



**Department  
Of the Army**



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**January 2016**

# **Environmental Assessment**

## **Verizon- Fort Irwin Fiber Optic Cable Project at Fort Irwin, California**

**U.S. Army Garrison  
Fort Irwin, California**

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**SIGNATURE PAGE**

**ENVIRONMENTAL ASSESSMENT**

**Verizon Fiber Optic Cable Project at Fort Irwin, California**

**Proponent: U.S. Army Garrison, Fort Irwin, California**

**Lead agency: U.S. Army Garrison, Fort Irwin, California**

**Cooperating Agencies: None**

**APPROVAL**

This Environmental Assessment meets the requirements of NEPA, 40 CFR 1500-1508, Army Regulation 200-1, *Environmental Protection and Enhancement*, dated 13 December 2007 and 32 CFR 651(AR 200-2) *Environmental Analysis of Army Actions*, dated 29 March 2002.

\_\_\_\_\_  
Date

Justine E. Dishart  
Chief, Environmental Management Division

\_\_\_\_\_  
Date

Muhammad A. Bari, P.E.  
Director, Public Works

\_\_\_\_\_  
Date

G. Scott Taylor  
COL, AR  
Commanding

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A Biological Technical Report for Verizon’s Fiber Optic Cable Project at Fort Irwin

- B Cultural Resources Investigations for the Verizon Fort Irwin Fiber Optic Project
- C Phase I Environmental Site Assessment Proposed Verizon- Ft. Irwin Fiber Project
- D Record of Non-Applicability (RONA) for General Conformity for the Verizon Fort Irwin Fiber Optic Cable Project

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# Acronyms and Abbreviations

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AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ADNL	A-weighted day-night level
AFB	Air Force Base
afy	acre-feet per year
amsl	above mean sea level
APE	Area of Potential Effect
AR	Army Regulation
ARB	Air Resources Board
ASTM	American Society of Testing and Materials
ASTs	Above Ground Storage Tanks
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDMG	California Division of Mines and Geology
CDNL	C-weighted day-night level
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CHRIS	California Historical Resources Information System
CMY	Community
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CPV	Concentrating Photovoltaic
CTT	Closed, Transferring, and Transferred
CSC	California Species of Concern
CWA	Clean Water Act
CWC	California Water Code
DA	Department of the Army
DAR	Defense Access Road
dB	decibel
dBA	A-weighted sound pressure level
dBC	C-weighted sound pressure level
DPW	Directorate of Public Works

EA	Environmental Assessment
END	Federally Listed Endangered
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FBM	Fur-Bearing Mammal
FEIS	Final Environmental Impact Statement
FGC	Fish and Game Code
FNSI	Finding of No Significant Impact
FOIA	Freedom of Information Act
FP	Fully Protected
FSOC	Federal Species of Concern
GHG	Greenhouse Gas
GPS	Geographic Positioning System
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
HS	Hydrogen Sulfide
INRMP	Integrated Natural Resource Management Plan
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MGD	Million Gallons per Day
MMRP	Military Munitions Response Program
N <sub>2</sub> O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NAWS	Naval Air Weapons Station
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NPPA	Native Plant Protection Act
NPDES	National Pollutant Discharge System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTC	National Training Center
O <sub>3</sub>	Ozone
Pb	Lead
PCBs	Polychlorinated Biphenyls
PFCs	Perfluorocarbons
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter less than 10 microns in aerodynamic diameter
PM <sub>2.5</sub>	Particulate Matter less than 2.5 microns in aerodynamic diameter
ppm	parts per million
PRO	Professional/Industrial

PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act of 1976
REC	Recognized Environmental Conditions
RES	Residential
ROI	Region of Influence
RONA	Record of Non-Applicability
RV	Recreational Vehicle
RWQCB	Regional Water Quality Control Board
SBAIC	San Bernardino Archaeological Information Center
SCE	Southern California Edison
SF <sub>6</sub>	Sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>x</sub>	Oxides of Sulfur
SOC	Species of Concern
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SSC	Species of Special Concern
SWANCC	Solid Waste Agency of Northern Cook County
SWPPP	Stormwater pollution prevention plan
TCP	Traffic Control Plan
THR	Threatened
TRP	Troop
UAV	Unnamed Aerial Vehicle
U.S.	United States
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USTs	Underground Storage Tanks
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance
WL	Watch List

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# Executive Summary

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## ES-1 Introduction

This Environmental Assessment (EA) describes the potential environmental consequences of the proposed Verizon Fort Irwin Fiber Optic Cable Project at Fort Irwin, California.

## ES-2 Purpose and Need of the Proposed Action

The purpose of the Proposed Action is to respond to increasing broadband demand in the Fort Irwin service area to support the installation's current and future broadband requirements for residential customers, government/education facilities, military activities, and businesses.

### ES-2.1 Project Need

Broadband capacity is insufficient to meet the needs of users in the Verizon Fort Irwin Service Area. Additional capacity is required to meet current and future broadband demand.

## ES-3 Proposed Action and Alternatives

All alternatives are composed of three elements:

- Placing new conduit and fiber optic cable underground from an existing interconnection located on the west side of Fort Irwin Road approximately 0.25 mile southwest of the Fort Irwin welcome sign and static helicopter and tank display to the existing riser utility pole 4659666E located in the Fort Irwin cantonment area west of Barstow Road approximately 725 feet north of the intersection of Barstow Road and Outer Loop Road.
- Aerial placement of the fiber optic cable on existing utility poles from utility riser pole 4659666E to the Verizon Fort Irwin Central Office located in Building 12, north of Inner Loop Road and west of Barstow Road.
- Use of a 210-foot by 70-foot area for construction staging in the cantonment area south of Langford Lake Road and west of H Avenue.

The project alternatives include combinations of different routes for the underground and aerial components of the project. The staging area would be in the same location for all project alternatives. No routine maintenance would be required for the Proposed Action or Alternatives. All Alternatives are anticipated to begin construction in spring 2016.

### ES-3.1 Proposed Action

The Proposed Action is the preferred alternative and is comprised of the following project components:

- Underground Route A;

- Aerial Placement Route A; and
- Staging Area

The Proposed Action is anticipated to begin construction in spring 2016 and would take approximately 13 to 18 weeks to complete the underground portion of the project, which includes 11 to 16 weeks for trenching and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately 3 weeks. The total construction time is estimated to be 16 to 21 weeks.

### ***ES-3.1.1 Underground Route A***

Underground Route A would be approximately 7.8 miles in length. Underground Route A would begin at the existing Verizon manhole pickup located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter and tank display. From here, the route would follow an existing tank trail approximately 165 feet west of Fort Irwin Road until the trail ends at Outer Loop Road. The route would cross Outer Loop Road and the fiber optic line would transition to an aerial route at existing riser utility pole 4659666E, approximately 725 feet north of the intersection of Barstow Road and Outer Loop Road.

A 14-inch-wide, 36-inch-deep trench would be excavated the majority of the length of the route, from the existing Verizon manhole pickup described above to Outer Loop Road, using back hoes. Where large rocks are encountered, a rock saw would be used. A four-inch sand cushion will be placed under the fiber optic cable, and the cable will be covered with 32-inches of native soil. The total work area that would be temporarily disturbed during construction would be approximately 30 feet wide (15 feet on center from the trench). A maximum of 1,000 feet of trench would be open each day. Any open trenches would be covered at the end of the day; temporary fencing would be placed to secure each location for the duration the trenches remain open. Directional boring would be used to tunnel under Outer Loop Road to existing riser utility pole 4659666E to avoid cutting into the road surface. The directional bore portion of Underground Route A would be approximately 670 feet in length. Please see Section ES-3.2.1 for a more detailed description of the directional boring process.

Hand holes (small access boxes) of dimensions 2-feet wide by 3-feet long by 30-inches deep would be placed along the route every 1,000 feet. Approximately 41 hand holes would be required. The hand holes will be buried a minimum of 10 inches below grade, and a geographic positioning system (GPS) locator device would be placed inside the hand hole to aid in locating the hand hole for future maintenance, if required. A 50-foot coil of fiber optic cable would be placed inside every third hand hole (every 3,000 feet). In the event of accidental damage to the fiber optic cable, these 50-foot coils would be used to repair the damaged cable. Detailed traffic control methods will be provided in a Traffic Control Plan (TCP) to be approved by Fort Irwin.

### ***ES-3.1.2 Aerial Placement Route A***

Aerial Placement Route A is approximately one mile in length. With Aerial Placement Route A, the line would cross Barstow Road continue north on existing poles on the east side of Barstow Road, cross Barstow Road and Bastogne Street, continue north on the west side of

Bastogne Street, travel briefly east on the north side of Salerno Drive to poles on the west side of Barstow Road, then travel north to terminate at the existing Verizon Fort Irwin Central Office located in Building 12. All cable would be placed on existing utility poles in compliance with California General Order 95 Rules for Overhead Line Construction from equipment located on existing paved and dirt roads. Detailed traffic control methods will be provided in a TCP to be approved by Fort Irwin.

### ***ES-3.1.3 Staging Area***

A temporary staging area has been identified by Fort Irwin for temporary use by the project. The staging area would be located within the cantonment in the area known as Green Acres, northwest of the intersection of South Loop Road and Langford Lake Road. Green Acres is regularly used by contractors working at Fort Irwin to stage material, equipment, and for trailer space. The staging area would be an approximately 210-foot-long by 70-foot-wide area with a concrete pad and gravel. An existing fueling station is located southeast of the staging area. Equipment and supplies would be moved from the selected underground route and aerial alignment to the staging area each evening, and would be moved from the staging area to the active construction area each morning to avoid storage of equipment and supplies overnight in the construction area.

## **ES-3.2 Alternative 1**

Alternative 1 would involve the installation of a fiber optic line that would include the following project components:

- Underground Route B;
- Aerial Placement Route A; and
- Staging Area

The Aerial Placement Route A and the Staging Area would be the same for Alternative 1 as discussed above with the Proposed Action. This alternative is anticipated to begin construction in spring 2016. The directional bore portion of the project would take approximately eight weeks to complete, including six weeks for substructure installation and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately 3 weeks. The total construction time is estimated to be twelve weeks.

### ***ES-3.2.1 Underground Route B***

Underground Route B is approximately 8.1 miles in length. Underground Route B would begin at the same existing Verizon manhole pickup as Underground Route A. The pickup is located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter and tank display. The route would continue north/northeast on the west side of Fort Irwin Road, approximately 72 inches from the edge of pavement, to the intersection of Fort Irwin Road and Outer Loop Road, proceed west on the south side of Outer Loop Road and north on the west side of Barstow Road.

Approximately 725 feet north of the intersection of Barstow Road and Outer Loop Road, the fiber optic line would transition to an aerial route at existing riser utility pole 4659666E.

Verizon would use a directional bore method of construction for Underground Route B. Directional boring, also called horizontal directional drilling, is a trenchless method of

installing underground pipes, conduits, and cables in a shallow arc along a prescribed bore path using a surface-launched drilling rig. Directional boring is used when trenching or excavating is not practical, such as for crossing waterways or drainages, roadways, urban areas with traffic or other constraints, and environmentally sensitive areas. The process starts with the excavation of a receiving hole and entrance pits. For the project at Fort Irwin, directional boring would be accomplished by placing 4-foot wide by 4-foot long by 40-inch deep bore and receiving pits 72 inches west of the edge of the pavement of Fort Irwin Road at approximately 1,000-foot intervals. Approximately 43 bore pits would be required for the 8.1-mile bore route. The total area that would be disturbed by boring is approximately 30 feet by 75 feet around the bore and receiving pits.

The first stage drills a pilot hole on the designed path, and the second stage (reaming) enlarges the hole by passing a larger cutting tool known as the back reamer. The third stage places the conduit in the enlarged hole by way of the drill stem; it is pulled behind the reamer to allow centering of the pipe in the newly reamed path.

For this project, two-inch schedule 40 polyvinyl chloride (PVC) conduit would be glued together the length of the bore and pulled from bore pit to receive pit. Upon completion of each section, duct plugs would be installed to prevent wildlife from entering the vacant conduit. These plugs would be removed during the cable placement phase. Approximately 43 hand holes, as described in Section ES-3.1.1, above, would be placed in the bore/receive pit locations. Fiber optic cable would be placed inside the 2-inch conduit, and a 50-foot coil of fiber optic cable would be placed inside each hand hole. In the event of accidental damage to the fiber optic cable, these 50-foot coils would be used to repair the damaged cable.

Horizontal directional drilling is done with the help of a viscous fluid known as drilling fluid. It is a mixture of water and bentonite or polymer continuously pumped to the cutting head or drill bit to facilitate the removal of cuttings, stabilize the bore hole, cool the cutting head, and lubricate the passage of the product pipe. Water for the drilling fluid would come either from Fort Irwin (with permission) or would be brought in from off-installation. The drilling fluid is sent into a machine called a reclaimer, which removes the drill cuttings and maintains the proper viscosity of the fluid. Drilling fluids hold the cuttings in suspension to prevent them from clogging the bore. A clogged bore creates back pressure on the cutting head, slowing production. Drilling fluid would be collected with a vacuum in the bore pits and taken to the contractor's off-installation facility to dry out. Once dried, the spoils, which are not considered a hazardous waste can be disposed in a municipal landfill.

If the directional bore is blocked by unforeseen geologic substructure, a 1-foot wide by 36-inch deep trench may be required to bypass the blockage. Directional boring would continue after the blockage is passed. With Underground Route B, trenching is expected to be limited because large boulders and other obstructions are likely to have been removed during the construction of Fort Irwin Road.

Open bore and receive pits would be barricaded and temporary fencing would be placed to secure each location for the duration the pits remain open. Traffic control would be in compliance with the Work Area Traffic Control Handbook, the California Manual on Uniform Traffic Control Devices, and Fort Irwin requirements. Detailed traffic control methods will be provided in a TCP to be approved by Fort Irwin.

Routine maintenance of the fiber optic line would not occur. If specific repairs are required, the fiber optic line would be accessed using the hand holes and would be repaired using the 50-foot coils of fiber optic line that were left in the hand hold during construction.

### **ES-3.3 Alternative 2**

Alternative 2 would include the following project components:

- Underground Route A;
- Aerial Placement Route B; and
- Staging Area

Underground Route A and the Staging area would be the same as discussed for the Proposed Action above. This alternative is anticipated to begin construction in spring 2016 and take 16 to 21 weeks to complete, similar to the Proposed Action.

#### ***ES-3.3.1 Aerial Placement Route B***

Aerial Placement Route B would also begin at existing utility riser pole 4659666E and end at Building 12, and would also be approximately one mile in length. The line would remain on the west side of Barstow Road until its terminus at Building 12.

Existing utility poles would be used, and all cable would be placed in compliance with California General Order 95 Rules for Overhead Line Construction from equipment located on existing paved and dirt roads. A TCP, approved by Fort Irwin, would be required for work in the cantonment area.

### **ES-3.4 Alternative 3**

Alternative 3 would include the following project components:

- Underground Route B;
- Aerial Placement Route B; and
- Staging Area.

Underground Route B, Aerial Placement Route B, and the Staging Area would be the same as described above in the previously described alternatives. This alternative is also anticipated to begin construction in spring 2016 and take 12 weeks to complete, similar to Alternative 1.

### **ES-3.5 No Action Alternative**

With the No Action Alternative, the fiber optic line would not be installed at Fort Irwin. Environmental consequences associated with the Proposed Action would not occur within Fort Irwin, including those related to construction, operation, and maintenance of the Proposed Action. Although the environmental consequences with the project would not occur within Fort Irwin, the installation would continue to have insufficient data bandwidth for voice, video and data.

## ES-4 Summary of Impacts

### ES-4.1 Summary of Impacts

Impacts to environmental and socioeconomic resources resulting from implementation of the Preferred Alternative and the No Action Alternative are summarized in Table ES-1.

Table ES-1. Summary of Impacts

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
<b>Land Use Planning and Aesthetics</b>		
Site and Installation of Preferred Alternative	<u>Construction and Operation</u> : The proposed use would be compatible with installation land use plans and visual characteristics of its surroundings.	Other projects would continue to occur within the Fort Irwin cantonment, which may affect the aesthetics of the landscape and change or modify land uses.
Surrounding Area	<u>Construction and Operation</u> : No impact.	Other projects would continue to occur within the Fort Irwin cantonment, which may affect the aesthetics of the landscape and change or modify land uses.
<b>Geology, Soils, and Minerals Resources</b>		
Geology and Mineral Resources	<u>Construction and Operation</u> : No impact.	No impact on geology would occur. No impact on mineral resources would occur as Fort Irwin is designated for military training.
Soils	<u>Construction</u> : Potential for soil erosion impacts during construction.	Soil erosion impacts would continue as a result of construction from other projects and training activities.
Seismicity	<u>Construction and Operation</u> : The new fiber optic line would be exposed to seismic hazards but would be designed and constructed according to seismic design criteria in the current California Building Code.	With the No Action Alternative seismic hazards would remain the same.
<b>Biological Resources</b>		
Flora	<u>Construction</u> : Temporary impacts to 4.38 acres of desert scrub habitat.  <u>Operation</u> : Minor temporary impacts if hand holes need to be accessed for repairs. The majority of hand holes are within disturbed/developed areas.	With the No Action Alternative current conditions would be expected to continue and there would be no new effect on plant communities in the Proposed Action area.
Special-Status Species (Flora)	<u>Construction and Operation</u> : No impacts.	With the No Action Alternative current conditions would be expected to continue.

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Fauna	<p><u>Construction:</u> Temporary impacts to 4.38 acres of desert scrub habitat.</p> <p><u>Operation:</u> 41 buried hand holds would create a total of 246 square feet of barrier to burrowing animals. Minor temporary impacts if hand holes need to be accessed for repairs. The majority of hand holes are within disturbed/developed areas.</p>	Current conditions would be expected to continue and no new impacts to wildlife, including general wildlife and special-status species that encompass federal- and state-listed species and other special-status species, would occur.
Special-Status Species (Fauna)	<p><u>Construction:</u> Potential temporary impact to transient desert tortoise, some bird species, kit fox, and American badger. Temporary impacts to 7.60 acres of critical habitat for desert tortoise, of which 5.37 acres is disturbed.</p> <p><u>Operation:</u> 41 buried hand holds would create a total of 246 square feet of barrier to burrowing animals. Minor temporary impacts if hand holes need to be accessed for repairs.</p>	Current conditions would be expected to continue and no new impacts to wildlife, including general wildlife and special-status species that encompass federal- and state-listed species and other special-status species, would occur.
Pest Species	<p><u>Construction:</u> Construction activity might attract additional pest species, including ravens and coyotes, where additional food, trash, or water is available.</p> <p><u>Operation:</u> No new impacts. Use of existing utility poles for aerial portion of the fiber line will not increase or decrease current impacts of these poles.</p>	Current conditions would be expected to continue.
Jurisdictional Waters	<p><u>Construction:</u> No impact.</p> <p><u>Operation:</u> No impact.</p>	Current conditions would be expected to continue.
<b>Water Resources</b>		
Surface Water	<u>Construction and Operation:</u> Ground disturbing activities can make soil on project sites more susceptible to soil erosion. Storm events can carry sediment from disturbed areas that are susceptible to erosion to surface waters affecting water quality.	Current impacts to surface waters (sedimentation) would continue as a result of construction and training activities.

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Groundwater	<p><u>Construction:</u> Consumption of groundwater resources during construction for dust control.</p> <p><u>Operation:</u> No impact.</p>	<p>With the No Action Alternative current groundwater impacts would continue into the future. Fort Irwin would continue to obtain its potable water from groundwater. Groundwater management indicates that following the <i>Water Basin Development Plan's</i> recommendation of groundwater development would extend the production longevity of the basins into the future while meeting estimated future post demands.</p>
Drainage Patterns	No Impact.	No Impact.
<b>Air Quality</b>	<p><u>Construction:</u> Potential for fugitive dust emissions from soil disturbance during construction. Construction vehicle and equipment exhaust emissions. All emissions would be below MDAQMD thresholds and General Conformity Rule <i>de minimis</i> thresholds.</p> <p><u>Operation:</u> Any emissions from repair, if needed, would be less than construction emissions.</p>	<p>With the No Action Alternative existing air quality conditions would continue. San Bernardino County, where Fort Irwin is located, is designated nonattainment for PM<sub>10</sub> for both federal and state standards. The southern portion of the installation (below the 90 Universal Transverse Mercator [UTM] grid line) is designated nonattainment for O<sub>3</sub> for both federal and state standards.</p>
<b>Climate Change</b>	<p><u>Construction:</u> The Proposed Action would generate GHG emissions from construction related activities. Construction would result in a short-term increase in GHG emissions. The Proposed Action would not result in significant GHG emissions.</p> <p><u>Operation:</u></p> <p>Operational impacts would be limited to emissions from work trucks that would be used for repair of the fiber optic line on an as-needed basis. These emissions would be lower than those described for construction.</p>	<p>With the No Action Alternative existing conditions would continue.</p>

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
<b>Noise</b>	<p><u>Construction</u>: Temporary Increase in noise level from construction activities. Activities would occur during normal working hours.</p> <p><u>Operation</u>: Operation activities would not be associated with any noise impacts.</p>	<p>With the No Action Alternative existing noise impacts would continue. Existing noise sources that are common throughout the cantonment include overhead aircraft noise, vehicular traffic noise, and construction related noise.</p>
<b>Cultural Resources</b>	<p><u>Construction</u>: No historic properties would be affected. The Preferred Alternative would comply with post-review discovery procedures pursuant to 36 CFR 800.13(b)(1), (2), or (3) and Assembly Bill (AB) 2641 in the event that any previously undiscovered archaeological remains are uncovered during construction.</p> <p><u>Operation</u>: No impacts to cultural resources are expected during operation.</p>	<p>Ongoing construction and training activities have the potential to uncover previously undiscovered archaeological resources. However, the Environmental Division of the Directorate of Public Works would continue to manage archaeological resources that are encountered.</p>
<b>Socioeconomics</b>	<p><u>Construction and Operation</u>: No impacts to housing. No disproportionate adverse impacts to low-income or minority populations or children.</p>	<p>With the No Action Alternative existing socioeconomic conditions of Fort Irwin and the surrounding communities would persist.</p>
<b>Hazardous and Toxic Substances</b>	<p><u>Construction</u>: One Small Arms Range and three historic ranges have been identified near the underground alignment. No other recognized environmental concerns would be affected by the Proposed Action. Use of small quantities of potentially hazardous materials (e.g. oils, grease) during construction.</p> <p><u>Operation</u>: No impacts would occur during operation of the fiber optic line.</p>	<p>With the No Action Alternative existing use of hazardous and toxic substances on Fort Irwin would continue.</p>
<b>Transportation/ Utilities</b>	<p>Transportation (<u>Construction</u>): Effects to traffic during construction would be less than significant with use of traffic control plan.</p> <p>(Operation): No impacts during operation.</p> <p>Utilities (<u>Construction/Operation</u>): A beneficial effect would occur from the Proposed Action because the fiber optic line would increase the broadband capacity.</p>	<p>No impact. Without the fiber optic line, Fort Irwin's broadband capacity would remain the same.</p>

## ES-4.2 Cumulative Impacts

Construction of new facilities, as well as modifications to existing facilities and infrastructure, are ongoing on Fort Irwin. Planned projects include replacement of power utility poles along Fort Irwin Road and within the cantonment area, construction of an addition to the Recreational Vehicle (RV) Park, construction of a maintenance and hanger facility for the Grey Eagle Unmanned Aerial Vehicle (UAV) system, and water pipeline fire flow infrastructure capital improvements. The incremental impacts associated with implementation of the Preferred Alternative would not be expected to have a cumulative impact on the natural and human environment when considered in combination with other developments.

## ES-5 Summary of Mitigation Measures

Mitigation measures will be implemented to ensure adverse environmental impacts of the construction and operation of the Proposed Action will be avoided or minimized to acceptable levels. These mitigation measures will be incorporated into the design, construction, operation, and maintenance plans, implemented by the project proponent and general construction contractor, and included in all contract documents. A summary of the measures is presented in Table ES-2. Mitigation measures must be implemented for the Proposed Action to have a less than significant effect on the human and natural environment.

