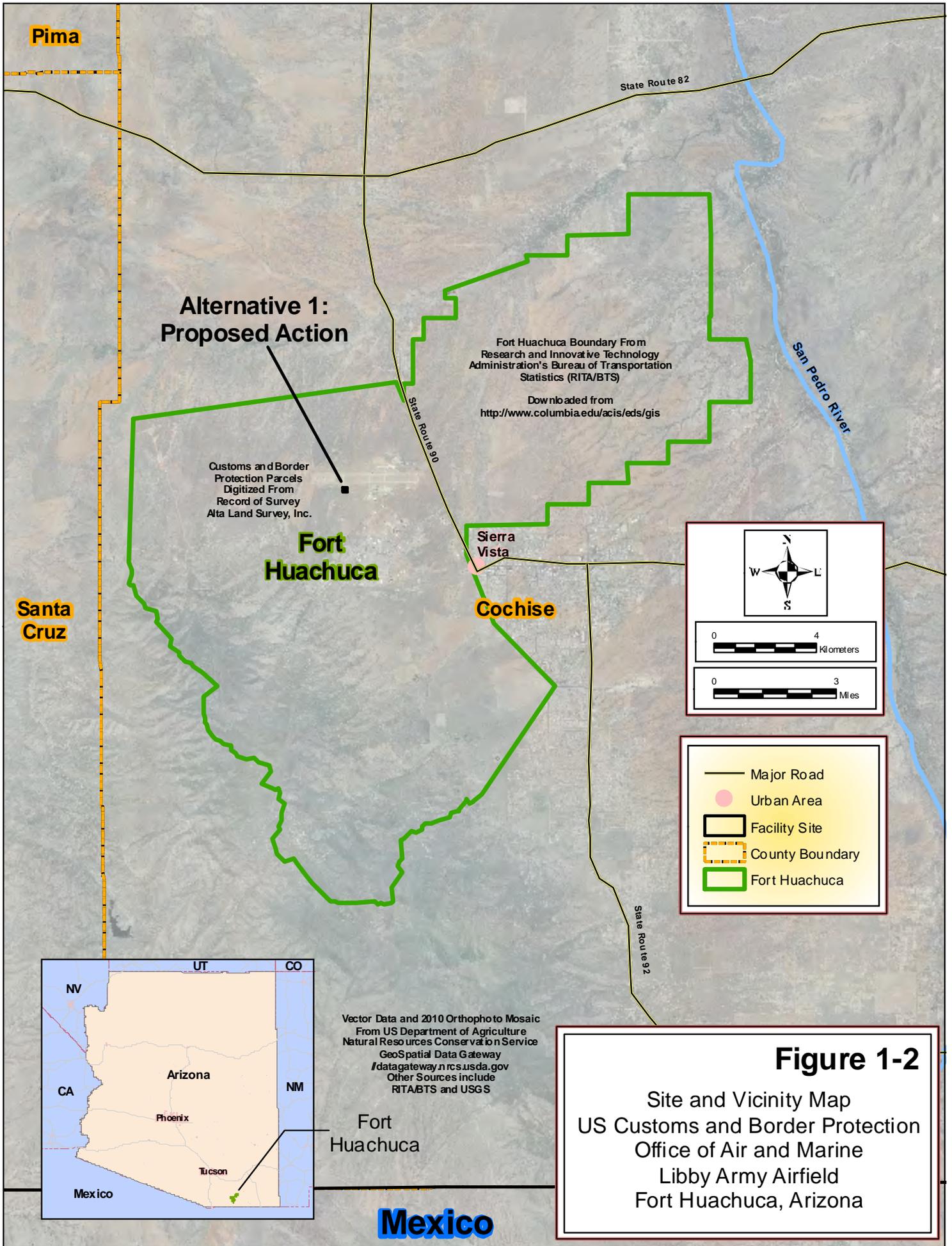
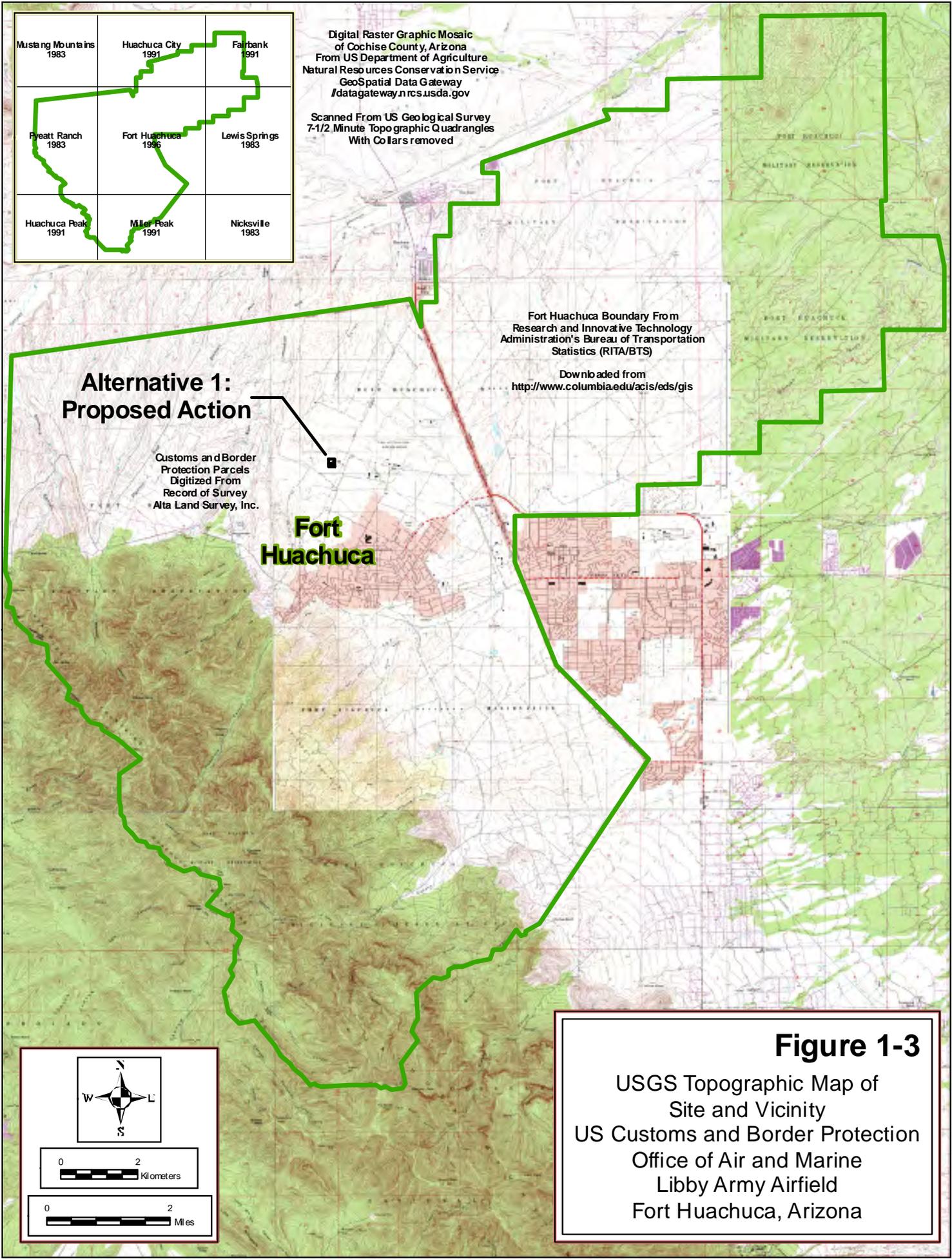


Figure 1-1

CBP OAM Existing Operations at
Libby Army Airfield
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona





The primary project need is for sufficient land with access to a taxi strip that will allow for development of a facility to support current helicopter and UAS operations. The facility will need to have the capacity to accommodate at least six aircraft and 69 personnel. At a minimum, the facility would require hangars, support buildings, and vehicle and aircraft parking as well as associated utilities and ancillary features. The airport and associated airspace must support UAS operations and provide proximity to the U.S. - Mexico International Border in the Tucson Sector.

The facility site must have a high level of physical security and 24-hour occupational access will be required to meet mission objectives and protect enforcement assets. The site must be cost effective to improve. All construction and operations must be consistent with Fort Huachuca Real Property Master Plan.

1.4 PUBLIC INVOLVEMENT

In accordance with DHS Directive and Instruction 023-01 Implementation of NEPA, this draft EA and draft Finding of No Significant Impact (FONSI) will be made available to agencies and the general public for review and comment. A Notice of Availability (NOA) will be published in local newspaper(s) and copies of the draft EA will be made available to agencies and the general public on publicly accessible web sites, starting the 30 day public comment period. If the agency does not receive any comments or none requiring additional data gathering or analysis, then the comment period is considered complete. Those comments, along with responses, can then be documented in an appendix to the Final EA. The process concludes with a NOA of the FONSI, or a Notice of Intent (NOI) to prepare an EIS, if substantive comments are received that require a more significant action.

1.5 AGENCY COORDINATION

Agency coordination was an ongoing process throughout development of this EA. Meetings were held with and/or written correspondence was exchanged with representatives of the following agencies: the U.S. Army, the U.S. Army Corps of Engineers, the U.S. Fish & Wildlife Service, the Arizona Game and Fish Department, the Arizona Historic Preservation Office, Federally Recognized Tribes, and the City of Sierra Vista. Agency correspondence is provided in **Appendix A**.

1.6 FRAMEWORK FOR ANALYSIS

This EA was prepared on behalf of CBP in accordance with, but not limited to the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); and Department of Homeland Security's Management Directive (MD) 023-01.

This EA is intended to be a concise public document that provides sufficient evidence and analysis for either a Finding of No Significant Impact (FONSI) or a determination of need to prepare an EIS. This EA incorporates applicable findings from previous biological assessments and other studies on LAAF and Fort Huachuca.

The following documents include information and data relevant to existing and planned conditions at Fort Huachuca and CBP activities within the Tucson Sector. These documents, presented chronologically, are incorporated by reference into this EA:

- December 2008 – *Arizona Air National Guard, Environmental Assessment for Proposed MQ-1 Predator Beddown at Fort Huachuca, Arizona (AANG2008)*
- February 2010 – *Customs and Border Protection, Water Conservation Management Report for U.S. Customs and Border Protection Activities within the Sierra Vista Subwatershed of the San Pedro Watershed (CBP, 2010b)*

Table 1-1 summarizes other pertinent statute or regulations affecting the determination of environmental effects and impact thresholds within this EA.

TABLE 1-1: Applicable Environmental Statutes and Regulations

Resource	Statute or Regulation
NEPA	40 CFR 1508
Geology and Soils	Farmland Protection Policy Act of 1981
Water Resources	Federal Water Pollution Control Act of 1972, as amended
	Floodplain Management (E.O. 11988) of 1977
	Protection of Wetlands (E.O. 11990) of 1977
Vegetation and Wildlife Resources	Endangered Species Act of 1973, as amended
	Migratory Bird Treaty Act of 1918, as amended
Cultural	National Historic Preservation Act of 1966, as amended
	Native American Graves Protection and Reparation Act of 1990
Air	Clean Air Act of 1970, as amended
Noise	Noise Control Act of 1972
Hazardous Materials/Sustainability	Solid Waste Disposal Act of 1965, as amended by Resource Conservation and Recovery Act of 1976 (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)
	40 CFR 112 Oil Pollution Prevention (1996)
	Energy Policy Act of 2005 (Public Law 109-58)
	Energy Independence and Security Act (EISA) of 2007 (Public Law 110-140)
	Strengthening Federal Environmental, Energy, and Transportation Management (E.O. 13423) of 2007. Requires federal agencies to implement the <i>Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings</i> in all new construction and major renovation projects.

	Federal Leadership in Environmental, Energy, and Economic Performance (E.O. 13514) of 2009.
Social/Economic	Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (E.O. 12898) of 1994
	Protection of Children from Environmental Health Risks (E.O. 13045) of 1997
Health and Safety	Occupational Safety and Health Act of 1970 (OSHA), as amended

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2.0 PROPOSED ACTION AND ALTERNATIVES

CBP proposes to construct, operate, and maintain a permanent CBP OAM joint manned and unmanned aircraft operations facility at Libby Army Airfield (LAAF) to fulfill its mission along the U.S. – Mexico international border. Current operations at LAAF include 69 personnel supporting the Sierra Vista Air Unit (SVAU) and unmanned aircraft system (UAS) operations. Assets currently assigned to the SVAU program include three AS-350 helicopters, and assets currently assigned to the UAS operation include three MQ-9 Predator aircraft (**Figure 2-1**). The existing temporary facilities are located on approximately nine acres just south of the Southeast Taxiway at LAAF and include two hangars, mobile offices with associated utilities, small storage buildings, gravel parking (40 spaces), and paved aircraft parking and launch pad.

The following sections provide a description of the alternatives considered in order to identify potential impacts that could result from implementation of the proposed action.

2.1 ALTERNATIVE 1: PROPOSED ACTION ALTERNATIVE

Under Alternative 1, CBP would obtain a real estate permit with Fort Huachuca for about seven acres of land at the southwest end of the South Taxiway for the construction and operation of the proposed joint permanent air facilities (**Figure 2-2**).

Sierra Vista Air Unit (SVAU) personnel, UAS Squadron personnel, and office personnel are assigned to the joint permanent facility for a total of 69 staff. The SVAU assigned to Fort Huachuca will consist of three AS-350 helicopters. The UAS Squadron permanently assigned to the Installation will consist of three MQ-9 Predator aircraft. Fort Huachuca's Real Property Master Plan Update (2007) estimates current combined flight operations (departures and landings of military and civilian aircraft) of 160,000 per year at LAAF and Sierra Vista Municipal Airport (SVMA). Air operations for the proposed action may occur on a 24 hour/day, 7 day/week basis, resulting in approximately 22 air operations daily for a total 8,030 air operations annually (U.S. Army 2007b). This would represent 5 percent of the current flight operations at the LAAF/SVMA airport.

This EA considers an alternative that will allow for environmental clearance of the maximum area required to meet the project's purpose and need. The following facilities description was prepared for the Description of Proposed Action and Alternatives (DOPAA): 40,000-square feet (SF) of hangar area, 14,000-SF Administration/Operation Center, 44,250-SF Apron/Ramp, 20,000-SF of paved parking, 5,000-SF for storage parking, 43,250-SF of hardstand, and a 5,200-SF utilities building.

FIGURE 2-1: Aviation Assets



(a) AS-350 Helicopter

Source: CBP Airbus Helicopters/ AS 350 A-Star Fact Sheet, 7/10/2014



(b) MQ-9 Predator B

Source: CBP Unmanned Aircraft System, MQ-9 Predator B Fact Sheet, 2/6/2014

Libby Army Airfield

Alternative 1:
Proposed Action

Customs and Border
Protection Parcels
Digitized From
Record of Survey
Alta Lapid Survey, Inc.

2010 Orthophoto Mosaic
From US Department of Agriculture
Natural Resources Conservation Service
GeoSpatial Data Gateway
[//datagateway.nrcs.usda.gov](http://datagateway.nrcs.usda.gov)

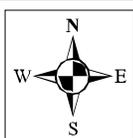


Figure 2-2

Proposed Action Site
Preferred Alternative
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

The proposed Air Facility would require additional utilities including, but not limited to, electrical/data quad duct, electrical, communications dish(s), and antenna(s). Other supporting items such as fencing, sidewalks and lighting may be required. Planning for facility space also takes into account the possibility that operation and mission requirements may dictate the need to temporarily host a wide variety of other aircraft.

Seven acres of land is available from AANG for site planning and design. All of the seven acres of land could be disturbed during facility construction, including excavation, grading, paving and landscaping. It is estimated that heavy construction equipment could operate for up to four weeks during the site preparation stage. Construction materials are anticipated to be supplied by local or regional vendors. Total construction time could be two years.

The proposed action includes transfer of the existing temporary facility. The disposition of the temporary facility will include removal of some operational structures including the above ground ancillary structures, storage buildings, satellite dishes, and antennae. The fabric hangars and the mobile administrative buildings will remain in place, as well as the concrete apron and taxiway. All removed structures will be either re-used on the new facility or disposed of as surplus property or waste.

2.2 ALTERNATIVE 2: NO ACTION ALTERNATIVE

Under Alternative 2, the No Action Alternative, CBP OAM would continue the operation and maintenance of the existing temporary facility south of the Southeast Taxiway at LAAF. No new facilities would be constructed and existing personnel and air operations would continue. The lease agreement on the current, existing temporary CPB OAM facility is set to expire. CBP OAM was notified that LAAF does not intend to consider renewal of the lease, citing long-range land use planning conflicts. A new lease agreement on the existing site will be required, despite the land use planning conflicts, to accommodate the No Action Alternative. In the worst case the existing facilities will no longer be available for use, CBP will be forced to vacate the temporary facilities, and CBP operations will terminate.

The existing facility is comprised of an airfield apron and taxiway, temporary hangars with ancillary structures, temporary office structures and parking area. The hangar area specifically includes two hangars of canvas or fabric skin construction. One hangar houses predator drones, and the other hangar houses helicopters. The concrete apron supports the hangars and other ancillary structures that are all temporary in nature, including: mobile flight operation command centers, mobile fuel tankers in secondary containment, storage buildings, and predator drone and helicopter staging. Adjacent to the concrete apron are three mobile diesel powered generators, satellite dishes, and other antenna structures. The administrative complex consists of mobile offices with associated utilities, small storage buildings, and a gravel parking area located south of the concrete apron. It is accessible via a foot bridge built across an unnamed wash. Alternative 2 currently accommodates 69 personnel and six aircraft (three AS-350's and three MQ-9).

The No Action Alternative does not satisfy purpose and need. A new lease agreement on the existing site will be required to accommodate the No Action Alternative, despite the stated intent

to not renew. Since CBP OAM was notified that LAAF does not intend to consider renewal of the lease, it is likely that the existing facilities will no longer be available for use, and CBP operations will be disturbed.

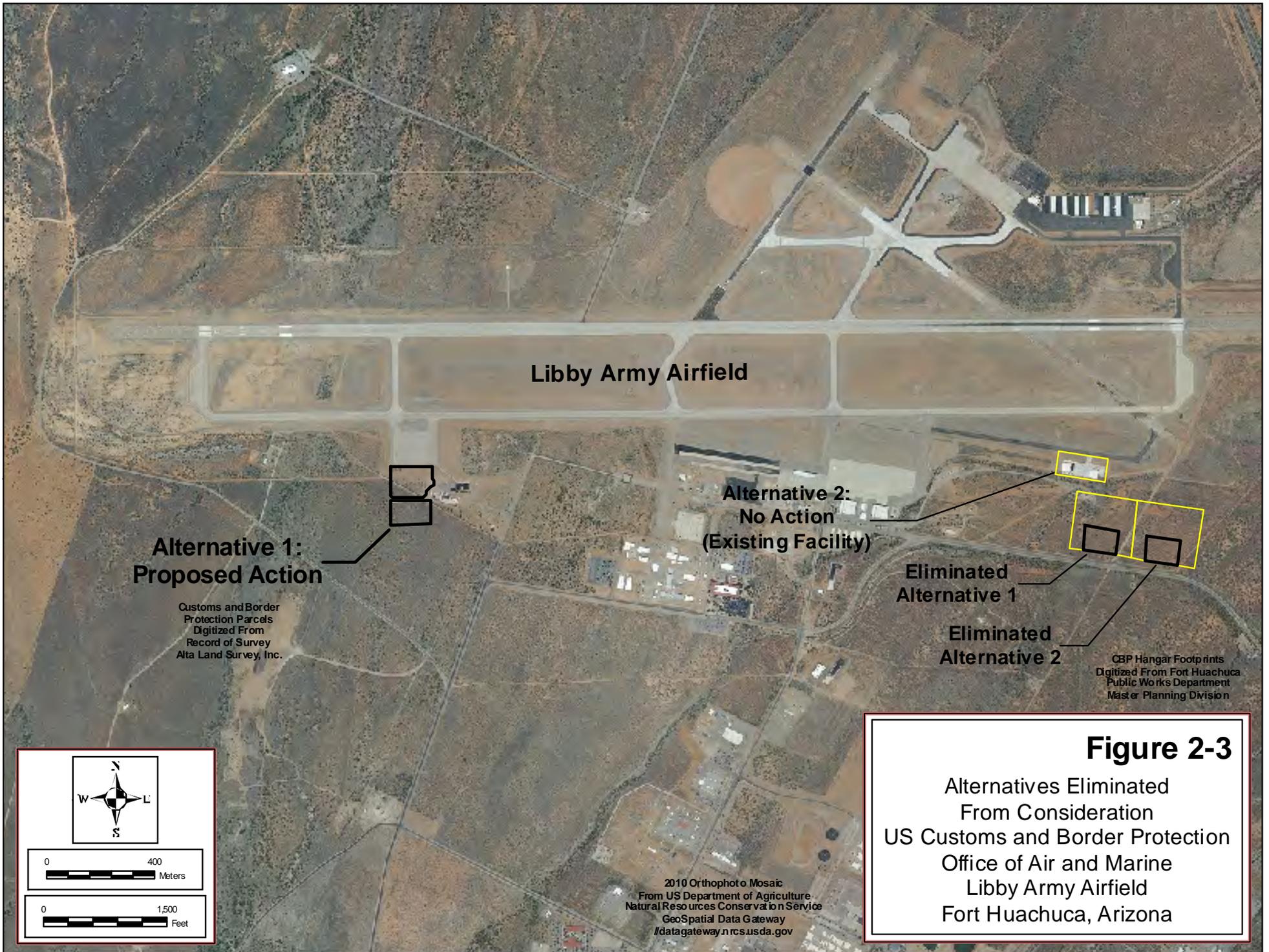
In this document, it is assumed that existing operations continue in the existing location as the No Action Alternative, and that is the baseline against which the impacts of the Proposed Action Alternative will be evaluated. The No Action Alternative is carried forward as an alternative in this EA.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER EVALUATION

LAAF is ideally located to support CBP OAM's mission to gain operational control of the remote and rugged terrain along the southern U.S. border. The LAAF/SVMA joint airport at Fort Huachuca, Arizona is the only airport capable of supporting forward area CBP OAM operations within the Tucson Sector (INS, 2003).

Alternatives outside of the Sierra Vista Subwatershed were not considered for further evaluation because of the unique airspace requirements of UAS operations. The UAS mission on the southern border is flown from LAAF under an agreement between CBP and the Federal Aviation Administration (FAA) for the use of airspace. This FAA certification is required to ensure that UAS operations will not interfere with commercial and general aviation aircraft operations or the safety for other airborne vehicles or persons and property on the ground.

The CBP discussed placement at two alternative locations in an effort to identify the best site location for the joint permanent Air facility (**Figure 2-3**). These two potential alternatives, located adjacent to each other at the southeast end of LAAF near the current temporary Air facilities, had been previously determined as potential locations for the permanent facility. However, these alternative locations have since been determined to be no longer available, due to conflicts with the Fort Huachuca RPMP.



2.4 SUMMARY

Alternative 1 (Proposed Action Alternative) and Alternative 2 (No Action Alternative) will be carried forward for analysis in this EA. **Table 2-1** presents evaluation criteria based on the stated purpose and need. Alternative 1 and Alternative 2 are assessed relative to these criteria. **Table 2-2** presents a matrix of potential impacts resulting from the two alternatives carried forward for analysis.

TABLE 2-1: Summary of Alternative Consistency with Purpose and Need

Evaluation Criteria	Alternative 1: Proposed Action	Alternative 2: No Action
Sufficient land available for development to accommodate new facility	Yes, at least 7 acres	No. Current land lease is expiring, and other uses are planned for the temporary facility land. Could result in termination of mission operations.
Access to taxistrip	Yes, 400 feet south of Southwest Taxiway	Yes, immediately adjacent to Southeast Taxiway
Accommodates 6 aircraft; two separate air units	Yes	Yes
Accommodates administration space and parking for at least 69 personnel	Yes	Yes
Physical security	Yes	Yes
24 hour access	Yes	Yes
Cost effective to improve	Yes, reasonable cost to extend utilities and taxistrip	Yes, currently connected to utilities and taxistrip

TABLE 2-2: Comparison of Potential Impacts

Resource	Alternative 1: Proposed Action	Alternative 2: No Action
Land Use	Minor permanent negative impact resulting from the conversion of approximately seven acres of undeveloped land to landside facilities (includes terminal buildings, aircraft parking aprons, hangars, fuel services, aviation-related businesses, and automobile access and parking). Land use is consistent with Fort Huachuca plans.	No impacts over existing baseline conditions. Potential loss of operations if expired lease cannot be renegotiated.
Geology and Soils	Minor permanent negative impacts to soils from grading and excavation. Impacts will occur in a previously disturbed area. No impacts to local or regional geological conditions. Mitigation measures including a SWPPP and BMPs will be developed and implemented to reduce soil erosion.	No impacts over existing baseline conditions.
Hydrology and Groundwater	Negative impacts to groundwater levels from 43.91 acre-feet/year (AF/YR) of total water use, requiring 24.78 AF/YR of mitigation. In addition, a one-time construction impact of 6.74 AF is expected.	Negative impacts to groundwater levels from 43.91 AF/YR of total water use, requiring 24.78 AF/YR of mitigation.
Surface Waters and Waters of the U.S.	No direct impacts to surface waters. Groundwater use could decrease the baseflow of the San Pedro River by 0.006 cubic feet per second (CFS). CBP will provide mitigation for water resources to offset water use.	No direct impacts to surface waters. Groundwater use could decrease the baseflow of the San Pedro River by 0.006 CFS. CBP will provide mitigation for water resources to offset water use.
Floodplains	No impacts.	No impacts.
Vegetative Habitat	Negligible impacts from habitat loss of semi-desert grassland and/or mixed-desert scrub vegetation. Over time, baseflow reductions could degrade riparian vegetation within the SPRNCA. CBP will provide mitigation for water resources to offset water use.	No direct impacts at LAAF. Over time, baseflow reductions could degrade riparian vegetation within the SPRNCA.

Resource	Alternative 1: Proposed Action	Alternative 2: No Action
Wildlife and Aquatic Resources	<p>Negligible impact on the lesser long-nosed bat as a result of potential noise and habitat loss from construction and mortality or injury from collisions with vehicles or structures.</p> <p>Negligible impact on wildlife species during construction. No impact on aquatic species or habitat. Reductions in baseflow would reduce instream and riparian habitat within the SPRNCA. This indirect habitat loss could have a minor effect on water dependent species, including threatened and endangered species. CBP will provide mitigation for water resources to offset water use, and work closely with AZGFD to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal.</p>	<p>No direct impacts at LAAF. Reductions in baseflow would reduce instream and riparian habitat within the SPRNCA. This potential habitat loss could affect water dependent species, including threatened and endangered species. CBP will provide mitigation for water resources to offset water use.</p>
Threatened and Endangered Species	<p>Groundwater use would decrease the baseflow in the San Pedro River, affecting instream and riparian habitat over time. This could result in a negligible impact on the Huachuca water umbel, southwestern willow flycatcher, yellow-billed cuckoo, Chiricahua leopard frog, desert pupfish, and Gila topminnow. CBP will provide mitigation for water resources to offset water use.</p>	<p>Groundwater use would decrease the baseflow in the San Pedro River, affecting instream and riparian habitat over time. This could result in a negligible impact on the Huachuca water umbel, southwestern willow flycatcher, yellow-billed cuckoo, Chiricahua leopard frog, desert pupfish, and Gila topminnow. CBP will provide mitigation for water resources to offset water use.</p>
Cultural, Historical, and Archeological Resources	<p>No impacts. In case of inadvertent discovery, artifacts encountered during construction will be addressed during coordination with the Installation's cultural resources manager.</p>	<p>No impacts over existing baseline conditions.</p>

Resource	Alternative 1: Proposed Action	Alternative 2: No Action
Air Quality	Negligible impacts during construction. Since the new construction will meet sustainability requirements set by the Guiding Principles, it is expected that air emissions will be reduced-positive impact.	No impacts over existing baseline conditions.
Climate	The total emissions from construction activities will have a negligible negative impact on climate. Since the new construction will meet sustainability requirements set by the Guiding Principles, it is expected that climate impacts will be reduced-positive impact.	No impacts over existing baseline conditions.
Noise	Minor temporary negative impacts during construction.	No impacts over existing baseline conditions.
Utilities and Infrastructure	Negligible impacts resulting from the extension and use of existing utilities.	No impacts over existing baseline conditions.
Roadways & Traffic	No impacts over existing baseline conditions.	No impacts over existing baseline conditions.
Aviation	Negligible impacts from helicopter and UAS operations	Negligible impacts from helicopter and UAS
Hazardous Materials	No impacts. An SPCC Plan and BMPs will be developed and implemented to minimize potential impact from Hazardous Material use and storage.	No impacts over existing baseline conditions.
Socioeconomic	Negligible impacts to employment and population in Cochise County.	No impacts over existing baseline conditions.
Sustainability and Greening	Positive impact- per EO 13514, the new construction will be required to meet sustainability requirements set by the Energy Efficiency Guiding Principles, which allow for a facility to operate in an energy efficient and sustainable manner.	No impacts over existing baseline conditions.
Human Health and Safety	Potential for temporary impacts during construction to be offset by standard construction site safety practices.	No impacts over existing baseline conditions.

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3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

This section describes existing conditions of and possible impacts to environmental resources of the proposed action. Potentially affected environments are described first to provide a baseline description for each resource. In turn, potential changes or impacts to each resource are described as consequences.

As stated in CEQ Regulation 40 CFR 1508.14, the human environment is interpreted comprehensively to include the natural and physical environments and the relationship of people with those environments. In compliance with NEPA and CEQ, affected environment descriptions focus only on those resources that may be subject to impacts. Therefore, the following resources and issues are not addressed in detail in this EA: aesthetic and visual resources, and environmental justice and protection of children. The following paragraphs provide further explanation.

Aesthetic and Visual Resources:

Both the existing facility and the proposed joint air facility location are predominately obstructed from public view because of the remote location of LAAF and its distance (approximately 3 miles) from Highway 90. The proposed joint permanent air facility would be consistent with the existing visual landscape at LAAF. No long-term change to the character of the area would occur as a result of this alternative. No bright, uncomfortable, or visually disturbing lighting would be introduced that could be seen from nearby public or residential areas or roadways. CBP will be required to follow the Dark Sky Initiatives to help keep light pollution minimal. The visual appearance of Alternative 1 would be consistent with FAA and U.S. Army design guidelines and would not substantially degrade the viewshed or alter the character of the viewshed by introduction of anomalous structures or elements. Alternative 2 would have no effect on aesthetics and visual resources since there would be no changes to the visual resources.

Since there are no potential impacts from either alternative, aesthetic and visual resources are not analyzed in this EA.

Environmental Justice and Protection of Children:

Alternative 1 would occur in an area of existing military airfield-related land use. There are no housing areas or residential populations within the immediate vicinity of LAAF. Family housing or community uses in Fort Huachuca are approximately 2.5 miles south of the proposed action and residences within Sierra Vista are approximately 3 miles southeast. The construction and operation of the proposed facility would not adversely impact any segment of the population, including minority or low-income populations or children. The proposed action would utilize hazardous products and substances that would pose a health risk to children. However, no schools or childcare centers are located within the immediate vicinity of LAAF. Furthermore, children are not likely to be exposed to any risks associated with the proposed action because of the high physical security associated with the site.

Alternative 2 would have no negative affect on Environmental Justice or the Protection of Children since there are no changes to the operations. Since there are no potential impacts from either alternative, this issue is not addressed in this EA.

3.1 PRELIMINARY IMPACT SCOPING

An initial impact scoping process determined the following resources had potential to be affected by the proposed action and alternatives. These resources are analyzed in this EA.

- Land Use (**Section 3.2**)
- Geology and Soils (**Section 3.3**)
- Hydrology and Groundwater (**Section 3.4**)
- Surface Waters and Waters of the U.S. (**Section 3.5**)
- Floodplains (**Section 3.6**)
- Vegetative Habitat (**Section 3.7**)
- Wildlife and Aquatic Resources (**Section 3.8**)
- Threatened and Endangered Species (**Section 3.9**)
- Cultural, Historical, and Archeological Resources (**Section 3.10**)
- Air Quality (**Section 3.11**)
- Climate (**Section 3.12**)
- Noise (**Section 3.13**)
- Utilities and Infrastructure (**Section 3.14**)
- Roadways/Traffic (**Section 3.15**)
- Aviation (**Section 3.16**)
- Hazardous Materials (**Section 3.17**)
- Socioeconomic (**Section 3.18**)
- Sustainability and Greening (**Section 3.19**)
- Human Health and Safety (**Section 3.20**)

Cumulative impacts are evaluated in **Section 4**. These are defined in the CEQ regulations as those impacts attributable to the proposed action combined with other past, present, or reasonably foreseeable future impacts regardless of the source.

3.2 LAND USE

Land use is defined as how a specific area is used and refers to both natural and “human modified” conditions occurring at a particular location. Examples of human-modified land use categories include residential, industrial, transportation, communications, utilities, agricultural, institutional, recreational, and other developed areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

3.2.1 Affected Environment

This section addresses current land use conditions, plans, and policies affecting the proposed location for CBP OAM's joint permanent facility. The Region of Influence (ROI) for land use encompasses the area proposed for construction, the adjacent land, and the existing facility site.

Land use planning at LAAF is contingent on the U.S. Army because the airfield is situated on the Fort Huachuca Military Installation. Lands surrounding the Installation are subject to Cochise County and City of Sierra Vista land use restrictions. In addition, the Installation is adjacent to the San Pedro Riparian National Conservation Area (SPRNCA), which is managed by the Bureau of Land Management (BLM) to protect and enhance the desert riparian ecosystem. The SPRNCA, established by Act of Congress in 1988, is the dominant geographic feature in the San Pedro Basin, and is managed for a variety of wildlife, environmental, and recreational uses. LAAF and the proposed project are located over eight miles west of the SPRNCA.

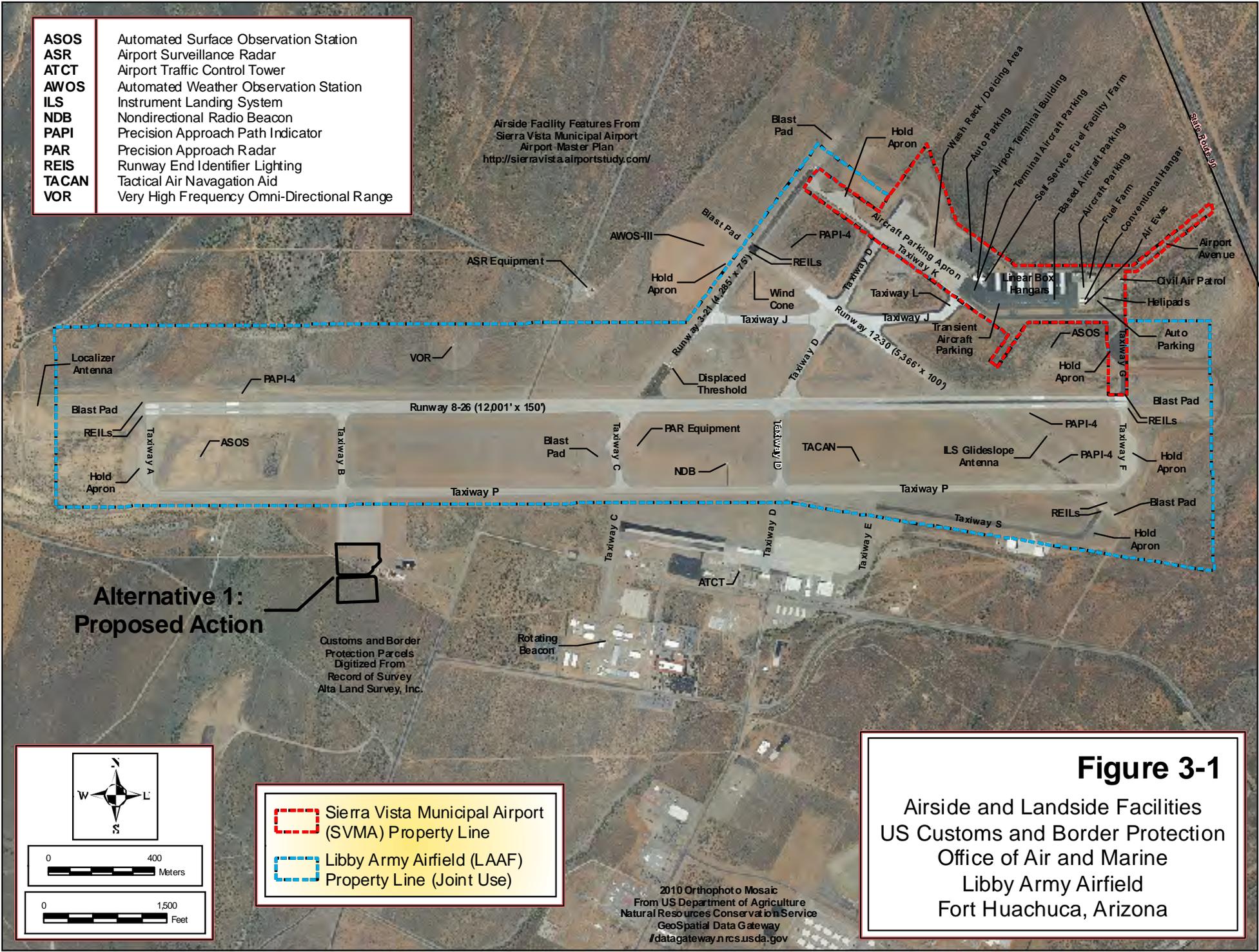
LAAF is one of 22 joint-use airports in the country where military runways also are used by a public airport. Airfield land uses include 1,897 acres of military use at LAAF and 72 acres of public use at SVMA. According to Fort Huachuca's Real Property Master Plan Update (2007), LAAF has a current and future land use designation as airfield. An area development plan is proposed for the 146-acre site south of the Main and Southeast Taxiways (Airfield South, Mission Expansion Plan) to address the increasing demand for critical airfield mission related development (U.S. Army, 2007b).

Airside facilities at LAAF include runways, taxiways, connecting taxiways, airfield lighting, and navigation and visual aids. These facilities are designed, built, and referenced in accordance with U.S. Army and FAA requirements. Landside facilities include terminal buildings, aircraft parking aprons, hangars, fuel services, aviation-related businesses, and automobile access and parking. **Figure 3-1** illustrates the existing airside and landside facilities at LAAF/SVMA.

Accident Potential Zones (APZs) are an important land use and zoning consideration at LAAF. APZs, which are identified in **Figure 3-2**, are designated according to the Department of Defense (DoD) as areas immediately beyond the ends of runways and along primary flight paths that are subject to more aircraft accidents than other areas. Development within APZs is subject to DoD guidelines. APZs are categorized as either Zone I or Zone II, with Zone I being closer to the runway and having the higher potential for accidents. Clear Zones work in conjunction with APZs and are designated at the ends of runways. These zones have the highest potential for accidents and are severely restricted from development (U.S. Army, 2007b).

ASOS	Automated Surface Observation Station
ASR	Airport Surveillance Radar
ATCT	Airport Traffic Control Tower
AWOS	Automated Weather Observation Station
ILS	Instrument Landing System
NDB	Nondirectional Radio Beacon
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
REIS	Runway End Identifier Lighting
TACAN	Tactical Air Navigation Aid
VOR	Very High Frequency Omni-Directional Range

Airside Facility Features From
Sierra Vista Municipal Airport
Airport Master Plan
<http://sierravistaairportsstudy.com/>



**Alternative 1:
Proposed Action**

Customs and Border
Protection Parcels
Digitized From
Record of Survey
Alta Land Survey, Inc.

Rotating
Beacon

ATCT

Figure 3-1

Airside and Landside Facilities
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

- Sierra Vista Municipal Airport (SVMA) Property Line
- Libby Army Airfield (LAAF) Property Line (Joint Use)

2010 Orthophoto Mosaic
From US Department of Agriculture
Natural Resources Conservation Service
GeoSpatial Data Gateway
[/datagateway.nrcs.usda.gov](http://datagateway.nrcs.usda.gov)

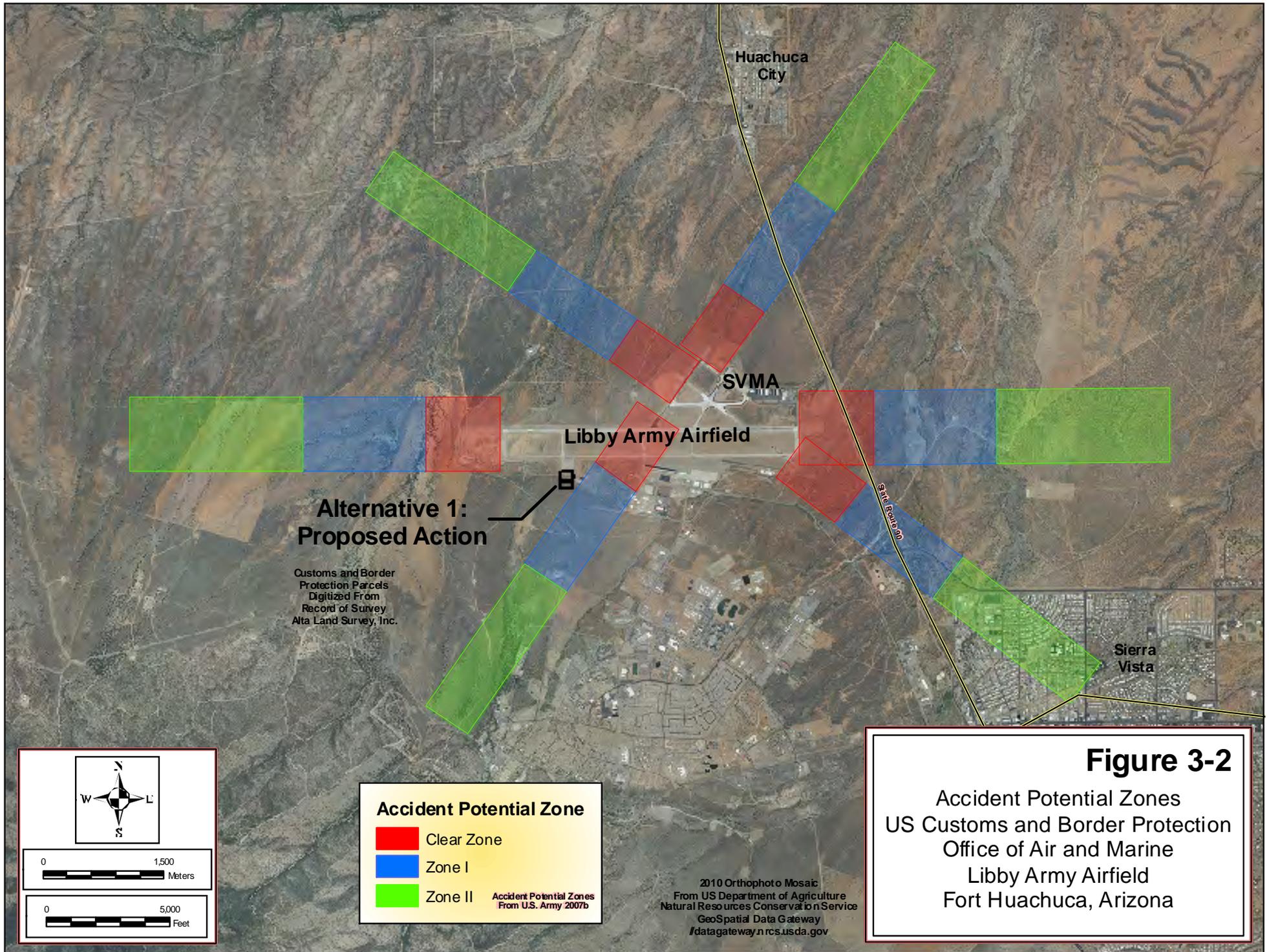


Figure 3-2
 Accident Potential Zones
 US Customs and Border Protection
 Office of Air and Marine
 Libby Army Airfield
 Fort Huachuca, Arizona

3.2.2 Environmental Consequences

3.2.2.1 *Alternative 1: Proposed Action Alternative*

The proposed action is consistent with existing and future land uses identified in Fort Huachuca's Real Property Master Plan Update (U.S. Army, 2007b). Current land use at the site is categorized as airfield, which means the land must accommodate airfield related facilities including landing and takeoff areas, aircraft maintenance areas, the airfield itself, operations and training facilities, and navigational and traffic aids. There are no known conflicts between the proposed action and objectives of Federal, State, regional, or local land use plans, policies, or controls for the site. There also is no known conflict with APZs and clear zones on the site and with existing land use conditions. Construction activities would not impact the use of lands adjacent to the site nor would they cause a restriction to future land uses adjacent the site.

Indirect or induced land use impacts within Sierra Vista or Cochise County are not anticipated, as the local housing market is currently housing the existing operations personnel. Additionally, Alternative 1 is not anticipated to have a direct or indirect impact on land uses within the SPRNCA.

3.2.2.2 *Alternative 2: No Action Alternative*

The lease agreement on the current, existing temporary CPB OAM facility is set to expire. CBP OAM was notified that LAAF does not intend to consider renewal of the lease, citing long-range land use planning conflicts. A new lease agreement on the existing site will be required, despite the land use planning conflicts, to accommodate the No Action Alternative.

The existing facility is comprised of an airfield apron and taxiway, temporary hangars with ancillary structures, temporary office structures and parking area. The hangar area specifically includes two hangars of canvas or fabric skin construction. One hangar houses predator drones, and the other hangar houses helicopters. The concrete apron supports the hangars and other ancillary structures that are all temporary in nature, including: mobile flight operation command centers, mobile fuel tankers in secondary containment, storage buildings, and predator drone and helicopter staging. Adjacent to the concrete apron are three mobile diesel powered generators, satellite dishes, and other antenna structures. The administrative complex consists of mobile offices with associated utilities, small storage buildings, and a gravel parking area. Alternative 2 currently accommodates 69 personnel and six aircraft (three AS-350's and three MQ-9).

No changes in land use would occur if CBP were to continue utilizing the existing temporary facility. As a result, no temporary or permanent land use impacts are anticipated, except for the conflicts with land use planning.

3.3 GEOLOGY AND SOILS

Geological resources are surface and subsurface materials and their properties. Principal geologic factors influencing structural development potential are soil stability and topography. Soils are unconsolidated materials overlying bedrock or other parent material, and are described in terms of series or type, slope, and physical characteristics. Soil depth, structure, elasticity,

strength, shrink-swell potential, and erodibility influence suitability for the construction of structures and facilities. Topography is defined as the surface elevation contours of the natural and/or man-made features (exclusive of buildings and temporary features) of an area that describe the configuration of its surface. Topography is influenced by many factors, including human activity, underlying geological material, seismic activity, climate conditions, and erosion.

Topography

Fort Huachuca is located in the Upper San Pedro River Basin (USPB), which covers an area of approximately 2,500 square miles, extending 60 miles from the Mexican Border to just north of the City of Benson, Arizona. Within the USPB lie the Huachuca and Whetstone Mountains to the west and the Mule Mountains and Tombstone Hills to the east, which surround a valley intersected by the San Pedro and Babocomari Rivers, as shown in **Figure 3-4** and **Figure 3-6** in Section 3.4 Hydrogeology. The USPB slopes gradually downwards from south to north, with valley floor elevations ranging from 4,800 feet above mean sea level (MSL) in Mexico to 3,300 feet above MSL at the Basin's northern boundary (AANG, 2008).

Geology

The surficial deposits of the USPB, where Fort Huachuca is located, consist of thin, unconsolidated, and discontinuous deposits, including Pleistocene and Holocene alluvium of stream channels, flood plains, and terraces. Underlying the surficial deposits are sedimentary deposits, which are chiefly alluvial sand and gravel deposits of fans, valley centers, terraces, and channels.

On the basis of age and consolidation, the sedimentary deposits are separated into three layers, as follows (from youngest to oldest): (1) the upper Pliocene to Pleistocene upper basin-fill unit, which is unconsolidated to moderately consolidated; (2) the upper Miocene to Pliocene lower basin-fill unit, which is also unconsolidated to moderately consolidated; and (3) the upper Oligocene to lower Miocene well-consolidated Pantano Formation. The Pantano Formation overlays bedrock, which lies at depths up to 5,500 feet below land surface in valley areas and at or near the land surface near mountains (AANG, 2008).

Soils

Fort Huachuca has a diverse assortment of soil types directly related to differences in climate, parent material, and topography at the installation. A soil survey of Fort Huachuca conducted in 1997 identified the ROI as located within the Terrarossa soil complex, which is characterized by the U. S. Department of Agriculture (USDA) as well- drained, sandy loams, gravelly loams, and very gravelly sandy loams with slopes ranging from 0 to 45 percent.

3.3.1 Affected Environment

The Region of Influence (ROI) for these resources is defined by the area within which an action may directly or indirectly cause changes to the character of geologic and soil resources either onsite or down-slope from the site. The ROI for geology and soils encompasses the area

proposed for construction, the adjacent land, and the existing temporary facility site. Most of the preferred action alternative site has been previously graded and disturbed. The area containing Alternatives 1 and 2 is flat with a gradual easterly slope and is situated at about 4,600 feet above mean sea level, which is the approximate elevation of LAAF.

Several hundred feet of consolidated and unconsolidated sedimentary deposits, most of which are capable of transmitting groundwater, generally underlie the Upper San Pedro Basin. These deposits may be more than 1,000 feet thick in the south, where basin and range type faulting has produced a deep graben structure (CBP, 2010b).

Most of the western boundary deposits follow the crest of the Huachuca Mountains, which vary in elevation from about 5,000 to 8,400 feet above MSL. This mountain range is composed of intensely folded and faulted terrain in which marine limestone has been thrust beneath a granitic continental margin at the end of the Paleozoic Era, approximately 245 million years ago (CBP, 2010b). A series of these thrust faults creates a zone of weakness that forms a broad arc starting on the westernmost flank of the Mule Mountains, south into Mexico, north up the spine of the Huachuca Mountains, and finally to the northwest to where it dissects the Santa Rita Mountains (CBP, 2010b). The principal regional hydrostratigraphic features are the upper and lower units of unconsolidated basin fill and overlying floodplain alluvium. These units form the regional and local aquifers which are further discussed in **Section 3.4**.