Table ES-2. Summary of Mitigation Measures

Resource	Potential Impact	Mitigation Measure
<b>Geology, Soils, and Mineral Resources</b>		
	Soil erosion	<p><b>G-1:</b> Proper construction, soil management, and stormwater protection practices will prevent soil erosion and the loss of topsoil. Construction specifications will identify areas where soil excavation, grading, stockpiling, backfilling, or other disturbance may occur. The construction specifications will identify appropriate construction and soil management practices, such as stockpiling adjacent to the construction area, minimizing areas of disturbance, and appropriate slopes for excavations and backfill. The construction specifications will also identify the proper methods for protection of disturbed or exposed soils to prevent erosion.</p> <p>Prevention of soil erosion and loss of topsoil due to rainfall and stormwater will be addressed through the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will be prepared to identify site activities and conditions that may result in erosion or loss of topsoil due to stormwater runoff. Appropriate best management practices (BMPs) for protection of disturbed areas and stockpiled soil will be identified. These BMPs may include check dams, slope diversions, and temporary</p>

Resource	Potential Impact	Mitigation Measure
		<p>diversion dikes for runoff control. Other BMPs that could be implemented for sediment control could include compost filter berms and socks, fiber rolls, or berms; sediment basins, rock dams, filters, chambers, or traps; silt fences; and hay bales. Staked fiber rolls would be placed at all potential drainage features for the duration of construction and 2 weeks after completion of construction. Good housekeeping measures would be practiced during construction. Site-specific stormwater BMPs would be detailed in a construction SWPPP that would be prepared by the construction contractor prior to breaking ground. The SWPPP will also identify the applicable monitoring parameters and frequencies to be implemented in the case of storm events that occur during the construction period. The SWPPP will be submitted to the Lahontan Regional Water Quality Control Board and a copy must be maintained onsite during construction.</p>

### Biological Resources

Desert tortoise  
(May Affect, Not Likely  
to Adversely Affect)

**B-1:** Within two weeks prior to the onset of construction, a pre-construction desert tortoise survey shall be conducted by an authorized biologist within all work areas that contain desert tortoise habitat and that would be affected, directly or indirectly, by project activities. If no tortoises or active burrows are identified, then construction would proceed without interruption. If active burrows or tortoises are identified, construction would be delayed and consultation with the Fort Irwin Directorate of Public Works (DPW) Environmental Division regarding compliance with the USFWS Biological Opinion (BO) for Operations and Activities at Fort Irwin would occur.

Desert tortoise  
(May Affect, Not Likely  
to Adversely Affect)

**B-2:** Before construction begins, personnel working on the site shall receive a briefing on the desert tortoise, detailing the life history of a desert tortoise and the protocol to follow if a tortoise is encountered at the work site.

Desert tortoise  
(May Affect, Not Likely  
to Adversely Affect)

**B-3:** During construction, a biological monitor shall be available to observe construction activities and verify that no tortoises wander into the construction site. If a tortoise is present, construction in the immediate vicinity would be halted and coordination with the Fort Irwin DPW) Environmental Division regarding compliance with the USFWS BO for Operations and Activities at Fort Irwin would occur.

Resource	Potential Impact	Mitigation Measure
	Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-4:</b> To avoid wildlife pitfalls, at the end of each day, the biological monitor shall ensure that all potential wildlife pitfalls, such as trenches and bores, have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends or at certain distances to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations shall be inspected periodically throughout the day and at the end of the work day. Any wildlife encountered during the construction process shall be allowed to leave the construction area unharmed.
	Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-5:</b> To avoid entrapment of desert tortoise, any construction pipe, culvert, or similar structure with a diameter greater than three inches, stored less than eight inches above ground for one or more nights, shall be inspected for tortoises before the material is moved, buried, or capped. These structures may be capped or placed on pipe racks as an alternative to required inspections.
	Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-6:</b> Workers shall check underneath each on-site, parked vehicle or piece of equipment prior to moving it. If a desert tortoise is observed, the vehicle shall not be moved until the tortoise is relocated from the area.
	Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-7:</b> Prior to construction start construction boundaries will be clearly delineated on the ground using flagging, survey lath, or wooden stakes.
	Mohave ground squirrel	<b>B-8</b> To the most practicable extent possible, the construction crews shall site bore pits and other excavation in areas where squirrel burrows are not located.
	Other special-status species (Fauna) (Migratory Birds)	<b>B-9:</b> To avoid take of any species protected under the MBTA, a pre-construction nesting bird survey shall be conducted by a qualified biologist not more than seven (7) days prior to the onset of ground disturbance that is to occur between February 15 and September 15. The nest surveys shall include the project site and adjacent areas within 500 feet of the project site. If nesting migratory birds are not observed during the survey, site preparation and construction activities may begin. If an active migratory bird nest is located, a buffer shall be established around the nesting location at a distance recommended by the monitoring biologist in coordination with the Fort Irwin Directorate of Public Works (DPW) Environmental Division. Typically this is a

Resource	Potential Impact	Mitigation Measure
Other special-status species (Fauna) (Migratory Birds)	<b>B-10:</b>	<p>minimum of 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors), until juveniles have fledged and there is no evidence of a second attempt of nesting. Stakes or signs shall be used to clearly mark the nest buffer.</p> <p>Construction shall not be permitted within the buffer areas while the nest continues to be active. A biological monitor shall be present during construction to monitor the nest(s), make sure construction activities are not disturbing the nest, and document any findings. Once the monitoring biologist determines that the nest is no longer active, the buffer shall be removed and construction activities may resume in that area.</p> <p>Land and vegetation clearing should occur outside the breeding season for birds listed under the MBTA, defined as February 15 to August 31. If land and vegetation clearing occurs during the breeding season, then implementation of B-9 will prevent impacts to nesting birds during these activities.</p>
Other special-status species (Fauna) (Burrowing Owl)	<b>B-11:</b>	<p>A pre-construction take avoidance survey for burrowing owl shall be conducted no less than 14 days prior to initiating ground disturbing activities using the methods described in CDFW Staff Report on Burrowing Owl Mitigation (CDFW 2012) and in consultation with the Fort Irwin Directorate of Public Works (DPW) Environmental Division. Identified active nests shall be protected from disturbance with a buffer distance determined through monitoring the behavior of the owls and according to CDFW guidelines (2012) which identifies buffer distances based on the time of year and level of disturbance associated with construction activities.</p> <p>Mitigation measures could also include passive relocation of burrowing owls outside of the nesting season (September 1 through January 31). A specific mitigation methodology for the owl shall be determined in consultation with the Fort Irwin DPW Environmental Division.</p>
Other special-status species (Fauna) (Kit Fox)	<b>B-12:</b>	<p>During the pre-construction survey, biologists shall survey for desert kit fox dens. Active dens that are identified shall be flagged for avoidance and protected from ground-disturbing activities with a buffer distance determined through monitoring the behavior of the fox(es) and coordination with the Fort Irwin DPW Environmental Division. During the pup-rearing season, maternity dens shall be protected and avoided (1 January through 31 July). If avoidance of a non-maternity den</p>

Resource	Potential Impact	Mitigation Measure
		is not feasible, the Fort Irwin DPW Environmental Division shall be contacted about approved kit fox passive relocation measures (den collapse after burrow scoping) outside of breeding and pup-rearing season (August 1 to January 1).
	Other special-status species (Fauna) (Kit Fox)	<b>B-13:</b> Domestic dogs shall not be allowed on the construction site.
	Other special-status species (Fauna) (American Badger)	<b>B-14:</b> During the pre-construction survey, biologists shall survey for badger dens. If present, occupied badger dens shall be flagged for avoidance and ground-disturbing activities avoided within 50 feet of the occupied den. During the pup-rearing season, maternity dens shall be avoided (15 February through 1 July) and a minimum 200-foot buffer established. Buffers may be modified with the concurrence of the Fort Irwin Directorate of Public Works (DPW) Environmental Division. If avoidance of a non-maternity den is not feasible, the Fort Irwin DPW Environmental Division shall be contacted about approved badger relocation techniques.
	Pest species	<b>B-15:</b> To preclude attraction of common ravens and coyotes, construction trash, including construction worker food trash, shall be placed in sealed containers and emptied at the close of each business day. The project area shall be kept as clean of debris as possible. Each water source will be caged or netted to prevent use by ravens.
	Pest species	<b>B-16:</b> All road-killed animals shall be reported to the Fort Irwin Directorate of Public Works (DPW) Environmental Division, Natural Resources Section immediately.
	Pest species	<b>B-17:</b> Water used for construction shall be used in a manner that does not result in the formation of standing water that may attract pest species. Water trucks with open tops shall be covered securely at the end of each work day.
	Pest species	<b>B-18:</b> Structures shall have appropriate nesting deterrent mechanisms installed such as bird spikes and auditory or visual deterrents to discourage and/or prevent common ravens from using structures as nesting substrates.

Resource	Potential Impact	Mitigation Measure
Air Quality	Fugitive Dust	<p><b>A-1:</b> During construction the contractor shall employ dust suppression BMPs, to comply with MDAQMD Rules 403 and 403.2 to reduce fugitive dust. The Rules' requirements are below:</p> <p>Rule 403 – Fugitive Dust, requires fugitive dust emissions to be restricted such that visible dust does not travel beyond the property line, and requires minimization of fugitive dust to the extent possible.</p> <p>Rule 403.2 – Fugitive Dust Control for the Mojave Desert Planning Area, requires dust control measures to be implemented during construction, including watering, reduction of track out, covering of vehicles carrying loose materials, stabilization of graded areas, and reduction of nonessential earthmoving activities during high wind periods.</p>
Hazardous and Toxic Substances	Historic Ranges	<p><b>H-1:</b> A qualified UXO contractor shall monitor trenching activities in the areas in proximity to historic ranges, approximately 3.5 miles to 4.5 miles from the beginning of the alignment at the existing Verizon manhole pickup and approximately 0.5 mile to 1.5 miles from the beginning of the alignment at the existing Verizon manhole pickup. If a hazard is identified, construction in the immediate vicinity will be halted and coordination with the Fort Irwin DPW Environmental Division regarding removal of the hazard would occur. Additionally, project plans would include the development of an approved Spill Prevention, Control, and Countermeasures Plan (SPCCP) to avoid potential spills or leaks of contaminants associated with the Verizon fiber optic line.</p>
Transportation	Traffic	<p><b>T-1:</b> During construction a traffic control plan will be designed and implemented, which could include lane closures and detours. Flaggers would be used only where determined needed. The construction contractor will coordinate with appropriate Fort Irwin personnel to ensure that emergency operations are not impacted by construction activities. If necessary, construction could occur during low-traffic volume periods, such as at night.</p>

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# 1. Purpose and Need

## 1.1 Introduction

The United States (U.S.) Army National Training Center (NTC) at Fort Irwin is located approximately 37 miles northeast of Barstow, California, in the north-central part of the High Mojave Desert as shown on Figure 1-1 (Fort Irwin 2010). Fort Irwin encompasses approximately 1,190 square miles (761,405 acres). Approximately half of Fort Irwin's land area is used for desert battlefield training. A cantonment area occupies approximately three square miles and provides temporary and permanent living quarters for soldiers and their families along with the support facilities of the base. The cantonment area consists of residential areas, support facilities, retail centers, restaurants, and health care facilities.

Fort Irwin's population includes approximately 5,000 assigned military members, a 5,637 person civilian workforce, and 6,934 family members. In addition, approximately 6,300 soldiers visit Fort Irwin during training rotations, which occur ten times per year (Fort Irwin 2012).



Figure 1-1 Vicinity Map

This EA analyzes and documents potential impacts on the human and natural environment that would result from implementation of the Proposed Action or Alternatives. Details of the Proposed Action are provided in Section 2.

## 1.2 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to respond to increasing broadband demand in the Fort Irwin service area to support the installation's current and future broadband requirements for residential customers, government/education facilities, military activities, and businesses.

### 1.2.1 Project Need

Broadband capacity is insufficient to meet the needs of users in the Verizon Fort Irwin service area. Additional capacity is required to meet current and future broadband demand.

### 1.2.2 Project Objectives

The Proposed Action would achieve the following objectives:

- Provide sufficient data bandwidth for voice, video and data to Fort Irwin.
- Install a new fiber optic cable through the most cost-efficient and least environmentally damaging construction methods.

## 1.3 Scope of Analysis

This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations specified in 40 Code of Federal Regulations (CFR) Part 1500 through Part 1508, and 32 CFR Part 651. The purpose of this EA is to describe current environmental resources that may be affected by the Proposed Action and inform decision-makers and the public of the potential environmental consequences of the construction and operation of the Verizon Fort Irwin Fiber Optic Cable Project.

This EA identifies, documents, and evaluates potential environmental and socioeconomic effects of the Proposed Action, and alternatives to the Proposed Action, and seeks to ensure that appropriate consideration has been given to environmental resources. It includes a thorough evaluation of direct, indirect, and cumulative impacts, both temporary and permanent, that could occur as a result of implementing the Proposed Action. Reasonably foreseeable future actions are identified in Section 4. Any additional requirements stemming from other unrelated actions would undergo separate NEPA analysis and evaluation.

This EA also considers the potential impacts of the No Action Alternative, as required by NEPA. The No Action Alternative provides a benchmark against which the potential impacts of the Proposed Action and the alternatives can be compared.

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the Proposed Action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action and alternatives.

## 1.4 Framework for Decision-Making

The U.S. Army is the lead agency for completing a NEPA analysis for the Proposed Action. This EA will be used to identify any potentially significant impacts of the Proposed Action, to identify environmental concerns in advance of project implementation, and to discuss any appropriate mitigation measures for those concerns; it may also be used to support obtaining permits and approvals from other agencies, if required.

## 1.5 Issues

The Army separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the Proposed Action. Non-significant issues were identified as those: 1) outside the scope of the Proposed Action; 2) already decided by law, regulation, management plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, “...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...” A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the project administrative record.

As for significant issues, the Army identified no topics raised during scoping.

## 1.6 Agency and Public Participation

The U.S. Army invites public participation in the proposed federal action through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. All agencies, organizations, and members of the public having a potential interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process.

Public participation opportunities with respect to this EA and decision making on the Proposed Action are guided by 32 CFR Part 651. Upon completion of the EA, the Final EA and Draft Finding of No Significant Impact (FNSI) will be made available to the public for comment for a period of 30 days. At the end of the 30-day public review, the U.S. Army will consider all comments submitted by individuals, agencies, and organizations. As appropriate, the U.S. Army may then execute the FNSI and proceed with implementation of the Proposed Action. If it is determined that implementation of the Proposed Action would result in significant impacts, the U.S. Army would publish in the Federal Register a Notice of Intent to prepare an environmental impact statement or would not take the action.

Throughout this process, the public may obtain information on the status and progress of the Proposed Action and the EA through Mr. Clarence Everly, Fort Irwin Directorate of Public Works, Environmental Division, Building 602, P.O. Box 105085, Fort Irwin, California, 92310-5085 or via email to [clarence.a.everly.civ@mail.mil](mailto:clarence.a.everly.civ@mail.mil).

## 1.7 Relevant Statutes, Regulations, and Executive Orders

A decision on whether to proceed with the Proposed Action depends on numerous factors, including mission requirements, regulatory requirements, and environmental considerations. In addressing environmental considerations, Fort Irwin was guided by relevant statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These include, but are not necessarily limited to the following:

### 1.7.1 Federal Statutes

- Archeological Resources Protection Act of 1979 (16 United States Code [USC] 470)
- American Indian Religious Freedom Act of 1978 (42 USC 1996, as amended)
- Clean Air Act (CAA) (42 USC 7401 et seq., as amended)
- Clean Water Act (CWA) of 1977 and the Water Quality Act of 1987 (33 USC 1251 et seq., as amended)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (as amended by the Superfund Amendments and Reauthorization Act of 1986 [42 USC 9601 et seq.]
- Endangered Species Act of 1973 (ESA) (16 USC 1531-1543)
- Energy Policy Act of 2005 (42 USC 15801)
- Farmland Protection Act of 1981 (7 USC 4201 et seq., as amended)
- Fish and Wildlife Coordination Act (16 USC 661, et seq.)
- Migratory Bird Treaty Act (MBTA) (16 USC 701, et seq.)
- National Energy Conservation Policy Act (42 USC 8251)
- NEPA (42 USC 4321-4370)
- National Historic Preservation Act of 1966 (16 USC 470 et seq., as amended)
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq., as amended)
- Noise Control Act of 1972 (42 USC 4901 - 4918)
- Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC 6901)
- Toxic Substances Control Act (15 USC 2601 et seq., as amended)

### 1.7.2 Federal Regulations

- Army Regulation (AR) 190-13, The Army Physical Security Program
- AR 200-1, Environmental Protection and Enhancement

- AR 210-20, Installation Master Planning
- AR 385-10, The Army Safety Program
- AR 525-13, Antiterrorism
- Council on Environmental Quality Regulations for Implementing NEPA (Title 40 CFR, Parts 1500-1508 [40 CFR 1500-1508])
- Protection of Historic Properties (36 CFR Part 800)
- Environmental Analysis of Army Actions (32 CFR 651)

### 1.7.3 Executive Orders

- EO 11514, Protection and Enhancement of Environmental Quality (amended by EO 11991)
- EO 11988, Floodplain Management
- EO 11990, Protection of Wetlands
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 12372, Intergovernmental Review of Federal Programs
- EO 12580, Superfund Implementation
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- EO 12902, Energy Efficiency and Water Conservation at Federal Facilities
- EO 13007, Protection of Indian Sacred Sites
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risk
- EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition
- EO 13123, Greening the Government Through Efficient Energy Management
- EO 13149, Greening the Government Through Federal Fleet and Transportation Efficiency
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
- EO 13327, Federal Real Property Asset Management (amended by EO 13423)
- EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management

## 1.8 Permits, Approvals, and Agreements Required by Other Agencies

This section provides a listing and summary of some of the permits and approvals that may be needed for implementation of the proposed action. It is intended to provide the reader with a general understanding of the regulatory requirements that may need to be met prior to implementation of any of the proposed alternatives. Discussions with those agencies would be required to determine the specific nature of any future permits or approvals that might be required from those agencies. Their inclusion in this document is intended to acknowledge the potential role of these agencies and ensure their notification and subsequent inclusion of any comments from them. This listing is not intended to be all inclusive, for example there may be a variety of permits and approvals needed from local and regional agencies that are not reflected here. In addition, the permits and approvals required would vary depending on the implementing agency. A list of permits and approvals that may be required is provided in Table 1.8-1.

Table 1.8-1 Permits, Approvals, and Agreements Required by Other Agencies

<b>Permitting or Approval Agency</b>	<b>Permit or Approval</b>
California State Historic Preservation Office	Commenting Agency
California Department of Fish and Wildlife	Commenting Agency
Regional Water Quality Control Board – Lahontan Region	Notice of Stormwater Plan Compliance
Mojave Air Quality Management District	CAA General Conformity Determination
U.S. Army Corps of Engineers (USACE)	Commenting Agency
U.S. Fish and Wildlife Service (Service)	Commenting Agency

## 2. Description of Proposed Action and Alternatives

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This section describes the Proposed Action and Alternatives for implementation of the Verizon Fiber Optic Project. Alternatives were evaluated using an interdisciplinary approach. Potential alternatives were evaluated against the following criteria:

- Meets project purpose and need (see Section 1.2);
- Potential for land use and mission conflicts;
- Cost of construction, operation, and maintenance; and
- Technological feasibility.

From this process, five alternatives (the Proposed Action, Alternatives 1 through 3, and the No Action Alternative) were selected for detailed analysis.

### 2.1 Project Components

All alternatives are composed of three elements:

- Placing new conduit and fiber optic cable underground from an existing interconnection located on the west side of Fort Irwin Road approximately 0.25 mile southwest of the Fort Irwin welcome sign and static helicopter and tank display to the existing riser utility pole 4659666E located in the Fort Irwin cantonment area west of Barstow Road approximately 725 feet north of the intersection of Barstow Road and Outer Loop Road.
- Aerial placement of the fiber optic cable on existing utility poles from utility riser pole 4659666E to the Verizon Fort Irwin Central Office located in Building 12, north of Inner Loop Road and west of Barstow Road.
- Use of a 210-foot by 70-foot area for construction staging in the cantonment area south of Langford Lake Road and west of H Avenue.

The project alternatives include combinations of different routes for the underground and aerial components of the project. The staging area would be in the same location for all project alternatives. Project components are described in greater detail below.

#### 2.1.1 Underground Placement

Two routes are evaluated for the underground portion of the project.

##### 2.1.1.1 Underground Route A

Underground Route A would be approximately 7.8 miles in length. Underground Route A would begin at the existing Verizon manhole pickup located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter

and tank display. From here, the route would follow an existing tank trail approximately 165 feet west of Fort Irwin Road until the trail ends at Outer Loop Road. The route would cross Outer Loop Road and the fiber optic line would transition to an aerial route at existing riser utility pole 4659666E, approximately 725 feet north of the intersection of Barstow Road and Outer Loop Road (Figure 2-1).

Verizon would use the trenching construction method to construct the majority of Underground Route A. With this method a 14-inch-wide, 36-inch-deep trench would be excavated the majority of the length of the route, from the existing Verizon manhole pickup described above to Outer Loop Road, using back hoes. Where large rocks are encountered, a rock saw would be used. A four-inch sand cushion will be placed under the fiber optic cable, and the cable will be covered with 32-inches of native soil. The total work area that would be temporarily disturbed during construction would be approximately 30 feet wide (15 feet on center of the trench). A maximum of 1,000 feet of trench would be open each day. Any open trenches would be covered at the end of the day, and temporary fencing would be placed to secure each location for the duration the trenches remain open. This alternative would require approximately 4,000 gallons of water per day, or less than 1 acre-foot of water, for dust control and trench compaction.

Directional boring would be used to tunnel under Outer Loop Road to existing riser utility pole 4659666E to avoid cutting into the road surface. The directional bore portion of Underground Route A would be approximately 670 feet in length. Please see Section 2.1.1.2, below, for a more detailed description of the directional boring process. Detailed traffic control methods for construction in the cantonment area would be provided in a Traffic Control Plan (TCP) to be approved by Fort Irwin. Measures may include signs informing motorists to reduce speed, "Worker Ahead" signs, traffic cones, light boards, and flag control personnel as needed.

Hand holes (small access boxes) of dimensions 2-feet wide by 3-feet long by 30-inches deep would be placed along the route every 1,000 feet. Approximately 41 hand holes would be required. The hand holes will be buried a minimum of 10 inches below grade, and a geographic positioning system (GPS) locator device would be placed inside the hand hole to aid in locating the hand hole for future maintenance, if required. A 50-foot coil of fiber optic cable would be placed inside every third hand hole (every 3,000 feet). In the event of accidental damage to the fiber optic cable, these 50-foot coils would be used to repair the damaged cable.

### 2.1.1.2 Underground Route B

Underground Route B is approximately 8.1 miles in length. Underground Route B would begin at the same existing Verizon manhole pickup as Underground Route A. The pickup is located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter and tank display. The route would continue north/northeast on the west side of Fort Irwin Road, approximately 72 inches from the edge of pavement, to the intersection of Fort Irwin Road and Outer Loop Road, proceed west on the south side of Outer Loop Road and north on the west side of Barstow Road. Approximately 725 feet north of the intersection of Barstow Road and Outer Loop Road, the fiber optic line would transition to an aerial route at existing riser utility pole 4659666E (Figure 2-2).

Verizon would use a directional bore method of construction for Underground Route B. Directional boring, also called horizontal directional drilling, is a trenchless method of installing underground pipes, conduits, and cables in a shallow arc along a prescribed bore path using a surface-launched drilling rig. Directional boring is used when trenching or excavating is not practical, such as for crossing waterways or drainages, roadways, urban areas with traffic or other constraints, and environmentally sensitive areas. The process starts with the excavation of receiving hole and entrance pits. For the project at Fort Irwin, directional boring would be accomplished by placing 4-foot wide by 4-foot long by 40-inch deep bore and receiving pits 72 inches west of the edge of the pavement of Fort Irwin Road at approximately 1,000-foot intervals. Approximately 43 bore pits would be required for the 8.1-mile bore route. The total area that would be disturbed by boring is approximately 30 feet by 75 feet around the bore and receiving pits.

The first stage drills a pilot hole on the designed path, and the second stage (reaming) enlarges the hole by passing a larger cutting tool known as the back reamer. The third stage places the conduit in the enlarged hole by way of the drill stem; it is pulled behind the reamer to allow centering of the pipe in the newly reamed path.

For this project, two-inch schedule 40 polyvinyl chloride (PVC) conduit would be glued together the length of the bore and pulled from bore pit to receive pit. Upon completion of each section, duct plugs would be installed to prevent wildlife from entering the vacant conduit. These plugs would be removed during the cable placement phase. Approximately 43 hand holes, as described in Section 2.1.1.1, above, would be placed in the bore/receive pit locations. Fiber optic cable would be placed inside the 2-inch conduit, and a 50-foot coil of fiber optic cable would be placed inside each hand hole. In the event of accidental damage to the fiber optic cable, these 50-foot coils would be used to repair the damaged cable.

Horizontal directional drilling is done with the help of a viscous fluid known as drilling fluid. It is a mixture of water and bentonite or polymer continuously pumped to the cutting head or drill bit to facilitate the removal of cuttings, stabilize the bore hole, cool the cutting head, and lubricate the passage of the product pipe. Water for the drilling fluid would be obtained from Fort Irwin or brought from off-installation. The drilling fluid would be sent into a machine called a reclaimer, which removes the drill cuttings and maintains the proper viscosity of the fluid. Drilling fluids hold the cuttings in suspension to prevent them from clogging the bore. A clogged bore creates back pressure on the cutting head, slowing production. Drilling fluid would be collected with a vacuum in the bore pits and taken off-installation to the contractor's yard to dry out. Once dried, the spoils, which are not considered a hazardous waste and can be disposed in a municipal landfill.

If the directional bore is blocked by unforeseen geologic substructure, a 1-foot wide by 36-inch deep trench may be required to bypass the blockage. Directional boring would continue after the blockage is passed. With Underground Route B, trenching is expected to be limited because large boulders and other obstructions are likely to have been removed during the construction of Fort Irwin Road.

Open bore and receive pits would be barricaded and temporary fencing would be placed to secure each location for the duration the pits remain open. Detailed traffic control methods for construction along Fort Irwin Road and in the cantonment area would be provided in a TCP to be approved by Fort Irwin.

Routine maintenance of the fiber optic line would not occur. If specific repairs are required, the fiber optic line would be accessed using the hand holes and would be repaired using the 50-foot coils of fiber optic line that were left in the hand hold during construction.

## **2.1.2 Aerial Placement**

### **2.1.2.1 Aerial Placement Route A**

Both underground routes end with the placement of the fiber optic line on existing riser utility pole 4659666E. Aerial Placement Route A is approximately one mile in length. With Aerial Placement Route A, the line would cross Barstow Road continue north on existing poles on the east side of Barstow Road, cross Barstow Road and Bastogne Street, continue north on the west side of Bastogne Street, travel briefly east on the north side of Salerno Drive to poles on the west side of Barstow Road, then travel north to terminate at the existing Verizon Fort Irwin Central Office located in Building 12 (Figure 2-3). All cable would be placed on existing utility poles in compliance with California General Order 95 Rules for Overhead Line Construction. Detailed traffic control methods for construction in the cantonment area would be provided in a TCP to be approved by Fort Irwin.

Routine maintenance of the fiber optic line would not occur. Specific repairs would be made as-needed.

### **2.1.2.2 Aerial Placement Route B**

Aerial Placement Route B would also begin at existing utility riser pole 4659666E and end at Building 12, and would also be approximately one mile in length. The line would remain on the west side of Barstow Road until its terminus at Building 12 (Figure 2-4). Existing utility poles would be used, and all cable would be placed in compliance with California General Order 95 Rules for Overhead Line Construction from equipment located on existing paved and dirt roads. Detailed traffic control methods for construction in the cantonment area would be provided in a TCP to be approved by Fort Irwin.

Routine maintenance of the fiber optic line would not occur. Specific repairs would be made as-needed.



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Map Date: 9/23/2015  
Photo Source: NAIP 2014

**Figure 2-1. Underground Route A**

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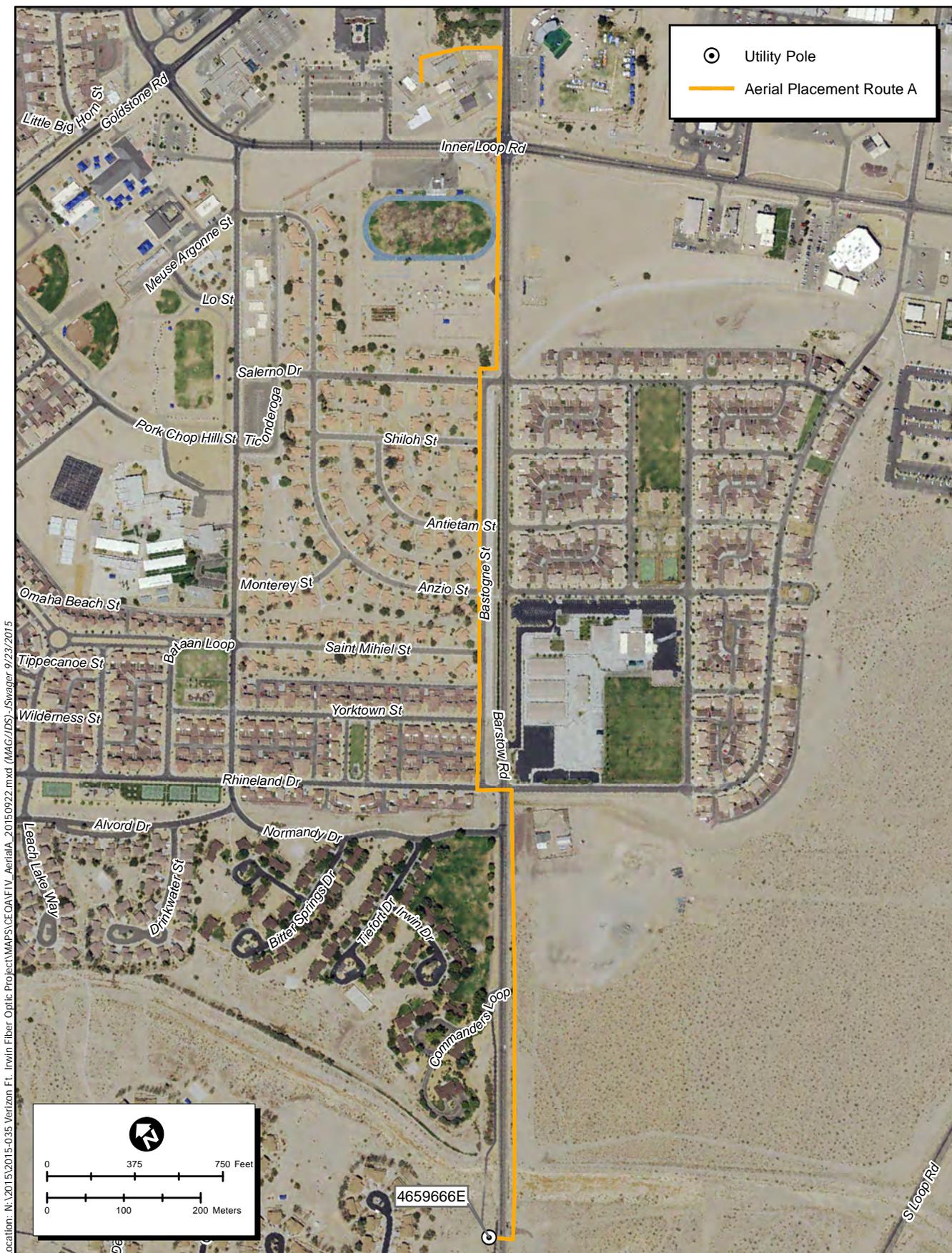
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Photo Source: NAIP 2014

**Figure 2-2. Underground Route B**

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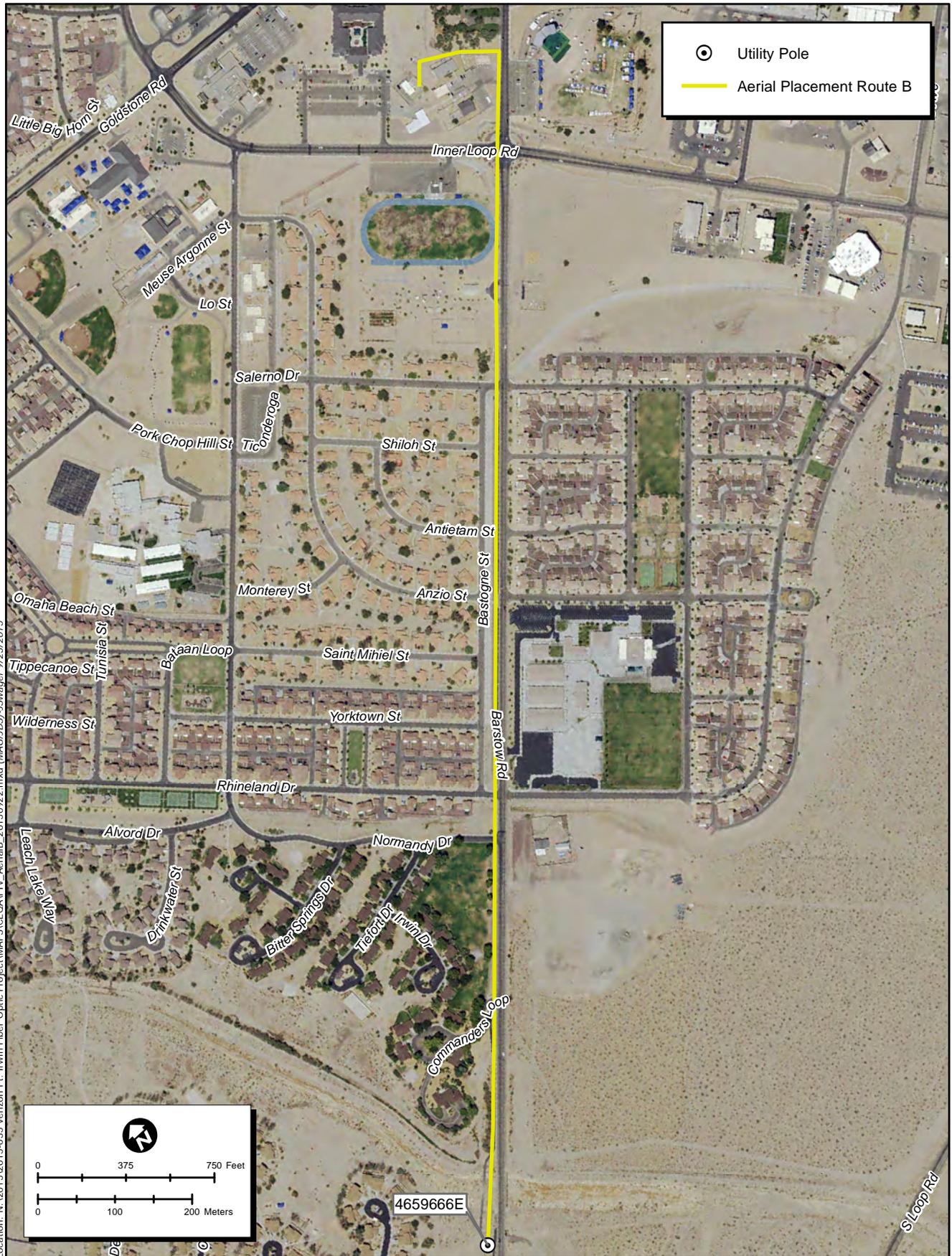


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**Figure 2-3. Aerial Placement Route A**

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 Photo Source: NAIP 2014

**Figure 2-4. Aerial Placement Route B**

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### 2.1.3 Staging Area

A staging area has been identified by Fort Irwin for temporary use by the project. The staging area would be located within the cantonment in the area known as Green Acres, northwest of the intersection of South Loop Road and Langford Lake Road (Figure 2-5). Green Acres is regularly used by contractors working at Fort Irwin to stage material, equipment, and for trailer space. The staging area would be an approximately 210-foot-long by 70-foot-wide area with a concrete pad and gravel. An existing fueling station is located southeast of the staging area.

## 2.2 Proposed Action

The Proposed Action would include the following project components:

- Underground Route A;
- Aerial Placement Route A; and
- Staging Area.

The Proposed Action is anticipated to begin construction in spring 2016 and would take approximately 13 to 18 weeks to complete the underground portion of the project, which includes 11 to 16 weeks for trenching and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately 3 weeks. The total construction time is estimated to be 16 to 21 weeks.

## 2.3 Alternative 1

Alternative 1 would include the following project components:

- Underground Route B;
- Aerial Placement Route A; and
- Staging Area.

This alternative is anticipated to begin construction in spring 2016. The directional bore portion of the project would take approximately eight weeks to complete, including six weeks for substructure installation and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately 3 weeks. The total construction time is estimated to be 12 weeks.

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**Figure 2-5. Staging Area**

2015-035 Ft. Irwin Verizon

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## 2.4 Alternative 2

Alternative 2 would include the following project components:

- Underground Route A;
- Aerial Placement Route B; and
- Staging Area.

This alternative is anticipated to begin construction in spring 2016 and take 16 to 21 weeks to complete, similar to the Proposed Action.

## 2.5 Alternative 3

Alternative 3 would include the following project components:

- Underground Route B;
- Aerial Placement Route B; and
- Staging Area.

This alternative is also anticipated to begin construction in 2016 and take 12 weeks to complete, similar to Alternative 1.

## 2.6 No Action Alternative

With the No Action Alternative, the fiber optic line would not be installed at Fort Irwin. Environmental consequences associated with the Proposed Action would not occur within Fort Irwin including those related to construction, operation, and maintenance of the Proposed Action. Although the environmental consequences associated with the project would not occur, the installation would continue to have insufficient data bandwidth for voice, video and data.

## 2.7 Alternatives Considered but Not Carried Forward

Two potential alternatives were considered but not carried forward for detailed analysis. These alternatives were evaluated to determine whether they could provide a feasible alternative but were rejected because they did not meet one or more of the project objectives.

The alternative of using a directional bore method of construction along the tank trail (Underground Route A) was evaluated but not carried forward because this type of installation method would not be feasible due to the rocky nature of the soil. Therefore, the alternative of using a directional bore method for Underground Route A was not carried forward for detailed analysis.

The alternative of using trenching to install the fiber optic line along Fort Irwin Road (Underground Route B) was evaluated but not carried forward because this type of installation method would potentially cause greater disruption to the Fort Irwin Road infrastructure and traffic patterns than the directional bore construction method. Therefore,

the alternative of trenching for Underground Route B was not carried forward for detailed analysis.

## 3. Affected Environment

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Chapter 3 describes the existing environmental conditions of the area that could be affected by implementation of the Proposed Action or Alternatives (Project area). These resources include land use planning and aesthetics, geology/soils, biological resources, water resources, air quality, noise, cultural resources, socioeconomics, hazards and toxic substances, and transportation and utilities.

### 3.1 Resources Not Affected

The Proposed Action, Alternative 1, Alternative 2, Alternative 3, and the No Action Alternative would not affect coastal barriers, coastal zone management, farmlands, floodplains, housing, community services, transportation, or wild and scenic rivers. These resource areas are not discussed in this EA.

### 3.2 Land Use Planning and Aesthetics

The attributes of land use addressed in this analysis focus on general land use patterns, management plans, policies, and regulations. These provisions determine the types of land uses that are allowable and identify appropriate design and development standards to address specially designated or environmentally sensitive areas.

#### 3.2.1 Surrounding Land Use

The northern boundary of Fort Irwin is just south of Death Valley National Park, and the western boundary is adjacent to Naval Air Weapons Station (NAWS) China Lake. Much of the land southwest, south, and east of Fort Irwin is in public ownership and administered by the Bureau of Land Management (BLM) and State of California (U.S. Army Corps of Engineers [USACE] 2006). Small areas of land are privately owned, primarily to the south, in the vicinity of Barstow. Surrounding areas are mostly unpopulated and used for activities such as grazing, mining, or recreation (BLM 1996). Barstow and the nearby smaller communities of Lenwood, Hinkley, Yermo, Daggett, and Newberry Springs are all located more than 30 miles southwest of the Fort Irwin cantonment area.

Certain operations associated with Fort Irwin extend beyond the boundary of the installation. These include use of railroad sidings along the Union Pacific Railroad at the nearby communities of Yermo and Manix, the Southern California Logistics Airport, the Barstow-Daggett Airport, a tank trail from Manix north to the cantonment area, and Fort Irwin Road from Barstow to the installation.

#### 3.2.2 Installation Land Use

Fort Irwin is generally divided into non-maneuver and maneuver areas. Non-maneuver areas include the cantonment of Fort Irwin (approximately 15,300 acres), Leach Lake impact area (89,860 acres), Goldstone Deep Space Communications Complex (32,960 acres), environmental conservation areas (23,971 acres, primarily desert tortoise critical habitat), archaeological sites (3,250 acres), and recreation areas (7,100 acres). Also included in non-

maneuver areas are 111,900 acres of impassable areas that have slopes greater than 20 percent and where use of armored, mechanized, and wheeled vehicles is prohibited. The cantonment area is the urbanized area of Fort Irwin and has the features of a small community, including family housing, commercial uses, recreational areas, community facilities, utilities, base operations, and administration. Maneuver areas cover the remaining 56 percent of the installation (about 358,700 acres) and are predominantly used for military maneuvers, live fire, and force-on-force training (USACE 2006).

Bicycle Lake Army Airfield is 2.5 miles north of the cantonment area. This tactical airfield acts as a forward staging base for aircraft operations associated with Fort Irwin's mission. There are four helipads on the installation – one at the Ammunition Supply Depot, one at Weed Army Community Hospital, and two in the range and training areas.

### 3.2.3 Proposed Project Location

Combinations of two Underground Routes and two Aerial Placement Routes compose the Proposed Action and Alternatives.

#### 3.2.3.1 Underground Route Locations

Both Underground Routes begin along Fort Irwin Road in the vicinity of the helicopter and tanks static display at the Welcome to Fort Irwin entrance sign and end at existing utility riser pole 4659666E in the cantonment area. Underground Route A would follow an existing tank trail approximately 165 feet west of Fort Irwin Road until the trail ends at Outer Loop Road. The route would then cross Outer Loop Road and the fiber optic line would transition to one of two aerial routes (Figure 2-1). Underground Route B is located along the west side of Fort Irwin Road, approximately 72 inches from the edge of pavement. It would continue north/northeast to the intersection of Fort Irwin Road and Outer Loop Road, proceed west on the south side of Outer Loop Road and north on the west side of Barstow Road where it would transition to one of the two Aerial Placement Routes (Figure 2-2). From the helicopter and tanks static display at the Welcome to Fort Irwin entrance sign to NASA Road both Underground Route A and Underground Route B traverse through lands designated for training. From NASA Road to Outer Loop Road both routes traverse through lands designated for recreation. Once inside the cantonment area (north of Outer Loop Road), Underground Route A would border Residential (RES) land use designations. Underground Route B would cross RES and Community (CMY) land use designations.

#### 3.2.3.2 Aerial Placement Route Locations

Both Aerial Placement Routes begin at existing utility riser pole 4659666E and end at Building 12. The fiber optic cable would be placed on existing utility poles for both routes. Aerial Placement Route A would begin at existing utility riser pole 4659666E, cross Barstow Road, continue north on existing poles on the east side of Barstow Road for approximately, cross Barstow Road and Bastogne Street, continue north on the west side of Bastogne Street, travel briefly east on the north side of Salerno Drive to poles on the west side of Barstow Road, then travel north to terminate at the existing Verizon Fort Irwin Central Office located in Building 12 (Figure 2-3). Aerial Placement Route B would also begin at existing utility riser pole 4659666E and end at Building 12. The line would remain on the west side of Barstow Road until its terminus at Building 12 (Figure 2-4). Both Aerial Placement Routes

would pass through RES, CMY, Professional/Industrial (PRO), and Troop (TRP) land use designations (Fort Irwin 2008).

### 3.2.3.3 Staging Area

The Staging Area would be located in the area known as Green Acres, northwest of the intersection of South Loop Road and Langford Lake Road. This area has an Industrial (IND) land use designation.

## 3.3 Geology, Soils, and Mineral Resources

This section describes the physiography, geology, seismicity, mineral resources, and soils in the region of influence (ROI) for the Project area, which is defined as the areas affected by the Proposed Action and Alternatives.

### 3.3.1 Physiography

Fort Irwin is situated in the Mojave Desert physiographic province. This area is characterized by high mountain peaks and ridges that are separated by broad alluvial fans and wide flat valleys. The average elevation of the Mojave Desert is approximately 2,500 feet above mean sea level (amsl). The Basin and Range physiographic province is located to the east, and the Sierra Nevada Range is located to the north of Fort Irwin (USACE 2006). The Mojave Desert is bounded on the west by the northwest-southeast-trending San Andreas Fault and on the north by the east-west-trending Garlock Fault. The Mojave Block is the term used to generally describe the area between these faults that define the Mojave Desert.

Fort Irwin covers an area of approximately 1,190 square miles and contains several drainage basins. The cantonment area is situated within the Irwin groundwater basin, which is bounded on the east-northeast by Beacon Hill, on the northwest by Northwest Ridge, on the west by Southwest Ridge, and on the south by low-lying hills that separate the Irwin groundwater basin from the Langford Lake groundwater basin to the south.

The Project area's underground route would start at the helicopter and tanks static display at the Welcome to Fort Irwin entrance sign, and follow along either Fort Irwin Road or the existing tank trail (165 feet west of Fort Irwin Road) until Outer Loop Road. Once the route crosses under Outer Loop Road, the fiber optic cable would transition to an aerial placement route at existing riser utility pole 4659666E. It would then be placed on existing utility poles until it terminates at Building 12 in the cantonment area.

### 3.3.2 Geology

Geologic formations at Fort Irwin range in geologic time from the Precambrian era (over 600 million years ago) to the Holocene era (11,000 years ago to present). In general, geologic formations in the region consist of the Avawatz Mountains, Paleozoic sediments, Triassic metasedimentary and metavolcanic rocks, and Tertiary sediments and volcanic rocks. The Quail Mountains are located along the Garlock Fault zone and are composed generally of Mesozoic granitic and metamorphic rocks.

Unconsolidated deposits at Fort Irwin include alluvium (clay, silt, sand, and gravel), aeolian (dune) sand, and playa deposits. In some areas of Fort Irwin, the alluvial materials result in clean sands and gravels that serve as water-bearing units. Other alluvial deposits contain

fine-grained material, including silts and clays. In general, alluvium increases in thickness from edges of basins to their central floors. Alluvial valley fill forms the most important water-bearing unit in the vicinity of the project area. Numerous dry lakes exist at Fort Irwin. The thickness of deposits underlying many of these dry lakes is unknown; however, playa deposits of the Mojave Desert generally range from a few feet to 100 feet thick (USACE 2006).

### 3.3.3 Seismicity

The Mojave Desert region, including Fort Irwin, has experienced moderate seismicity in the past. Death Valley Fault, located northeast of Fort Irwin, is a right-lateral, strike-slip fault that extends along the northeastern Avawatz Mountains and eastern Soda Mountains. Segments of Death Valley Fault have exhibited evidence of movement within the past 10,000 years. Garlock Fault, located north of Fort Irwin, is a major east-west trending fault in California. Garlock Fault is a strike-slip fault with left-lateral displacement and separates the Basin and Range province from the Mojave Desert province. Seismicity has been observed along the eastern portion of Garlock Fault. The Death Valley and Garlock Fault zones intersect in the eastern portion of Fort Irwin (USACE 2006). The Project area is located near Fort Irwin Road southwest of the cantonment area and inside the cantonment area. The Garlock Fault is located approximately 20 miles north of the proposed site.

Other faults in the region include the Mule Spring Fault, Manix Fault, an unnamed fault that runs between East Cronese Lake and Red Pass Lake, several faults in the Soda Mountains, and a fault along the northwest flank of the Silurian Hills. The Mule Spring Fault extends the length of the northern Avawatz Mountains, and the Manix Fault runs roughly parallel to Interstate 15 south of Fort Irwin (USACE 2006).