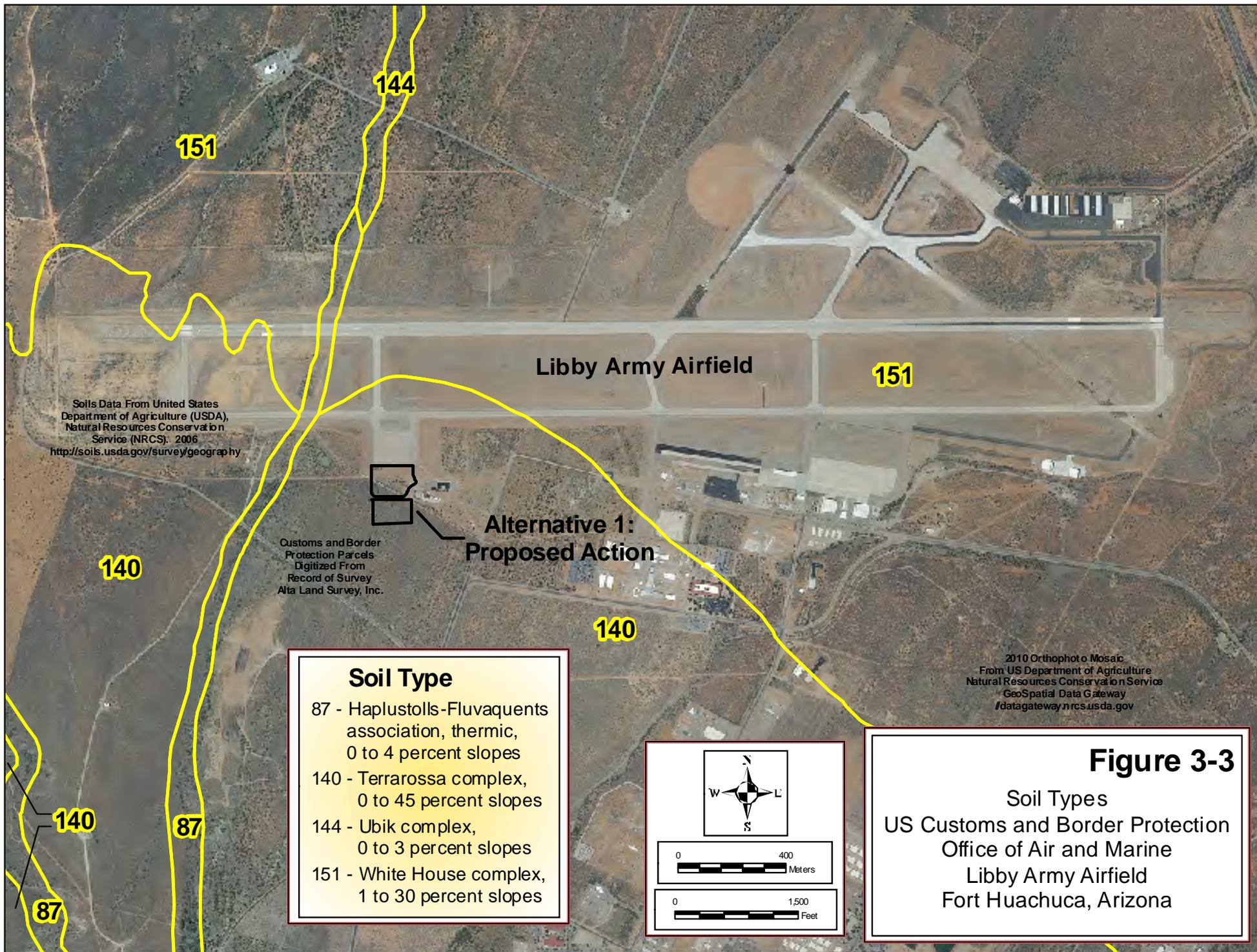
The soil type in this area is classified as the Terrarossa complex (see **Figure 3-3**), which is characterized by the USDA as well-drained, sandy loams, gravelly loams, and very gravelly sandy loams with slopes ranging from 0 - 45 percent. Soil properties include: slow permeability, high shrink-swell potential, clay texture, and high water erosion potential. These soils are characterized with very slow infiltration rates when saturated and an extremely low water transmission rate, properties which are usually caused by a high percentage of clays, the existence of claypans or clay layers near the surface, or where shallow soils overlie nearly impervious bedrock near the surface (AANG, 2008).

Prime farmland is also addressed as part of the analysis of geology and soil candidates of the site. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, which must be kept available for these uses. No prime farmland is located at the ROI or in adjacent areas; therefore the Farmland Protection Policy Act does not apply.

3.3.2 Environmental Consequences

3.3.2.1 Alternative 1: Proposed Action Alternative

Ground clearing would occur as a result of site development. Grading using standard cut and fill methods would occur in order to prepare the site for construction. Surface disturbance from excavation and construction would be limited to the extent practicable and no appreciable loss of soil is anticipated. Excavated soils would be maintained temporarily at predetermined, nearby stockpile locations and would be reused on site to balance the site grading. Ground disturbance is anticipated to be less than approximately seven acres total and would occur only in previously



disturbed areas. Soils within the ROI are classified with low to moderate erodibility, and soil disturbing activities are not anticipated in environmentally sensitive locations or special management zone areas.

Provisions of the Arizona Pollutant Discharge Elimination System (Arizona Administrative Code, Title 8, Chapter 9 and United States Code 1251 et seq.) require construction projects disturbing more than one acre to have a Storm Water Pollution Prevention Plan (SWPPP) that includes BMPs. These BMPs are designed to minimize soil erosion by wind or rain and protect surface water quality. By statute, BMPs must include erosion and sediment controls, interim and permanent stabilization practices, velocity dissipation devices in discharge locations and outfall channels, and a description of post-construction storm water management measures. A SWPPP is required prior to project implementation.

Overall, minor permanent impacts to soil resources from grading, excavation, trenching, and erosion are anticipated during construction. Minor impacts to soil are also possible during disposition of structures at the existing facilities. Impacts would be minimized by the BMPs in the SWPPP. The proposed action would not result in substantial alterations to topography or local or regional geologic conditions since ground disturbance is anticipated to be less than approximately seven acres total and would occur only in previously disturbed areas.

3.3.2.2 Alternative 2: No Action Alternative

No change in topographic, geologic, or soil resources of the area would occur. No impact on soil resources is anticipated.

3.4 HYDROLOGY AND GROUNDWATER

Fort Huachuca is located on the Sierra Vista subwatershed of the USBP. The Installation shares the subwatershed with the City of Sierra Vista, Huachuca City, and most of the San Pedro River National Conservation Area (SPRNCA). This subwatershed is bounded by the Mexican Border to the south, the Mule Mountains on the east, the Huachuca Mountains on the west, and Arizona State Route (SR) 82 on the north.

The groundwater system within the Sierra Vista subwatershed of the USBP can be divided into three units: an alluvial floodplain aquifer, an unconsolidated regional aquifer, and an underlying consolidated aquifer. The floodplain aquifer is a long, narrow area along the San Pedro River, and consists of unconsolidated gravels, sands, and silt deposited by flood flows of the river system. The floodplain aquifer is relatively shallow and depth to groundwater ranges from zero (at the river) to 50 feet below ground surface (bgs) at the edges of the aquifer. The unconsolidated regional aquifer, which underlies the entirety of the Sierra Vista subwatershed, is comprised of upper and lower basin-fill units and has a thickness that ranges from 150 feet to 1,250 feet. The upper basin-fill unit consists mostly of sand and gravels and is less consolidated than the lower basin-fill unit, which contains a number of clay and silt lenses that can cause localized confining conditions to exist. Depth to groundwater in the regional aquifer ranges from 50 feet near the floodplain aquifer to 500 feet near wellfields in developed areas, such as the City of Benson or Fort Huachuca. Underlying the regional aquifer is a consolidated aquifer, which is

comprised of the Pantano Formation. The consolidated aquifer ranges from 0 to several thousand feet in thickness and is generally of low permeability because of cementation, but can yield water to wells through fractures and may be an important local water-bearing unit (Pool and Dickinson [2007]). Groundwater flow between the floodplain, regional, and consolidated aquifers is generally unrestricted (ADWR, 2005).

Floodplain, regional, and consolidated aquifers are all recharged primarily from the mountain fronts, as precipitation rates in the lower basin areas are low and evaporation rates are high due to the warm climate, preventing the aquifers from being recharged by precipitation (AANG, 2008).

The Sierra Vista subwatershed is an extremely active area with respect to water resource management activities. Concern about regional groundwater withdrawal and potential impacts to the stream flow in the San Pedro River have increased in recent years. Considerable effort has been devoted to assessing the nature and extent of these impacts, as well as to developing and implementing plans to mitigate any adverse impacts. The city of Sierra Vista, Fort Huachuca, numerous federal, state, and local agencies, and a large number of citizens and interest groups have been involved in this process (USAGFH, 2000). Over the past decade, tremendous progress has been made in reducing groundwater consumption rates in the Sierra Vista Subwatershed. This progress has come in the form of reduced groundwater demand both on-Installation and off-Installation and increased artificial and enhanced recharge of the groundwater system. Annual pumping from Fort Huachuca production wells has decreased from a high of approximately 3,200 acre-feet in 1989 to a low of approximately 986 acre-feet in 2012. Water use efficiency in the City of Sierra Vista as measured by per capita water use (gallons/person/day or GPCD) has improved from 180 GPCD in 2000 to 141 GPCD in 2012 despite a 21percent population increase during the same time period (ADPW, 2012).

In the case of Fort Huachuca, the reduction in water demand has occurred through a variety of measures including fixture upgrades (i.e., replacement of high water use plumbing fixtures with low water use fixtures), facility infrastructure removal/consolidation (i.e., demolition of facilities), aggressive leak detection and repair, water conservation education, and implementation of a strict landscape watering policy in military family housing. Agricultural pumping has decreased as a result of the retirement of agriculture associated with creation of the SPRNCA and through the purchase of conservation easements by Fort Huachuca in partnership with The Nature Conservancy and Cochise County (AANG, 2008).

Drinking Water Supply

The main sources of groundwater in the Sierra Vista subwatershed are the regional and floodplain aquifers, both of which serve as sources of potable water for Fort Huachuca. Eight municipal water supply wells are located on Fort Huachuca at depths between 202 feet and 1,230 feet. Two of the wells, located on the East Range, have a capacity of 800 gallons per minute (gpm), and the remaining six wells are located in the southeastern section of the cantonment area and have a capacity ranging from 500 gpm to 700 gpm. Additionally, five wells located

throughout the Installation to support military testing and research activities have minimal production.

The consolidated aquifer also supplies wells locally in the City of Sierra Vista, but does not have a significant presence in the subwatershed (ADWR, 2005). Estimated water storage in the regional aquifer ranges from 31.8 million acre-feet (ADWR, 1991) to 20 million acre-feet (EEC, 2002). Estimated storage in the floodplain aquifer ranges from 160,000 acre-feet (ADWR, 1991) to 366,000 acre-feet (EEC, 2002).

3.4.1 Affected Environment

The ROI is defined as the area within which an action may directly or indirectly cause changes in the character of hydrologic and groundwater resources. The proposed project's hydrologic system is within the Sierra Vista Subwatershed (**Figure 3-4**). In the Sierra Vista Subwatershed, groundwater enters the watershed in the form of mountain-front recharge, streambed infiltration, and as groundwater flow moving northward from Mexico.

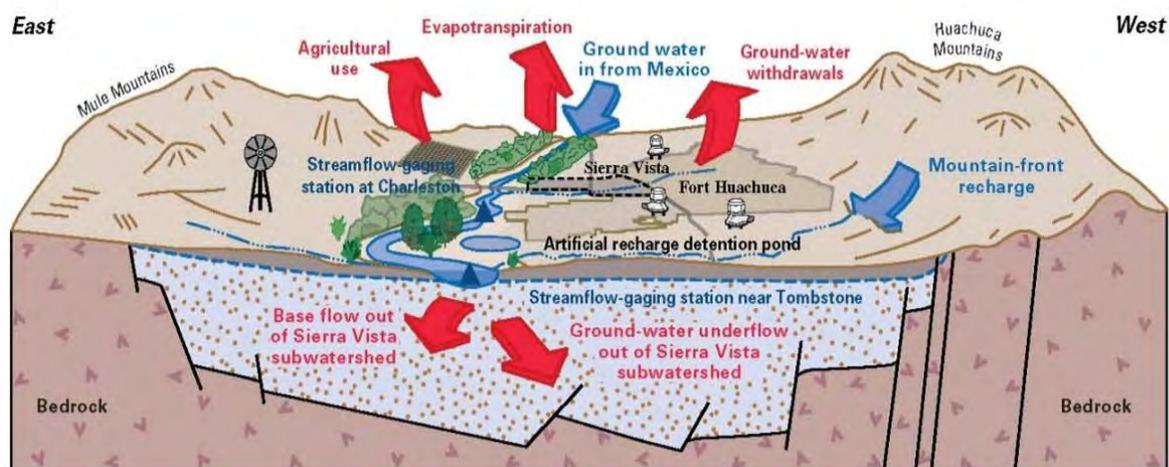
FIGURE 3-4: Sierra Vista Subwatershed



Source: ADWR 2009

Groundwater is transferred to the San Pedro River in gaining reaches, from evapotranspiration, groundwater pumping, and groundwater flow out of the basin to the north (ADWR, 1994). This hydrologic system can be quantified as a water budget and is illustrated in **Figure 3-5**.

FIGURE 3-5: Simulated Annual Water Budget for the Sierra Vista Subwatershed



Source: USGS 2007

Fort Huachuca, the communities of Sierra Vista and Huachuca City, agricultural operators, and mining operators rely entirely on groundwater pumped from the regional watershed. When groundwater is pumped from an aquifer, it is removed from storage or natural discharge (groundwater recharge or discharge). The natural discharge provides stream baseflow or is consumed through riparian evaporation and plant transpiration (evapotranspiration or ET). Over time, groundwater pumping in excess of recharge has created local declines in groundwater elevation, resulting in cones of depression within the basin. As cones of depression increase, the quantity of water flowing into the San Pedro or Babocomari Rivers as baseflow is likely to decrease. As part of a regional effort to obtain a sustainable yield (or balanced water budget), the Secretary of the Interior in cooperation with the Upper San Pedro Partnership prepares an annual report to Congress known as the Section 321 Report. This report identifies the steps taken to reduce overdraft and restore sustainable yield of groundwater in the Sierra Vista Subwatershed. Progress is being made toward balancing the water budget within the subwatershed with the implementation of a variety of specific management measures including water conservation, reuse, and recharge.

The most recent Section 321 Report available is the *Water Management of the Regional Aquifer in the Sierra Vista Subwatershed – 2011 Report to Congress* (USDOI, 2013). This Report estimates a groundwater storage deficit of 4,600 AF/YR in the Sierra Vista Subwatershed in calendar year 2010. **Table 3-1** from this Report summarizes the 2010 water budget for the Sierra Vista Subwatershed.

TABLE 3-1: Water recharged to and withdrawn/discharged from the regional aquifer underlying the Sierra Vista Subwatershed in 2010

[Water-budget volumes are in acre-ft; inflows are assigned positive numbers, outflows are assigned negative numbers; all values are estimates based upon the best available data and computational methods; all totals rounded to nearest 100 acre-ft.]

Component	Estimated Volume AF	Description
Natural Aspects of System		
Natural Recharge ¹	15,000	Inflow largely from percolating waters on and around mountains and through ephemeral channels
Groundwater Inflow ¹	3,000	Subsurface inflow from Mexico
Groundwater Outflow ¹	-440	Subsurface outflow at USGS San Pedro River near Tombstone streamflow-gaging station (09471550)
Stream Baseflow ²	-4,890	Groundwater discharge to the river that flows out of the Subwatershed
Evaporation and Plant Transpiration ³	-10,800	Groundwater consumed in the riparian system exclusive of evapotranspiration supplied by near-riparian recharge from precipitation or flood runoff
Pumping		
Public Water Supply (gross)	-9,467	Groundwater withdrawals by water companies and municipalities
Rural Wells (gross)	-4,228	Groundwater withdrawals by private wells
Industrial (gross)	-1,143	Groundwater withdrawals for industrial, golf courses, sand and gravel operations
Irrigation (net) ⁴	-126	Groundwater withdrawals for agricultural use; consumptive use only
Active Management Measures		
Reduction of Riparian Evapotranspiration	645	Management of invasive mesquite
Municipal Effluent Recharge ^{5,6}	3,091	Recharge by the City of Sierra Vista, Fort Huachuca, City of Tombstone, and City of Bisbee
Detention Basin Recharge ⁷	447	Recharge of storm water within basins that have been installed to mitigate increased flood peaks in ephemeral-stream channels resulting from urbanization.

Component	Estimated Volume AF	Description
Passive Recharge Resulting from Human Activities		
Incidental Recharge ⁸	2,049	Mainly from exterior irrigation and septic tanks
Urban-Enhanced Recharge ⁹	2,300	Urbanization concentrates runoff in ephemeral-stream channels which increases natural
Aquifer Storage Change¹⁰	-4,600	

Source: USDOJ 2013

1 Flow volume estimated by the Arizona Department of Water Resources (2005).

2 Base flow discharge at USGS San Pedro River near Tombstone streamflow-gaging station (09471550) estimated from entire period of record (Kennedy and Gungle, 2010).

3 Evapotranspiration value is the average of the high and low estimates of Scott and others (2006).

4 Pumping for irrigation is consumptive use only. Area considered is the groundwater basin portion of the Sierra Vista Subwatershed only. The area within the boundaries of the Sierra Vista Subwatershed includes more agricultural lands— primarily located in the head waters of the Babocomari River—than the area within the groundwater basin portion of the Subwatershed.

5 Municipal effluent recharge is water returned to the aquifer through recharge facilities as reported by the City of Sierra Vista (Mike Hemesath, Director, Department of Public Works, City of Sierra Vista, written commun., March 31, 2011), Fort Huachuca (Tom Runyon, Hydrologist, Fort Huachuca, written commun., April 8, 2011), City of Tombstone (Carla Molina, Tombstone Public Works, oral commun., July 11, 2011), and City of Bisbee (Steve Pauken, City Manager, City of Bisbee, written commun., July 15, 2011). City of Bisbee recharge calculations are for July 1, 2010 to June 30, 2011.

6 Includes 350 acre-ft of incidental recharge through the constructed wetlands above the recharge ponds at the Sierra Vista Waste Water Reclamation facility (Mike Hemesath, Director, Department of Public Works, City of Sierra Vista, written commun., March 31, 2011).

7 Recharge of stormwater within basins installed to mitigate flood peaks in urban ephemeral-stream channels.

8 Incidental recharge is an estimate of water returned to the aquifer from septic tanks and turf watering.

9 Urbanization in semiarid climates can increase recharge by concentrating rainfall runoff in ephemeral-stream channels (Kennedy, 2007; Lohse and others, 2010). Estimate provided by the Agricultural Research Service. Recharge caused by urbanization only partially mitigates the increased pumping that accompanies increased urbanization.

10 Subtotals and total are equal to sum of individual terms rounded to nearest 100 acre-ft; sum of subtotals can differ from sum of all individual terms rounded to nearest 100 acre-ft due to rounding error.

Extensive research and modeling efforts regarding the complex hydrology of the Sierra Vista Subwatershed are on-going. The regional aquifer is deep and mostly unconfined, except in some portions of the southern half of the subwatershed. The regional aquifer is estimated to contain between 19.8 million AF to 26.1 million AF of recoverable water (ADWR, 2005). The floodplain aquifer is composed of streambed alluvium within the San Pedro River's channel and is long, narrow, and relatively shallow.

Water levels are generally stable in the basin except in the Fort Huachuca-Sierra Vista area where groundwater pumping has created a large cone of depression, which was first documented in 1973. This cone of depression encompasses approximately 7.5 square miles running in a northwest-southeast direction, paralleling the Huachuca Mountains for at least 15 miles from approximately the Babocomari River to south of Sierra Vista (US Army, 2007a). Water level declines within this area averaged 1.4 feet per year from 1968 to 1986 (ADWR, 2009). Well groundwater levels near Fort Huachuca continue to decline and water-level changes ranging from -1 foot to greater than -30 feet were recorded in wells near the proposed project area. These wells also had deep water levels as deep as 585 feet.

Overall, the chemical quality of the groundwater obtained by Fort Huachuca and other users in the Upper San Pedro Basin (USPB) is good and is considered suitable for domestic uses. However, in several areas (St. David and Benson), fluoride and sulfate concentrations at or above drinking water standards have been noted. Groundwater at the Installation is treated with chlorine for disinfection and no other treatment is required (U.S. Army, 2007a).

3.4.2 Environmental Consequences

3.4.2.1 *Alternative 1: Proposed Action Alternative*

The *Water Conservation Management Report for U.S. Customs and Border Protection Activities within the Sierra Vista Subwatershed of the San Pedro Watershed* quantified the water use associated with CBP OAM activities at LAAF (CPB, 2010b). The total water use accounted for direct use at the site by CBP OAM personnel, employee domestic use by CBP OAM personnel and their families at home, and induced use within the community generated by the presence of CBP OAM facilities. The report included an estimate of water use for a future expansion expected to contain 69 employees, which is now the current staffing level. These projected water use values are utilized as current values for this report.

The proposed action alternative would result in a total groundwater use of 43.91 AF/YR related to the direct, domestic, and induced water use generated by the CBP OAM facilities (**Table 3-2**, adapted from CBP 2010b, Table 18. Note: what CBP 2010b called current was 47 persons; future was estimated for 69 persons). Current water conservation and mitigation measures at the Installation and Sierra Vista provide 19.13 AF/YR of recharge for the CBP effects, and 24.78 AF/YR of mitigation would be required by CBP to offset any adverse groundwater impacts. Additionally, a one-time construction ground water use of 6.74 AF would occur under Alternative 1. Detailed water use analysis and potential mitigation measures are discussed in **Section 5**. Water levels in the regional aquifer will continue to decline and the amount of groundwater in storage and groundwater available for natural discharge will be reduced if groundwater pumping in excess of recharge continues.

No impact on groundwater quality is anticipated as a result of the proposed action because no release of hazardous substances or pollutants and no injection of substances into groundwater are expected to occur with the proposed action.

3.4.2.2 Alternative 2: No Action Alternative

The No Action Alternative would also result in the total groundwater use of 43.91 AF/YR related to the direct, domestic, and induced water use generated by the CBP OAM facilities at present 2014 staffing levels of 69 persons. (CBP 2010b, Table 18. Note: what CBP 2010b called current was 47 persons; future was estimated for 69 persons). Current water conservation and mitigation measures at Fort Huachuca and Sierra Vista provide 19.13 AF/YR of recharge for the CBP effects and 24.78 AF/YR of mitigation would be required by CBP to offset any adverse groundwater impacts. Potential mitigation measures are discussed in **Section 5**. Water levels in the regional aquifer will continue to decline and the amount of groundwater in storage and groundwater available for natural discharge will be reduced if groundwater pumping in excess of recharge continues.

TABLE 3-2. Summary Table for CBP A&M Water Use, Recharge and Net Water Use

	Water use (acre-feet / year)
Incorporated Area Water Use	30.32
Unincorporated Area Water Use	10.05
Direct	0.77
CBP A&M Portion of Industrial Water	2.77
Total	43.91
Direct Effluent Recharge by Fort	0.23
CBP A&M Portion of Sierra Vista Effluent	14.25
CBP A&M Population's Septic Tank	4.65
Total	19.13
Net Water	24.78

Source: CBP 2010b, Table 18

3.5 SURFACE WATERS AND WATERS OF THE U.S.

No surface water bodies occur in the ROI other than an unnamed wash located at the existing temporary facility. Surface water features in Fort Huachuca are typically ephemeral streams consisting of dry washes, arroyos, or continuous and discontinuous gullies. The ephemeral streams are narrow channels with a sand and gravel layer at the bottom of the channel, and are usually dry and only flow in response to precipitation events that are significant enough to achieve runoff conditions (AANG, 2008).

Due primarily to its location in a dry subtropical (desert subtype) climate, Fort Huachuca does not support abundant wetland habitats. According to a February 2000 wetland inventory performed by the USFWS, Fort Huachuca has a total of 63.9 acres of wetlands and 770.2 acres

of riparian habitat; however, none of these wetlands or riparian habitat are present on the proposed OAM property (USFWS, 2000).

3.5.1 Affected Environment

The ROI is defined as the area within which an action may indirectly or directly cause changes in the character of surface water resources and designated waters of the U.S. Surface water discharges originating within the Sierra Vista Subwatershed are the tributaries to either the San Pedro or Babocomari Rivers (**Figure 3-6**).

The Babocomari River, located approximately three miles north of the ROI, drains the northwestern sections of the Sierra Vista Subwatershed. It discharges into the San Pedro River just south of Fairbank. The Babocomari River is ephemeral throughout most of its length although a reach near the headwaters about 15 miles above its confluence with the San Pedro and another reach about four miles above the confluence sustain perennial flow due to special geologic conditions (CBP, 2010b).

The San Pedro River, located approximately 10 miles east of the ROI, is a major regional stream, draining a land area of approximately 4,600 square miles and extending almost 200 miles from its headwaters in Sonora, Mexico to its confluence with the Gila River near Winkleman, Arizona. The San Pedro River contains water derived from precipitation, snowmelt runoff, and baseflow from groundwater. Much of the San Pedro River exhibits an intermittent flow regime with seasonal appearance and disappearance of surface water in response to rainfall (ADWR, 2008). Unlike most rivers in Arizona, the San Pedro River is undammed and maintains perennial flows for approximately 18 miles south of the confluence with the Babocomari River.

Along this portion of the San Pedro, baseflow is maintained by bedrock that forces groundwater to the surface to contribute to perennial river flow (CBP, 2010b). Baseflow is defined as water in the river provided by the natural discharge of groundwater outflow and does not account for rainfall, runoff, or floods that may contribute additional water to the river. As a result, changes in groundwater storage in the basin could potentially affect the quantity of water flowing in the San Pedro River and diminish riparian vegetation. In 2006, the estimated baseflow of the Sierra Vista Subwatershed was 3,250 AF/YR (or 4.49 cubic feet per second [CFS]) (USDOJ, 2008).