The California Division of Mines and Geology (CDMG) has not identified any Alquist-Priolo Fault-Rupture Hazard Zones in the cantonment at Fort Irwin, although several faults in the Irwin groundwater basin show evidence of displacement during the past 1.6 million years (CDMG 1999). The faults that show displacement include Bicycle Lake Fault, Garlic Spring Fault (which trends northwest from Garlic Spring and along the north edge of the cantonment), a concealed fault that parallels Garlic Spring Fault about 1,300 feet to the south, and an unnamed fault that trends approximately east-west from south of Bicycle Lake across the cantonment. None of these faults has been identified as being active within the past 11,000 years (USACE 2006).

The closest fault to the Project area is the Garlic Spring Fault. An approximated section of the Garlic Spring Fault extends northwest from Garlic Spring towards the cantonment. This approximated section is located less than a mile southwest of the Project area (CDMG 1962).

### 3.3.4 Mineral Resources

Mineral resources at Fort Irwin include precious metals and geothermal resources. Although minerals exist at Fort Irwin, no mining or exploration is carried out within the original boundaries of the installation due to the exclusion signed by President Roosevelt in the 1940s. The installation has known gold reserves and potentially has silver. No known petroleum reserves are onsite. Geothermal resources are too low in temperature to have commercial value (USACE 2006).

### 3.3.5 Soils

The landscape in the vicinity of Fort Irwin is dominated by alluvial basins that lie between mountain ranges. Mountain tops in the region have been eroded, exposing outcrops of bedrock, while the land between consists of a variety of coarse and fine sediment materials.

Soils commonly occurring in the region include coarse materials derived from mountainous rock and finer materials located on the valley floors. Soils located on the alluvial fans along the bases of mountain ranges (upper bajadas) consist of coarse gravels that change to loamy gravels toward the toe of alluvial fans. Soils on the lower bajadas include sandy loams and finer loamy materials. Dry lakes (playas) located at the bottom of basins have silts and clays and typically develop salt pans (USACE 2003; USACE 2006).

Desert soils found in the region develop slowly and are fragile. Desert soils that are disturbed are highly susceptible to wind and water erosion. In addition, desert soils are highly vulnerable to compaction. Activities such as vehicle movement disturb the soil crusts, leaving them vulnerable to erosion by wind and water (USACE 2006).

Another characteristic of some soils in the region is the formation of desert pavement. Desert pavement consists of a surface crust of pebbles and rocks that have developed a coating of manganese oxide due to sun exposure, rendering the surface dark and shiny. Desert pavement results from wind movement on the sand; however, once formed, desert pavement protects fragile soils from further erosion. Once desert pavement is removed, re-establishment could take several thousand years (USACE 2006).

Soils within the Project area have been mapped as Garlock-Ambrosia-Arizo Complex (2 to 8 percent slopes), Arizo Complex (2 to 8 percent slopes), and Fortirwin-Golddivide-Arizo association (2 to 8 percent slopes) (NRCS 2015).

The location of both underground alternatives is in high-desert terrain on near-level ground with a surface cover of sand, gravel, cobble, rocks, and sparse vegetation. Underground Route A has been disturbed by an existing tank trail and Underground Route B has been disturbed by the existing Fort Irwin Road. Both aerial placement alternatives would be located on existing utility poles within the cantonment area.

## 3.4 Biological Resources

Biological resources include plants (flora) and animals (fauna) and the habitats in which they occur. Major vegetation communities are described in terms of the representative species present with special attention placed on special-status species (i.e., those afforded some level of federal, state, or local protection such as the Lane Mountain milkvetch). General wildlife species expected to occur also are described, again with emphasis placed on special-status species such as the desert tortoise, Mohave ground squirrel, southwestern willow flycatcher, and Least Bell's vireo.

A biological report was prepared by ECORP Consulting for the Project area in July 2015. In order to characterize the baseline biological conditions within the Project area, ECORP conducted a background review, vegetation mapping, assessment of special-status species potential for occurrence, focused desert tortoise surveys, focused rare plant surveys, Mohave ground squirrel camera study, Mohave ground squirrel trapping surveys, and

jurisdictional delineation. The results of the biological studies are discussed below. The section begins with a discussion of a number of regulatory considerations pertinent to biological resources at Fort Irwin.

### 3.4.1 Regulatory Considerations

Regulations concerning biological resources are discussed below.

**Endangered Species Act (ESA).** The ESA (16 USC Sections 1531 et. seq.) was established to protect and allow for recovery of species in danger of extinction and the associated habitat. Species in the ESA may be listed as endangered or threatened. Endangered species includes those in danger of extinction throughout all or a large amount of its range. Threatened includes species likely to become endangered within the foreseeable future. The ESA also protects habitat considered critical to the existence and recovery of listed species. Federal projects with potential to affect a listed species or critical habitat are required to consult with the U.S. Fish and Wildlife Service (USFWS 1973).

**Recovery Plans.** Recovery plans are developed as required under the ESA. The plans are documents that detail the specific management practices and tasks needed to enable the recovery of species listed under the ESA. Recovery plans offer guidelines for private, federal, and state cooperation in conserving threatened and endangered species and areas where such species are or historically have been distributed. Current management direction requires that any action conform to any USFWS recovery plan for federally listed species. A recovery plan must include the following components: a description of site-specific management actions necessary to achieve the goals of the plan; objective measurable criteria, which, when met, would result in a determination that the species no longer needs the protection of the ESA and can be removed from the list; and estimates of the time and costs required to carry out the plan and to achieve intermediate steps toward the goal.

Within the vicinity of the Proposed Action and Alternatives, there is an existing recovery plan for one species: the desert tortoise (*Gopherus agassizii*). The original desert tortoise recovery plan was issued by the USFWS in 1994 (USFWS 1994); the USFWS issued a revised recovery plan for desert tortoise in 2011 (USFWS 2011).

**California Endangered Species Act (CESA).** The purpose of CESA is to ensure that all native species of flora and fauna, including associated habitat, threatened by extinction and/or significantly declining populations that could lead to a threatened or endangered designation, are protected. The CESA is maintained by a list of state threatened and endangered species to the California Department of Fish and Wildlife (CDFW). CESA encourages consultation with CDFW if a Proposed Action may affect a state listed species.

**Migratory Bird Treaty Act (MBTA).** The purpose of the MBTA (16 USC Section 703 et. seq.) is to allow for protection of migratory birds. The MBTA states that it is unlawful to pursue, hunt, take, capture, or kill a migratory bird by any means, including any part, egg, or nest. The list of bird species protected by the MBTA is included in 50 CFR Section 10.13.

**Bald and Golden Eagle Protection Act of 1940.** Under the Bald and Golden Eagle Protection Act, 54 Stat. 251, as amended (16 U.S.C. Sections 668 through 668d), it is illegal to possess, sell, transport, or trade American bald or golden eagles, dead or alive, their nests, or their eggs. The Secretary of the Interior can issue a permit for taking or transporting eagles for

scientific, exhibition, and religious purposes or for transporting nests if the eagles interfere with resource development. Searches, seizures, and arrests are authorized by this act. Infrastructure must be built, installed, or expanded in such a manner as to avoid disturbing bald and golden eagles. If a nest is discovered in the affected area, a permit must be obtained to transport the nest to another site.

**Sikes Act and Sikes Act Improvement Amendments.** The Sikes Act, Pub. L. 86-797, as amended (16 U.S.C. Sections 670 through 670f), requires the Secretary of Defense to provide for conserving and rehabilitating natural resources on military installations; for sustaining multipurpose use of the resources (including hunting, fishing, trapping, and non-consumptive uses); and for public access to military installations, subject to safety requirements and military security. To facilitate the program, the Secretary of the Army is required to prepare and implement an Integrated Natural Resource Management Plan (INRMP). Fort Irwin has prepared an INRMP (USACE 2006), which describes existing conditions and acts as a resource management guide for the installation.

**Management of Natural Resources—Land, Forest, and Wildlife.** The Management of Natural Resources – Land, Forest, and Wildlife, Army Regulation (AR) 200-3, prescribes current Army policies, procedures, and standards for conserving, managing, and restoring land and the renewable natural resources consistent with and in support of military mission and national policies.

#### **California Fish and Game Code (FGC)**

Nesting birds: California FGC Sections 3800, 3513, and 3503.5 incorporate the regulations of the federal MBTA to apply to the protection of all birds occurring naturally in California, except for game birds. According to these FGC Sections, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, including birds of prey.

Streambed Alteration Notification/Agreement: California FGC Section 1602 requires that a Streambed Alteration Application be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the Proposed Actions and, if necessary, submits to the Applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the Applicant is the Streambed Alteration Agreement. Often, projects that require a Streambed Alteration Agreement also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap.

The California Water Code (CWC) provides the state authority over water uses, including beneficial uses, and describes state policy over water and water rights. Division 7 of the CWC describes the state’s protective measures for water quality in particular, including the Porter-Cologne Water Quality Control Act (Porter-Cologne).

California Water Code and Porter-Cologne Water Quality Control Act: Under Porter-Cologne, the State Water Resources Control Board has jurisdiction over state water rights and water quality policy. Under supervision of the State Board, water quality for state waters is overseen by nine Regional Boards on a day-to-day basis at the local/regional level. The local Regional Board for a given project issues permits to control pollution (i.e. waste-

discharge requirements, for instance) that implement water quality standards. Regional Boards also regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Under Porter-Cologne, projects that discharge waste must file a report of waste discharge with the appropriate regional board and no discharge may take place until the Regional Board issues waste discharge requirements or a waiver thereof. Under the auspices of the U.S. Environmental Protection Agency, the State Board and nine Regional Boards also have the responsibility of granting Clean Water Act National Pollutant Discharge Elimination System permits, commonly known as NPDES permits, for certain point-source discharges.

California Fully Protected Species: California FGC Section 4700 implement the Fully Protected Species Statute which regulates that fully protected species may not be taken or possessed at any time. The State of California first began to designate species as “fully protected” prior to the creation of the CESA and FESA. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, mammals, amphibians and reptiles, birds and mammals. Most fully protected species have since been listed as threatened or endangered under CESA and/or FESA. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

Native Plant Protection Act: California FGC Sections 1900-1913 implements the Native Plant Protection Act (NPPA) of 1977. The NPAA was created with the intent to “preserve, protect and enhance rare and endangered plants in this State.” The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take. The CESA of 1984 (California Fish and Game Code Section 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California FGC.

## 3.4.2 Flora

### 3.4.2.1 Vegetation Communities

The flora of Fort Irwin is described in the installation INRMP, which is the source of material presented here (USACE, 2006). Nine vegetation communities and two land cover types were mapped within the Project area and immediately surrounding areas (within 450 feet), which are listed below in Table 3.4-1 below. Dominant vegetation communities include creosote bush scrub, desert wash scrub, and disturbed saltbush scrub. Each vegetation community that was mapped during the survey effort is discussed separately below. Table 3.4-2 shows the vegetation communities encompassed by each project component (ECORP 2016a).

Table 3.4-1 Vegetation Communities Present Within and Adjacent to the Project Area

Vegetation Community/Land Cover Type	Within Project Area	Outside Project Area (within 450 feet)
creosote bush scrub	X	X
disturbed creosote bush scrub	X	X
Undisturbed desert wash scrub	X	X
disturbed desert wash scrub		X
desert wash scrub/creosote bush scrub	X	X
Undisturbed saltbush scrub		X
disturbed saltbush scrub	X	X
Mojave mixed woody scrub	X	X
creosote bush scrub/saltbush scrub		X
disturbed	X	X
developed	X	X

Table 3.4-2. Vegetation Communities per Project Component

Vegetation Community/Land Use	Acres				
	Underground Route A	Underground Route B	Aerial Route A	Aerial Route B	Staging Area
undisturbed creosote bush scrub	2.82	0.06	0	0	0
disturbed creosote bush scrub	0.27	0.49	0	0	0
undisturbed desert wash scrub	0.82	0.28	0	0	0
undisturbed desert wash scrub/creosote bush scrub	0.47	0	0	0	0
disturbed saltbush scrub	0	1.48	0	0	0
Undisturbed Mojave mixed woody scrub	0	0.04	0	0	0
<i>Vegetation Community Subtotal</i>	<i>4.39</i>	<i>2.35</i>	<i>0</i>	<i>0</i>	<i>0</i>
Disturbed	23.66	26.49	0	0	0
Developed	0.15	0.58	0	0	0.34
<b>Total</b>	<b>28.19</b>	<b>29.42</b>	<b>0</b>	<b>0</b>	<b>0.34</b>

**Creosote Bush Scrub (Disturbed and Undisturbed).** Creosote bush scrub, an association dominated by the large shrub creosote bush (*Larrea tridentata*), is the most widespread community at Fort Irwin, occurring throughout the range below 3,610 feet on alluvial slopes, valley floors, and mountain slopes. Many subdominant shrubs typically occur in creosote bush scrub, including range rhatany (*Krameria erecta*), desert straw (*Stephanomeria pauciflora*), wishbone bush (*Mirabilis bigelovii*), and cheesebush (*Ambrosia salsola*) (USACE 2006). Subdominant shrubs that were observed growing within creosote bush scrub

included white bur-sage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), California jointfir (*Ephedra californica*), Mojave Desert California buckwheat (*Eriogonum fasciculatum* var. *polifolium*), and water jacket (*Lycium andersonii*). Within the alignment for Underground Route A, approximately 2.82 acres of this community were undisturbed while approximately 0.27 acre was disturbed. Within the alignment for Underground Route B, approximately 0.06 acre of this community was undisturbed, while approximately 0.49 acre was disturbed. The alignment for Aerial Placement Route A had a portion of disturbed creosote bush scrub adjacent to the alignment. This community is considered suitable habitat for the desert tortoise, rare plants, MGS, and other special-status plant and wildlife species (see Section 4.3).

**Desert Wash Scrub (Disturbed and Undisturbed).** Desert wash scrub is a low, shrubby, diverse community occurring in open washes, arroyos, and canyons throughout the desert. Within the Project area, dominant shrubs of this vegetation community that were observed included cheesebush (*Ambrosia salsola*), desert alyssum (*Lepidium fremontii*), indigo bush (*Psoralea arborescens* var. *minutiflora* and *P. a.* var. *arborescens*), sandpaper plant (*Petalonyx thurberi*), and desert senna (*Senna armata*). Within the alignment for Underground Route A, approximately 0.82 acre was undisturbed and within the alignment for Underground Route B, approximately 0.28 acre of this community was undisturbed. Disturbed Desert wash was mapped in the surrounding areas but not within the Project area. In many cases it was observed that desert wash scrub vegetation communities were disturbed by vehicular travel or diverted by human-made structures, such as rip-rap piles associated with bridge construction.

**Desert Wash Scrub/Creosote Bush Scrub (Undisturbed).** The alignment for Underground Route A contained approximately 0.47 acre of a community intergrade between desert wash scrub and creosote bush scrub, but this community was not present in the alignment for Underground Route B. This community is considered suitable habitat for the desert tortoise, rare plants, MGS, and other special-status plant and wildlife species (see Section 4.3).

**Saltbush Scrub (Disturbed and Undisturbed).** Saltbush scrub is characterized by the dominance of one or more species of saltbush (*Atriplex* spp.). Saltbush scrub is associated with moderately alkaline soils toxic enough to inhibit most desert shrubs that occur in the creosote bush scrub. It commonly occurs on lower bajada slopes and plains and around playas throughout most of the desert (Holland 1986). Good examples of saltbush scrub can be found on playas along margins of dry lakes on Fort Irwin. Underground Route A was not found to contain this vegetation community. Within the alignment for Underground Route B, approximately 1.48 acres of this community were found to have a level of disturbance associated (disturbed). Undisturbed saltbush scrub was only found in the areas surrounding the Project area. The dominant shrubs of this vegetation community that were observed included allscale (*Atriplex polycarpa*). A subdominant species that was observed on occasion included spiny hopsage (*Grayia spinosa*). Saltbush scrub was mainly observed growing in close proximity to Fort Irwin Road. This community is in the process of recovering and is therefore considered suitable habitat for the desert tortoise, rare plants, MGS, and other special-status plant and wildlife species (see Section 4.3).

**Creosote Bush Scrub/Saltbush Scrub (Undisturbed).** An intergrade of creosote bush scrub and saltbush scrub was observed in the median between the northbound and southbound traffic

lanes on Fort Irwin Road. This community did not occur within the Project area but was mapped within the surrounding areas. This community is considered suitable habitat for the desert tortoise, rare plants, MGS, and other special-status plant and wildlife species (see Section 4.3).

**Mojave Mixed Woody Scrub. (Undisturbed).** Mojave mixed woody scrub was not observed to be a dominant vegetation community within the Project area however, it was observed in a few locations interspersed within rock/boulder outcrops in the Underground Route B alignment. Plant species observed within the Mojave mixed woody scrub vegetation community included desert brickellia (*Brickellia desertorum*), Cooper's goldenbush (*Ericameria cooperi*), Mojave woodyaster (*Xylorhiza tortifolia* var. *tortifolia*), clustered barrel cactus (*Echinocactus polycephalus* var. *polycephalus*), pima rhatany (*Krameria erecta*), and Mohave sage (*Salvia mohavensis*). The alignment for Underground Route A was not found to contain this vegetation community. Within the alignment for Underground Route B, approximately 0.04 acre of this community was present. This community is considered suitable habitat for the desert tortoise, rare plants, MGS, and other special-status plant and wildlife species (see Section 4.3).

**Disturbed/Unvegetated.** The majority of the Project area exhibited habitat that was degraded and disturbed beyond what would happen in a natural setting. Those areas mapped as disturbed have been affected by military operations, road construction, water conveyance features, and other associated human activities. Disturbed areas were usually much more sparsely vegetated than adjacent habitat and in some cases were dominated by non-native plant species. Within the alignment for Underground Route A, approximately 23.66 acres of this land cover type were present, while the alignment for Underground Route B was found to contain approximately 26.49 acres. The unvegetated areas do not provide habitat for special-status species except for burrowing owl.

**Developed.** Developed is not considered a community, rather a land cover type. This land type includes industrial areas, paved roads, and building pads. This land type primarily occurred in the cantonment area and along Fort Irwin Road. Approximately 0.15 acre occurred in the alignment for Underground Route A, while approximately 0.58 acre of this land type occurred within the alignment for Underground Route B. The entire staging area (0.34 acre) consisted of this land cover type. The developed areas do not contain habitat for special-status species except for nesting bird species protected under the MBTA.

### 3.4.3 Fauna

Wildlife present at Fort Irwin consists of a variety of species adapted to desert scrub habitats that provide little cover and xeric conditions. Some isolated seeps and springs provide perennial sources of water and vegetative cover that contribute to increased wildlife diversity in these areas. Rocky terrain provides additional cover and habitat for various reptile, rodent, bat, and bird species. Playas could support seasonal wetlands or pools with brine shrimp, which in turn support migratory water birds. Lack of specialized aquatic habitat contributes to the absence of native amphibian and fish populations on the installation. Game species at Fort Irwin include Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaidura macroura*), chukar partridge (*Alectoris chukar*), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californica*), and coyote (*Canis latrans*).

Descriptions of common wildlife species that could potentially occur on the project site as well as descriptions of species observed on the project site follow.

#### 3.4.3.1 Reptiles and Amphibians

The creosote bush scrub on the proposed sites could support a diverse assemblage of reptiles, including common lizards such as zebra-tailed lizards (*Callisaurus draconoides*), side-blotched lizards (*Uta stansburiana*), desert spiny lizard (*Sceloporus magister*), and western whiptails (*Cnemidophorus tigris*). Less common lizards might include the desert horned lizard (*Phrynosoma platyrhinos*), long-nosed leopard lizard (*Gambelia wislezenii*), and desert iguana (*Dipsosaurus dorsalis*). Habitat specialists might include the chuckwalla (*Sauromalus obesus*) in rocky habitats and the common (desert) night lizard (*Xantusia vigilis*). Common snake species include the coachwhip (*Masticophis flagellum*), gopher snake (*Pituophis melanoleucus*), western patch-nosed snake (*Salvadora hexalepis*), western shovel-nosed snake (*Chionactis occipitalis*), and sidewinder (*Crotalus cerastes*). Less common species include the blind snake (*Leptotyphlops humulis*) and ground snake (*Sonora semiannulata*). Unlike lizards, most of which are primarily diurnal, most snake species on the installation are nocturnal. The desert tortoise (*Gopherus agassizii*) occurs in varying densities throughout Fort Irwin and the surrounding area.

#### 3.4.3.2 Birds

Common bird species potentially occurring in the Project area include the black-throated sparrow (*Amphispiza bilineata*), rock wren (*Salpinctes obsoletus*), horned lark (*Eremophila alpestris*), common raven (*Corvus corax*), and greater roadrunner (*Geococcyx californianus*). Additional species could occur as migrants or could winter on the project site. Some common species include the yellow-rumped warbler (*Dendroica coronata*), Hutton's vireo (*Vireo huttoni*), cliff swallow (*Hirundo pyrrhonata*), ruby-crowned kinglet (*Regulus calendula*), and white-crowned sparrow (*Zonotrichia leucophrys*). Raptors, which may occur along the proposed alignments, include red-tailed hawks (*Buteo jamaicensis*), northern harriers (*Circus cyaneus*), golden eagles (*Aquila chrysaetos*), and prairie falcons (*Falco mexicanus*). Owls that might exist along the proposed alignments include the burrowing owl (*Athene cunicularia*) and barn owl (*Tyto alba*); however, no burrowing owl burrows were observed during field surveys.

Most bird species at Fort Irwin are protected under the MBTA.

#### 3.4.3.3 Mammals

Small mammals potentially occurring in the Project area include blacktail jackrabbit, desert cottontail, and white-tailed antelope squirrel (*Ammospermophilus leucurus*). Small rodent species could include kangaroo rats (*Dipodomys* spp.), pocket mice (*Chaetodipus formosus*; *Perognathus* spp.), and field mice (*Peromyscus* sp.). Desert woodrat (*Neotoma lepida*) and Botta's pocket gopher (*Thomomys bottae*) are also common. Larger mammals could include badger (*Taxidea taxus*), kit fox (*Vulpes macrotis*), grey fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), and mountain lion (*Felis concolor*). The kit fox and coyote are expected to occur throughout the area, whereas the others are localized and fairly rare. Abandoned mines, natural caves, trees, and manmade structures throughout the installation provide potential roosting habitat for bats. Bats also use the many cliff faces and rocky ledges of mountain ranges as sites for roosting and have the potential to use Joshua trees as

night roosts. The western pipistrelle (*Pipistrellus hesperus*) and California myotis (*Myotis californicus*) are the two species most commonly observed.

#### 3.4.4 Threatened, Endangered, and Sensitive Species

Sensitive wildlife includes all federal- and state-listed or proposed endangered and threatened species, species listed by the California Native Plant Society (CNPS), federal species of concern (FSOC), and California species of concern (CSC). Sensitive species were considered if their known geographical distribution encompassed part of the project area, or if their distribution was near the project area and general habitat requirements of the species are found in the project area. Each species was also evaluated for a potential for use ranking based on the following criteria:

- **Low potential for use.** No recent or historical records exist of the species occurring in the project area or its immediate vicinity (within approximately two miles) and the habitat requirements of the species are not found in the project area.
- **Moderate potential for use.** Either a historical record exists of the species in the project area or its immediate vicinity (within approximately two miles) or the habitat requirements of the species are found in the project area.
- **High potential for use.** Both a historical record exists of the species in the project area or its immediate vicinity (within approximately two miles) and the habitat requirements of the species are found in the project area.
- **Present.** Species has been observed recently (in the last 2 years) in the project area.

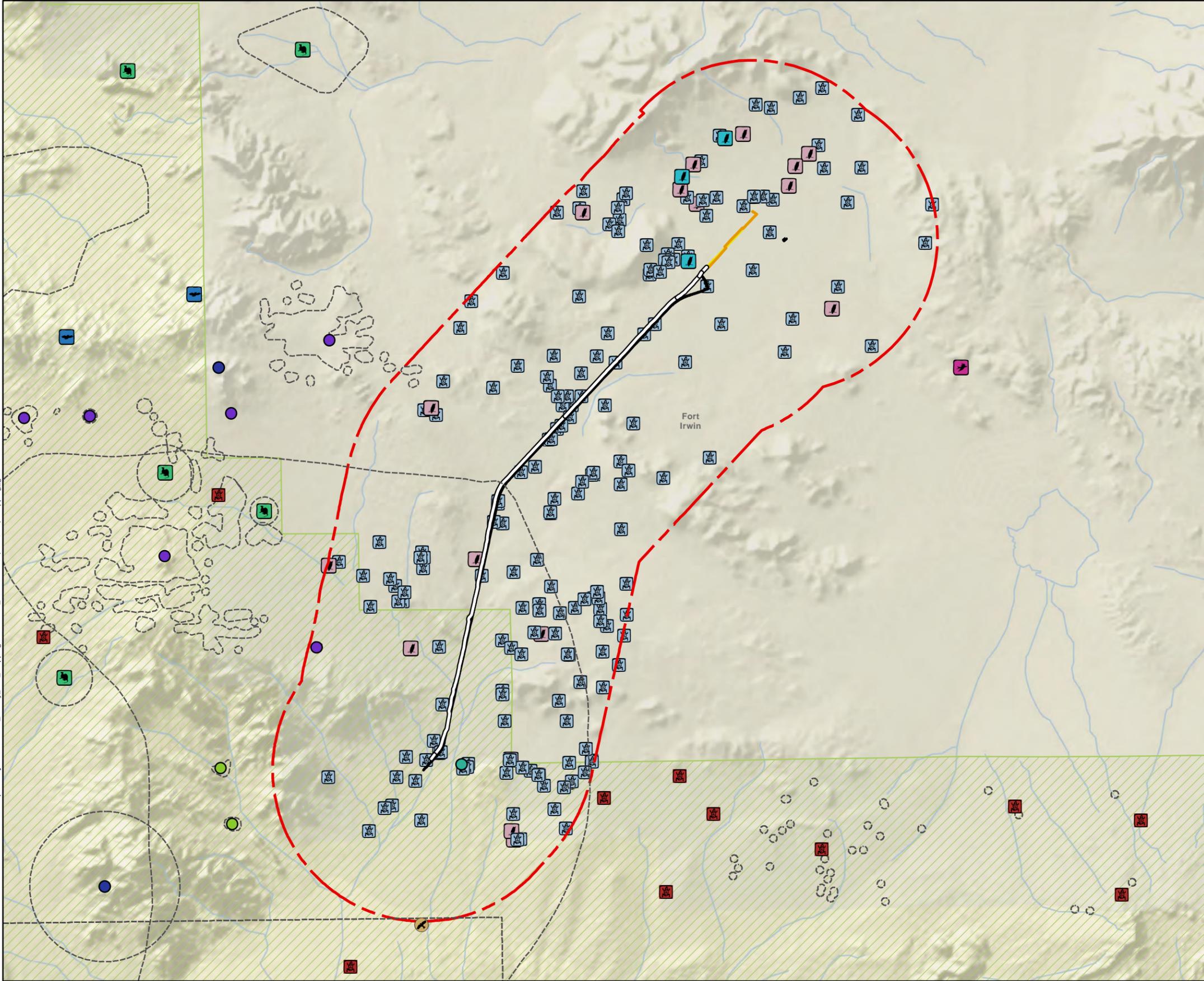
##### 3.4.4.1 Special-status Flora

Special-status flora species considered here include the following species of interest: (1) those species that are listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS under the ESA; (2) those species designated as sensitive by the BLM, indicating species requiring special management consideration; (3) those species designated by the federal government as Species of Concern, representing species formerly designated as candidates for listing as endangered or threatened, but for which information is insufficient to make that determination; (4) those species listed by the CDFW as threatened or endangered under the CESA; and (5) those species designated by the CNPS as Category 1B, meaning rare, threatened, or endangered in California and elsewhere; CRPR 2A, meaning it is presumed extinct in California but extant elsewhere; or CRPR 2B, meaning rare, threatened, or endangered in California, but more common elsewhere.

Figure 3.4-1 shows the results of the background review in relation to the Project area. Table 3.4-3 lists the special-status plant species evaluated during the background review. A brief natural history and discussion of the potential for occurrence in the Project area for each of the special-status plant species is presented below. The habitat associated with each species was evaluated and used to determine their specific potential for occurrence within the habitat types in the alignments of the Project area. A rare plant survey was conducted specifically for Lane Mountain milkvetch; however, the survey timing also correlated with the appropriate time of year to detect any of the other special-status species listed below (ECORP 2016a).

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Location: N:\2015\2015-035 Verizon Ft. Irwin Fiber Optic Project\MAPS\SSS\_survey\_and\_mapping\cnddb\FIV\_CNDDB.mxd (MAG\_A4)\_mapping\_guest 10/6/2015



**Figure 3.4-1. CNDDDB Occurrences and Fort Irwin Records of Special Status Species**

- Distance From Project**  
 2 Miles
- Project Components**<sup>1</sup>
- Underground Route A
  - Underground Route B
  - Aerial Route A
  - Aerial Route B
  - Staging Area

- CNDDDB Occurrences**<sup>2</sup>
- CNDDDB Polygon Extent

- Plants**
- Hot Springs Fimbristylis
  - Lane Mountain Milk-vetch
  - Clokey's Cryptantha
  - Alkali Mariposa-lily

- Amphibians/Reptiles**
- Desert Tortoise

- Birds**
- Burrowing Owl
  - Loggerhead Shrike
  - Prairie Falcon

- Mammals**
- Mohave Ground Squirrel
  - Townsend's Big-eared Bat

- Ft. Irwin Records**<sup>3</sup>
- Burrowing Owl
  - Desert Tortoise
  - Swainson's Hawk

- Critical Habitat**<sup>4</sup>
- Desert Tortoise

*This map may include multiple species' occurrences at each location, some of which may not be visible on this graphic. The CNDDDB occurrences shown may not reflect the actual location of the occurrence.*

<sup>1</sup> Project Boundary: MountainTop Communication Solutions  
<sup>2</sup> CDFW California Natural Diversity Database (CNDDDB), June 2015 (GIS Shapefile)  
<sup>3</sup> Received from Ft. Irwin  
<sup>4</sup> Insert Critical Habitat Source: USFWS  
 CNDDDB Occurrences Located on USGS 7.5' Quadrangles: East of Goldstone, CA (1984), Fort Irwin, CA (1984), Paradise Range, CA (1984), Langford Well, CA (1986), East of Langford Well, CA (1986), Coyote Lake, CA (1986)

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Table 3.4-3. Special-status Plant Species Potential for Occurrence

Scientific Name Common Name	Status		Flowering Period Elevation (meters)	Potential for Occurrence; Habitat
	Fed: Ca: CRPR: BLM:	END none 1B.1 none		
<i>Astragalus jaegerianus</i> Lane Mountain milk- vetch	Fed: Ca: CRPR: BLM:	none 1B.1 none	April-June 900-1200	High; Joshua tree woodland, Mojavean desert scrub. Dry, stony hillsides and mesas, in granite, sand and gravel.
<i>Calochortus striatus</i> alkali mariposa lily	Fed: Ca: CRPR: BLM:	none none 1B.2 sens	April-June 90-1595	Moderate; Chaparral, chenopod scrub, Mojavean desert scrub, meadows, alkaline meadows and ephemeral washes.
<i>Cryptantha clokeyi</i> Clokey's cryptantha	Fed: Ca: CRPR: BLM:	none none 1B.1 sens	April 800-1280	Moderate; Mojavean desert scrub. Sandy or gravelly soils.
<i>Cymopterus deserticola</i> desert cymopterus	Fed: Ca: CRPR: BLM:	none none 1B sens	March-May 630-1500	Moderate; Deep loose, well drained sandy soil that occurs in alluvial fans and basins, stabilized low sand dune and sandy slopes
<i>Eremothera boothii</i> ssp. <i>boothii</i> Booth's evening-primrose	Fed: Ca: CRPR: BLM:	none none 2B.3 none	June- August 815-2400	Low; Joshua Tree woodland, pinyon and juniper woodland
<i>Eriophyllum mohavense</i> Barstow woolly sunflower	Fed: Ca: CRPR: BLM:	SOC none 1B.2 sens	March- May 500-960	Low; Chenopod scrub, Mojave desert scrub, and playas
<i>Fimbristylis thermalis</i> hot springs fimbristylis	Fed: Ca: CRPR: BLM:	none none 2B.2 none	July- September 120-1340	Moderate; freshwater-marsh, springs, meadows
<i>Phacelia parishii</i> Parish's phacelia	Fed: Ca: CRPR: BLM:	none none 1B.1 sens	April-July 535-1200	Low; Clay or alkaline soils, on lake margins.
<i>Wislizenia refracta</i> ssp. <i>refracta</i> jackass-clover	Fed: Ca: CRPR: BLM:	none none 2B.2 none	April-November 600-800	Moderate; Playas, desert dunes, Mojavean desert scrub, Sonoran desert scrub. Sandy washes, roadsides, alkaline flats.
Federal Designations (FESA, USFWS)				
END: Federally listed, endangered				
SOC: Species of Concern				
California Native Plant Society (CNPS) Ranking System-California Rare Plant Ranks (CRPR; formerly known as CNPS Lists): (Note: All of the plants constituting California Rare Plant Rank 1B and 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing.				
1A: Plants presumed extinct in California.				
1B: Plants rare and endangered in California and elsewhere				

2: Plants rare, threatened or endangered in California, but more common elsewhere
List 1B and 2 extension meanings:
.1 Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat).
.2 Fairly endangered in California (20-80% occurrences threatened/moderate degree and immediacy of threat).
.3 Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known).
Source: ECORP 2016a

**Lane Mountain milkvetch (*Astragalus jaegerianus*).** One federally listed endangered plant species occurs on the installation, the Lane Mountain milkvetch, which was listed by the USFWS as endangered on October 6, 1998; the species also is designated as CRPR 1B. The closest record of this species is approximately two miles west of the southern end of the bore route alternative alignments. Lane Mountain milkvetch occurs in Joshua tree woodland, mixed Mojave scrub, and creosote bush scrub in poorly developed sandy or granitic gravely soils. During 2001, a survey covering over 21,000 acres mapped four major geographic populations of Lane Mountain milkvetch. A new population of Lane Mountain milkvetch was discovered immediately south of the NASA Goldstone facility. Also, three previously known populations (Coolgardie Mesa, Paradise Valley, and Brinkman Wash) were found to be significantly larger than previously reported. The majority of these populations are located between three and five miles west of the Project area. Populations of Lane Mountain milkvetch were encountered at elevations from 3,100 to 4,200 feet amsl, generally in areas of small ridges, shallow bedrock, and granitic soils. The populations occur in Mojave creosote bush scrub and Mojave mixed woody scrub communities with diverse shrub assemblages. The most common host shrubs for the Lane Mountain milkvetch were turpentine broom (*Thamnosma montana*), bursage, eastern Mojave buckwheat (*Eriogonum fasciculatum*), Cooper's goldenbush (*Ericameria cooperi*), and Nevada jointfir (*Ephedra nevadensis*) (USACE 2006). Based on the distribution of the Lane Mountain milkvetch, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered high.

**Alkali mariposa lily (*Calochortus striatus*).** The alkali mariposa lily is a federal Species of Concern and is designated as a CRPR 1B species. The alkali mariposa lily is in the lily family (*Liliaceae*) and occurs in creosote brush scrub communities in the Mojave Desert and has been reported in the California Mojave Desert in small scattered populations in Kern, Los Angeles, and San Bernardino Counties. Alkali mariposa lily grows in alkaline meadows and moist creosote bush scrub plant communities where it flowers in the spring between April and June. The alkali mariposa lily has been observed at Two Springs and at Paradise Springs (USACE 2006). The Paradise Springs population is approximately three miles southwest of the southern end of the bore route alternative alignments and another small population is located approximately 0.7 mile north of Paradise Springs (CNDDDB 2015). Based on the distribution of the alkali mariposa lily, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered moderate.

**Clokey's cryptantha (*Cryptantha clokeyii*).** Populations of Clokey's cryptantha are uncommon but have been observed in rocky areas surrounding Superior Valley and Paradise Valley. This species is designated as a CRPR 1B species and is a small annual in the waterleaf family (*Boraginaceae*). Plants typically occur in gravelly areas of coarse colluvium substrate and are most frequently found on upper slopes in Mojavean desert scrub. The closest record to the Project area is approximately four miles southwest of the southern end of the bore route alternatives (CCH 2015 and Fort Irwin DPW 2015). Based on the distribution of Clokey's cryptantha, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered moderate.

**Desert cymopterus (*Cymopterus deserticola*).** Desert cymopterus is designated as sensitive by the BLM and is designated as a CRPR 1B species. This herbaceous perennial in the carrot family (*Apiaceae*) is found on deep, loose, well-drained sandy soil that occurs on alluvial fans and basins. Desert cymopterus also occurs on stabilized low sand dune areas and occasionally on sandy slopes. One of the known populations of desert cymopterus is located in the Superior Valley area, which is located just south of the NAWIS China Lake boundary. Several additional populations, potentially containing several thousand plants, were observed during a survey of the Superior Valley (USACE 2006). Other extant populations of this species are located near Harper Dry Lake in Lockhart, California, and in the vicinity of the border of Kern and San Bernardino Counties, near Boron, California. Based on the distribution of desert cymopterus, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered moderate.

**Booth's Evening Primrose (*Eremothera boothii* ssp. *boothii*).** Booth's evening primrose is designated as a CRPR 2B species. This annual herb is in the evening-primrose family (*Onagraceae*) and typically grows in sandy flats and steep loose slopes within Joshua tree and pinon/juniper woodland, and sometimes within sandy openings in riparian forest/scrub. One of the known populations of this species nearest to the Project area is located approximately 18 miles to the north-northwest of the Fort Irwin cantonment area. Specifically this population is located 3.3 miles northeast of the McLean Junction, off of Pioneer Cut Road and southwest of the Granite Mountains range. Other extant populations of this species within the Mojave Desert are mainly limited to the eastern Mojave Desert mountain ranges and in the vicinity of Victorville and Hesperia, California. Based on the known distribution of Booth's evening primrose, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered low.

**Hot Springs fimbristylis (*Fimbristylis thermalis*).** Hot springs fimbristylis is designated as a CRPR 2B species. This perennial rhizomatous herb is in the sedge family (*Cyperaceae*) and typically grows in mineralized soils near hot springs and meadows near seeps. One of the known populations of this species is located approximately 0.2 mile to the east of the southern end of the Project area. Specifically this population is located within Jack Spring, which is just east of the intersection of Rocking K Ranch Road and Ft. Irwin Road. Other extant populations of this species are located in Death Valley National Park in Inyo County,

and in southwestern San Bernardino County. Although this species is present immediately adjacent to the Project area, the existence of suitable habitat within the Project area was not observed therefore the potential for occurrence by this species is considered moderate.

**Barstow woolly sunflower (*Eriophyllum mohavense*).** Barstow woolly sunflower is an FSOC, a BLM sensitive species, and is designated as a CRPR 1B species. Barstow woolly sunflower is a small annual in the sunflower family (*Asteraceae*) and typically occurs in creosote bush scrub that is adjacent to or within an overstory of Joshua trees and saltbush scrub. Barstow woolly sunflower is found in open, flat, barren sites, most commonly on the sandy margins of alkali depressions distributed among the more common creosote bush plant community. The range of Barstow woolly sunflower extends within the west-central Mojave Desert. All known locations of Barstow woolly sunflower are south, southwest, and west of Fort Irwin, with the closest known population located on Coolgardie Mesa, about five miles outside Fort Irwin (USACE 2006). Based on the distribution of Barstow woolly sunflower, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered low.

**Parish's phacelia (*Phacelia parishii*).** Parish's phacelia is designated as a CRPR 1B.1 species and BLM sensitive species. An annual plant, Parish's phacelia is a member of the waterleaf family (*Boraginaceae*) found in Mojave Desert scrub, playas, lake margins on alkaline or clay soils. The closest known location of Parish's phacelia is south of Fort Irwin on the southeast margin of Coyote Lake, over 10 miles south of the Project area (CCH 2015). Based on the distribution of Parish's phacelia, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered low.

**Jackass clover (*Wislizenia refracta* ssp. *refracta*).** The jackass clover is designated as a CRPR 2B.2 species. An annual plant, the jackass clover is a member of the spiderflower family (*Cleomaceae*) found in creosote bush scrub, primarily in sandy washes, along roadsides, and in alkaline flats. All known locations of jackass clover are south of Fort Irwin on the south side of Coyote Lake, over 10 miles south of the Project area (CCH 2015). Based on the distribution of the jackass clover, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for occurrence by this species is considered moderate.

#### 3.4.4.2 Special-status Fauna

Special-status faunal species considered here include the following species of interest: (1) those species that are listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS under the ESA; (2) those species designated as sensitive by the BLM, indicating species requiring special management consideration; (3) those species designated by the federal government as Species of Concern; in some cases this represents species formerly designated as candidates for listing as endangered or threatened, but for which information is insufficient to make that determination; (4) those species listed by the CDFW as threatened or endangered under the CESA; and (5), those species designated by CDFW as CSC.

Figure 3.4-1 shows the results of the background review for wildlife in relation to the Project area. Table 3.4-4 lists the special-status wildlife species evaluated during the background

review. The habitat types in the study area were evaluated and used to determine the potential for occurrence for each species in Table 3.4-4. Focused surveys were conducted for the desert tortoise and MGS (ECORP 2016a). The following species have potential to occur at Fort Irwin and are listed by the USFWS as threatened or endangered under the ESA, or by CDFW as threatened or endangered under the CESA.

Table 3.4-4. Special-status Wildlife Species Potential for Occurrence

Scientific Name Common Name	Status		Potential to Occur	Habitat
	Fed: Ca: BLM:	none SSC none		
<i>Accipiter cooperii</i> Cooper's hawk	Fed: Ca: BLM:	none SSC none	Low	Inhabits a variety of habitats, including grasslands, woodlands, urban areas, and arid areas.
<i>Accipiter striatus</i> Sharp-shinned hawk	Fed: Ca: BLM:	none SSC none	Low	Typically occurs in woodlands and forested habitats but will forage in open areas.
<i>Agelaius tricolor</i> tri-colored blackbird	Fed: Ca: BLM:	none SSC none	Low	A highly colonial species. Occurs in wetlands with reeds for nesting.
<i>Antrozous pallidus</i> pallid bat	Fed: Ca: BLM:	none SSC SEN	Moderate	Occurs in a variety of habitats throughout California. Roosts in dry, open areas with rocky outcrops.
<i>Aquila chrysaetos</i> golden eagle	Fed: Ca: BLM:	none SSC/FP SEN	Moderate	Occurs in rolling foothill mountain areas; nests in large trees in open areas or cliff-walled canyons.
<i>Asio otus</i> Long-eared owl	Fed: Ca: BLM:	none SSC none	Moderate	Found in grassland habitats and open areas.
<i>Athene cunicularia</i> burrowing owl (burrow sites)	Fed: Ca: BLM:	none SSC SEN	High	Associated with low-lying vegetation, open scrub, grassland, and agricultural habitats.
<i>Buteo regalis</i> Ferruginous hawk	Fed: Ca: BLM:	none SSC none	Low	Found in prairie, grassland, forest and desert habitats; nests along streams or on steep slopes.
<i>Buteo swainsoni</i> Swainson's hawk	Fed: Ca: BLM:	none THR none	High	Nests in stands with few trees in juniper-sage flats, riparian areas and in oak savanna. Forages in grassland, or cultivated field areas supporting rodent populations.

Scientific Name Common Name	Status		Potential to Occur	Habitat
	Fed: Ca: BLM:	none SSC none		
<i>Chaetura vauxi</i> Vaux's swift	Fed: Ca: BLM:	none SSC none	Moderate	Occupies open desert, roosts and nests in cliffs and rocky outcrops.
<i>Charadrius montanus</i> mountain plover	Fed: Ca: BLM:	none SSC none	Low	Found in desert, grassland and cropland habitats.
<i>Chlidonias niger</i> Black tern	Fed: Ca: BLM:	none SSC none	Low	Found in riparian and wetland habitats.
<i>Circus cyaneus</i> Northern harrier	Fed: Ca: BLM:	none SSC none	Low	Occupies a variety of habitats with low-growing vegetation, including riparian, montane, and agricultural areas.
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	Fed: Ca: BLM:	none SSC SEN	Low	Occurs in a variety of habitats throughout California. Roosts in open areas.
<i>Dendroica petechia brewsteri</i> Yellow warbler	Fed: Ca: BLM:	none SSC none	Low	Occurs in riparian woodlands and forests.
<i>Empidonax traillii extimus</i> Southwestern willow flycatcher	Fed: Ca: BLM:	END END none	Low	Occupies riparian woodland habitat with willows.
<i>Falco columbarius</i> merlin (wintering)	Fed: Ca: BLM:	none WL none	Low	Inhabits marshes, deserts, open woodlands, fields and coastal lakes and lagoons.
<i>Falco mexicanus</i> prairie falcon	Fed: Ca: BLM:	none WL none	High	Nests in open, dry habitats on cliffs. Often found far away from permanent water sources.
<i>Falco peregrinus anatum</i> Peregrine falcon	Fed: Ca: BLM:	none END none	Low	Typically nests on high cliffs along the western coast and forages in wetlands.
<i>Gopherus agassizii</i> desert tortoise	Fed: Ca: BLM:	THR THR none	Present	Inhabits almost any desert habitats with friable soils for burrow and nest construction.

Scientific Name Common Name	Status		Potential to Occur	Habitat
<i>Icteria virens</i> Yellow-breasted chat	Fed: Ca: BLM:	none SSC none	Low	Occurs in riparian woodlands and forests.
<i>Lanius ludovicianus</i> loggerhead shrike	Fed: Ca: BLM:	none SSC none	Moderate	Inhabits large, open areas conducive to hunting. Nests in dense brush and shrubs.
<i>Larus californicus</i> California gull	Fed: Ca: BLM:	none SSC none	Low	Found in areas with perennial access to water, usually associated with ocean, lake, or ponded habitats.
<i>Laterallus jamaicensis coturniculus</i> California black rail	Fed: Ca: BLM:	none THR SEN	Low	Occurs in marshes, swamps and wet meadows.
<i>Oreothlypis virginiae</i> Virginia's warbler	Fed: Ca: BLM:	none SSC none	Low	Occurs in riparian woodlands and forests.
<i>Plegadis chihi</i> white-faced ibis	Fed: Ca: BLM:	none SSC none	Low	Found in shallow freshwater marshes with dense tule thickets for nesting.
<i>Pyrocephalus rubinus</i> Vermillion flycatcher	Fed: Ca: BLM:	none SSC none	Low	Occurs in riparian woodlands and forests.
<i>Taxidea taxus</i> American badger	Fed: Ca: BLM:	none SSC none	Moderate	Associated with open stages of dry scrub, forest, and herbaceous habitats. Requires sufficient food, friable soils, and open uncultivated ground.
<i>Toxostoma bendirei</i> Bendire's thrasher	Fed: Ca: BLM:	none SSC SEN	Moderate	Found in desert habitats.
<i>Toxostoma crissale</i> Crissal thrasher	Fed: Ca: BLM:	none SSC none	Low	Inhabits desert riparian and desert wash habitats.
<i>Toxostoma lecontei</i> Le Conte's thrasher	Fed: Ca: BLM:	none SSC* none	Low	Inhabits arid and desert habitats in the southwest. *SSC designation refers only to <i>Toxostoma lecontei macmillanorum</i> , the subspecies found in the San Joaquin Valley

Scientific Name Common Name	Status		Potential to Occur	Habitat
				(CDFW 2015).
<i>Uma scoparia</i> Mojave fringe-toed lizard	Fed: Ca: BLM:	none SSC SEN	Low	Found in areas with dry, loose, wind-blown sand in dunes, dry lakebeds, riverbanks, desert washes, alkali scrub, and desert scrub.
<i>Vireo bellii pusillus</i> Least Bell's vireo	Fed: Ca: BLM:	END END SEN	Low	Nests in low riparian habitat in the vicinity of water or dry river bottoms below 609 meters (2,000') amsl.
<i>Vireo vicinior</i> Gray vireo	Fed: Ca: BLM:	none SSC SEN	Low	Inhabits woodland and forested habitats.
<i>Vulpes macrotis arsipus</i> Desert kit fox	Fed: Ca: BLM:	none FBM none	Moderate	Occupies open desert, creosote bush flats, and sand dunes.
<i>Xerospermophilus mohavensis</i> Mohave ground squirrel	Fed: Ca: BLM:	none THR none	Moderate	Found in desert scrub, alkali scrub and Joshua tree woodland habitats with winterfat and spiny hopsage present.
Federal Designations (FESA, USFWS) END: Federally listed, endangered THR: Federally listed, threatened	BLM Designation SEN: Sensitive		State Designations (CESA, CDFW) END: State listed, endangered THR: State listed, threatened SSC: California Species of Special Concern FP: Fully Protected FBM: Fur-bearing mammal WL: Watch List	

**Peregrine falcon (*Falco peregrinus anatum*).** This subspecies of peregrine falcon was federally delisted from its endangered status in August 1999 and state delisted from its endangered status in 2009. This subspecies is found primarily in the western United States. During winter, they can be found throughout most of California. Summer range is more restricted to northern California, along the coast from Santa Barbara northward, and in the Sierra Nevada Mountains. Peregrines typically nest on high cliffs, or less commonly, on buildings and structures in urban areas. They forage over wetlands or other habitats with large concentrations of birds, their primary food source. Peregrines are uncommon winter migrants to the West Mojave. A peregrine falcon was observed at Bitter Springs in 1997. This subspecies would not be expected except as an occasional transient at the Project area. This species was not observed during field surveys. Based on the distribution of the

peregrine falcon, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered low.