There are three stream flow (gage) stations located on the San Pedro River in the Sierra Vista Subwatershed that are maintained by the U.S. Geological Survey (USGS) as summarized in **Table 3-3** and shown in **Figure 3-6**. In the perennial reach of the San Pedro, average annual flows range from 22,873 AF/YR near Palominas to 38,636 AF/YR at Charleston (ADWR, 2009).

These records show that the largest flows of the year generally occur in response to monsoon storm events during the summer (**Table 3-3**). Starting in late September when monsoons ends, stream flows decrease until winter storms cause flows to begin gradually increasing through the winter and early spring. Stream flows recede to their lowest values of the year by April when precipitation drops significantly in the dry, pre-monsoon period (U.S. Army, 2007a).

TABLE 3-3: San Pedro River Stream Flow Gage Data

Station Number	USGS Station Name*	Average Seasonal Flow (% of annual Flow)				Annual Flow (AcreFeet/Year)				Years of Annual Flow Record
		Winter	Spring	Summer	Fall	Min.	Med.	Avg.	Max.	
9470500	SPR near Palominas	10	2	70	17	4,403	16,659	22,873	65,464	44
9471000	SPR at Charleston	14	5	65	16	6,778	33,203	38,636	152,798	84
9471550	SPR near Tombstone	19	4	49	28	7,314	29,654	36,950	102,107	24

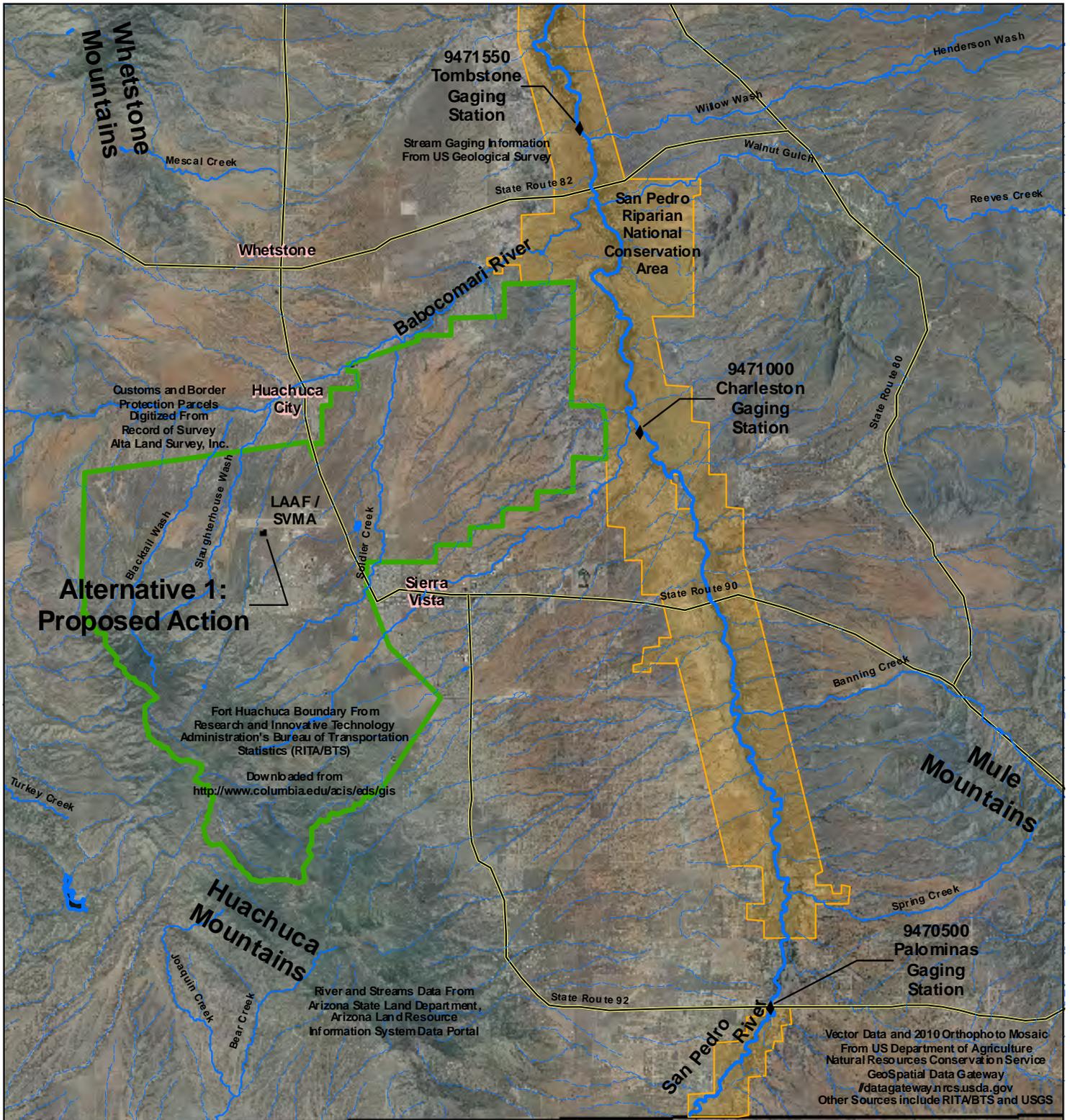
Source: USGS (NWIS) 2005 & 2008 as reported in ADWR 2009

*Please see **Figure 3-6** for the location of these stations.

Note average seasonal flow and annual flow include baseflow and additional stream flow provided by rainfall, runoff, or floods.

Researchers found that the dry, pre-monsoon period has started progressively earlier and lasted longer since about 1930. In addition, there has been a decrease in summer monsoon flows since about the mid-1960's and a pattern of large winter flows from the late 1970's to the mid-1990's. This period was then followed by a period of extremely low winter flows in the late 1990's and early 2000's (U.S. Army, 2007a). Researchers have concluded that flows in the San Pedro River and other nearby rivers appear to be more vulnerable to changes in summer precipitation because summer flows resulting from summer monsoons make up the largest component of annual flow (Thomas and Pool 2006, per U.S. Army, 2007a).

In 2006, the USGS published a study that evaluated trends in streamflow of the San Pedro River. Annual streamflow of the river at the Charleston gage has decreased by more than 50 percent during the 20th century. Factors that caused the decreasing trends in streamflow of the San Pedro River at Charleston include fluctuations in precipitation and air temperature, changes in watershed characteristics, human activities, or changes in seasonal distribution of bank storage. After removing the variation in streamflow caused by fluctuations in precipitation, the study found that changes in watershed characteristics such as changes in riparian vegetation, changes in upland vegetation, and changes in stream-channel morphology, and human activities such as ground-water pumping, construction of runoff-detention structures, urbanization, and cattle grazing had a major role in the decrease of streamflow (USGS, 2006b).



Mexico

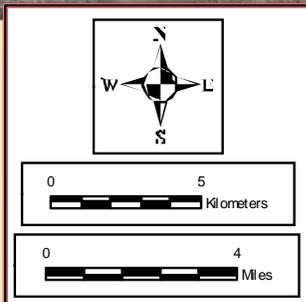
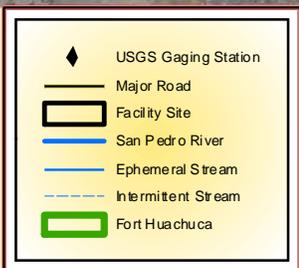


Figure 3-6

Surface Water Resources
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

3.5.2 Environmental Consequences

3.5.2.1 Alternative 1: Proposed Action Alternative

No surface waters are located within the proposed action area. The proposed action would increase the amount of impervious surfaces with the addition of rooftops and paved surfaces for vehicles and aircraft. Surface water runoff from paved surfaces is classified as nonpoint source pollution. The proposed action is anticipated to create only a minor increase in additional nonpoint source pollution in the area. No significant impact to water quality on-site or downstream is anticipated.

As noted in **Table 3-1**, the estimated volume of natural discharge to rivers (or stream baseflow) is 4,890 AF (or 6.75 CFS) in the Sierra Vista Subwatershed. **Table 3-4** provides a summary of the calculations of the effects on the baseflow of the San Pedro River. Alternative 1 or 2 result in no more than a 0.08 percent decrease in baseflow (4.01/4890 AF/YR). For more details about these calculations, see the Water Conservation and Management Report previously referenced in section 3.4.2.1 (CBP, 2010b), included in **Appendix B**. This negligible reduction in baseflow could slightly reduce the total flow and instream aquatic habitat in the San Pedro River. Over time, this reduction could degrade riparian vegetation within the SPRNCA.

TABLE 3-4: CBP OAM Potential Effects on Natural Discharge

	Total water use / gross groundwater demand	Potential mitigation obligation / net groundwater demand	Change in aquifer storage (55% storage derived from net groundwater demand)	Change in natural discharge (45% capture derived from net groundwater demand)	Change in ET (64% ET derived from natural discharge)	Change in baseflow (36% stream discharge from natural discharge)
Alternative 1 or 2 (annual use)	43.91 AF/YR	24.78 AF/YR	13.63 AF/YR	11.15 AF/YR	7.14 AF/YR	4.01 AF/YR (0.006 CFS)
Alternative 1 Construction Use (one-time use)	6.74 AF	3.90 AF	2.14 AF	1.76 AF	1.13 AF	0.63 AF (0.0009 CFS)

Sources: CBP 2010b and CBP 2010c. Note 1 AF/YR = 0.00138 CFS

3.5.2.2 Alternative 2: No Action Alternative

Although no surface waters would be impacted by the No Action Alternative, the continuation of the existing temporary facility will continue to adversely affect groundwater baseflow to the San Pedro River in the same amounts as the Proposed Action.

3.6 FLOODPLAINS

Floodplains include, at a minimum, areas subject to a one percent or greater chance of flooding in any given year (i.e., the 100-year flood). Floodplains can be considered lowland and relatively flat areas adjacent to inland and coastal waters or flood-prone areas of offshore islands. Per E.O. 11988, Federal agencies are directed to take action to reduce the risk of flood loss;

minimize the impact of floods on human safety, health and welfare; and restore and preserve the natural and beneficial values served by floodplains. In general topography and drainage patterns on Fort Huachuca funnel flows to the northeast into the Babocomari River, which is a tributary to the San Pedro River.

3.6.1 Affected Environment

LAAF is situated within Fort Huachuca's boundaries. Because military reservations are not mapped for the National Flood Insurance Program, no Flood Insurance Rate Maps are available from the Federal Emergency Management Agency for the Installation. Floodplain data for the Installation originated from Fort Huachuca's 1997 Real Property Master Plan (RPMP), which has since been incorporated into Fort Huachuca's RPMP Update (U.S. Army, 2007b).

According to these data, a floodplain is located approximately 400 feet west of the facility site (**Figure 3-7**). This data does not cite a source, so the degree of accuracy is unknown.

Hydraulic/hydrologic studies would be required in order to determine the boundaries of 100-year and 500- year floodplains.

3.6.2 Environmental Consequences

3.6.2.1 Alternative 1: Proposed Action Alternative

No floodplains are located with the ROI of Alternative 1. Natural drainage patterns on this site would be modified by impervious or semi-impervious buildings and parking areas. The facility construction plan would likely be designed to move surface water runoff away from buildings. The construction of a joint permanent facility is not expected to have an impact on local and regional floodplains and drainage patterns.

3.6.2.2 Alternative 2: No Action Alternative

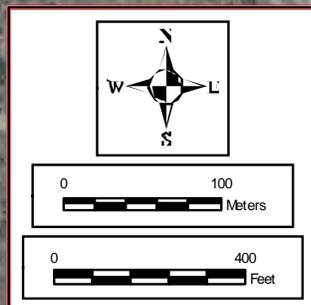
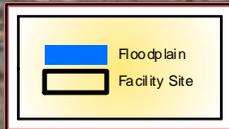
The site design for the existing temporary facility was not able to avoid the assumed floodplain. Consistent with U.S. Army guidelines, the modular trailers were constructed one foot higher than the floodplain elevation in order to minimize any damage should a flood occur. Additionally, the existing facilities have been designed to move surface water runoff away from buildings into the unnamed wash. As a result, the existing temporary facility is not expected to have an impact on local and regional floodplains and drainage patterns. Thus, the No Action Alternative would result in no significant impact to floodplains.

Libby Army Airfield

**Alternative 1:
Proposed Action**

Floodplain Data From
Fort Huachuca 1997
Real Property Master Plan
Data Source Not Sited

Customs and Border
Protection Parcels
Digitized From
Record of Survey
Alta Land Survey, Inc.



2010 Orthophoto Mosaic
From US Department of Agriculture
Natural Resources Conservation Service
GeoSpatial Data Gateway
[/datagateway.nrcs.usda.gov](http://datagateway.nrcs.usda.gov)

Figure 3-7
Floodplains
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

3.7 VEGETATIVE HABITAT

The ROI for vegetative habitat includes areas in and around LAAF where ground disturbance could occur and where activities related to the proposed action could cause impacts to vegetation. LAAF and the surrounding area exhibit high desert plain characteristics, where vegetation is typical of semi-desert grassland and mesquite upland scrub.

3.7.1 Affected Environment

In August 2013, LG²ES completed a comprehensive floristic and faunal assessment on the ROI. During the course of the assessment, no flora or fauna listed by the State of Arizona, U.S. Fish and Wildlife Service or U.S. Forest Service as endangered, threatened, species of concern or sensitive species was encountered (LG²ES, 2013a).

In regard to the ROI, approximately two-thirds of the site has previously been cleared and graded and is currently being utilized as a staging area for adjacent construction (**Figure 3-8**). The remaining one-third is vegetated, primarily by semi-desert grassland species (**Figure 3-9**), but is consistently mechanically maintained to prevent the growth of vegetation suitable for wildlife utilization; specifically avian species (LG²ES, 2013a).

There are two community types on, or in the immediate vicinity of, the ROI. Approximately one third of the site can be characterized as mechanically maintained scrubby grasslands. This community is characterized as an area of mechanically maintained grasses and forbs dominated by Lehman's love grass (*Eragrostis lehmanniana*) with a few scattered immature mesquite (*Prosopis glandulosa*). The remaining two thirds of the site is predominantly cleared land with scattered pockets of vegetation also dominated by Lehman's love grass.

The current facility contains two distinct habitat types including barren land and an ephemeral wash. The barren land is maintained and only contains sporadic herbaceous weedy species. The ephemeral wash is relatively well vegetated and dominated by low growing willow (*Salix spp.*) and cottonwood (*Populus spp.*) along with various herbaceous species.

Agaves (*Agave spp.*) are an important resource at Fort Huachuca as foraging habitat for the federally endangered lesser long-nosed bat (U.S. Army, 2007a). The most significant stands of agave at the Installation are designated as Agave Management Areas, which protect the plants and bats that may be foraging in these areas from training activities and development. The nearest Agave Management Area to the ROI is situated approximately 0.3 mile west of the proposed project. During the course of the assessment, no agaves were found within the proposed project area. It is not anticipated that the proposed action would result in any negative effects to the Agave Management Areas, or continuing usage of these areas by the lesser long-nosed bat.

Ultimately, the potential effects of unmitigated groundwater use in the Sierra Vista Subwatershed could result in changes in the type and distribution of vegetation along the San Pedro River. Riparian vegetation varies from stream edge to the uplands, depending partly on its

FIGURE 3-8: Cleared Staging Area



FIGURE 3-9: Vegetated and Maintained Area



water source. Some plants are sustained by the river's baseflow during dry periods when no rainfall, runoff, or floods contribute water to the river. Cottonwood and willow are almost entirely dependent on baseflow and are most sensitive to changes in groundwater levels. In general, plants become increasingly reliant on rainfall rather than baseflow as their distance from and above the river channel increases (USPP, 2009). Over time, reductions in natural discharge may result in the gradual transition from groundwater dependent vegetation such as cottonwood (*Populus spp.*) and willow (*Salix spp.*), and endangered aquatic plants such as the Huachuca water umbel (*Lilaeopsis schaffneriana spp. recurva*), to more drought-tolerant species.

As the San Pedro River is approximately 10 miles from the ROI, and the project will utilize current stormwater management design standards, it is not anticipated that the proposed action would result in any negative effects to the Sierra Vista Subwatershed or the San Pedro River.

3.7.2 Environmental Consequences

3.7.2.1 Alternative 1: Proposed Action Alternative

Alternative 1 could disturb approximately seven acres of land by excavation, grading, paving or landscaping activities. This construction could remove up to approximately 3.1 acres of semi-desert grassland and/or mixed-desert scrub vegetation, consisting primarily of grasses, outside of the currently-fenced boundary of LAAF/SVMA. The remainder of the site is currently cleared or graded by adjacent construction activities. Alternative 1 would result in a negligible loss of maintained scrubby grassland scrub habitat which is abundant across the Installation, especially in the vicinity of LAAF. It is anticipated that minimal habitat loss would result from the development of Alternative 1.

Fort Huachuca's Agave Management Plan dictates that prior to construction in Agave Management Areas, surveys must be conducted to assess potential impacts. Although Alternative 1 is not located within a designated management area, and no agave plants were discovered during the floristic assessment, CBP will coordinate with the U.S. Army to insure the relocation of any previously undiscovered plants. The loss of vegetation would have a negligible adverse impact on the availability of wildlife habitat.

Although not anticipated, indirect impacts associated with groundwater withdrawal from Alternative 1 could reduce natural discharge into the San Pedro River and diminish riparian vegetation within the SPRNCA. This change in the hydrologic regime could, over time, result in the transition of riparian habitat to upland habitat.

3.7.2.2 Alternative 2: No Action Alternative

No change in existing vegetative habitat or resources would occur at the ROI. No direct impact on vegetative habitat or resources is anticipated. The existing temporary facility was constructed in 2008, disturbing approximately nine acres of semi-desert grassland and/or mixed-desert scrub habitat. The area is predominantly barren land with a vegetated ephemeral wash.

Indirect impacts associated with groundwater withdrawal from Alternative 2 would be identical to those from Alternative 1, based on the personnel numbers.

3.8 WILDLIFE AND AQUATIC RESOURCES

3.8.1 Affected Environment

The ROI for wildlife and aquatic resources includes areas in and around LAAF where ground disturbance could occur and where activities related to the proposed action could cause impacts to these resources. The term wildlife refers collectively to mammals, birds, fish, amphibians, and reptiles.

3.8.2 Environmental Consequences

3.8.2.1 Alternative 1: Proposed Action

Based upon the wildlife assessment, this site does not support any unique wildlife habitat. The site does not support heavy-use wildlife movement areas or wildlife movement corridors because it is either fenced or maintained to minimize vegetation suitable for supporting wildlife. As a result, Alternative 1 could have a negligible impact to wildlife habitat or movement areas.

Wildlife species found within or adjacent to the proposed project site are typical of open grassland and mesquite-grass savanna habitats. Much of the wildlife is limited to species with a small home range that are not sensitive to disturbance. Wildlife within the ROI is currently exposed to human disturbance and noise associated with existing airfield activities. Noise impacts are discussed in **Section 3.13**. Additionally, the fence surrounding LAAF will be expanded to include the entirety of the ROI, limiting wildlife migration.

Faunal species observed within the project during the Biological Resources Assessment (LG²ES, 2013) were limited to those in **Table 3-5**.

TABLE 3-5: Faunal Species Identified during the Assessment

Common Name	Taxonomic Name
Birds	
Mourning Dove	<i>Zenaida macroura</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Reptiles	
Desert Grassland Whiptail	<i>Aspidoscelis uniparens</i>
Amphibians	
Red-Spotted Toad	<i>Bufo punctatus</i>

Source: LG²ES 2013a

Other species that may occur in the vicinity of the ROI include, but are not limited to, black-tailed jack rabbit (*Lepus californicus*), meadowlarks (*Sturnella spp.*), curve-billed thrasher (*Toxostoma curvirostre*), pocket gophers (*Thomomys spp.*), and various locally common snakes and lizards.

The maintained and vegetated portion (approximately one-third) of the ROI was the only area observed conducive to wildlife utilization. Limited single mesquite within the cleared areas could provide nesting habitat for various bird species; however none were observed and the disturbance from current construction activities are likely to limit utilization.

Although stormwater drainage ditches, which may temporarily contain standing water during rain events, are being constructed as a portion of the Air National Guard hangar project adjacent to the ROI, no other aquatic resources or habitats exist within the area (**Section 3.4**).

Common wildlife species found at and surrounding the proposed construction site could be disturbed or displaced during construction. Construction activities would result in the temporary increase in noise and human activity that may disturb a roaming or foraging animal. This impact would be negligible, of short duration, and would not result in a significant impact on wildlife in the ROI. During construction, passerines and other birds protected under the Migratory Bird Treaty Act would likely avoid the project area for higher quality native habitat which exists in the immediate vicinity; as such the impact of this habitat displacement is expected to be negligible.

Additionally, no water resources are found within Alternative 1, therefore no direct impact on aquatic habitat or resources would occur. As discussed in **Section 3.4**, indirect impacts associated with unmitigated groundwater withdrawal may reduce instream flow and diminish riparian vegetation within the SPRNCA. This change in the hydrologic regime could result in a decrease in aquatic and riparian habitat. However, this change is anticipated to result in negligible effects for most species as CBP are proposing water resources mitigation projects to offset this facility's water use. Potential effects to threatened and endangered species are addressed in **Section 3.9**.

3.8.2.2 Alternative 2: No Action Alternative

No change in existing wildlife and aquatic habitat and resources would occur in the ROI. Due to the nature of the existing site, it is anticipated that there is minimal wildlife utilization except for occasional migratory bird roosting and nesting. No further impacts to wildlife are anticipated to occur within this ROI. Indirect impacts would be identical to those of the proposed action.

3.9 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1543) declares the intention of Congress to protect federally listed threatened and endangered species and designated critical habitat of such species. The ESA defines an endangered species as a species that is in danger of becoming extinct, a threatened species is one that is likely to become endangered in the foreseeable future, and candidate species are currently being reviewed to determine if they

should also be protected under the ESA. A conservation agreement species is a species that has reason for concern and USFWS has an agreement with an agency or landowner to help conserve the species.

Critical habitat is defined in section 3(5)(A) of the Act as:

1. The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features essential to the conservation of the species, and that may require special management considerations or protection;
2. Specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Destruction or adverse modification of critical habitat is also defined in 50 CFR 402.02 and described as any action that results in direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. The loss of a single piece of habitat may not jeopardize the continued existence of the species, but it may reduce the ability of critical habitat to contribute to recovery.

3.9.1 Affected Environment

In August 2013, LG²ES completed a comprehensive floristic and faunal assessment on the ROI. During the course of the assessment, no flora or fauna listed by the State of Arizona, U.S. Fish and Wildlife Service or U.S. Forest Service as endangered, threatened, species of concern or sensitive species was encountered (LG²ES, 2013a).

In 2009, discussions were held with USFWS to determine what effect, if any, a previously proposed CBP project (see **Figure 2-3**) might have on the federally listed species identified for Cochise County, Arizona (CBP, 2010a). From these meetings, it was determined that the project, as proposed, had the potential to affect nine species based on the analysis of known species occurrence, the presence of constituent elements of suitable habitat, potential effects of changes in baseflow in the SPRNCA, and/or the listing of critical habitat for a federally listed species. Since that time, a tenth species has been added. This information is considered to be valid for the current Alternative 1 proposed action site, due to the close proximity of Alternate 1 to the previously proposed site.

1. Southwestern willow flycatcher (*Empidonax traillii extimus*) – Endangered
2. Yellow-billed cuckoo (*Coccyzus americanus*) – Candidate
3. Jaguar (*Panthera onca*) – Endangered
4. Lesser-long nosed bat (*Leptonycteris curasoae yerbabuena*) – Endangered
5. Ocelot (*Felis pardalis*) – Endangered
6. Desert pupfish (*Cyprinodon macularius*) – Endangered
7. Gila topminnow (*Poeciliopsis occidentalis occidentalis*) – Endangered
8. Chiricahua leopard frog (*Lithobates [Rana] chiricahuensis*) – Threatened
9. Huachuca water umbel (*Lilaeopsis schaffneriana ssp. recurva*) – Endangered

10. Mexican garter snake (*Thamnophis eques megalops*)- Threatened

Additionally, designated critical habitat for the Huachuca water umbel has the potential to be affected. The 2010 CBP OAM Facility at Libby Army Airfield Biological Assessment (CBP, 2010a) is incorporated by reference and includes a detailed description of each species. An updated Biological Assessment Survey (LG2ES 2014a) was conducted in 2013 as part of this EA, and is included in **Appendix B**. No Arizona threatened or endangered species were observed at the site during the biological assessment. **Figure 3-10** illustrates known occurrences and habitats of endangered species.

3.9.2 Environmental Consequences

Potential direct effects on federally listed threatened, endangered and candidate species and habitats are focused on the ROI within LAAF. Direct effects from the temporary construction and permanent facility operation and maintenance may include habitat loss, noise, direct mortality, and human disturbance.

Potential threats to riparian dependent species within the SPRNCA from CBP OAM's proposed action includes indirect impacts associated with the use of groundwater. CBP OAM's withdrawal of groundwater may indirectly affect the baseflow in the Sierra Vista Subwatershed. The potential effects of unmitigated groundwater use could, but is not likely to, result in changes in instream habitat and riparian and wetland habitat in and along the San Pedro River.

Cumulative effects include potential impacts from population growth, groundwater usage, and climate change within the Sierra Vista Subwatershed. Cumulative effects are discussed in **Section 4.3**. Section 7 consultation with the USFWS is on-going and correspondence is included in **Appendix A**. CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures

3.9.2.1 Alternative 1: Proposed Action Alternative

Lesser Long-Nosed Bat

The lesser long-nosed bat can be found mainly in desert scrub habitat and they forage for food at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The lesser long-nosed bat recovery plan identifies the need to protect foraging areas and food plants such as columnar cacti and agaves. There are currently known roosts and foraging areas (Agave Management Areas) within the Installation. No agave plants are located within the proposed OAM site. However, approximately 0.3 mile west of the ROI, there is an established Agave Management Area that the lesser long-nosed bat uses for foraging and this species could occur within the project site.

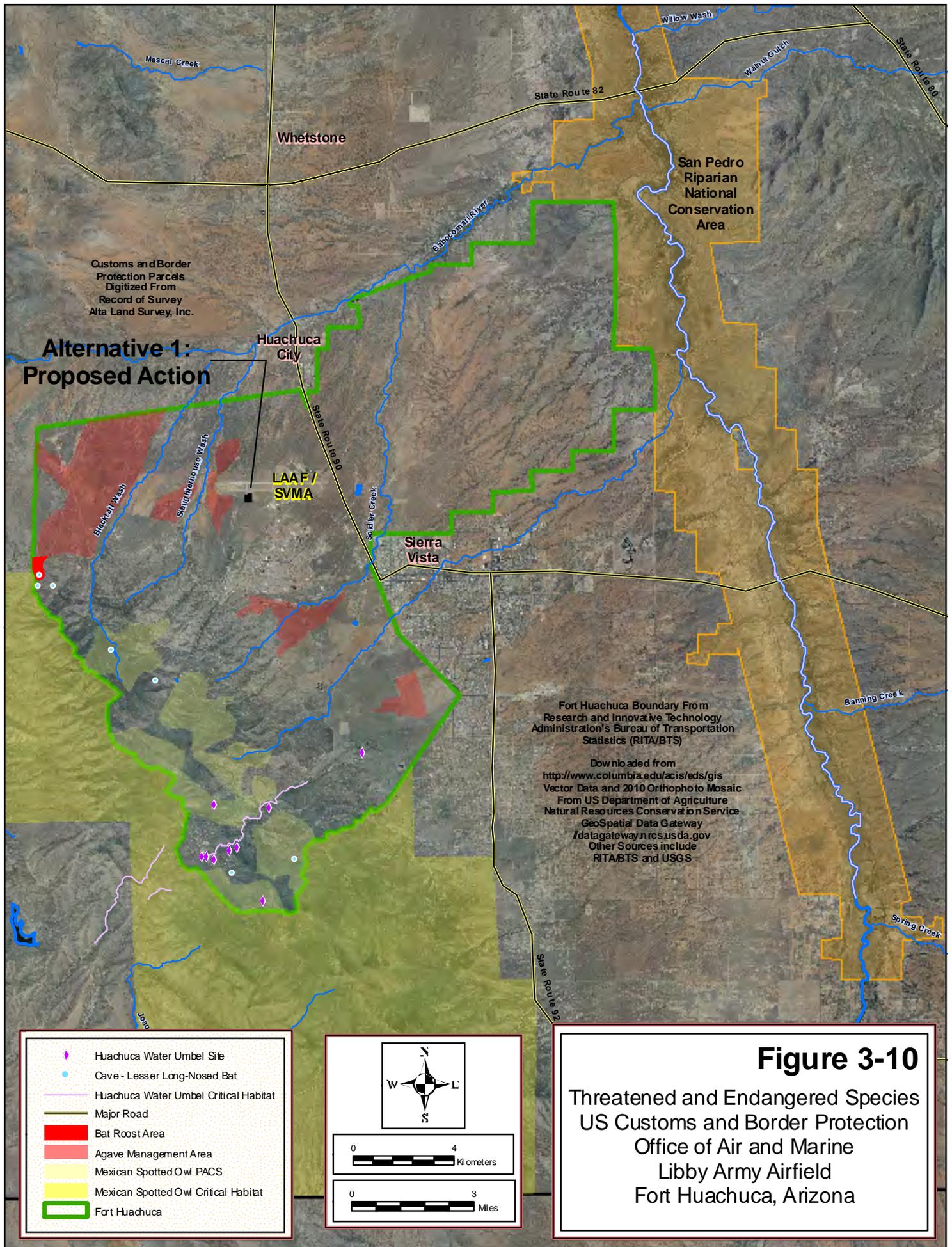


Figure 3-10

Threatened and Endangered Species
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

CBP OAM helicopter departure and approach would be located within the proposed seven acre site and the MQ-9 Predator aircraft departure and approach would be along the southern taxiway. As discussed in **Section 3.13**, noise generated by take-off and landings by MQ-9 Predator aircraft should not disturb foraging lesser long-nosed bats, because these craft are relatively quiet. The bats will avoid the heavy noise of the helicopters within the proposed action location, which is a sufficient distance from Agave Management Area to avoid disturbance of the bats. Disturbance of bats as a result of noise could also occur because of a temporary presence of heavy equipment used to perform the facility construction. While the facility construction is estimated to occur over two years, heavy equipment would only be required for site preparation (approximately four weeks).

Alternative 1 will result in no anticipated adverse impacts to the lesser long-nosed bat.

Jaguar and Ocelot

There are no known breeding jaguar populations in the United States and individuals are believed to be transients from Mexico. Jaguars could potentially use the SPRNCA riparian corridor to travel to mountain ranges between Arizona and Mexico. There have been reported sightings of the jaguar in the Whetstone, Santa Rita, and Patagonia mountain ranges since 2012. In March 2014, critical habitat was been designated by the USFWS for the jaguar in areas west of Ft Huachuca, approximately 5 miles west of the proposed action.

The ocelot ranges from northern Argentina to the extreme southern portions of Arizona and Texas. Sightings of two distinct individuals have occurred since 2011 in the Huachuca Mountains, based on photographs taken by trail cameras. Several confirmed sightings of ocelots have been made in Arizona in recent years, with confirmed sightings of live ocelots made in 2009 and 2011 in Cochise County, according to the USFWS (USFWS 2014). Within the boundary fence of the installation, there have been 3 sightings of one individual in 2013 and 2014. Potential habitat in the area is limited to mesquite woodland vegetation along the Babocomari and San Pedro Rivers, but the density of the vegetation in these areas may be too low to support ocelots (Tewes 1997, per U.S. Army, 2007a). The USFWS species description lists the ocelot as endangered without critical habitat (USFWS 2014).

It has been determined by CBP that the chance of an ocelot or a jaguar occurring within the project area is remote. Therefore, there are no impacts associated with Alternative 1 to the jaguar or ocelot.

Aquatic and Riparian Dependent Species

Possible adverse effects to aquatic and riparian dependent species within the SPRNCA include indirect impacts associated with the use of groundwater. As described in **Section 3.5**, the proposed action would result in a negligible reduction of baseflow by 4.01 AF/YR (0.006 CFS) annually and 0.63 AF (0.0009 CFS) during a one-time construction use in the Sierra Vista Subwatershed. This could result in no more than a 0.012 percent decrease in baseflow in the San Pedro River. Alternative 1 could indirectly impact the southwestern willow flycatcher, yellow-billed cuckoo, Gila topminnow, desert pupfish, Chiricahua leopard frog, and the Huachuca water

umbel and its critical habitat. If groundwater pumping in excess of recharge continues, flows and riparian acreage along the San Pedro River will be lost. However, CBP and cooperating entities are proposing water resource mitigation projects to offset water use by this proposed action. The following sections summarize potential effects to these species unless mitigation is provided to offset impacts.

Huachuca Water Umbel and Critical Habitat

Critical habitat for the Huachuca water umbel was designated July 12, 1999 (USFWS 65 FR 132) to include 33.7 miles of the upper San Pedro River from approximately 600 feet south of Hereford Bridge to just north of Fairbank. This includes the portion of the river that flows through the SPRNCA. A critical habitat is also located in the far south of the Ft. Huachuca property, approximately 9 miles south of the proposed action, as illustrated in **Figure 3-10**.

In terms of critical habitat, the primary constituent elements identified in the final rule as necessary for the survival and recovery of the Huachuca water umbel include, but are not limited to, the habitat components which provide the following:

1. Sufficient perennial baseflows to provide a permanently or nearly permanently wetted substrate for growth and reproduction of Huachuca water umbel;
2. A stream channel that is relatively stable, but subject to periodic flooding that provides for rejuvenation of the riparian plant community and produces open microsites for water umbel expansion;
3. A riparian plant community that is relatively stable over time and in which nonnative species do not exist or are at a density that has little or no adverse effect on resources available for water umbel growth and reproduction; and
4. In streams and rivers, refugial sites in each watershed and in each reach, including but not limited to springs or backwaters of mainstream rivers, which allows each population to survive catastrophic floods and recolonize larger areas.

Since the upper San Pedro River is the only large, contiguous habitat of the water umbel, it is the most important of the critical habitat areas to the survival and recovery of the species. Loss of this habitat would appreciably diminish the value of critical habitat for both the survival and recovery of the Huachuca water umbel. In the final critical habitat rule, the USFWS found that activities such as excess groundwater pumping that appreciably decreases baseflow and appreciably reduces the wetted surface area of perennial rivers or springs may destroy or adversely modify critical habitat (USFWS, 1999).

Huachuca water umbel occupies a biohydrological niche which places it in the “hydric herbaceous perennial” vegetation class from Leenhouts et al. (2006). They found that the presence of hydric perennial herbs declined as their distance from and above the river channel increased. This is in direct correlation with the depth of the umbel’s roots to groundwater and inundation frequency.

In general, plants become increasingly reliant on rainfall rather than baseflow as their distance from and above the river channel increases (USPP, 2009). Over time, reductions in baseflow may result in the gradual transition from groundwater dependent vegetation to more drought-tolerant species. Decreasing the baseflow under Alternative 1 or Alternative 2 will have only a negligible effect on the Huachuca water umbel and its critical habitat.

Southwestern Willow Flycatcher and Yellow-Billed Cuckoo

The effects of the proposed action for the southwestern willow flycatcher and yellow-billed cuckoo are different in some respects from that of the Huachuca water umbel with regard to the timing of effects. The water umbel is a semi-aquatic obligate wetland plant and this group of plants would be the first to be adversely affected by declining flows (U.S. Army, 2007a). The southwestern willow flycatcher and yellow-billed cuckoo habitat could probably sustain small declines in groundwater elevation or flow in most areas, and would not be affected as quickly as the Huachuca water umbel.

Southwestern willow flycatchers and yellow-billed cuckoos occupy habitat in dense riparian vegetation typically near surface water or saturated soil. Along the San Pedro River, southwestern willow flycatchers have been known to nest in saltcedar where cottonwood and willow were present (Paradzick et. al. 1999, McCarthey et. al. 1998, Sogge et. al. 1997, per U.S. Army, 2007a). The SPRNCA has previously been documented as having the highest concentration of breeding yellow-billed cuckoo in the State of Arizona, and throughout the southwestern United States (EEC 2001 per U.S. Army, 2007a).

In general, if baseflow declines or is lost, recruitment of cottonwoods and willows could be effected, and saltcedar could replace cottonwood and willows in some areas. Cottonwoods and willows typically do not grow where groundwater is deeper than about 8 feet (Anderson 1995 per U.S. Army, 2007a). Very small declines in baseflow could turn perennial reaches of the river into intermittent or no flow reaches (U.S. Army, 2007a). Periods of no flow would be most likely to occur in May to early July when birds would be establishing territories and nesting. Lack of surface water would likely make these areas less suitable or unsuitable for nesting southwestern willow flycatchers and yellow-billed cuckoos. However, under the proposed action alternative, the predicted negligible decrease in baseflow would have a negligible effect on the habitat for the southwestern willow flycatcher and yellow-billed cuckoo.

Gila Topminnow, Desert Pupfish, and Chiricahua Leopard Frog

There is no suitable habitat for the desert pupfish, Gila topminnow, or the Chiricahua leopard frog at or near LAAF. None of these species have critical habitat located near or within LAAF or the SPRNCA. Therefore, no direct impacts to the desert pupfish, Gila topminnow, or the Chiricahua leopard frog are anticipated for either alternative.

These three species were proposed to be translocated into springs and tributaries to the San Pedro River within the SPRNCA by the Arizona Game and Fish Department in early 2010 and by the BLM pending the approval of their BA (CPB, 2010a). Although some translocations have apparently occurred, the results (mortality and reproduction) are not known. Alternative 1 would

result in a negligible reduction of baseflows in the San Pedro River with an estimated decrease of 0.012 percent. In general, if groundwater pumping in excess of recharge continues unmitigated, over time base flows could decline or be lost. Very small declines in baseflow could turn perennial reaches of the river into intermittent or no flow reaches (U.S. Army, 2007a).

If these species are reestablished within the SPRNCA, under this Alternative the negligible decrease in baseflow would have a negligible effect on the desert pupfish, Gila topminnow, and Chiricahua leopard frog.

3.9.2.2 Alternative 2: No Action Alternative

Lesser Long-Nosed Bat

Under Alternative 2, a new permanent CBP OAM facility would not be constructed and there would not be an increase of habitat loss, noise, or human disturbance related to construction and operation of a new CBP OAM facility. Therefore, additional impacts to the lesser long-nosed bat are not anticipated.

Jaguar and Ocelot

Under Alternative 2, a new permanent CBP OAM facility would not be constructed and there would not be an increase of habitat loss, noise, or human disturbance related to construction and operation of a new CBP OAM facility. Therefore, additional impacts to the jaguar or ocelot are not anticipated.

Aquatic and Riparian Dependent Species

Possible adverse effects to aquatic and riparian dependent species within the SPRNCA are limited indirect impacts associated with the use of groundwater.

Under Alternative 2, a new permanent CBP OAM facility would not be constructed and there would not be an increase of habitat loss, noise, or human disturbance related to construction and operation of a new CBP OAM facility. Therefore, additional impacts to the aquatic and riparian-dependent species are not anticipated.

3.10 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) of 1966 as amended and its implementing regulations, 36 CFR Part 800, require CBP to identify and assess the effects of its actions on historic properties. Such properties consist of prehistoric and historic sites, structures, artifacts, and any other physical evidence of prehistoric and historic human activities. The historic preservation review process is outlined in regulations issued by the Advisory Council on Historic Preservation. In compliance with that process, LG2ES conducted a Cultural Resource Survey (CRS).

The survey was conducted for CBP through a General Services Administration (GSA) contract under the auspices of Section 106 of the National Historic Preservation Act (NHPA). The purpose of the CRS is to determine whether historic properties may be affected by the proposed

undertaking. CRS conducted for the CBP are performed in accordance with the Secretary of the Interior's "Standards and Guidelines" (48 FR 44716-42) and the standards set forth by the Arizona Department of Historic Resources. The CBP contract for the survey included a comprehensive background literature review, research phase, a field survey, and a visual impacts assessment on historic properties within a one-mile radius of the proposed undertaking.

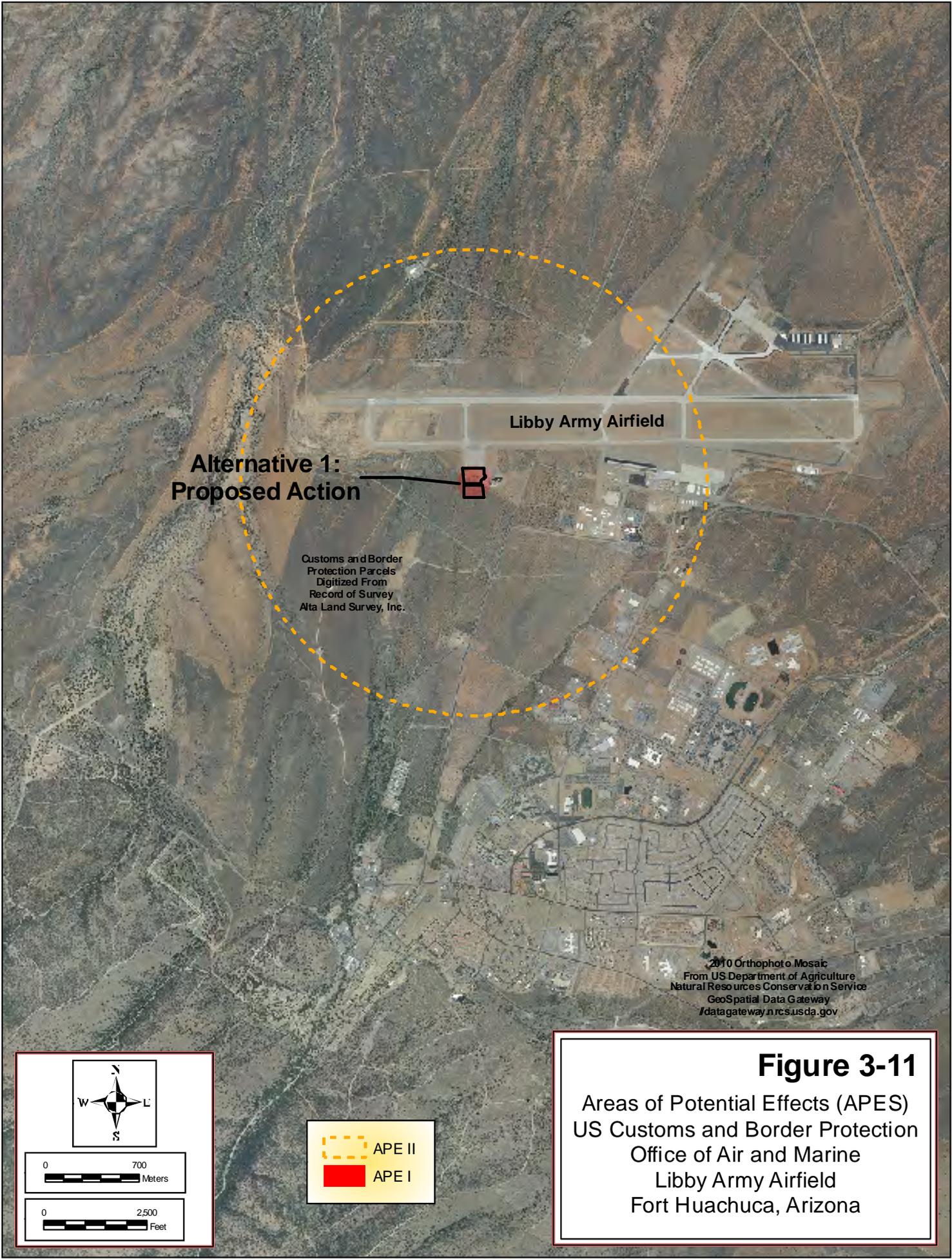
Historic properties considered were those listed, determined eligible for, or unevaluated for listing on the National Register of Historic Places (NRHP) or the Arizona Register of Historic Places. There have been 16 archaeological sites identified during previous surveys within a one-mile radius of the project; however, not all have had their NRHP eligibility determined.

The APE is the geographic area within which a project may directly or indirectly cause changes in the character or use of historic properties, if such historic properties exist. During discussions it was determined that there would actually be two APEs. The first APE (APE I, direct APE) is the footprint of ground disturbing activities subject to a 100 percent surface intensive survey (see **Figure 2-2 Proposed Action Site**). The second APE (APE II) was determined to be a viewshed study within a one mile radius of the proposed action site, as included in the CBP contract (**Figure 3-11**).

The investigation consisted of an intensive cultural resources survey and a Class I site file search of the project parcels and the surrounding area within the one-mile APE. For the viewshed study, researchers from LG²ES worked closely with Fort Huachuca cultural resource staff to select eight archaeological and/or historic sites within APE II to determine if the proposed project would pose an adverse visual effect on any prehistoric, historic, or traditional cultural properties.

The Arizona site file search identified that the project area falls within an area previously surveyed for cultural resources by Ft. Huachuca staff in 2013 for the construction of the AANG facilities. Fort Huachuca staff identified one historic feature within the CBP proposed site which consisted of a howitzer firing point including a howitzer shell embedded in the ground with a metal aiming stake (Schneider, 2013) which has been recovered by the Fort Huachuca staff. **Figure 3-12** illustrates the position from where this firing point was recovered, in the southern part of the proposed site.

During the site visit to the project area, archaeologists from LG²ES and Fort Huachuca conducted an intensive resurvey of the approximately seven acres proposed CBP OAM joint permanent Air Facility for archaeological resources. This survey produced no new archaeological evidence within the site footprint. The viewshed study included a visual assessment of Fort Huachuca and the surrounding area.



**Alternative 1:
Proposed Action**

Customs and Border
Protection Parcels
Digitized From
Record of Survey
Alta Land Survey, Inc.

Libby Army Airfield

2010 Orthophoto Mosaic
From US Department of Agriculture
Natural Resources Conservation Service
GeoSpatial Data Gateway
[/datagateway.nrcs.usda.gov](http://datagateway.nrcs.usda.gov)



Figure 3-11
Areas of Potential Effects (APES)
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

Libby Army Airfield

**Alternative 1:
Proposed Action**

Customs and Border
Protection Parcels
Digitized From
Record of Survey
Alta Land Survey, Inc.

**Howitzer
Firing
Position**

2010 Orthophoto Mosaic
From US Department of Agriculture
Natural Resources Conservation Service
GeoSpatial Data Gateway
[//datagateway.nrcs.usda.gov](http://datagateway.nrcs.usda.gov)

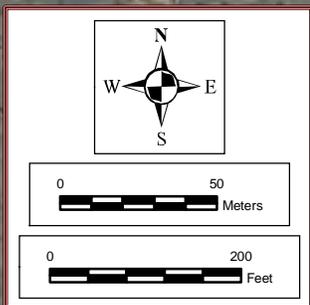


Figure 3-12
Howitzer Firing Position
US Customs and Border Protection
Office of Air and Marine
Libby Army Airfield
Fort Huachuca, Arizona

3.10.1 Affected Environment

The San Pedro River Valley shows evidence of long-term prehistoric human activity and occupation, beginning during the Paleo-Indian Period. Cultural resources within and near the installation boundaries encompass sites spanning from the Paleo-Indian Period to the present. Camp Huachuca was founded in 1877 in response to increased hostilities by the Apache, which stemmed from the Camp Grant Massacre in 1871 (Hastings, 1959). The Apache threat continued to increase under Geronimo's leadership, and Camp Huachuca became Fort Huachuca in 1882 (Smith, 1981). Since its founding, the use of the Installation has varied widely. The Installation has housed a variety of infantry and cavalry units, including the famed Buffalo Soldiers between 1892 and 1942 (Altschul and Jones, 1990). The installation also served as a bison preserve during the mid-twentieth century (U.S. Army, 2007b).

3.10.2 Environmental Consequences

3.10.2.1 *Alternative 1: Proposed Action Alternative*

Within APE I (direct APE, the site footprint) there was one isolated historic artifact found during a previous survey conducted by the Fort Huachuca staff, the howitzer firing point previously discussed. While this item was historic, it was determined not eligible for listing on the NRHP. Since the proposed site was already disturbed at the time of this resurvey and no additional artifacts were discovered, this project is determined to have no effect on any cultural resources within APE I (LG²ES, 2013b).

While there are a number of NRHP-eligible sites and sites whose eligibility is still undetermined within a one mile radius of the project area (APE II), the proposed undertaking will have no effect on any of these cultural resources due to the topography of the area and the distance of these sites and structures from the project area. Likewise, there are a large number of historic structures, landscapes, monuments, and cultural sites located within the viewshed study area (APE II) and the extended viewshed study area which includes, but is not limited to, the Fort Huachuca Historic District ("Old Post") and other cultural and historic sites located nearby. Nevertheless, this project will have no effect on these properties other than the temporary traffic, noise, and dust associated with construction activities. Although the proposed site can be viewed from a scenic area of the Reservoir Hill Hiking Trail, open to the public, there is no effect to these resources due to the distance, topography, and natural environment of the region (LG²ES, 2013b). Since Ft. Huachuca and LAAF are both military industrial complexes, the addition of the CBP OAM facility utilizing a similar military industrial design will have no effect on the historical resources in and adjacent to LAAF. (LG²ES, 2013b). Correspondence with 11 Native American tribes with ancestral ties to the area is currently underway. Copies of these letters can be found in **Appendix A**. Concurrence is expected from the Arizona State Historic Preservation Office (SHPO) for the proposed CBP OAM site.

3.10.2.2 *Alternative 2: No Action Alternative*

No impacts to cultural, historical resources, or Traditional Cultural Properties would occur if CBP were to continue using the temporary facility. There are no cultural resources located on the existing temporary facility.

3.11 AIR QUALITY

Air quality in a given location is determined by the concentration of designated pollutants in the atmosphere. The Clean Air Act (CAA) of 1970 and the CAA Amendments (CAAA) of 1990 have established national air quality standards for all areas in the U.S. that are administered by the U.S. Environmental Protection Agency (EPA). These standards are referred to as National Ambient Air Quality Standards (NAAQS) and include the following pollutants: ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter equal to or less than 10 microns in diameter (PM₁₀), and lead (Pb) (**Table 3-5**). Ozone is formed through photosynthesis of NO_x and volatile organic compounds (VOCs), which are the chemical precursors that determine the level of ozone in the environment. These NAAQS represent the maximum level of any pollutant that can be present without posing a hazard to public health.