**Southwestern willow flycatcher (*Empidonax traillii extimus*).** This species was federally listed as endangered in 1995 and is also state-listed as endangered. Southwestern willow flycatcher breeds in riparian woodland habitats with willows (*Salix* sp.), cottonwoods (*Populus* sp.), and/or alders (*Alnus* sp.). Scattered records exist of this species occurring at various locations throughout Fort Irwin. However, in all cases the observations represented transient birds detected during spring and fall migration periods. While the southwestern willow flycatcher is a summer resident in the region, the species is not expected to occur regularly at Fort Irwin in the breeding season because of a lack of appropriate habitat; however, the species might occur during brief periods of migration at springs and riparian areas. Suitable habitat is not present in the alignments of the Project area. Based on the distribution of the southwestern willow flycatcher, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered low.

**Least Bell's vireo (*Vireo bellii pusillus*).** This species was federally listed as endangered in 1986 and state listed as endangered in 1980. The least Bell's vireo is a summer resident in the region and breeds in riparian habitat, preferring areas of dense mulefat (*Baccharis salicifolia*) with an overstory of willows. In 1986 a least Bell's vireo was observed on Fort Irwin at Bitter Springs. This species is not expected to occur regularly at Fort Irwin because of the lack of suitable habitat; however, it might occur near springs for brief periods during migration. Suitable habitat is not present in the alignments of the Project area. Based on the distribution of the least Bell's vireo, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered low.

**Desert tortoise (*Gopherus agassizii*).** This species was federally listed as threatened in 1990 and state-listed as threatened in 1989. Desert tortoise is a large, herbivorous reptile found throughout much of the Mojave and Sonoran Deserts; its range roughly approximates the distribution of creosote bush scrub. The desert tortoise is active in the spring, summer, and autumn when daytime temperatures are below 90°F (32°C). Most activity occurs during spring and early summer.

The USFWS determined that the Mojave population of the desert tortoise warranted listing in response to documented population declines over portions of its range, particularly in the western Mojave Desert. The declines are thought to be due to a number of reasons, including upper respiratory tract disease exacerbated by the stress of several drought seasons, loss of habitat, predation by ravens, livestock grazing, and direct disturbance by humans.

The desert tortoise is well studied at Fort Irwin. Numerous surveys have been conducted over the years to document the distribution and estimated size of tortoise populations throughout the installation. The desert tortoise is known to occur throughout Fort Irwin in low to moderate numbers, with the highest concentration along the southern boundary. Multiple records of desert tortoise occur within the alignments of the Project area. Since

1998, there were approximately 17 observations of desert tortoise within or adjacent to the tortoise survey action area. These observations of tortoises were primarily reports to DPW from motorists travelling along Ft Irwin Road reporting either roadkill animals or animals trying to cross the road. Desert tortoise is present within the Project area.

The southern two miles of the Project area are within the USFWS Superior-Cronese Critical Habitat Unit (Figure 10). Approximately 7.58 acres of the alignment of Underground Route A and 8.23 acres of the alignment of Underground Route B are within the 766,900-acre USFWS-designated Critical Habitat Unit for desert tortoise and would be affected by Project activities (Table 3.4-5). However, most (5.42 acres for Underground Route A and 6.47 acres for Underground Route B) of this designated Critical Habitat within each of the alignments for the Underground Routes had previously been disturbed or developed and do not provide suitable tortoise habitat. The amount of affected critical habitat that supports native or recovering (disturbed) native vegetation, therefore, is 2.16 acres for Underground Route A and 1.76 acres for Underground Route B, which totals approximately 0.000282 percent for Underground Route A and 0.000230 percent for Underground Route B of the overall Critical Habitat Unit.

Table 3.4-5. Vegetation Communities in Critical Habitat

Vegetation Community/Acres	Underground Route A	Underground Route B
Creosote Bush Scrub	1.56	0.06
Desert wash scrub	0.60	0.18
Developed	0	0.32
Disturbed	5.42	6.15
Disturbed Saltbush	0	1.48
Mojave Mixed Woody Scrub	0	0.04
Percent of Critical Habitat Unit* Affected	0.000282	0.000230
<b>Subtotal (no disturbed or developed)</b>	<b>2.16</b>	<b>1.76</b>
<b>Total</b>	<b>7.58</b>	<b>8.23</b>

\*Total acreage in Superior-Cronese Critical Habitat Unit is 766,900 acres

**Burrowing owl (*Athene cunicularia*).** The burrowing owl is designated as a CDFW SSC. The SSC designation includes burrow sites in breeding locations throughout California and wintering sites in several counties in northern California. The burrowing owl is not formally listed under the CESA or the FESA. The primary reasons for burrowing owl population decline are habitat loss, degradation, and fragmentation due to agricultural and urban development. Predation by natural predators (hawks, larger owls, and mammals) and introduced predators (domestic cats and dogs) may also contribute to population declines. There are several records of this species occurring within two miles of the Project area (ECORP 2016a). Based on the distribution of the burrowing owl, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered high.

**California black rail (*Laterallus jamaicensis coturniculus*).** This species was state-listed as threatened in 1971. The California black rail is an uncommon, local resident of marshes, swamps, and wet meadows. A black rail was observed at the wastewater evaporation and percolation ponds at Fort Irwin during fall 1994, but it has not been detected since. The occurrence of this species in the central Mojave Desert is extremely unusual, and it would not occur within the alignments of the Project area due to lack of habitat. Based on the distribution of the California black rail, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered low.

**Swainson's hawk (*Buteo swainsoni*).** This species was state-listed as threatened in 1983. The Swainson's hawk was once a widespread breeder in the non-forested areas of northern California and the Central Valley. This species is migratory and is not expected to occur regularly at Fort Irwin or forage in the area for prolonged periods. Swainson's hawk has been observed at Bitter Springs and might occasionally use the area for transient forage habitat during migration. Two individuals were documented approximately one mile (3.2 km) east of the alignments of the Project area in 2014. Based on the distribution of Swainson's hawk, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the alignments of the Proposed Action and Alternatives, the potential for use by this species is considered high.

**Desert kit fox (*Vulpes macrotis*).** This species is not listed under the federal or state Endangered Species Acts; however, it is considered a protected species by the State of California because it is classified as a fur bearing mammal. In the California Code of Regulations (CCR), desert kit foxes are protected under Title 14, Chapter 5, Section 460, which prohibits take of this species at any time. The desert kit fox is found in various types of desert habitats that include creosote bush, shadscale, greasewood, and sagebrush. It feeds primarily on nocturnal rodents and rabbits but will opportunistically take birds, reptiles, and insects. Based on the distribution of the desert kit fox and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered moderate.

**Mohave ground squirrel (*Xerospermophilus mohavensis*).** This species was state-listed as threatened in 1971. Numerous petitions to federally list the species have been filed, but listing the species has not been warranted. The MGS generally occurs in habitat that consists of large alluvial-filled valleys with deep fine- to medium-textured soils vegetated with creosote scrub, shadscale scrub, or alkali sink scrub with the absence of desert pavement and shallow eroded soils. At Fort Irwin, MGS occurrences in the Western Expansion Area are well documented. Recent focused surveys conducted in spring 2015 for MGS on the eastern portions of the Goldstone area were negative and surveys conducted in the vicinity of the Gary Owen impact area for the last three years were negative as well (Clarence, personal communication, July 31, 2015). These surveys were concentrated in the northern and eastern portions of the installation; other populations of MGS could occur in areas with suitable habitat yet to be surveyed. Previous surveys conducted in the 1980s and 1990s indicated the presence of this species at 12 sites, including several in the vicinity of Goldstone Lake, the Echo site, Nelson Lake, Bicycle Lake, Drinkwater Lake, the north end of Lucky Fuse, and Lizard Gulch. Surveys over the last five years in these areas for this species

were negative (Clarence Everly, personal communication, August 18, 2015). The closest record of this species to the Project area is over three miles west (Fort Irwin DPW 2015), but suitable habitat is present throughout the Project area. Based on the distribution of the MGS, the known occurrences of this species in the vicinity of the Project area, and the vegetation community and habitat characteristics within and adjacent to the Project area, the potential for use by this species is considered moderate.

**Other special-status fauna.** Other special-status faunal species are those proposed for listing, candidates for listing, SSC, or designated as Sensitive by the BLM. This list is steadily growing for the Mojave Desert region. Including the above-listed species, the list includes 27 additional animal species that were either observed at Fort Irwin previously or occur in the Mojave Desert ecosystem.

Based on the presence of suitable habitat and records within two miles, prairie falcon was given a high potential to occur in the Project area. Based on the presence of suitable habitat and no records within two miles, the pallid bat (*Antrozous palludus*), long-eared owl (*Asio otus*), Vaux's swift (*Chaetura vauxi*), loggerhead shrike (*Lanius ludovicianus*), American badger, golden eagle, and Bendire's thrasher (*Toxostoma bendirei*) were given a moderate potential to occur in the Project area. The remaining 19 species were given a low potential to occur in the Project area based on no recent or historical records of the species occurring within approximately two miles and/or the habitat requirements of the species are not present. Le Conte's thrasher (*Toxostoma lecontei*), a CDFW SSC, was classified as having a low potential to occur because the SSC designation refers only to the subspecies population occurring in the San Joaquin Valley, *T. l. macmillanorum*, and does not include the population found in the Mojave Desert (CDFW 2015).

### 3.4.5 Sensitive Habitats

Sensitive habitats in the Project area are defined here as:

- Vegetation communities, designated critical habitats, or other areas designated as sensitive biological resources by resource agencies;
- Wildlife movement corridors; and
- Wetlands and/or jurisdictional waters of the United States.

The southern two miles of the Project area are within the USFWS Superior-Cronese Critical Habitat Unit. Approximately 7.58 acres of the alignment of Underground Route A is within the 766,900-acre USFWS-designated Critical Habitat Unit for desert tortoise. However, most (5.42 acres for the alignment of Underground Route A) of this designated Critical Habitat had previously been disturbed and does not provide suitable tortoise habitat. The amount of affected critical habitat that supports native or recovering (disturbed) native vegetation, therefore, is 2.16 acres for the alignment of Underground Route A, which totals approximately 0.000282 percent of the overall Critical Habitat Unit.

Approximately 8.23 acres of the alignment of Underground Route B is within the 766,900-acre USFWS-designated Critical Habitat Unit for desert tortoise. However, most (6.47 acres for the alignment of Underground Route B) of this designated Critical Habitat had previously been disturbed and does not provide suitable tortoise habitat. The amount of affected critical habitat that supports native or recovering (disturbed) native vegetation,

therefore, is 1.76 acres for the alignment of Underground Route B, which totals approximately 0.000230 percent of the overall Critical Habitat Unit.

Table 3.4-5 shows the different types of vegetation communities located within the Critical Habitat Unit and the amount present in each Underground Route. The vegetation communities include; creosote bush scrub, desert wash scrub, disturbed saltbush scrub, Mojave mixed woody scrub, disturbed, and developed.

### 3.4.6 Field Biological Resources Surveys

Multiple biological studies were performed by ECORP Consulting for the Project. A summary of the findings from the biological studies is provided below. Biological studies included background review, vegetation mapping, assessment of special-status species potential for occurrence, focused desert tortoise surveys, focused rare plant surveys, MGS camera study, MGS trapping surveys, and jurisdictional delineation (ECORP 2016a).

#### 3.4.6.1 Flora

In the Project area, the plant communities are primarily disturbed. The dominant vegetation communities include creosote bush scrub, desert wash scrub, and disturbed saltbush scrub. Dominant perennial plants include creosote bush, allscale, and cheesebush. The alignment is mostly dominated by creosote bushes. Plant species observed during the site surveys are listed in Table 3.4-6.

Table 3.4-6. Plant Species Observed During Proposed Action Site Surveys

Scientific Name	Common Name
<b>VASCULAR PLANTS</b>	
<b>GYNOSPERMS (GNETALES)</b>	
<b>EPHEDRACEAE</b>	<b>EPHEDRA FAMILY</b>
<i>Ephedra californica</i>	California jointfir
<i>Ephedra nevadensis</i>	Nevada jointfir
<b>ANGIOSPERMS (EUDICOTS)</b>	
<b>APIACEAE</b>	<b>CARROT FAMILY</b>
<i>Lomatium mohavense</i>	Mojave lomatium
<b>ASTERACEAE</b>	<b>SUNFLOWER FAMILY</b>
<i>Acamptopappus sphaerocephalus</i>	golden head
<i>Ambrosia ancanthocarpa</i>	annual bur-sage
<i>Ambrosia confertiflora</i>	weak leaved burweed
<i>Ambrosia dumosa</i>	white bur-sage
<i>Ambrosia salsola</i>	cheesebush
<i>Bebbia juncea</i>	sweetbush
<i>Brickellia incana</i>	woolly brickellia
<i>Brickellia cf. desertorum</i>	desert brickellia
<i>Chaenactis fremontii</i>	Fremont's pincushion
<i>Chaenactis carphoclinia</i> var. <i>carphoclinia</i>	pebble pincushion
<i>Encelia actoni</i>	Acton encelia
<i>Encelia farinosa</i>	brittlebush

<b>Scientific Name</b>	<b>Common Name</b>
<i>Ericameria cooperi</i>	Cooper's goldenbush
<i>Ericameria paniculata</i>	black-banded rabbitbrush
<i>Eriophyllum ambiguum</i>	annual woolly sunflower
<i>Eriophyllum wallacei</i>	Wallace eriophyllum
<i>Geraea canescens</i>	hairy desert sunflower
<i>Leptosyne bigelovii</i>	Bigelow coreopsis
<i>Logfia depressa</i>	dwarf cottonrose
<i>Malacothrix coulteri</i>	snake's head
<i>Malacothrix glabrata</i>	desert dandelion
<i>Monoptilon belloides</i>	Mojave desert star
<i>Nicolletia occidentalis</i>	hole-in-the-sand plant
<i>Pleurocoronis pluriseta</i>	arrow leaf
<i>Psathyrotes ramosissima</i>	turtleback
<i>Rafinesquia neomexicana</i>	desert chicory
<i>Senecio flaccidus</i> var. <i>monoensis</i>	smooth threadleaf ragwort
<i>Stephanomeria pauciflora</i>	wire lettuce
<i>Tetradymia stenolepis</i>	Mojave cottonthorn
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	Mojave woodyaster
<b>BIGNONIACEAE</b>	<b>TRUMPET-CREEPER FAMILY</b>
<i>Chilopsis linearis</i> subsp. <i>arcuata</i>	desert-willow
<b>BORAGINACEAE</b>	<b>BORAGE FAMILY</b>
<i>Amsinckia tessellata</i>	bristly fiddleneck
<i>Cryptantha angustifolia</i>	narrow leaved cryptantha
<i>Cryptantha circumscissa</i> var. <i>circumscissa</i>	cushion cryptantha
<i>Cryptantha nevadensis</i> var. <i>nevadensis</i>	Nevada cryptantha
<i>Cryptantha pterocarya</i> var. <i>pterocarya</i>	winged-nut cryptantha
<i>Emmenanthe penduliflora</i> var. <i>penduliflora</i>	whispering bells
<i>Nama demissum</i>	purple mat
<i>Pectocarya linearis</i> subsp. <i>ferocula</i>	slender pectocarya
<i>Pectocarya heterocarpa</i>	chuckwalla pectocarya
<i>Pectocarya platycarpa</i>	broadfruit combseed
<i>Phacelia crenulata</i>	notch leaved phacelia
<i>Pholisma arenarium</i>	desert pholisma
<b>BRASSICACEAE</b>	<b>MUSTARD FAMILY</b>
<i>Brassica nigra</i> *	black mustard
<i>Brassica tournefortii</i> *	Saharan mustard
<i>Caulanthus lasiophyllus</i>	California mustard
<i>Lepidium fremontii</i>	desert alyssum
<i>Lepidium lasiocarpum</i> subsp. <i>lasiocarpum</i>	shaggyfruit pepperweed
<i>Sisymbrium altissimum</i> *	tumble mustard

<b>Scientific Name</b>	<b>Common Name</b>
<i>Sisymbrium irio</i> *	London rocket
<i>Stanleya</i> (cf.) <i>pinnata</i> var. <i>pinnata</i>	prince's plume
<b>CACTACEAE</b>	<b>CACTUS FAMILY</b>
<i>Cylindropuntia echinocarpa</i>	silver cholla
<i>Echinocactus polycephalus</i> var. <i>polycephalus</i>	clustered barrel cactus
<i>Opuntia basilaris</i> var. <i>basilaris</i>	beavertail cactus
<b>CHENOPODIACEAE</b>	<b>GOOSEFOOT FAMILY</b>
<i>Atriplex polycarpa</i>	allscale
<i>Atriplex semibaccata</i> *	Australian saltbush
<i>Grayia spinosa</i>	hopsage
<i>Salsola tragus</i> *	Russian thistle
<b>CLEOMACEAE</b>	<b>SPIDER PLANT FAMILY</b>
<i>Peritoma arborea</i>	bladderpod
<b>CONVOLVULACEAE</b>	<b>MORNING GLORY FAMILY</b>
<i>Cuscuta</i> sp.	dodder
<b>CUCURBITACEAE</b>	<b>GOURD FAMILY</b>
<i>Cucurbita palmata</i>	coyote melon
<b>EUPHORBIACEAE</b>	<b>SPURGE FAMILY</b>
<i>Chamaesyce albomarginata</i>	whitemargin sandmat
<i>Chamaesyce micromera</i>	desert spurge
<i>Croton setigerus</i>	turkey-mullein
<b>FABACEAE</b>	<b>LEGUME FAMILY</b>
<i>Astragalus acutirostris</i>	sharpkeel milkvetch
<i>Acmispon argyraeus</i> var. <i>argyraeus</i>	canyon lotus
<i>Dalea mollissima</i>	silky dalea
<i>Lupinus concinnus</i>	bajada lupine
<i>Parkinsonia aculeata</i> *	Mexican palo verde
<i>Prosopis glandulosa</i> var. <i>torreyana</i>	honey mesquite
<i>Psoralethamnus arborescens</i> var. <i>arborescens</i> <sup>(CNPS List 4.3)</sup>	Mojave indigo bush
<i>Psoralethamnus arborescens</i> var. <i>minutifolius</i>	Johnson's indigo bush
<i>Psoralethamnus polydenius</i>	dotted dalea
<i>Senna armata</i>	desert senna
<b>GERANIACEAE</b>	<b>GERANIUM FAMILY</b>
<i>Erodium cicutarium</i> *	redstem stork's bill
<b>KRAMERIACEAE</b>	<b>RHATANY FAMILY</b>
<i>Krameria erecta</i>	pima rhatany
<b>LAMIACEAE</b>	<b>MINT FAMILY</b>
<i>Salvia columbariae</i>	chia
<i>Salvia mohavensis</i>	Mohave sage

<b>Scientific Name</b>	<b>Common Name</b>
<i>Scutellaria mexicana</i>	bladder sage
<b>LOASACEAE</b>	<b>LOASA FAMILY</b>
<i>Mentzelia albicaulis</i>	whitestem blazingstar
<i>Petalonyx thurberi</i>	sandpaper plant
<b>MALVACEAE</b>	<b>MALLOW FAMILY</b>
<i>Eremalche rotundifolia</i>	desert five spot
<i>Sphaeralcea ambigua</i> var. <i>ambigua</i>	apricot mallow
<b>NYCTAGINACEAE</b>	<b>FOUR O'CLOCK FAMILY</b>
<i>Allonia incarnata</i> var. <i>incarnata</i>	trailing windmills
<i>Mirabilis laevis</i> var. <i>villosa</i>	wishbone bush
<b>ONAGRACEAE</b>	<b>EVENING PRIMROSE FAMILY</b>
<i>Camissonia campestris</i> ssp. <i>campestris</i>	Mojave sun cups
<i>Chylismia brevipes</i> ssp. <i>brevipes</i>	golden sun cups
<i>Chylismia claviformis</i> ssp. <i>claviformis</i>	browneyes
<i>Eremothera boothii</i> ssp. <i>desertorum</i>	Booth's desert suncup
<b>PAPAVERACEAE</b>	<b>POPPY FAMILY</b>
<i>Argemone corymbosa</i>	prickly poppy
<i>Eschscholzia munitiflora</i>	pygmy poppy
<b>POLEMONIACEAE</b>	<b>PHLOX FAMILY</b>
<i>Gilia</i> (cf.) <i>cana</i> ssp. <i>speciformis</i>	showy gilia
<i>Langloisia setosissima</i> ssp. <i>punctata</i>	lilac sunbonnet
<i>Loeseliastrum matthewsii</i>	desert calico
<b>POLYGONACEAE</b>	<b>BUCKWHEAT FAMILY</b>
<i>Chorizanthe brevicornu</i>	brittle spineflower
<i>Chorizanthe rigida</i>	rigid spiny herb
<i>Eriogonum deflexum</i>	skeleton weed
<i>Eriogonum inflatum</i>	desert trumpet
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	Mojave Desert California buckwheat
<i>Eriogonum nidularium</i>	bird nest buckwheat
<i>Eriogonum pusillum</i>	yellow turbans
<i>Eriogonum reniforme</i>	kidney leaf buckwheat
<i>Oxytheca perfoliata</i>	roundleaf puncturebract
<b>RANUNCULACEAE</b>	<b>BUTTERCUP FAMILY</b>
<i>Delphinium parishii</i> ssp. <i>parishii</i>	Mojave larkspur
<b>RESEDACEAE</b>	<b>MIGNONETTE FAMILY</b>
<i>Oligomeris linifolia</i>	oligomeris
<b>RUTACEAE</b>	<b>RUE FAMILY</b>
<i>Thamnosma montana</i>	turpentine broom
<b>SOLANACEAE</b>	<b>NIGHTSHADE FAMILY</b>
<i>Datura wrightii</i>	sacred thorn-apple

Scientific Name	Common Name
<i>Lycium andersonii</i>	water jacket
<i>Lycium cooperi</i>	peach thorn
<i>Nicotiana obtusifolia</i>	desert tobacco
<i>Solanum elaeagnifolium</i> *	white horse-nettle
<b>TAMARICACEAE</b>	<b>TAMARISK FAMILY</b>
<i>Tamarix cf. aphylla</i> *	athel tree
<b>ZYGOPHYLLACEAE</b>	<b>CALTROP FAMILY</b>
<i>Tribulus terrestris</i> *	puncture vine
<b>ANGIOSPERMS (MONOCOTS)</b>	
<b>POACEAE</b>	<b>GRASS FAMILY</b>
<i>Bromus madritensis</i> *	red brome
<i>Bromus tectorum</i> *	cheatgrass
<i>Hordeum murinum</i> *	wall barley
<i>Schismus arabicus</i> *	split grass
<i>Schismus barbatus</i> *	common Mediterranean grass
<i>Stipa speciosa</i>	desert needlegrass
* - Nonnative species. cf. - From the latin <i>confer</i> , imperative of <i>conferre</i> , to compare. Indicates a species was not identified via dichotomous key (e.g., Jepson Manual), but that appeared to be a particular species.	
<b>CNPS Rare Plant Listing Status:</b> List 4.3 Uncommon in California. Not very endangered in California.	

During the focused rare plant survey none of the target rare plant species were observed. One CRPR 4.3 (limited distribution, not very threatened in California) plant species, Mojave indigo bush (*Psoralethamnus arborescens* var. *arborescens*), was encountered throughout the survey. This shrub was observed growing within desert wash scrub and margins of desert wash scrub that overlapped with creosote bush scrub. Sixteen individual indigo bushes were observed within the maximum potential temporary impact area for the alignment of Underground Route A and two polygons (areas where more than one plant was concentrated) were observed. The first polygon, located on Sheet 1 on Figure 14, occupied a total of 3,311 square feet, however only 448 square feet (13.5 percent) of that polygon fell within the maximum potential temporary impact area. The second polygon, located on Sheet 2 on Figure 14, occupied a total of 1,337 square feet; however, only 15 square feet (1.1 percent) of that polygon fell within the maximum potential temporary impact area. One individual Mojave indigo bush was observed within the maximum potential temporary impact area for the alignment of Underground Route B.

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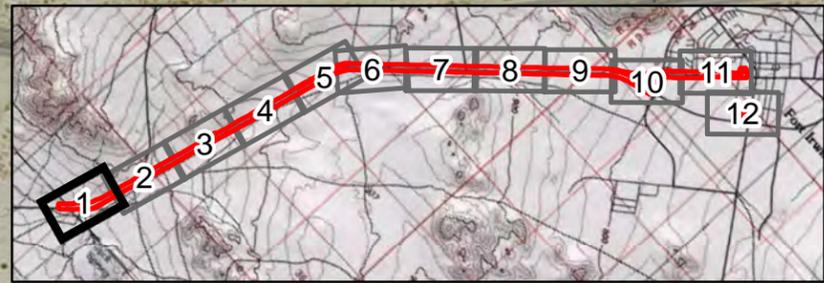


	Rare Plant Study Area		Underground Route A
	Mojave indigo bush		Underground Route B
	Match Line		
	Maximum Potential Underground Trenching		

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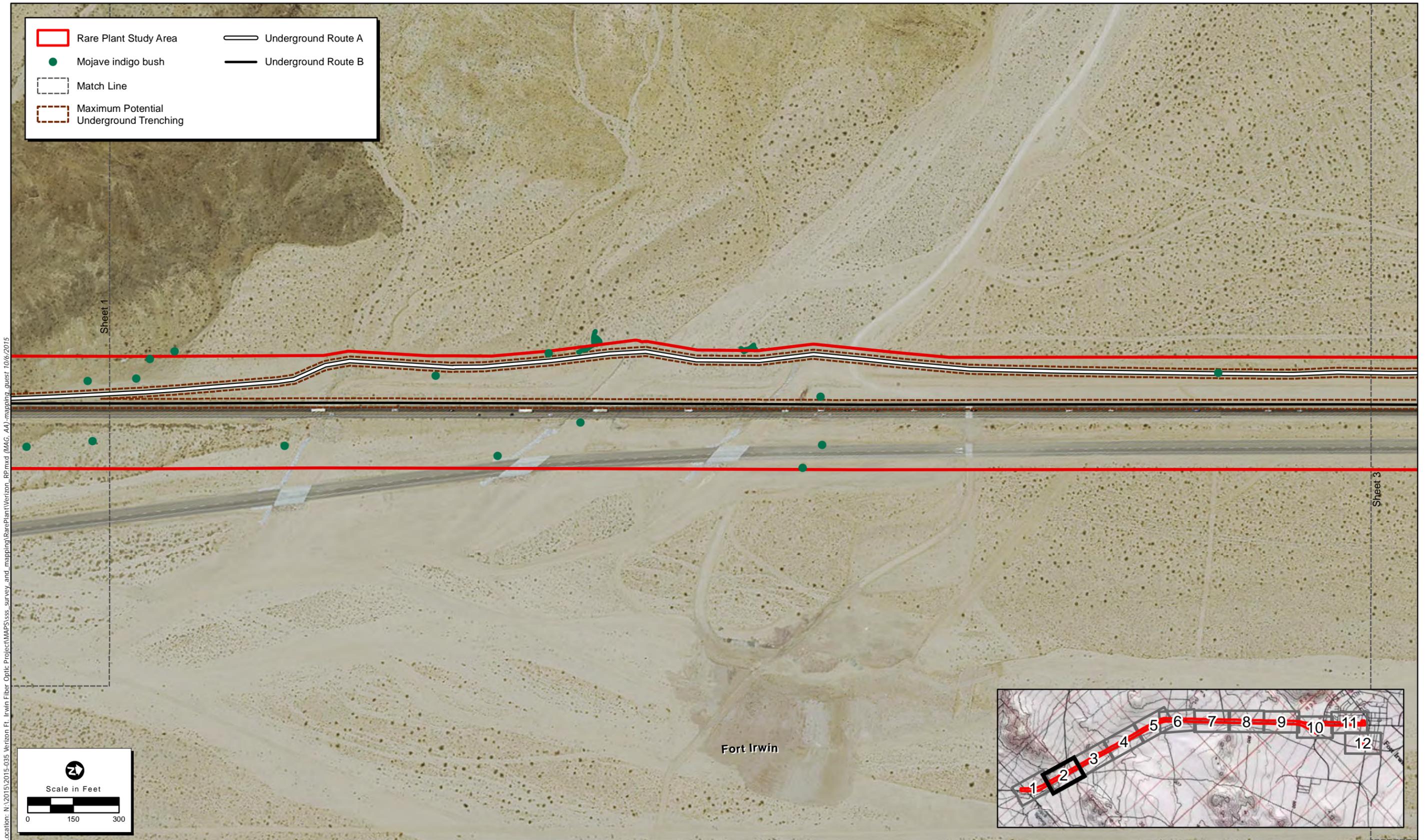
Scale in Feet

Map Date: 10/6/2015  
Photo Source: NAIP 2012



**Figure 3.4-2. Rare Plant Survey Results Sheet 1 of 12**

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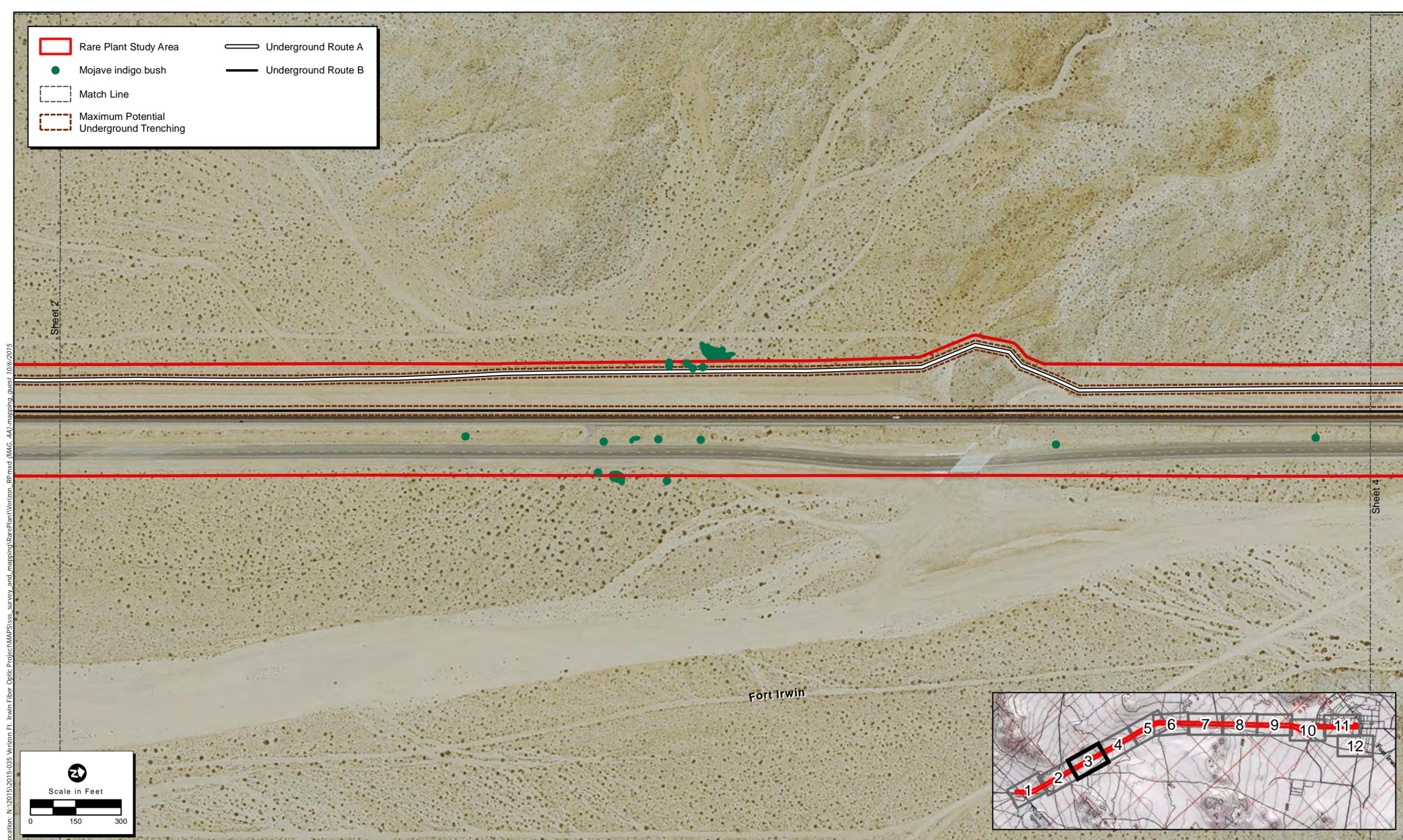


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Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 2 of 12**

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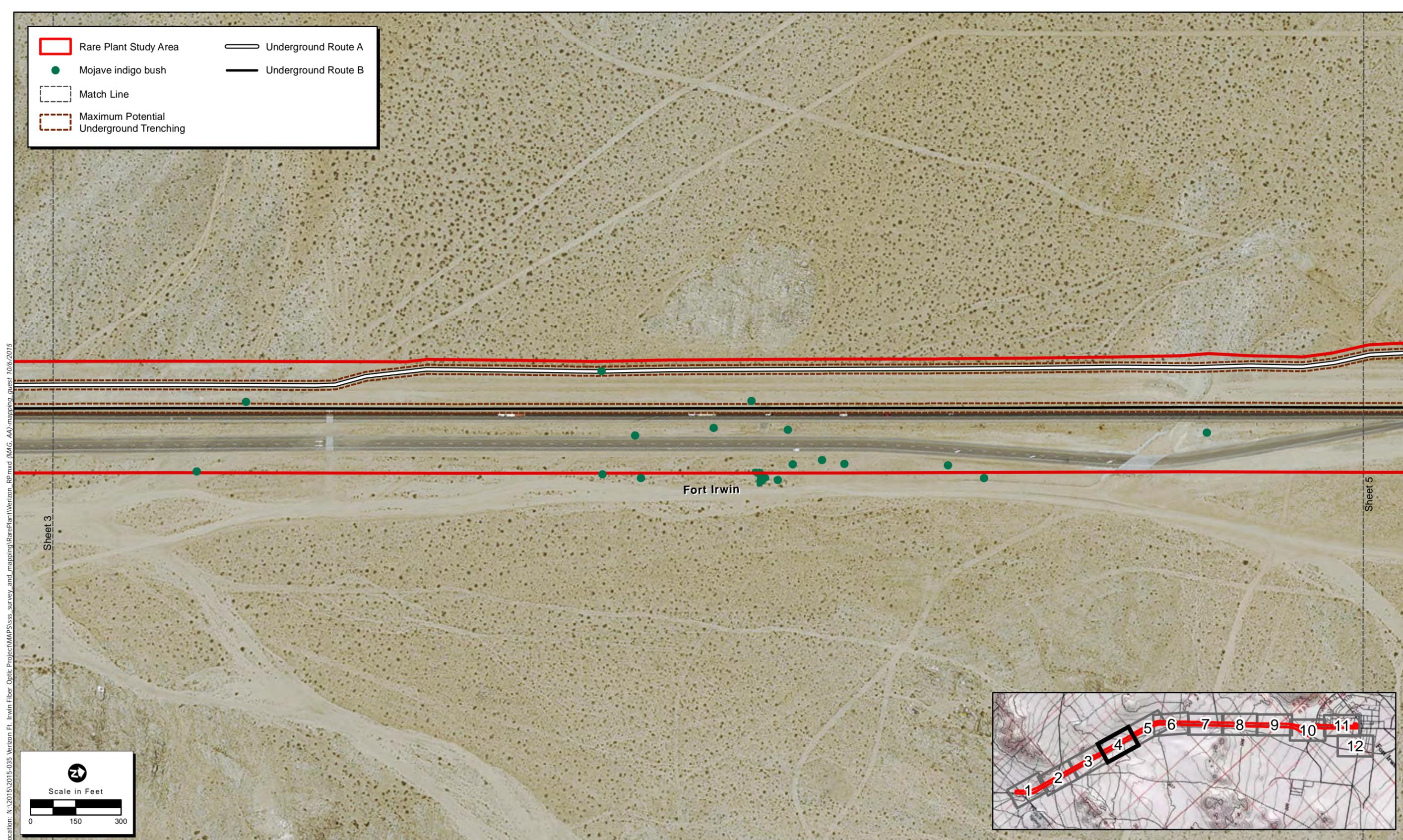


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**Figure 3.4-2. Rare Plant Survey Results Sheet 3 of 12**

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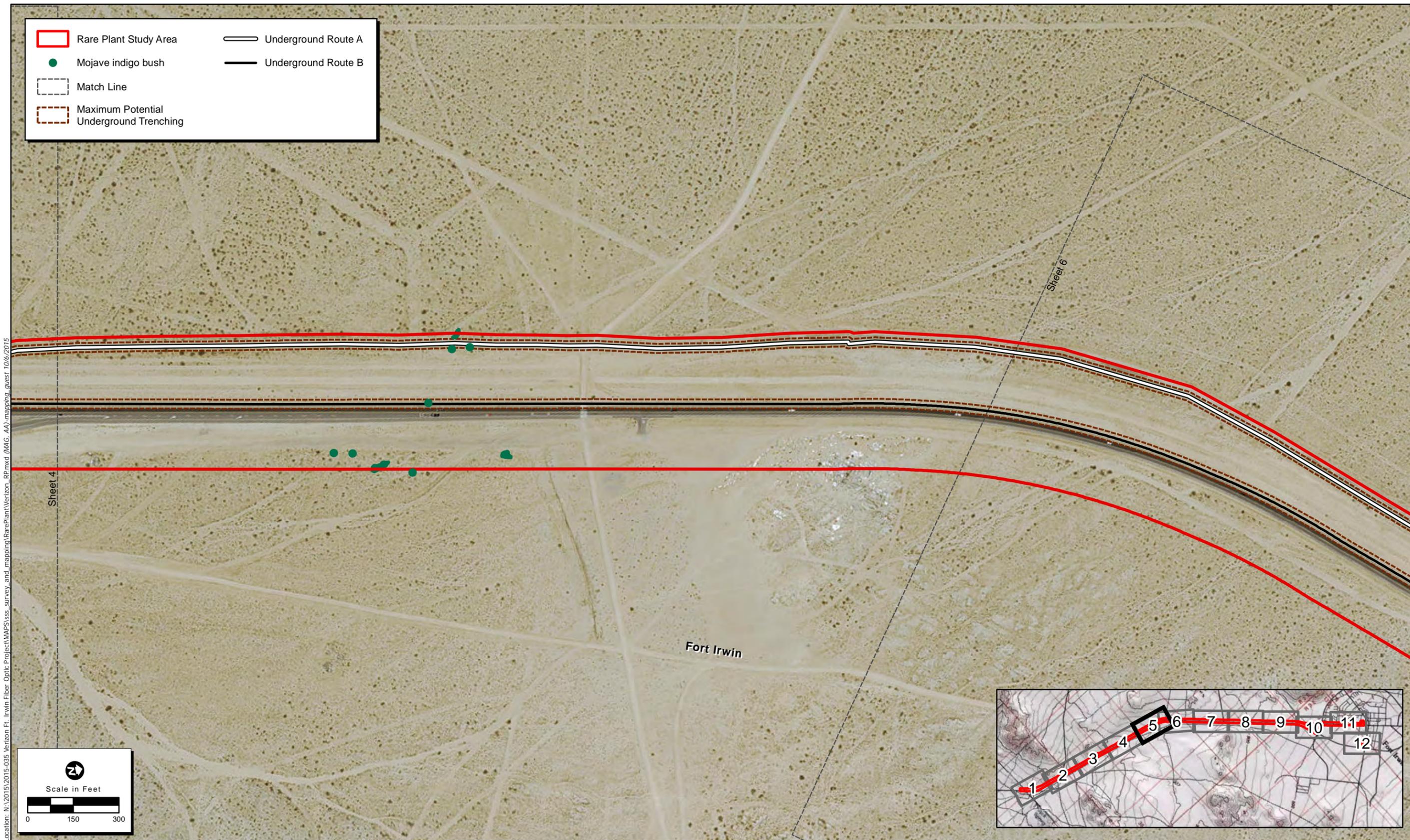


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Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 4 of 12**

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Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 5 of 12**

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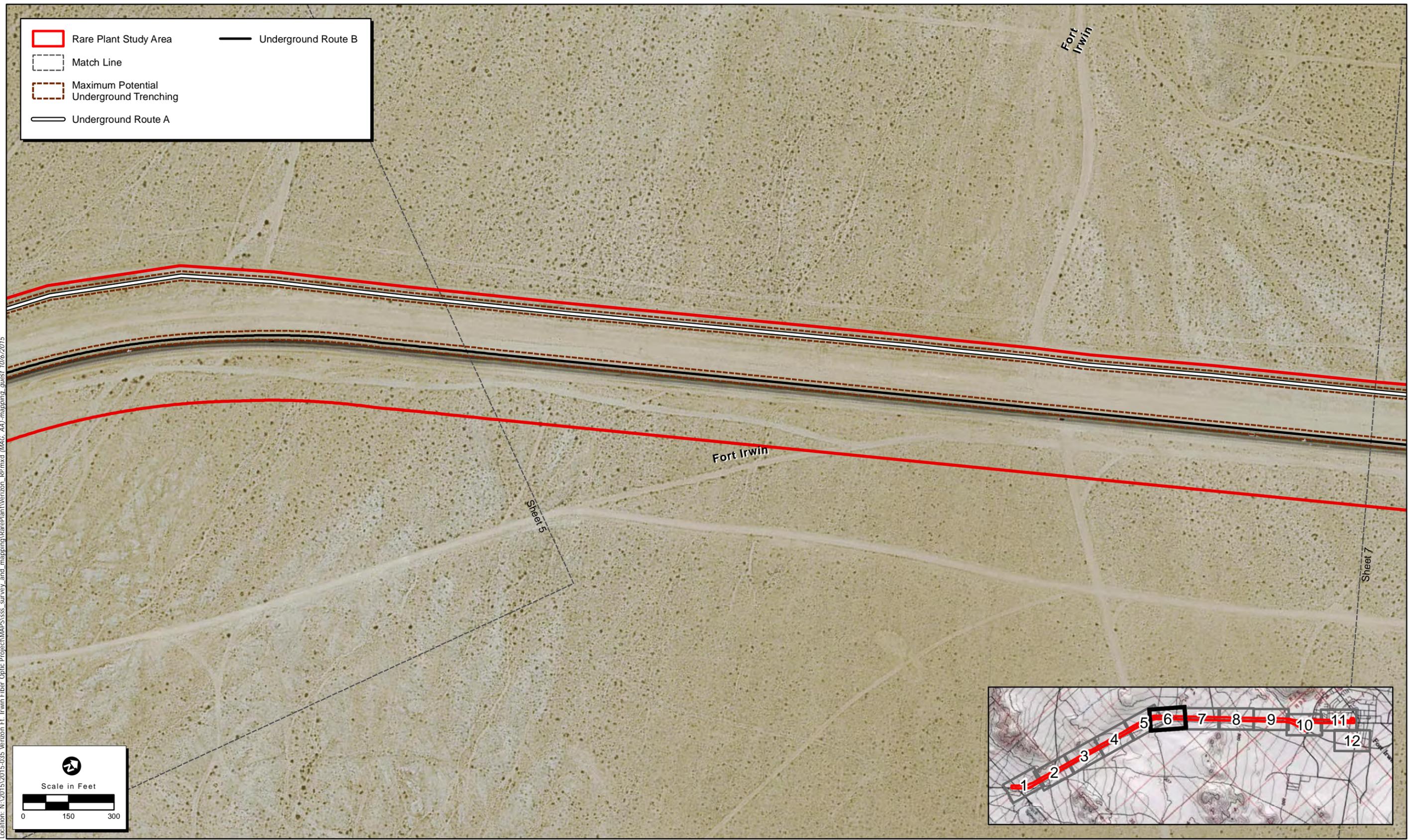


Figure 3.4-2. Rare Plant Survey Results Sheet 6 of 12

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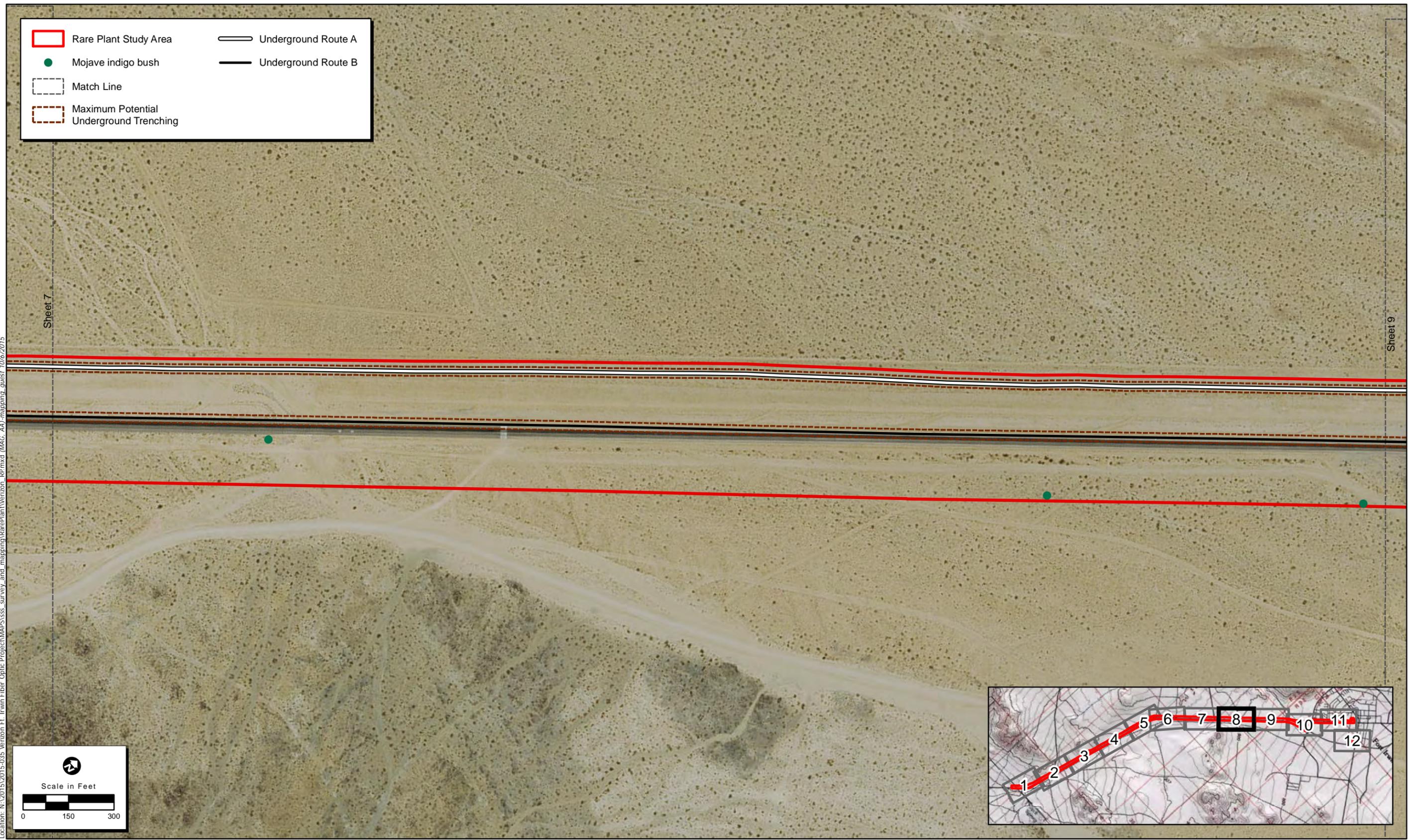