The EPA places the responsibility to achieve and maintain compliance with NAAQS on each state and requires the approval of a state-developed plan to accomplish this objective. The EPA refers to these plans as the State Implementation Plan (SIP). An SIP is a compilation of goals, strategies, schedules, standards, and enforcement actions that will lead to compliance with or the maintenance of NAAQS. Areas are described as being in attainment if they are in compliance with NAAQS, and the objective of the SIP would be to maintain this compliance status. Areas not in compliance with NAAQS are classed as nonattainment areas.

Air quality is affected by stationary sources (e.g., urban and industrial development) and mobile sources (e.g., motor vehicles); consequently, changes in population and urbanization tend to affect air quality. Air quality at a given location is a function of several factors, including the quantity and type of pollutants being emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, temperature, atmospheric pressure, the presence or absence of inversions, and topographic features in the region.

The 1990 CAA Amendments (Title V) require states to permit major stationary sources. A major stationary source is a facility (e.g. plant, installation, or other non- mobile activity) that emits more than the established threshold amount of any one criteria pollutant. The purpose of the Title V of the 1990 CAA Amendments is to establish regulatory control over large, industrial-type activities and to prevent further impacts upon air quality.

Due to Title V and the Arizona Administrative code Title 18, Chapter 2, Fort Huachuca qualifies as a Class II synthetic minor for air permitting. In this classification, the Installation voluntarily limits the use of natural gas fuel to limit the emissions of NO_x and CO. These limitations allow Fort Huachuca to stay below the established thresholds for emissions (100 tons/year) set by Arizona Department of Environmental Quality (ADEQ) and EPA and avoid becoming a Title V source (USAGFH 2004). Also regulated are several mobile diesel-powered emergency generators subject to the EPA's RICE MACT amendments effective January 2013, limiting the hours of operation for maintenance and specifying low-sulfur fuel.

3.11.1 Affected Environment

Local air quality standards fall under the jurisdiction of the Arizona SIP which includes a compilation of goals, strategies, schedules, standards, and enforcement actions that will lead to compliance with the NAAQS. The State of Arizona has adopted both National Primary and Secondary Standards for criteria air pollutants, as shown in **Table 3-6**. The directly emitted criteria air pollutants include CO, nitrogen oxides (NO_x), SO₂ and PM₁₀.

TABLE 3-6: National Ambient Air Quality Standards (NAAQS)

Pollutant		Primary/ Secondary	Averaging Time	Level	Notes
Carbon Monoxide		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		primary and secondary	Rolling 3 month average	0.15 µg/m ³ ⁽¹⁾	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb ⁽²⁾	Annual Mean
Ozone		primary and secondary	8-hour	0.075 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	PM _{2.5}	primary	Annual	12 µg/m ³	annual mean, averaged over 3 years
		secondary	Annual	15 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: US EPA, October 2011

- (1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- (2) The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
- (3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard (“anti-backsliding”). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
- (4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO₂ standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971

standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

According to ADEQ, contributing regional air pollution sources include emissions from Mexico, unpaved road dust, agricultural burning, cleared areas, windblown agricultural, off road vehicles, and unpaved parking lots. Fort Huachuca is part of the Southeast Arizona Intrastate Air Quality Control Region, which encompasses the counties of Cochise, Graham, Greenlee, and Santa Cruz (ADEQ 2009). A portion of Cochise County is currently designated as being in moderate nonattainment of the PM10 standard, but Sierra Vista and Fort Huachuca are not located in this designation area. Ultimately the proposed action is taking place in an area of attainment for all NAAQS criteria pollutants.

3.11.2 Environmental Consequences

3.11.2.1 Alternative 1: Proposed Action Alternative

Table 3-7 shows the emissions calculations results for all the increased pollutant sources. The quantity of dust emissions from proposed construction operations is estimated using the EPA Guidance Document (EPA 2006). It is estimated that construction operations could disturb a maximum of seven acres for a period of one month. Fugitive dust would increase during construction activities, although it would be greatly reduced by BMPs for dust suppression. For the detailed emissions calculations, please refer to **Appendix C**.

An increase in exhaust emissions is expected from equipment operation during construction of proposed CBP facilities. Additional exhaust emissions from aircraft and employee personal vehicle operations were also included in the calculations. These emissions were estimated using the EPA approved NONROAD and Emissions and Dispersion Modeling System (EDMS) models. NONROAD model results for the construction equipment are based on the NONROAD equipment population files for the entire county. According to the model user's guide, EPA does not recommend changing the equipment population files. As a result, the calculated values presented in **Table 3-7** would be above the probable on-site construction fleet equipment actual emissions.

Overall, in accordance with the General Conformity Rule (40 C.F.R. §§ 51.850-860 and 40 C.F.R. 5s 93.1 50-160), a Federal agency responsible for an action must demonstrate that the air emissions associated with the action are in conformity with the SIP for Federal nonattainment pollutants. Since the area is in attainment for all criteria pollutants, no Federal action is required in this area. The activities associated with the proposed action would not result in a violation of the General Conformity Rule, even if the project was in a nonattainment area because the total emissions from these activities are negligible and would not exceed the pollutant-specific *de minimis* threshold values.

Since the new facility will be designed to comply with the Guiding Principles for new construction, it is expected that air emissions related to building occupation will be reduced.

3.11.2.2 Alternative 2: No Action Alternative

No change in existing ambient air quality levels would occur and no new pollution sources would be introduced. No impact to air quality is anticipated over current baseline levels.

TABLE 3-7: Air Quality Emissions -Total Cumulative from Both Alternative #1 and #2
(Tons per Year (tpy))

Construction Emissions from Cumulative Projects	NO _x	VOC	CO	SO _x	PM ₁₀	PM _{2.5}
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Construction/Fugitive Dust-Alt #1	2.50	0.32	1.09	0.18	4.44	0.68
Fugitive Dust-Alt #2 (fine particulate emissions from earthmoving, vehicle traffic, and windblown dust)	0.021	0.001	0.008	0.000	0.429	0.044
Aircraft/Rotorcraft and Commuting*	11.40	0.11	2.15	0.50	0.01	--
Total Cumulative Emissions	13.911	0.431	3.248	0.68	4.870	0.724
EPA de minimis levels (Tons per Year) **	100.00	100.00	100.00	100.00	100.00	100.00

See *Appendix C - Air Quality Calculations*

* Source: Sprenger 2009, NONROAD, AP-42 and EDMS model results

**Tons per year levels for the Prevention of Significant Deterioration (PSD) sources or non-Major sources in attainment areas.

3.12 CLIMATE

Researchers believe that increasing emissions of greenhouse gases to the atmosphere are affecting the temperature and variability of the Earth's climate. The Arizona Climate Change Advisory Group (CCAG) was created to establish a baseline inventory and forecast of greenhouse gas (GHG) emissions in Arizona and produce an action plan with recommendations for reducing those emissions. The CCAG's Climate Change Action Plan was accepted and on Sept. 8, 2006. Additionally, Executive Order 2006-13 recommended a comprehensive set of 49 policy options to reduce GHG emissions in Arizona and set a State goal to reduce Arizona's GHG emissions to 2000 levels by 2020 and to 50 percent below 2000 levels by the year 2040 (Arizona CCAG, 2006).

Principal GHG emission sources for Arizona are electric generation and transportation. The combustion of fossil fuels such as natural gas, oil products, and coal from these two sources accounts for nearly 80 percent of the State's gross GHG emissions. Fossil fuel use from residential, commercial, and industrial sources constitutes another 11 percent of Arizona emissions. The average Arizona resident uses 12,000 kWh of electricity per person per year, which is about the same amount of electricity as the average US resident. However, Arizona electric generation has lower emissions than the national average. Arizona gets 46 percent of its electricity from coal versus 52 percent nationally and 44 percent from low-emitting sources, such as nuclear, hydro, and renewables versus 29 percent nationally (Arizona CCAG, 2006).

3.12.1 Affected Environment

The area of the Upper San Pedro Basin (USPB), where Fort Huachuca is located, has a dry climate with relatively mild winters and warm summers. The monthly average high temperature is 90° Fahrenheit (F) in June or July, while the monthly average winter low temperature is 34° F during December or January. However, climate varies with topography, being hotter and drier in valley bottoms and cooler, moister on mountain peaks. Clear skies or high thin clouds are common and permit intense surface heating during the day and radiant cooling at night. This creates a large diurnal temperature fluctuation which averages approximately 30° F.

The average wind velocity is seven miles per hour (mph). Wind gusts of 20 to 30 mph are common during the daytime. Highest average season precipitation occurs in the summer (July to September) in the form of monsoons. Summer precipitation is highly variable in which some areas receive a great deal of rain while nearby areas receive none. Winter and fall precipitation usually falls in the form of steady rains, while spring has the lowest levels of average precipitation (AANG 2008). Average annual precipitation at Ft. Huachuca between 1900 and 2013 was 15.47 inches (<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?az3120>).

Over the past 50 years, the climate in the western United States has warmed on average by 1.4° F (USGS, 2006). A warmer climate could mean less winter snowfall more winter rain and a faster, earlier snowmelt in Arizona's mountains. Higher temperatures and increased evaporation could lower water levels and stream flows in the summer (USGS, 2006).

3.12.2 Environmental Consequences

3.12.2.1 *Alternative 1: Proposed Action Alternative*

As stated in **Section 3.11**, the total air emissions from construction activities and exhaust emissions from aircraft operations are negligible under Alternative 1. Electricity use associated with Alternative 1 would be comparable to Alternative 2 for facility operation. Therefore, the emissions from electricity use, transportation, and construction for this alternative would have a negligible impact on climate. Since the new construction will meet sustainability requirements set by the Guiding Principles, it is expected that any climate impacts will be positive from "green" building operations.

3.12.2.2 *Alternative 2: No Action Alternative*

There would be no new pollution sources that may affect the atmosphere under the No Action Alternative. Existing aircraft operations would continue, and GHG emissions from aircraft exhaust would not change. Therefore, as a result of Alternative 2, there would be no additional impacts to climate beyond the existing baseline conditions.

3.13 NOISE

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise can be intermittent

or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will indicate if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (i.e., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Sound becomes noise when it is perceived as an interference with communication or is otherwise annoying. Sound and noise levels typically are measured in decibels (dB). The degree to which noise will disrupt an area is dependent on the perception of the people living in the affected area. Because the human ear is more sensitive to certain ranges of the sound spectrum, a weighted scale has been developed to more accurately measure human perception of sound. This measurement is called A-weighted decibels (dBA).

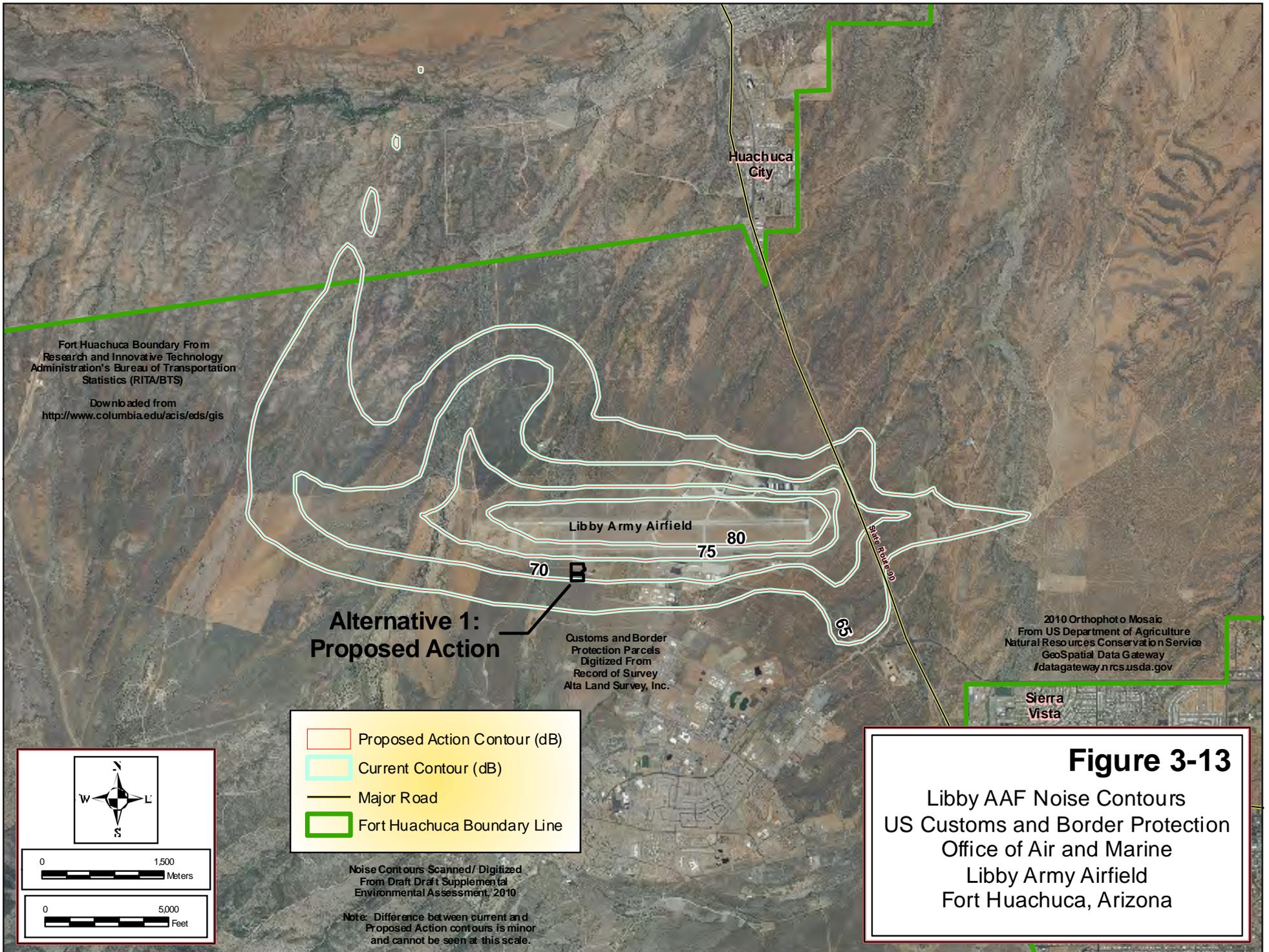
If noise levels cause physical damage to hearing or psychological harm, noise is considered a health hazard. For the purposes of measuring annoyance, noise measurements are taken frequently over a period of time (for example, every minute for an hour) and the values are averaged. This value is called an equivalent noise value (Leq), which allows the steady source of noise to be compared to established State and Federal noise criteria.

3.13.1 Affected Environment

Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis. Studies specifically conducted to determine noise impacts on various human activities show that about 90 percent of the population is not significantly bothered by outdoor sound levels below 65 dBA (USDOT, 1984).

Military aircraft operations, specifically fixed-wing manned aircraft, have the greatest influence on noise contours at LAAF/SVMA (Coffman Associates, 2001). Current CBP OAM operations were modeled as part of the NOISEMAP analysis for the EA for proposed MQ-1 Predator Beddown at Fort Huachuca by the Arizona Air National Guard (AANG 2008). **Figure 3-13** illustrates existing noise contours at LAAF. This model incorporated aircraft type, flight patterns, variations in altitude, power settings, number of operations (in terms of departures and arrivals), and hours of operation. It predicted that 5,141 acres in the vicinity of LAAF are currently exposed to noise levels greater than 65 dBA (AANG, 2008).

The ROI for noise is limited to the Alternative 1 and 2 parcels and adjacent environments that may be exposed to noise from CBP OAM air operation activities. Aviation noise within the ROI is generated by commercial, general aviation, and military activities. There are no major general aviation airports within the region, and noise generated by either commercial or general aviation traffic is low. The ambient sound environment around LAAF is impacted mainly from aircraft operations and to a lesser degree by automobile traffic (AANG, 2008).



3.13.2 Environmental Consequences

3.13.2.1 Alternative 1: Proposed Action Alternative

The NOISEMAP analysis for the EA for proposed MQ-1 Predator Beddown at Fort Huachuca by the Arizona Air National Guard (AANG 2008) concluded that since UAS are generally quiet aircraft, the addition of eight MQ-1 UAS as part of the Arizona Air National Guard program would only increase the area exposed to noise levels of greater than 65 dBA by one acre. It is reasonable to assume that CBP OAM's relocation would have similar and negligible noise impacts to the noise contours. CBP OAM's helicopter departure and approach would be located within the proposed site and would result in no increases in noise levels beyond the addressed anticipated emissions.

Individual construction equipment typically generates noise levels of 80 to 90 dBA at a distance of 50 feet. Locations more than 1,000 feet from construction sites seldom experience significant levels of construction noise greater than 65 dBA (EPA, 1971). Heavy equipment used to perform facility construction would cause a temporary increase in noise. While facility construction is estimated to occur over two years, heavy equipment would only be required for site preparation (approximately four weeks). Construction activities would be concentrated at the site, where no residences or sensitive noise receptors are located.

Vehicle traffic would increase with construction and operation of the joint permanent facility. Noise from construction vehicle traffic would occur for approximately two years. Vehicle traffic noise to the site would be similar to levels currently experienced from Brainard Road south of the existing site. Temporary construction traffic and permanent vehicle traffic would approach the site from the south on Whitside Road or from the east on Brainard Road.

No significant noise impacts to operations personnel are anticipated with Alternative 1, other than the existing operations impacts and the temporary construction impacts. Potential effects of these noise impacts on the lesser long-nosed bat are discussed in **Section 3.9**.

3.13.2.2 Alternative 2: No Action Alternative

As described in **Section 3.13.1**, the existing operations associated with Alternative 2 were examined as part of the current noise contours at LAAF (see **Figure 3-13**). Under Alternative 2, 5,141 acres in the vicinity of LAAF would be exposed to noise levels of greater than 65 dBA, with a majority of that exposure occurring within Fort Huachuca and LAAF. If CBP were to continue utilizing the temporary facility, there would be no new construction, therefore noise impacts from construction would not occur. Noise effects from existing operations would continue to impact the area.

3.14 UTILITIES AND INFRASTRUCTURE

This section describes the utilities and energy resources that may be affected by the Proposed Action and No Action alternatives. Utilities include electricity, and energy resources include stationary fuels for heating and cooling purposes.

3.14.1 Affected Environment

This section describes the available infrastructure, including potable water, wastewater treatment, electric power supply, and natural gas lines that may be affected by the proposed action and alternatives. LAAF comprises the ROI for these services and resources.

Potable water at Fort Huachuca is pumped from the regional aquifer of the Sierra Vista Subwatershed. Eight water supply wells service the potable water for Fort Huachuca. As of 1998 the water supply and storage available at Fort Huachuca was adequate to meet current and future demands (U.S. Army, 2007b).

The Fort Huachuca wastewater collection and treatment system is a gravity collection system that includes local sanitary sewers, trunk sewers, and lift stations. The installation's primary wastewater treatment plant was upgraded in 1995 to a total capacity of 3.1 MGD. The plant has adequate capacity to treat the current and future minimum, average, and maximum day flow rates. At present, this plant plays a major role in managing and conserving water through the Army's multi-tiered water resource management program. Water from the plant is treated and released into effluent recharge basins (U.S. Army, 2007b).

Both Fort Huachuca and Sierra Vista directly recharge effluent produced from their wastewater treatment plants to the regional aquifer to offset groundwater withdrawals from the aquifer. Fort Huachuca, Cochise County, and Sierra Vista have constructed storm water detention basins specially designed to retard storm runoff and increase its infiltration into the regional aquifer. Bisbee uses its effluent to replace groundwater-derived constructed golf course irrigation, thereby reducing the amount of groundwater withdrawn.

Electrical power to LAAF is provided by Tucson Electric Power (TEP) through a substation located approximately 800 feet west of Greely Hall. The installation is served by six distribution circuits. Each circuit has an underground feed from the substation but transfers at some point to overhead poles. New construction includes underground conduit systems for power distribution (U.S. Army 2007b).

Southwest Gas provides natural gas to the installation through two Southwest Gas supply main lines that originate from the pipeline along Interstate 10. The east supply connection point is located outside the East Gate, north of Hatfield Street. The west supply connection point is located between Gatewood Avenue and Whitside Road, south of Irwin Street. There are no limits on the system's capacity to meet current and future demand (U.S. Army 2007b).

3.14.2 Environmental Consequences

3.14.2.1 Alternative 1: Proposed Action Alternative

The operation and maintenance of Alternative 1 would result in a minor decrease in utility consumption due to the sustainability requirements set by the Energy Efficiency Guiding Principles for the new buildings. During construction, the existing sewer and water lines could be cost effectively extended to Alternative 1. An underground primary electric feed is proposed to enter the site from the southeast. Natural gas lines could be extended to the site. In all, the site is well equipped with existing infrastructure and utilities, with the exception of fiber optics. If deemed desirable for the joint permanent facility, a fiber optics line would need to be extended from Fort Huachuca's central plant. As a result, minor impacts to existing utilities would be expected to occur.

3.14.2.2 Alternative 2: No Action Alternative

No change in existing utilities would occur. No impact on utilities is anticipated.

3.15 ROADWAYS/TRAFFIC

This section describes the effects that the Proposed Action and No Action alternatives may have on ground transportation at the Installation.

3.15.1 Affected Environment

The airfield can be accessed via State Route (SR) 90 and then through the roadway network inside Fort Huachuca. Most traffic to LAAF traverses SR 90 through the East Gate along Hatfield Street, to either Brainard Road or Hunt Street, and then over to Arizona Street where the entrance to LAAF is located. This network consists of primary and secondary collector streets, and local or residential streets.

Primary collector streets, which comprise roadways that carry large volumes of traffic (6,000 to 10,000 vehicles per day), have cross-sections of up to four lanes, a median, shoulders, and sidewalks. Primary collector streets used to access LAAF include Hatfield Street and Brainard Road. Roadways that connect residential or commercial areas to primary collector streets are classified as secondary collector streets. Secondary collector streets carry less traffic (between 2,000 to 8,000 vehicles per day) and are built to lesser design standards than primary collectors. Secondary collector streets have cross-sections of up to four lanes with a median and sidewalks. Arizona Street is classified as a secondary collector. All other roads on Installation, including Hunt Street, are classified as residential or local streets (Coffman Associates 2001).

No rail service is available on Fort Huachuca. The nearest passenger rail service is located approximately 25 miles north at the Benson Amtrak Station (Coffman Associates 2001).

3.15.2 Environmental Consequences

3.15.2.1 Alternative 1: Proposed Action Alternative

Due to the remote location of proposed construction activities and the lack of any significant traffic flow in and around these sites, construction activities will not result in significant delays or inconveniences to ground traffic. Furthermore, there will be no lane restrictions along Brainard Road and Arizona Street. Alternative 1 is not anticipated to introduce any substantial safety hazard to motorists, pedestrians, or bicyclists (military or civilian), cause a new restriction in an existing flight corridors, or cause any significant traffic congestion during construction or operation.

3.15.2.2 Alternative 2: No Action Alternative

No change in existing traffic or transportation would occur. No impact on traffic or transportation is anticipated above current baseline conditions.

3.16 AVIATION

This section describes the aviation resources that may be affected by the Proposed Action and No Action alternatives, including civilian and military operations at LAAF.

3.16.1 Affected Environment

LAAF is one of 22 joint-use airports in the country where military runways also are used by a public airport. In 1982, 72 acres of land on the north side of LAAF were deeded to Sierra Vista to develop the civilian facilities that comprise Sierra Vista Municipal Airport. The airport facilities are under jurisdiction of the U.S. Army, and their use is governed by covenants and conditions.

Approaches to LAAF occur in Class D Airspace since the facility contains a manned operating control tower. The airport's airspace includes a horizontal radius of 4.3 statute miles of the airport, extending from the surface up to 7,200 feet above mean surface level. Aircraft are not allowed to enter the airspace until the Air Traffic Control (ATC) tower is contacted for clearance to do so. During the time the ATC tower is closed, the airspace reverts to Class G, or uncontrolled airspace. The consolidated radar and tower traffic counts at LAAF from 2009 to 2011 are summarized in **Table 3-8**, and include the existing UAS operations. An estimated 160,000 air operations are conducted at LAAF annually, according to the Real Property Master Plan Update (U.S. Army 2007b).

TABLE 3-8: LAAF Consolidated Traffic Count 2009-2011

Type	2009	2010	2011
Civilian	36,903	32,159	33,507
Military	99,302	112,186	107,066
Total	136,205	144,345	140,573

Source: SVMA 2013, Table 2K

Restricted areas encompass airspace identified by a region on the surface of the earth within which the flight of aircraft is subject to restrictions. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Four restricted airspace designations exist in the vicinity of Fort Huachuca: R-2303A, R-2303B, R-2303C and R-2312 (Table 3-9).

TABLE 3-9: Restricted Airspace at Fort Huachuca, Arizona

Restricted Area	Airspace Area	Active Times
R-2303A (Excludes LAAF)	Surface to 15,000 feet	0700 to 1700 hours Monday through Friday
R-2303B	8,000 feet to 30,000 feet	0700 to 1700 hours Monday through Friday
R-2303C	15,000 feet to 30,000 feet	Intermittently, with 24-hour advance notice
R-2312	Surface to 15,000 feet	Continuously

Source: USAGFH 2004

3.16.2 Environmental Consequences

3.16.2.1 Alternative 1: Proposed Action Alternative

As discussed in Section 2, proposed CBP OAM operations at LAAF will include six aircraft (three AS-350, and three MQ-9 UAS). Air operations may occur on a 24 hour/day, 7 day/week basis, with approximately 22 air operations (departures and landings) daily resulting in a total of 8,030 proposed air operations annually. Using Fort Huachuca's Real Property Master Plan Update (U.S. Army 2007b) estimate of current combined flight operations of 160,000 at LAAF and SVMA (military and commercial), the proposed operations would represent 5 percent of total flight operations or about 6 percent of the 2011 traffic count from Table 3-8. This amount of air traffic would have negligible impact since the existing air space is capable of supporting such operations and the air use is consistent with ongoing and planned military and civilian air operations.

3.16.2.2 Alternative 2: No Action Alternative

The current volume of air operations is identical to the proposed air operations as described in the previous section. Therefore, the No Action Alternative will have the same effect as the Proposed Action Alternative: negligible impact.

3.17 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Hazardous materials may be a solid, liquid, contained gaseous, or semisolid material, or any combination of materials that pose a substantial present or potential hazard to human health or the environment. Hazardous waste is defined in 40 CFR 260 as any “solid” waste with physical properties of ignitability, corrosivity, reactivity, or toxicity that may cause an increase in mortality, serious irreversible illness, incapacitating illness, or may pose a substantial threat to human health or the environment.

Hazardous materials pose a substantial environmental hazard if they have been released, are currently being released, or could potentially be released into structures, the ground, groundwater, or surface water. Such a release could affect human health and welfare, soil and water systems, and wildlife and vegetative species and habitats.

Issues associated with hazardous materials and waste typically relate to maintenance activities, aboveground storage tanks (ASTs), pesticides, and the storage, transport, and use of fuels. When such resources are improperly used, they can threaten the health and well-being of wildlife species, natural habitats, soil systems, water resources, and human beings. Compliance with Federal and state regulations for the use and storage of hazardous materials require the development of a Spill Countermeasures and Control (SPCC) Plan for storage of over 1320 gallons of petroleum products, and possibly a Facility Response Plan (FRP) if the facility meets the Substantial Harm criteria. The Emergency Planning and Community Right-to-Know Act (EPCRA) requires the annual filing of a Tier II inventory of hazardous materials above a specified threshold with the state and the local emergency response organizations. Hazardous waste must be handled in accordance with RCRA requirements, and source reduction or recycling of waste to meet sustainability requirements may be in the facility compliance tasks.

It is CBP policy to conduct environmental due diligence prior to the acquisition of a property. Information provided during due diligence provides a baseline of environmental conditions at the site and is used to identify removal or remedial actions necessary to make the real property suitable for use, establish mitigation measures, and provide for the health and safety of CBP personnel. Due diligence was conducted in the form of a Site Summary Report and a Transaction Screen (ASTM E1528-14, see **Appendix D**). No environmental concerns, to include hazardous constituents, were discovered during the preparation of these documents.

3.17.1 Affected Environment

For this EA, the ROI for hazardous materials is confined to areas where CBP flight and maintenance operations may occur and where construction activities would take place. The temporary facility has its own SPCC plan (not shared with LAAF or Fort Huachuca), which covers a 3,000-gal mobile refueling truck, a 350-gallon diesel generator, and a couple of smaller

generators. No ASTs are on the site other than the generator supply tanks. The mobile truck refuels from the Fort Huachuca petroleum storage site. SPCC Plan inspections are performed by the contractors who operate the site. Hazardous waste, such as oily rags, oil filters, and aerosol cans, are collected in satellite accumulation areas, and then picked up by Fort Huachuca personnel for disposal per an inter-agency agreement. Waste tires are taken off-site to an authorized facility for recycle.

3.17.2 Environmental Consequences

3.17.2.1 Alternative 1: Proposed Action Alternative

During construction, soil contamination could occur as a result of petroleum, oil, and lubricant spills. To preclude such impacts, these substances will be stored, handled, and disposed in accordance with 40 CFR 112 Oil Pollution Prevention, which dictates the development of a SPCC Plan. Ultimately, no impacts related to hazardous wastes, materials, or substances are expected to occur.

The SPCC Plan at the existing temporary facility describes the response procedures for an accidental spill of hazardous substances or petroleum, oil, and lubricants. The Fort Huachuca Fire Department would respond to a hazardous material release. In turn, the Directorate of Public Works maintenance contractor is responsible for cleanup once imminent danger to life and health has passed (U.S. Army, 2007b). This SPCC Plan would be amended to reflect the changes at the proposed joint facility.

Hazardous materials used during routine aircraft operation and maintenance may include jet fuel, lubricants, turbine oil, hydraulic oil, other petroleum products, antifreeze, and solvents. All hazardous materials will be stored, handled, and disposed in accordance with local, State, and Federal laws and regulations. If an aircraft washrack is included in the design, compliance with wastewater disposal regulations will be necessary. It is expected that hazardous waste will continue to be disposed by Fort Huachuca. The proposed action is not expected to result in an increased likelihood of an uncontrolled release of hazardous materials that could contaminate soil, surface water, or groundwater.

3.17.2.2 Alternative 2: No Action Alternative

Hazardous material/waste compliance will continue to be required, as described in 3.17.1.

3.18 SOCIOECONOMIC

This section describes the socioeconomic resources that may be affected by the Proposed Action and No Action alternatives, such as housing and economic development.

3.18.1 Affected Environment

The ROI affected by the proposed action includes Fort Huachuca, the City of Sierra Vista, and Cochise County. Sierra Vista shares a mutual reliance with Fort Huachuca. The installation relies upon Sierra Vista to partially supply housing, community and recreation facilities and

retail and commercial services for military and civilian installation personnel. The City utilizes Libby Army Airfield as its municipal airport and depends heavily on the economic activity generated by Fort Huachuca (U.S. Army, 2007b).

Fort Huachuca's on-base population is counted within the City of Sierra Vista, which is the major population center of the region. The 2010 population for the City of Sierra Vista was 43,888 representing 33.4 percent of the Cochise County population of 131,346 (US Census Bureau, 2010). Fort Huachuca influences the growth of Sierra Vista and the surrounding area. This trend has continued into the 21st Century as demonstrated by **Table 3-10**.

TABLE 3-10: Sierra Vista Population Growth 1980-2010

Year	1980	1985	1990	1995	2000	2005	2010
Population	24,937	28,792	32,983	37,815	37,775	43,690	43,888

Source: U.S. Army 2007b

The Arizona Department of Commerce projects that by 2020 Sierra Vista's population will reach approximately 56,000 and Cochise County's population will reach approximately 169,700. The strong population growth in Sierra Vista results from increasing numbers of military and civilian personnel at Fort Huachuca. Another strong contributor to the city's population growth has been an increasing number of retirees as demonstrated by rapid growth of the city's population over the age of 60 (U.S. Army, 2007b).

Along with increased population growth in and around Fort Huachuca, employment trends across Cochise County also have expanded. The number of individuals employed in Cochise County increased approximately 6.1 percent between 2001 and 2004. **Table 3-11** provides a breakdown of these figures and indicates the numbers and percentages of individuals serving as military or civilian Federal employees (U.S. Army, 2007b).

TABLE 3-11: Employment Figures for Cochise County, Arizona

Sources: Arizona Department of Commerce 2009 and U.S. Census Bureau 2009.

Year	2005	2006	2007	2008
Total Number of Individuals Employed	56,259	58,609	58,997	60,317
Total Civilian Federal Employees	4,925	4,900	4,750	4,925
Total Armed Forces Employees	3,409	4,234	3,947	3,017

3.18.2 Environmental Consequences

3.18.2.1 Alternative 1: Proposed Action Alternative

Given the small scale of the action relative to the size and complexity of the local economy, no significant socioeconomic impacts are anticipated. No appreciable change in local population distribution, employment, housing demand, or expenditure patterns is anticipated as a result of this action.

The effects of this change in the workforce in the area will not be significant in a local or regional context. Construction-related funding for the proposed action is not anticipated to be significant in the context of local or regional construction spending. No significant socioeconomic impact to the city of Sierra Vista or surrounding communities is anticipated as a result of the proposed action.

3.18.2.2 Alternative 2: No Action Alternative

No change in socioeconomics and economic development would occur with the No Action Alternative. No impact on socioeconomics and economic development is anticipated.

3.19 SUSTAINABILITY AND GREENING

Executive Orders have been in effect for many years directing Federal agencies to incorporate practical methods for sustainability and greening in daily operations. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management directs Federal agencies to support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner.

3.19.1 Affected Environment

It is CBP policy to integrate the principles and practices of sustainability into CBP facilities in order to minimize the effects and total ownership costs of CBP systems, material, facilities, and operations. As such, construction of the proposed joint Air facility would adhere to the policy set forth in E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance, 2009*, EO 13514, EISA 2007, the Energy Policy Act of 2005, and the 2008 Guiding Principles.

3.19.2 Environmental Consequences

3.19.2.1 Alternative 1: Proposed Action Alternative

The facility design of Alternative 1 would have opportunities to incorporate energy conservation and source reduction as part of the new construction. Where practical, Alternative 1 would incorporate environmentally sustainable practices in the daily operation and maintenance of the existing facility including solid waste recycling, energy conservation, and water conservation practices. Therefore, Alternative 1 is not anticipated to result in adverse impacts.

3.19.2.2 Alternative 2: No Action Alternative

No change in sustainability and greening would occur. Where practical, Alternative 2 would continue to incorporate environmentally sustainable practices in the daily operation and maintenance of the existing facility including solid waste recycling, energy conservation, and water conservation practices.

3.20 HUMAN HEALTH AND SAFETY

The safety of personnel working in or around the CPB site is the single largest concern. This section discusses public services include fire protection, medical, and emergency services.

Potential health and safety impacts on the local population may occur during construction. Hazards associated with construction activities may include the possibility of improperly stored, protected, or operated equipment. Due to the relatively short duration of construction activities, industry standards for construction site safety and limited exposure to the general public, health and safety impacts are anticipated to be negligible.

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The Occupational Safety and Health Administration (OSHA) and EPA issue standards that specifies the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits with respect to workplace stressors.

Emergency 911 calls are directed to the Fort Huachuca Fire Department, which maintains two ambulances used to transfer victims to either the Fort Huachuca Super Clinic or Sierra Vista Community Hospital. Aircraft Rescue and Firefighting (ARFF) services are also provided in Fort Huachuca at LAAF, which, depending on the location and intensity of the accident, are supported by the Fort Huachuca Fire Department and Sierra Vista Fire Department. The ARFF at LAAF is certified by the FAA for serving aircraft up to 90 feet in length, which would include the proposed UAS (AANG, 2008).

3.20.1 Affected Environment

Accident potential zones (APZs) are areas immediately beyond the ends of runways and along primary flight paths that are subject to more aircraft accidents than other areas. Aircraft Rescue and Fire Fighting (ARFF) facilities provided by the U.S. Army are located on the south side of the airfield. This ARFF houses the emergency fire suppression equipment for the airfield and provides the initial response to any aircraft fires. It is supported by the City of Sierra Vista Fire Department and Fort Huachuca, depending on the location of the incident. The ARFF meets the requirements of an Index A facility (Coffman Associates 2001, SVMA 2013).

CBP SAR operations are vitally important to local and regional populations. Any restriction in the ability of the CBP to provide SAR operations in the region would impact the health and human safety of undocumented foreign nationals, including children, in the remote border

region. Therefore, no disproportionate impacts to low income or minority populations or children would occur as a result of the proposed action.

In the event a UAS crashes or catches fire, personnel shall stand upwind as there is the potential for exposure to toxic gases from burning foam inside the wings. If communication is lost with the UAS, it is designed to crash land at the flight termination point located nearby on the installation. Once a crashed UAS is recovered, measures will be taken to ensure there are no uncontrolled releases of hazardous materials onto soil, surface water, air, or groundwater.

Nonessential personnel should maintain a safe distance (minimum of 50 meters) from the Launch and Recovery Element (LRE) area. Units should practice takeoff, landing, and emergency operations on a mission simulator on a regular basis. Leaders should ensure operators follow specified training and checklists, which are correct and are the most current available (FMI, 3-04.155).

3.20.2 Environmental Consequences

3.20.2.1 Alternative 1: Proposed Action Alternative

No direct impacts to public health and safety would occur with Alternative 1. The proposed action is located beyond the APZ clear zone and operations will follow all OSHA health and safety guidelines, including compliance with the OSHA Hazard Communication Standard, updated in 2013 to the Globally Harmonized System. All OSHA construction safety standards will be adhered to during the construction process. Due to the proximity of fire suppression equipment and the current state of readiness of the fire station near the airfield, impacts associated with fire protection would be negligible. Since the proposed action is located within a limited access, secured area, no impact on public health and human safety is anticipated.

3.20.2.2 Alternative 2: No Action Alternative

No change in existing public health and safety would occur. No impact on public health and human safety is anticipated with the No Action Alternative.

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4.0 CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental effects of Proposed Actions, when combined with other past, present, and reasonably foreseeable future projects in the area, such as the adjacent Air National Guard hangar construction. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future, is required. This cumulative effects analysis follows guidelines set forth in the CEQ handbook, *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997).

4.1 METHODS FOR CUMULATIVE IMPACT ANALYSIS

This cumulative impact analysis included three major tasks, as per the guidelines cited above:

1. Determine the scope of the cumulative analysis, including geographic extent, time frame, and relevant resources;
2. Conduct the cumulative effects analysis; and
3. Determine the cumulative impacts to relevant resources.

4.1.1 Scope of Cumulative Impact Analysis

Identification of Relevant Resources

Resources identified for consideration in the cumulative impacts analysis were those that were adversely impacted by the Proposed Action or Alternatives. If the Proposed Action or Alternatives did not result in direct or secondary impacts on a resource, then that resource was eliminated from the cumulative impact evaluation (CEQ, 1997). **Table 4-1** provides a summary of the decision-making process conducted to identify the relevant resources to be considered in this cumulative impacts analysis.

Geographical Extent of Analysis

The geographic area of concern for a cumulative impacts analysis is typically defined by the extent of the influence of a potential action and its alternatives (CEQ, 1997). The Region of Influence (ROI) for each of the resource areas in **Section 3**, Affected Environment and Consequences, was defined as the extent of influence of the Proposed Action and the Alternative with respect to the relevant resources.

TABLE 4-1: Consideration of Resources for Cumulative Impacts Analysis

Resource Area	Direct Impacts – Proposed Action	Indirect Impacts- Proposed Action	No Action Alternative	Cumulative Effects Analysis Required?	Detailed Analysis Warranted
Land Use	Minor permanent impact resulting from the conversion of approximately seven acres of undeveloped land to landside facilities.	Land use is consistent with Fort Huachuca Master plans.	No impacts over existing baseline conditions	No	No
Geology and Soils	Minor permanent impacts to soils from grading and excavation. Impacts will occur in a previously disturbed area. Development of a SWPPP and BMPs will reduce soil erosion by wind or heavy rain during construction and operation.	No impacts to local or regional geological conditions.	No impacts over existing baseline conditions	No	No
Hydrology and Groundwater	Adverse impacts to groundwater levels from 43.91 AF/YR of total water use. In addition, a one-time construction impact of 6.74 AF is expected.	Continued water use deficits could have indirect impacts to San Pedro River base flow and dependent species. Water use will be off-set through water conservation and mitigation actions.	Adverse impacts from total water usage unless mitigated.	Yes	No
Surface Waters and Waters of the US	No direct effect to surface waters. Mitigation measures including a SWPPP and BMPs will be developed and implemented.	Continued water use deficits could have indirect impacts to San Pedro River base flow and dependent species. Water use will be off-set through water conservation and mitigation actions.	Adverse impacts from total water usage unless mitigated.	Yes	No
Floodplains	No impacts.	No impact	No impact	No	No
Vegetative Habitat	Negligible habitat loss of semi-desert grassland and/or mixed-desert scrub vegetation.	Over time, baseflow reductions could degrade riparian vegetation within the SPRNCA. CBP will provide mitigation for water resources to offset water use.	No impact	No	No

Resource Area	Direct Impacts – Proposed Action	Indirect Impacts-Proposed Action	No Action Alternative	Cumulative Effects Analysis Required?	Detailed Analysis Warranted
Wildlife and Aquatic Resources	Negligible temporary impact on wildlife species during construction. No direct impact on aquatic species or habitat.	Reductions in baseflow would reduce instream and riparian habitat within the SPRNCA. This indirect habitat loss could have a negligible effect on water related species, including threatened and endangered species.	Adverse impacts from total water usage unless mitigated.	Yes	No
Threatened and Endangered Species	Negligible direct impact on the lesser long-nosed bat as a result of potential noise and habitat loss from construction and mortality or injury from collisions with vehicles or structures.	Increase in water use could have indirect impacts to San Pedro River base flow and dependent species.	Adverse impacts from total water usage unless mitigated.	Yes	No
Cultural, Historical, and Archeological Resources	No impacts. Any unidentified artifacts encountered during construction will be addressed during coordination with the Installation’s archaeologist.	No impacts	No impacts over existing baseline conditions	No	No
Air Quality	Minor temporary impacts during construction. Since the new construction will meet sustainability requirements set by the Guiding Principles, it is expected that air emissions will be reduced.	Reduced impacts from improved energy efficiency.	No impacts over existing baseline conditions	No	No
Climate	The total emissions from construction activities and additional exhaust emissions from aircraft operations will have a negligible impact on climate. Since the new construction will meet sustainability requirements set by the Guiding Principles, it is expected that climate impacts will be reduced.	Reduced impacts from improved energy efficiency.	No impacts over existing baseline conditions	No	No
Noise	Negligible temporary impacts during construction.	No impacts	No impacts over existing baseline conditions	No	No

Resource Area	Direct Impacts – Proposed Action	Indirect Impacts-Proposed Action	No Action Alternative	Cumulative Effects Analysis Required?	Detailed Analysis Warranted
Utilities and Infrastructure	Negligible permanent impacts resulting from the extension and use of existing utilities.	No impacts.	No impacts over existing baseline conditions	No	No
Roadways and Traffic	No impacts over existing conditions.	No impacts	No impacts over existing baseline conditions	No	No
Aviation	Negligible impacts from helicopter and UAS operations.	No impacts	No impacts over existing baseline conditions	No	No
Hazardous Materials/Waste	No impacts over existing baseline conditions. An SPCC Plan and BMPs will be developed and implemented to minimize potential impact from Hazardous Material use and storage.	No impacts	No impacts over existing baseline conditions	No	No
Socioeconomic	Negligible impacts to employment and population in Cochise County during construction.	No impacts.	No impacts over existing baseline conditions	No	No
Sustainability and Greening	Per EO 13514, the new construction will be required to meet sustainability requirements set by the Energy Efficiency Guiding Principles.	Reduced impacts from improved energy efficiency.	No impacts over existing baseline conditions	No	No
Human Health and Safety	No permanent impacts. Potential for temporary impacts during construction to be offset by standard construction site safety practices.	No impacts	No impacts over existing baseline conditions	No	No

Time Frame for Analysis

CEQ guidelines require that potential cumulative impacts be considered over a specified time period (i.e., from past through future). In order to assess the influence of a given action, a cumulative impact analyses should be conducted using existing, readily available data and the scoping of the cumulative impact analysis should be defined, in part, by data availability. The appropriate time for considering past, present, and reasonably foreseeable future projects can be the design life of a project, or future time frames used in local master plans and other available predictive data.

4.2 IMPACTS OF PAST AND PRESENT ACTIONS

The impacts of past actions have been considered in the analysis of this EA in establishing the baseline against which the proposed action is compared. In addition to the proposed project, two additional CBP missions are occurring within the Sierra Vista Subwatershed, the Naco Border Patrol Station and the Naco Port of Entry. The Naco Border Patrol Station is proposed to expand from 417 personnel to approximately 450 personnel. The Naco Port of Entry has no plans for expansion and will continue operations with 38 personnel.

Table 4-2 is a summary of all water use, including the total recharge by existing and planned mitigation measures, and potential mitigation obligation for each CBP action, adapted from the San Pedro Watershed report (CBP, 2010b). All three planned CBP projects are listed in the first column. The annual water use calculated for each category is listed by project. The water use categories account for the direct water use by the project, the induced water use by the personnel and families associated with each project outside of the site, and the associated industrial water use to support these families, plus the total of these three categories. Total recharge includes planned septic recharge and effluent recharge by Fort Huachuca; effluent and storm water recharge by the City of Sierra Vista; and includes effluent recharge and planned rainwater harvesting at Naco Station (CBP 2010b). Potential mitigation obligation is the total water use minus the total recharge.

Assuming all three CBP action items are completed, water use mitigation will be required by CBP for a total of 172.20 AF/YR, of which 24.78 AF/YR would be due to the proposed action. In addition, there is some water use associated with construction activities. Water use for construction is not a recurring debt to the subwatershed and would only need to be mitigated once at the time of use. Total construction associated water use after factoring in total recharge is projected to be 44.55 AF for the three projects for one time mitigation.

TABLE 4-2: Summary of Water Use for Each CBP Operational Entity

	Water Use, AC/FT/YR				Total Recharge, AC/FT/YR	Potential Mitigation Obligation, AC/FT/YR
	Direct	Employee, Family/Induced	Industrial Pumping	Total		
CBP A&M (Proposed Project)	0.77	40.37	2.77	43.91	19.13	24.78
USBP Naco Station	2.46	261.45	17.93	281.84	151.20	130.64
Naco POE OFO	0.42	21.49	2.13	24.04	7.26	16.78
Total CBP	3.65	323.3	22.83	349.79	177.59	172.20

Source: CBP 2010b, Table 43 et al.

4.3 IMPACTS OF FUTURE ACTIONS

Ft. Huachuca includes 73,142 acres and falls under the jurisdiction of the US Army Training and Doctrine Command. Fort Huachuca supports multiple Army and DoD aviation elements as home to the primary restricted military UAS training airspace in the United States. Fort Huachuca is the region's largest employer providing approximately 14,900 jobs in 2007 (U.S. Army, 2007b).

The 2007 *Real Property Master Plan Update* (U.S. Army, 2007b) identifies two short-term projects adjacent to LAAF that may interact with the proposed project- Airfield North and Airfield South. Both projects could increase air traffic at LAAF as well as increase groundwater demand associated with new employment. The Airfield North, Enhanced Use Lease (EUL) site is a 203 acre site north of LAAF and adjacent to Sierra Vista Municipal Airport. The U.S. Army and the City of Sierra Vista have a broad range of private leasing opportunities to maximize the utility and value of parcel, but no developers are currently under contract (Penn, 2009). The Airfield South, Mission Expansion Plan includes 146 acres south of LAAF managed to support missions requiring proximity to LAAF within the secure cantonment area.

Fort Huachuca's leadership in environmental conservation and stewardship has led to conservation measures including reduced groundwater demand and increased artificial and enhanced recharge of the groundwater system. The total effect of all the combined efforts initiated just by Fort Huachuca has been to reduce the gross groundwater consumption from 1,842 AF/YR in 2000 to 986 AF/YR in 2012, a reduction of 46 percent (ADPW, 2012).

The Sierra Vista Sub watershed currently supports approximately 78,970 people and is projected to support over 170,000 people by 2050 (USDOJ, 2008). As noted in **Table 4-3**, Cochise County is projected to continue experiencing population growth, which may affect groundwater levels within the Sierra Vista Sub watershed. Groundwater serves as the primary water source for residential, commercial, agricultural, and industrial water users in Cochise County and the sub watershed. As the population increases, groundwater use in the sub watershed increases and the quantity of water flowing in the San Pedro River is likely to decrease.

TABLE 4-3: Cochise County Population Trends

Cochise County	1990	2000	2010	2020	2030	2040	2050
Total Population	97,642	117,755	146,037	169,717	187,725	201,179	212,822
Population Change	NA	20,113	28,282	23,680	18,008	13,454	11,643
Average Annual Percent Change	NA	2.1%	2.4%	1.6%	1.1%	0.7%	0.6%

Source: Arizona Department of Commerce 2006

4.4 CUMULATIVE EFFECTS ANALYSIS

The following sections address two resource areas (i.e., water resources and biological resources/threatened and endangered species) where impacts of the Proposed Action, in connection with related past, present and reasonably foreseeable future actions warrant further consideration due to elevated sensitivity regarding these resources in the Fort Huachuca area. The following sections are not meant to imply that the Proposed Action would create any significant contribution to cumulative impacts on these resources.

4.4.1 Water Resources

Hydrology and Groundwater; Surface Waters

The Sierra Vista sub watershed is an extremely active area with respect to water resource management activities. Concern about regional groundwater withdrawal and potential impacts to the stream flow in the San Pedro River have increased in recent years. Considerable effort has been devoted to assessing the nature and extent of these impacts, as well as to developing and implementing plans to mitigate any adverse impacts. The city of Sierra Vista, Fort Huachuca, numerous federal, state, and local agencies, and a large number of citizens and interest groups have been involved in this process (CBP, 2010b). Over the past decade, tremendous progress has been made in reducing groundwater consumption rates in the Sierra Vista Sub watershed. This progress has come in the form of reduced groundwater demand both on-Installation and off-Installation and increased artificial and enhanced recharge of the groundwater system. Water use efficiency in the City of Sierra Vista as measured by per capita water use (gallons/person/day or GPCD) has improved from 180 GPCD in 2000 to 141 GPCD in 2012 despite a 21 percent population increase during the same time period (ADPW, 2012).

In the case of Fort Huachuca, the reduction in water demand has occurred through a variety of measures including fixture upgrades (i.e., replacement of high water use plumbing fixtures with low water use fixtures), facility infrastructure removal/consolidation (i.e., demolition of facilities), aggressive leak detection and repair, water conservation education, and implementation of a strict landscape watering policy in military family housing. Agricultural pumping has decreased as a result of the retirement of agriculture associated with creation of the SPRNCA and through the purchase of conservation easements by Fort Huachuca in partnership with The Nature Conservancy and Cochise County (CBP, 2010b).

The City of Sierra Vista and Fort Huachuca are actively pursuing and are in the process of implementing a wide variety of water recharge and consumption-reduction projects that will have a positive cumulative impact on regional water resources (see **Table 4-4**).

TABLE 4-4: Major Water Resource Projects and Studies at Fort Huachuca

Project	Description / Goal	Status
Water wise and Energy Smart Program (WWES)	Provide water and energy conservation education and related support services to U.S. Army, contractor employees, and family members who either work or live on Fort Huachuca.	Since January 2004, WWES has been conducting water conservation audits of facilities on Installation. Thus far, these audits have resulted in water savings exceeding two acre- feet/year. In addition, in support of an Army Energy Conservation mandate, WWES staff began systematic Energy Audit inspections of the over 500 buildings on Fort Huachuca, auditing 61 buildings over 2,767,756 square feet, meeting the goal for energy audits for the first time
Military Family Housing (MFH) Whole Neighborhood Revitalization Projects	Upgrading military family housing (MFH) Installation-wide as part of a multi-year whole neighborhood revitalization effort expected to be complete in 2011.	Renovations began in 1995. Water use fixtures in new homes meet or exceed current building codes related to water use efficiency. In addition, all new homes are or will be equipped with air conditioning vs. evaporative cooling. The overall footprint of turf at new homes is being reduced from an estimated 3000 square feet per home to approximately 1800 square feet or less per home.
Replacement Of Industrial/Commercial Water Fixtures	Replace all its flush urinals with waterless urinals, install 170 pressure assist toilets in 95 MFH housing units, and replace top loading washers with horizontal axis washers at military barracks laundry facilities and at the laundry facility.	Water savings associated with urinals are estimated at 66 acre-feet/year, water savings associated with toilet replacement are estimated to be 0.74 acre-feet/year. Top loading washer replacement complete, resulting in water savings of approximately 17 acre-feet/years.
Reducing Consumptive Water Use	Reducing the portion of water pumped from the groundwater system that does not return to the wastewater treatment plant. Any reduction in consumptive water use essentially offsets groundwater pumping on a one-to-one basis (i.e., each gallon reduction in consumptive water use decreases pumping by one gallon).	Fort Huachuca has already taken a number of steps to reduce consumptive water use in the following areas: Landscape irrigation, vehicle washing, firefighting activities, fire hydrant testing, construction-related water use (including dust control, soil moisture adjustment and testing/flushing of newly constructed water lines), facility climate control (including evaporative cooling and cooling tower water use), potable water distribution system testing/flushing, potable water distribution system leaks, swimming pool consumptive water use (including evaporation and leaks), and sewer conveyance losses (including sewer system leaks and sewage disposal through septic systems).

<p>Fort Huachuca Irrigation and Water Management Policy (Policy 022)</p>	<p>This policy places restrictions on irrigation of turf in MFH. It also specifies procedures for activities that use water insuring that water use efficiency is maximized. This policy also places restrictions and/or limits on outdoor decorative water features, new turf installation, and water use fixtures.</p>	<p>Policy implemented in May 2005. The impact of this policy cannot be readily quantified; however, it deserves partial credit for the significant reductions in groundwater pumping that have occurred at Fort Huachuca.</p>
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Source: USAGFH 2006

The region is expected to continue experiencing a population increase, which, along with off-Installation urban growth and urban water consumption increases constitutes a risk to the Sierra Vista subwatershed. Economic activities within the San Pedro River watershed in Mexico also pose a risk to the region’s water resources. Ongoing expansion of mining in northern Mexico, combined with the possible development of at least one additional major mine within the basin would result in major increases in water consumption upstream of the international border.

Overall, the water resource future of the region is complex and difficult to predict because it is comprised of both negative and positive trends. However, the contribution of the Proposed Action to cumulative impacts on water resources is not expected to be significant due to the mitigation measures outlined in Section 5 of this report.

4.4.2 Biological Resources

Wildlife and Aquatic Resources, Threatened and Endangered Species

Cumulative impacts to biological resources on Fort Huachuca and in the greater region are the result of the complex interactions of several different trends. The Installations’s water resources utilization and conservation, as discussed above, is a factor in the overall future of local biological resources and protected species. It addresses both the groundwater and local riparian concerns, and will provide an important long-range contribution to the overall health of the region’s biological resources, particularly that of the SPRNCA. The SPRNCA is critical habitat for a number of species (to include avian, plant, and fish) and serves as a significant international migratory bird corridor in the Southwest.

In the larger regional and international context, Fort Huachuca’s contribution to cumulative impacts on biological resources has been positive for many years. Fort Huachuca serves as a federal protectorate of several species of federally-protected, threatened, and endangered species and their on-Installation habitats (CBP, 2010a). Additionally, Fort Huachuca has implemented numerous actions to protect federally listed threatened and endangered as well as candidate species and their habitat across the installation. These include, but are not limited to the following measures:

- Off road travel and pyrotechnics are prohibited in agave management areas.
- Off road travel is prohibited.
- Warning signs and physical protection (i.e., boulders, fencing, etc.) have been completed and are being maintained.

- Annual reports have been submitted and current year work plans developed. Fort Huachuca will continue to report and jointly develop work plans with the Service (USAGFH 2006).

As discussed in **Sections 3.8** and **3.9**, the various components of the Proposed Action would have no contribution to trends in biological resources already being experienced on Fort Huachuca or in the region. With respect to the SPRNCA, the Proposed Action would have no impact on biological conditions and the quality of habitat in the area.

Another regional issue that presents significant environmental concerns to biological resources is the intrusion of non-native or exotic species into the area and the accompanying displacement of vulnerable native species. Some non-native species have shown the ability under current conditions to out-compete native species. These include fish species in the San Pedro River, grasses (i.e., buffel, Johnson, and Lehmann's love grass), bullfrogs, and tamarisk. The Proposed Action does not contribute to any cumulative impact with respect to the non-native species concern (CBP, 2010a). However, it may be necessary to implement a maintenance plan for control of invasive species once the construction is complete.

4.5 CONCLUSIONS OF THE CUMULATIVE IMPACTS ANALYSIS

This EA concludes that the effects of the Proposed Action would have negligible to minor adverse effects to geological resources, water resources, biological resources, cultural resources, air quality, climate, noise, utilities, traffic, aviation, hazardous materials/waste, socioeconomics, and human health/safety, and would not contribute to significant cumulative effects. The Proposed Action has the potential to have a minor positive effect on sustainability.

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5.0 MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

CBP will follow design criteria to reduce adverse environmental impacts and will need to implement mitigation measures to offset adverse environmental impacts. Design criteria to reduce adverse environmental impacts include avoiding or minimizing physical disturbance and construction to sensitive resources, consulting with Federal and State agencies and other stakeholders, and developing appropriate BMPs.

Environmental design measures and/or mitigation are presented for each resource category that could be affected. The proposed measures will be coordinated through the appropriate agencies and land managers/administrators prior to initiation of construction.

5.1 GENERAL BEST MANAGEMENT PRACTICES

BMPs should be implemented as standard operating procedure during all construction activities, and would include proper handling, storage, and/or disposal of hazardous and/or regulated materials. Standard procedures will include the implementation of an Arizona Construction General Permit and Stormwater Pollution Prevention Plan (SWPPP); Spill Prevention Control and Countermeasures Plan (SPCC); Dust Control Plan; Fire Prevention and Suppression Plan; and inadvertent discovery procedures from the Installation's ICRMP.

5.2 LAND USE

No mitigation measures required.

5.3 GEOLOGY AND SOILS

Soil erosion can be greatly reduced with the use of SWPPP and other appropriate BMPs. Provisions of the Arizona Pollutant Discharge Elimination System (Arizona Administrative Code, Title 8, Chapter 9 and United States Code 1251 et seq.) require construction projects disturbing more than one acre to have a Storm Water Pollution Prevention Plan (SWPPP) that includes BMPs. These BMPs are designed to minimize soil erosion and protect surface water quality. By statute, BMPs must include erosion and sediment controls, interim and permanent stabilization practices, velocity dissipation devices in discharge locations and outfall channels, and a description of post-construction storm water management measures. A SWPPP is required prior to project implementation.

5.4 HYDROLOGY AND GROUNDWATER

Substantial quantifiable, measurable and timely conservation measures should be included as part of the proposed action. The primary focus is on conservation measures that show a direct and measurable reduction of the net groundwater use in the Sierra Vista Subwatershed.

For current facility operations, CBP would need to offset 24.78 AF/YR of groundwater use (CBP, 2010b, Table 18, Future Net Water Use). Additionally, the proposed action alternative

would require a one-time mitigation obligation of 3.90 AF. Water use for construction is not a reoccurring debt and would only be mitigated once at the time of use.

5.4.1 Conservation Easements

CBP has contracted with the Army Corps of Engineers to help acquire conservation easements aimed at reducing or eliminating water consumption along the San Pedro River and its tributaries. Property owners' relinquish water rights in exchange for accepting a conservation easement; the reduced water use can then be used as an offset for water used within the Subwatershed. The U.S. Geological Survey has identified the shallow aquifer underlying the Babocomari River as one of the most important contributors to the San Pedro aquifer in the upper San Pedro Valley. As such, there has been considerable conservation easement activity along the Babocomari River, a key tributary to the San Pedro River. Babocomari Ranch is located along the Babocomari River and its owner, the Brophy family, has been a willing participant in negotiating conservation easements. According to the Arizona Water Resource Newsletter (Water Resources Research Center at the College of Agriculture and Life Sciences at The University of Arizona), the Brophy family has identified about 16,000 acres of ranch they would like to see placed under conservation easements (CBP 2010b). According to the June 6, 2011 newsletter of the Nature Conservancy, 4,400 acres of the Babocomari Ranch are covered by conservation easement, and 1,600 of the neighboring Diamond C Ranch, owned by the Jelks family, are also covered.

5.4.2 Other Mitigation Measures

Other potential water conservation and mitigation measures are discussed below.

Water Conservation

The Universal Plumbing Code has been adopted as an Arizona State Statute and requires that new construction use low-flow water use fixtures. Low-flow water use fixtures will be considered during the design of Alternative 1. Construction of the proposed joint Air facility would adhere to the policy set forth in E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance, 2009*, which requires significant improvements in water efficiency in new Federal construction.

Rainwater Harvesting

Rainwater harvesting could be included as a design feature in Alternative 1. For example, the land required to install the collection system and dry wells would need to be included in the CBP's contract with the U.S. Army. Furthermore, given the nature of this type of recharge activity, approval from Fort Huachuca would likely be required, along with proper permitting from the ADEQ.

Another example: assuming an estimated square footage of 59,200 square feet and an annual rainfall rate of 15.39 inches per year, it is estimated that 1.74 AF/YR of water could be captured from the proposed buildings at LAAF. This amount is over twice the projected direct water use by the CBP of 0.77 AF/YR (Table 12, CBP 2010b) after considering existing mitigation by Fort

Huachuca. By recharging the loss in supply, CBP could reduce the amount of water mitigation that will be required to offset the use.

Detention Basin Recharge

The City of Sierra Vista constructed detention basins in an effort to augment the amount of natural recharge within the Subwatershed. The City of Sierra Vista maintains eleven stormwater basins within its limits. These detention basins work by capturing large amounts of fast moving water (typically from a storm) and then releasing it slowly into the ground. Incoming water is captured in the detention basin's storage space and then released slowly through a designed outlet structure to seep into the ground, rather than running off as floodwater (CBP 2010b). CBP may consider detention basin construction by purchasing land and/or identifying land already owned that would be suitable for detention basin construction. Water collected and recharged within the basin would reduce the amount of water that would need to be mitigated by other means.

5.4.3 Regional Water Conservation and Mitigation Efforts

Agencies and organizations within the Sierra Vista Sub watershed are extremely active with respect to water management activities. Concern about regional groundwater withdrawal and potential impacts to the stream flow in the San Pedro River and riparian habitat in the SPRNCA have increased in recent years.

A major force in this effort is the Upper San Pedro Partnership (USPP). The USPP was formed in 1998 and is a consortium of 21 agencies and organizations working together to meet the long-term water needs of the San Pedro Riparian National Conservation Area and of the area residents. The USPP is committed to achieving a sustainable yield in the regional aquifer of the Sierra Vista Sub watershed. Sustainable yield (or balanced water budget) is defined as the level of groundwater use that can be maintained for an indefinite period of time without causing unacceptable environmental, economic, or social consequences.

The Defense Authorization Act of 2004, Public Law 108-136, Section 321, requires the Secretary of the Interior in cooperation with the USPP to prepare an annual report to Congress that addresses the water use management and conservation measures that have been implemented and are needed for a sustainable yield of groundwater withdrawal (USDOJ 2013). This annual report is commonly referred to as the 321 Report. These efforts will offset potential effects associated with groundwater pumping in the Sierra Vista Sub watershed and will protect habitat on the San Pedro River for riparian or aquatic dependent threatened and endangered species.

Table 5-1 summarizes the most recent conservation and mitigation measures by members of the USPP. These conservation practices that minimize water use to the greatest extent practicable, combined with mitigation to offset water use, have substantially reduced the water deficit. Approximately 11,200 AF of groundwater withdrawal has been offset by conservation and mitigation efforts currently utilized in the Sub watershed. These measures include the following:

- A large portion of land in the valley center of the Sub watershed has been acquired by the BLM and incorporated into the SPRNCA. SPRNCA is the nation’s first national riparian conservation area. Congress created the SPRNCA in 1988, directing the Secretary of the Interior to “conserve, protect and enhance the natural resources of this riparian system.
- Fort Huachuca, Cochise County, Huachuca City and the Cities of Sierra Vista, Bisbee and Tombstone implemented various conservation measures to minimize their water use. These conservation measures include public education on how to conserve water supplies and rebate programs for retrofitting residential plumbing. Fort Huachuca also installed approximately 460 waterless urinals.
- Both Fort Huachuca and Sierra Vista directly recharge effluent produced from wastewater treatment plants to the regional aquifer, compensating for groundwater withdrawals from the aquifer.
- Fort Huachuca, Cochise County, and Sierra Vista constructed storm water detention basins. These basins are specially designed to retard storm runoff and increase its infiltration into the regional aquifer.
- Bisbee uses its effluent to replace groundwater-derived constructed golf course irrigation, thereby reducing the amount of groundwater withdrawn.
- BLM removed invasive trees from along the banks of the SPR to reduce water consumption from non-native vegetation.
- The Nature Conservancy and Fort Huachuca have worked together to purchase conservation easements on agricultural lands to reduce or eliminate the agricultural demand for groundwater from those lands.

TABLE 5-1: Planned and estimated actual yields for 2010 and planned yields for 2011 of Partnership member measures to reduce aquifer overdraft and of increased recharge from urbanization.

[Yields are in acre-ft; numbers compiled March—July, 2011, based on data provided by respective jurisdictions or in conjunction with USGS; conservation yields in each year are relative to a zero yield in the baseline year of 2002; recharge yields are total values and are relative to a baseline of zero acre-ft; totals rounded to nearest 100 acre-ft]

		2010 Yield	2010 Yield	2011 Yield
Descriptio	Measure type	Planned	Actual	Planned
Fort Huachuca				
Conservation measures ^{1,2}	Conservation	[800]	[768]	[800]
Effluent recharge ³	Recharge	200	194	200
Stormwater detention basins ⁴	Recharge	50	172	50
Cochise County				
Conservation measures ⁵	Conservation	120	120	120
Stormwater detention basins	Recharge	30	30	30
Sierra Vista				
Conservation measures ^{1,2}	Conservation	1,750	1,750	1,800
Improved golf course efficiency	Conservation	15	15	15
Effluent recharge ⁶	Recharge	3,000	2,666	3,000
Stormwater detention basins ⁷	Recharge	300	185	300
Bisbee				
Conservation measures	Conservation	50	50	60
Reduced groundwater pumping through effluent reuse	Conservation	485	83	485
Effluent recharge ⁸	Recharge	5	351	15
Huachuca City				
Conservation measures ²	Conservation	50	91	50
Tombstone				
Conservation measures ²	Conservation	10	10	20
Effluent recharge ⁹	Recharge	100	74	100
Bureau of Land Management				
Mesquite reduction ¹⁰	Conservation	640	645	654
Urban enhanced ephemeral-stream channel stormwater recharge				
Increase in stormwater recharge in ephemeral-stream channels caused by urbanization ¹¹	Recharge	2,300	2,300	2,300
Incidental yields				
Retirement of agricultural pumping ¹²	Conservation	2,070	2,070	2,070
Total yields				
Total yield ¹³		11,200	11,500	11,300

Source: USDOJ 2013

¹Fort Huachuca is wholly contained within the boundaries of the City of Sierra Vista, and Fort Huachuca's conservation yields (in brackets) are included in the Sierra Vista yields included in table 3. The Planned and Actual Total Yields found at the bottom of this table do not include the values from the Fort Huachuca Conservation Measures line. Fort Huachuca's yields were double counted in 321 reports before 2009.

²Yield relative to 2002 baseline of zero. Conservation efforts started earlier than 2002 that continue to provide yields do not contribute to a reported yield because they are already incorporated in the baseline actual water-use figures. Yield calculated as the difference between pumping reported by the agency for 2010 and the pumping that would have occurred using the 2002 gallons-per-capita-per-day rate for the associated population estimated for 2010 using 2010 U.S. Census data.

³Because Fort Huachuca was already recharging 239 acre-ft of effluent in 2002, only the increase in recharge since 2002 is credited here.

⁴Recharge from stormwater detention basins on Fort Huachuca (Tom Runyon, Hydrologist, Fort Huachuca, written commun., April 8, 2011). Report estimates based partially on monitoring data and therefore yield is subject to 2010 rainfall.

⁵Conservation yield attributable to Cochise County could not be calculated owing to the large number of small unmetered wells. The reported yield of 120 acre-ft is attributable to toilet-replacement rebates and assumed savings from code changes. Cochise County undertook various code changes that should have yielded water savings, but that cannot be quantified owing to lack of available metered water-use data including hot water on demand, gray water plumbing, high-efficiency commercial laundry facilities, ban on artificial water features, humidity sensors on outdoor irrigation, turf restrictions, and limits on evaporative coolers.

⁶Mike Hemesath, Director, Department of Public Works, City of Sierra Vista, written commun., March 31, 2011. Recharge values are based on metered inflows to infiltration basins minus estimated evaporative loss.

⁷Recharge of stormwater in 2010 in the City of Sierra Vista's stormwater detention basins. Values based on a Sierra Vista calculation derived from a Partnership sponsored study of runoff and recharge (Stantec Consulting and GeoSystems Analysis Inc., 2006). This technique was developed to provide a consistent method to calculate yields from Fort Huachuca, Sierra Vista, and Cochise County basins.

⁸Steve Pauken, City Manager, City of Bisbee, written commun., July 15, 2011. Recharge from effluent released into Greenbush Draw from July 1, 2010 to June 30, 2011; 95 percent of total effluent discharged is assumed to recharge the groundwater system.

⁹Carla Molina, Tombstone Public Works, personal commun., July 11, 2011. Recharge from effluent produced by residents of Tombstone that is released into Walnut Gulch; 95 percent of total effluent discharged is assumed to recharge the groundwater system.

¹⁰Water-use savings through management of invasive mesquite and tamarisk using various treatments. Mesquite and tamarisk reduction reduces water use by replacing mesquite with more shallowly rooted plants. Yield estimated using an Agricultural Research Service model of riparian transpiration in the San Pedro Riparian National Conservation Area. Water conservation is greatest initially following treatment and decreases over time.

¹¹Urbanization in semiarid climates can increase recharge by concentrating rainfall runoff in ephemeral-stream channels (Kennedy, 2007; Lohse and others, 2010). Estimates provided by the Agricultural Research Service; credit not claimed by any particular Partnership member. These preliminary estimates will be refined through ongoing research and monitoring programs. Increased water use due to urbanization likely exceeds increased recharge. All urban-enhanced recharge estimates represent quantities expected in an average year—no current monitoring can provide year-specific values.

¹²Yield did not result from any specific Partnership member actions.

¹³Total yields rounded to nearest 100 acre-ft. Yields based on the best current data and assumptions. Yield values differ in places from prior Section 321 reports owing both to changes in implemented and planned projects and to reanalysis of yields using improved methods.

5.5 SURFACE WATERS AND WATERS OF THE U.S.

No surface waters are identified on the proposed site. However, a SWPPP will be developed for the stormwater runoff during construction to minimize potential water quality impacts.

5.6 FLOODPLAINS

Current RPMP (USArmy2007b) indicates that no floodplains exist in the project area. Coordination will continue with the U.S. Army to obtain recent hydraulic/hydrologic studies determining the boundaries of 100-year and 500-year floodplains.

5.7 VEGETATIVE ANALYSIS

Although no agave were discovered during the site visit and floristic assessment, CBP will coordinate with the U.S. Army for the relocation of any previously undiscovered agave that may be found during construction of the project. It may be necessary to implement a maintenance plan for control of invasive species once the construction is complete. CBP will provide water resource mitigation, per **Section 5.4**, to offset proposed water use that could indirectly affect vegetation communities in the SPRNCA.

5.8 WILDLIFE AND AQUATIC RESOURCES

Observation and protection of migratory bird nesting will be conducted pursuant to the specific requirements of the project as required by the permitting agencies. To avoid impacts to migratory birds, CBP will avoid construction activities during migratory bird nesting season (March 15 – September 15) to the extent practicable. If construction is necessary during the migratory bird nesting season, surveys will be conducted prior to scheduled activity to determine if active nests are present within the area of impact. If active nests are identified within or in the vicinity of a project site, a buffer zone will be established around the nest and no activities will occur within that zone until nestlings have fledged and left the nest area or the nest fails.

5.9 THREATENED AND ENDANGERED SPECIES

Once CBP's total groundwater usage is offset, CBP will have no effect on listed species or their critical habitat related to groundwater usage in the Sierra Vista Subwatershed (see **Section 3.9**, Threatened and Endangered Species). Groundwater mitigation measures are addressed in **Section 5.4**. CBP proposes to work closely with the Arizona Game and Fish Department under the Sikes Act/Integrated Natural Resource Management Plan (INRMP) to implement monitoring and management actions relative to the conservation easements with a wildlife habitat mitigation goal to ensure effectiveness of the mitigation measures

CBP could still have an effect on the lesser long-nose bat through noise and potential collisions. A detailed list of conservation measures and BMPs are located in the *2010 Biological Assessment for the Proposed CBP OAM Facility at LAAF* (CBP2010a). These measures consist of limiting disturbance to the smallest area practicable, no seeding of non-native grasses or plants, and following Fort Huachuca's Agave Management Plan.

5.10 CULTURAL RESOURCES

All construction will be kept within previously surveyed areas. A cultural resources survey was conducted and concluded that there will be no impacts to cultural resources. In case of inadvertent discovery of previously unidentified human remains or funerary objects during activity related to the project construction, the contractor will stop work immediately at that location and take all reasonable steps to secure the preservation of those resources, per the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.) and A.R.S. §41-865. In this event, the project proponent, grading contractor or CBP representative will immediately contact Fort Huachuca's Cultural Resources Manager and/or Environmental and Natural Resources Division Chief. The Installations's Cultural Resources Manager, in coordination with CBP, will make arrangements for the proper treatment of those resources.

5.11 AIR QUALITY

Fugitive dust will be minimized during construction activities through the implementation of BMPs to improve on-site dust suppression, as described in Section 5.3.

5.12 CLIMATE

Identification and selection of possible GHG minimization strategies is an important part of addressing potential climate change impacts, even on a small scale. During design, CBP will consider typical energy reduction measures such as building design and efficiency, photovoltaic cells, provisions for plug-in electric vehicles (PHEV) and bicycles, and potential vehicle fleet reduction or substitution, in compliance with E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance, 2009*, and the Energy Efficiency Guiding Principles.

5.13 NOISE

No mitigation measures required.

5.14 UTILITIES AND INFRASTRUCTURE

No mitigation measures required.

5.15 ROADWAYS/TRAFFIC

No mitigation measures required.

5.16 AVIATION

No mitigation measures required.

5.17 HAZARDOUS MATERIALS and WASTE MANAGEMENT

During construction or facility operation, contamination could occur as a result of petroleum, oil, and lubricant spills, or other hazardous material handling. To preclude such impacts, these substances will be stored, handled, and disposed in accordance with local, State, and Federal laws and regulations.

5.18 SOCIOECONOMIC

No mitigation measures required.

5.19 SUSTAINABILITY AND GREENING

Consistent with DHS's policy for environmental stewardship, listed in Directive 025-01 - Sustainable Practices for Environment, Energy, and Transportation Management, the proposed action will implement on-site solid waste reduction and recycling, energy conservation, and source reduction and pollution prevention programs as practicable. In compliance with E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance, 2009*, the facility design of Alternative 1 would have opportunities to incorporate energy conservation measures as part of the new construction, such as green roofs. Per DHS Strategic Sustainability Performance Plan (2013), the proposed action would set goals for environmentally sustainable practices in the daily operation and maintenance of the existing facility potentially including greenhouse gas (GHG) reduction, fleet management, water use efficiency, pollution prevention, and waste reduction.

5.20 HUMAN HEALTH AND SAFETY

Construction site safety will adhere to OSHA and EPA standards imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The Occupational Safety and Health Administration (OSHA) and EPA issue standards that specifies the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits with respect to workplace stressors. Operations will include compliance with the OSHA Hazard Communications Standard, which is amended to include the Globally Harmonized System.

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