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Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 7 of 12**

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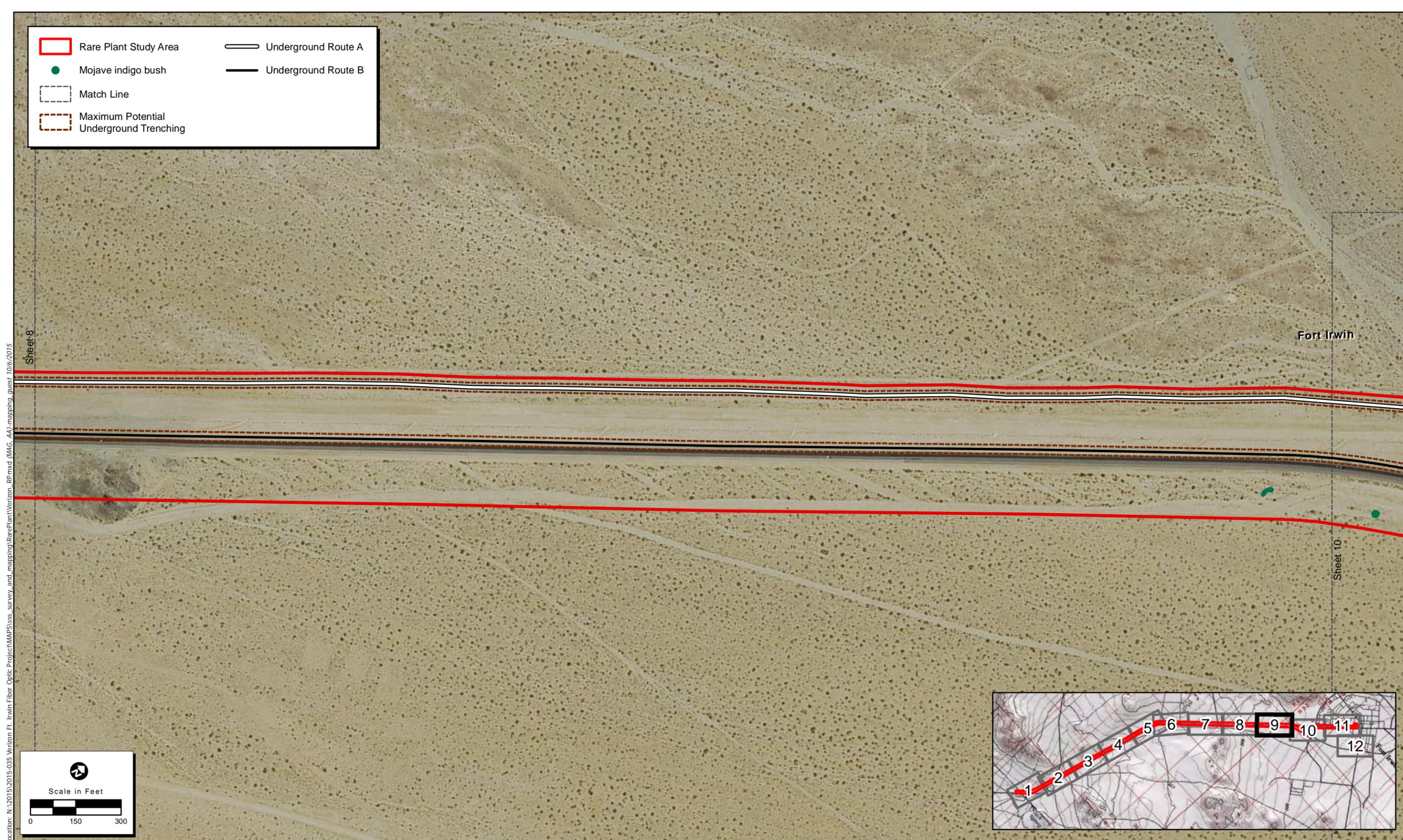
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Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 8 of 12**

2015-035 Ft. Irwin Verizon

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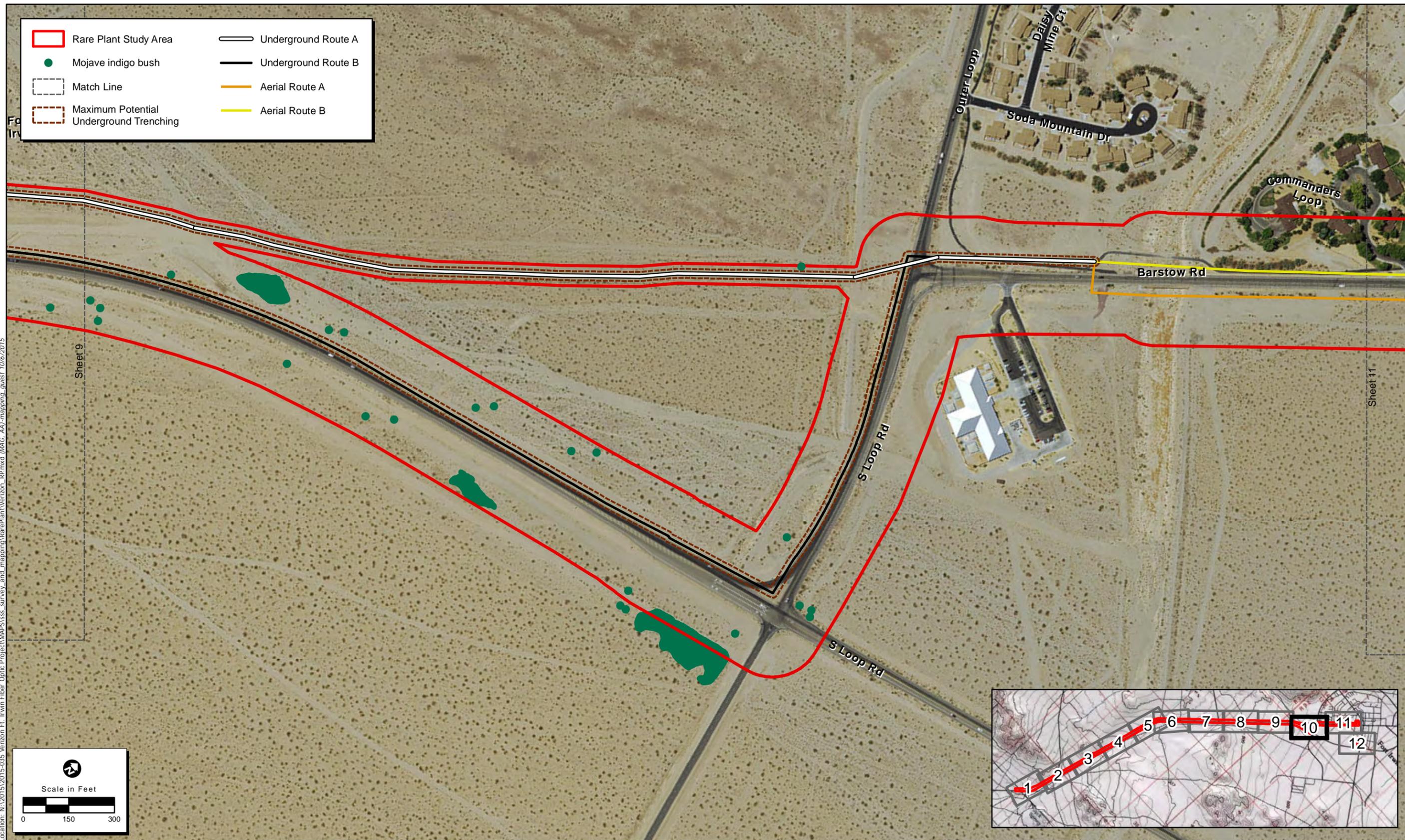
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Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 9 of 12**

2015-035 Ft. Irwin Verizon

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Location: N:\2015\2015-035 Verizon Ft. Irwin Fiber Optic Project\MAPS\ss\_survey\_and\_mapping\RarePlant\Verizon\_RB.mxd (MAG, A4)\_mapping\_quest\_10/6/2015

Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-2. Rare Plant Survey Results Sheet 10 of 12**

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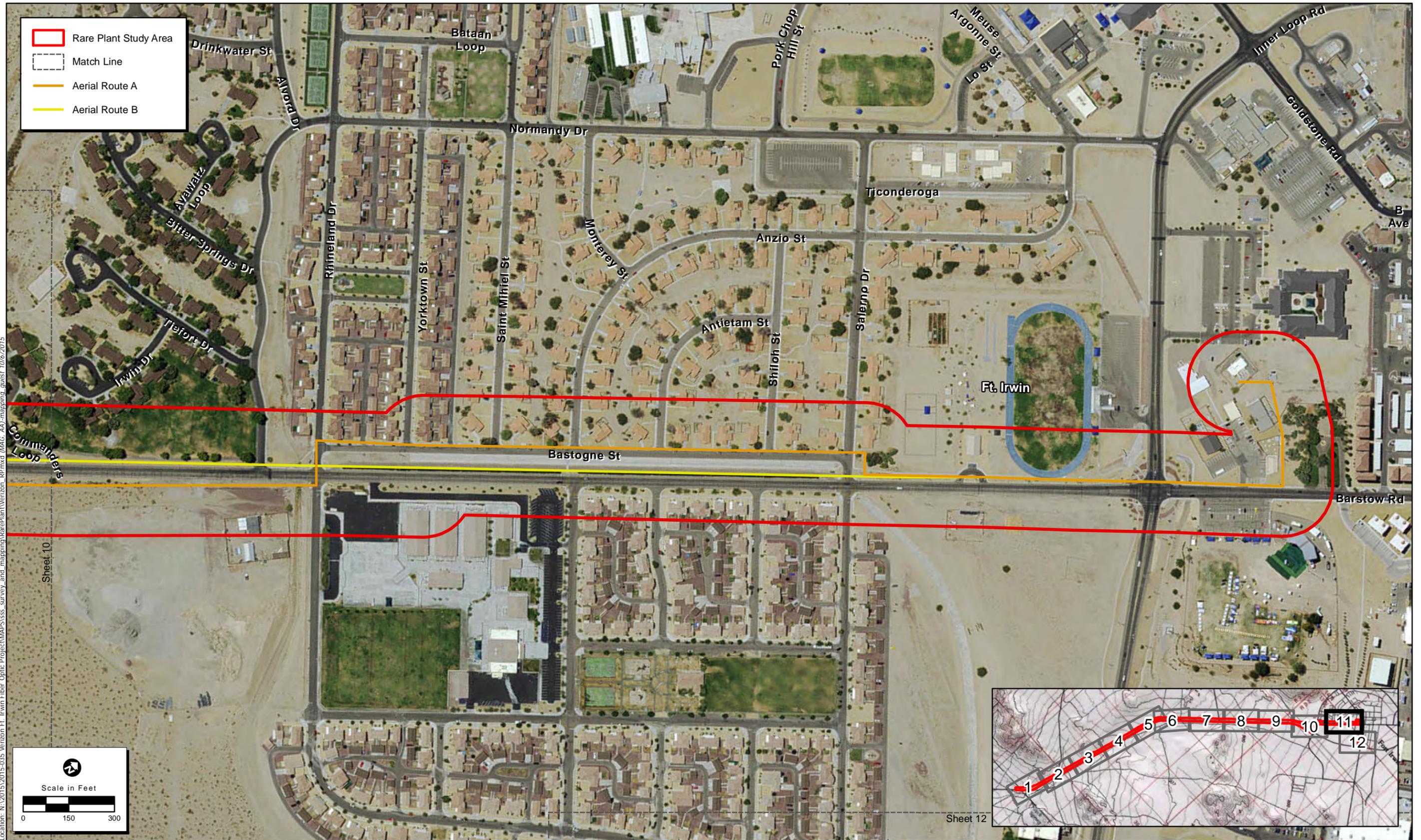


Figure 3.4-2. Rare Plant Survey Results Sheet 11 of 12

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Map Date: 10/6/2015  
Photo Source: NAIP 2012

Figure 3.4-2. Rare Plant Survey Results Sheet 12 of 12

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### 3.4.6.2 Fauna

During field surveys of the Project area, desert tortoise burrows and scat were observed, indicating presence in the Project area. However, neither desert tortoises nor any special-status wildlife species were observed. Wildlife present at Fort Irwin consists of a variety of species adapted to desert scrub habitats that provide little cover and xeric conditions. Ten mammal species and 13 bird species were observed during the surveys. Wildlife species observed during the site surveys are listed in Table 3.4-7.

Table 3.4-7 Wildlife Species Observed During Site Surveys

Scientific Name	Common name
<b>REPTILIA</b>	<b>REPTILES</b>
<b>Colubridae</b>	<b>Colubrids</b>
<i>Coluber flagellum pice</i>	red racer
<b>Crotaphytidae</b>	<b>Collard and Leopard Lizards</b>
<i>Gambelia wislizenii</i>	long-nosed leopard lizard
<b>Phrynosomatidae</b>	<b>Spiny lizards</b>
<i>Callisaurus draconoides</i>	zebra-tailed lizard
<i>Sceloporus occidentalis</i>	western fence lizard
<i>Sceloporus graciosus gracilis</i>	western sagebrush lizard
<i>Sceloporus magister</i>	desert spiny lizard
<i>Uta stansburiana elegans</i>	western side-blotch lizard
<b>Teiidae</b>	<b>Whiptails and Relatives</b>
<i>Aspidoscelis tigris tigris</i>	Great Basin whiptail
<b>Testudinidae</b>	<b>Land Tortoises</b>
<i>Gopherus agassizii</i>	desert tortoise (scat)
<b>Viperidae</b>	<b>Vipers</b>
<i>Crotalus cerastes</i>	sidewinder rattlesnake
<b>AVES</b>	<b>BIRDS</b>
<b>Accipitridae</b>	<b>Hawks, Kites, Harriers, and Eagles</b>
<i>Buteo jamaicensis</i>	red-tailed hawk
<b>Alaudidae</b>	<b>Larks</b>
<i>Eremophila alpestris</i>	horned lark
<b>Cathartidae</b>	<b>New World Vultures</b>
<i>Cathartes aura</i>	turkey vulture
<b>Charadriidae</b>	<b>Plovers</b>
<i>Charadrius semipalmatus</i>	Semipalmated plover (migrating)
<b>Columbidae</b>	<b>Pigeons and Doves</b>
<i>Streptopelia decaocto</i> *	Eurasian collared-dove
<b>Corvidae</b>	<b>Jays and Crows</b>
<i>Corvus corax</i>	common raven
<b>Cuculidae</b>	<b>Cuckoos and Roadrunners</b>
<i>Geococcyx californianus</i>	greater roadrunner
<b>Emberizidae</b>	<b>American Sparrows</b>
<i>Artemisospiza belli</i>	sage sparrow
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
<b>Fringillidae</b>	<b>Songbirds</b>
<i>Haemorrhous mexicanus</i>	house finch

Scientific Name	Common name
<b>Sturnidae</b>	<b>Starlings</b>
<i>Sturnus vulgaris</i> *	European starling
<b>Trochilidae</b>	<b>Hummingbirds</b>
<i>Calypte anna</i>	Anna's hummingbird
<b>Troglodytidae</b>	<b>Wrens</b>
<i>Salpinctes obsoletus</i>	rock wren
<b>MAMMALIA</b>	<b>MAMMALS</b>
<b>Canidae</b>	<b>Dogs</b>
<i>Canis latrans</i>	coyote
<b>Cricetidae</b>	<b>Cricetine Mice and Rats</b>
<i>Neotoma lepida</i>	desert woodrat
<i>Peromyscus maniculatus</i>	deer mouse
<b>Equidae</b>	<b>Asses, Horses, and Zebras</b>
<i>Equus asinus</i> *	feral burro
<b>Heteromyiadae</b>	<b>Kangaroo Rats, Pocket Mice, and Kangaroo Mice</b>
<i>Chaetodipus</i> sp.	unidentified pocket mouse
<i>Dipodomys</i> spp.	unidentified kangaroo rat
<i>Perognathus</i> sp.	unidentified pocket mouse
<b>Leporidae</b>	<b>Rabbits and Hares</b>
<i>Lepus californicus</i>	black-tailed jackrabbit
<b>Scuridae</b>	<b>Squirrels and Relatives</b>
<i>Ammospermophilus leucurus</i>	white-tailed antelope squirrel
<i>Xerospermophilus tereticaudus</i>	round-tailed ground squirrel
* = non-native species	

**Reptiles and Amphibians.** No desert tortoises were observed during the focused surveys; however, desert tortoise burrows and scat were observed, indicating presence in the Project area. Of the eight observations of desert tortoise sign only one, a class five burrow, was observed within the alignment for Underground Route A. This burrow was located at the southernmost extent of Underground Route A, south of the Fort Irwin welcome sign, on the west side of Ft Irwin Road (Figure 3.4-3). Desert tortoise sign was not found within the alignment for Underground Route B. All other sign observed was located outside of the maximum potential temporary impact area for Underground Routes A and B. Nine additional reptile species were observed during surveys, such as zebra-tailed lizard, side-blotch lizard, and sidewinder rattlesnake (ECORP 2016a).

**Birds.** During field surveys, birds were the most abundantly observed taxa, with a total of 13 species detected. Some bird species that were observed in the survey areas included horned lark, common raven, sage sparrow (*Artemisiospiza belli*), turkey vulture (*Cathartes aura*), and red-tailed hawk. Nesting habitat for these birds is present throughout the Project area in the native vegetation and man-made structures. Burrowing owls were not observed during the surveys and potential burrowing owl burrows were also not observed. The Project area provides suitable raptor foraging habitat; however, nesting habitat is fairly limited within the Project area due to the lack of tall, supportive nesting substrates (e.g., transmission towers, cliffs, Joshua trees) (ECORP 2016a).

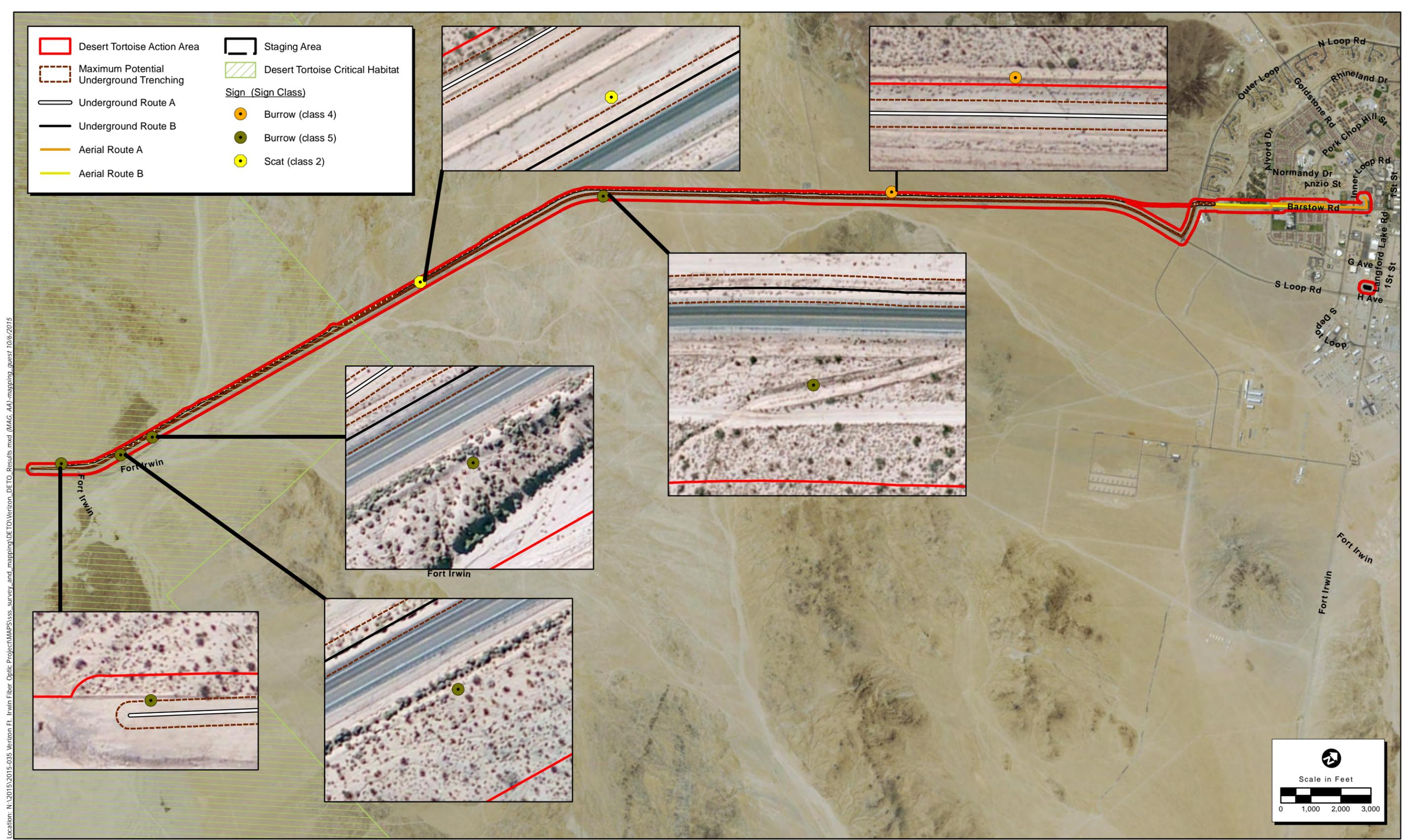
**Mammals.** During field surveys, ten mammal species were observed or detected. Some species observed included white-tailed antelope ground squirrel, round-tailed ground squirrel (*Xerospermophilus tereticaudus*), coyote, feral burro (*Equus asinus*), desert woodrat, and black-tailed jackrabbit. Suitable roosting habitat for bats is present in the rocky outcrops towards the southern end of the Project area. Although not observed, bobcats are also likely to occupy the alignments for the Project area. No MGS were observed during focused camera surveys or protocol trapping. However, round-tailed ground squirrels were found in the study area. Round-tailed ground squirrels are closely related to MGS and there are records of hybridization less than six miles from the Proposed Action area (ECORP 2016a).

### 3.4.7 Pest Species

The only pest species observed during the surveys were the common raven and the European starling. Common ravens (*Corvus corax*) are native birds in the Mojave Desert; however, their numbers have increased significantly over the past several decades as a result of expanding human use of the desert. Raven populations have grown beyond the natural carrying capacity of the desert environment because of resources provided by humans. In certain areas of the Western Mojave, raven populations have increased 1,500 percent from 1968 to 1992. Because ravens are known to prey on juvenile desert tortoises, increased populations of ravens could affect desert tortoise populations at Fort Irwin (ECORP 2016a).

European starlings (*Sturnus vulgaris*) are another pest species at Fort Irwin. Starlings originally came from Europe and have become widespread in the United States since their introduction. They have a detrimental effect on the nesting habits of several other bird species due to their tendencies to aggressively protect their territories. Starling nests are not protected by the MBTA. Other non-native pest species recorded at Fort Irwin include the house sparrow (*Passer domesticus*) (ECORP 2016a).

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Location: N:\2015\2015-035 Verizon Ft. Irwin Fiber Optic Project\MAPS\ssss\_survey\_and\_mapping\DETO\Verizon\_DETO\_Results.mxd (MAG, A4)-mapping\_guest 10/6/2015

Map Date: 10/6/2015  
Photo Source: NAIP 2012

**Figure 3.4-3. Desert Tortoise Survey Results**

2015-035 Ft. Irwin Verizon

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## 3.5 Water Resources

This section describes water resources, both surface and ground, within the Project area, as shown on Figures 2-1, 2-3, and 3-5.

### 3.5.1 Surface Water

Surface water resources are scarce at Fort Irwin and its surrounding region. Washes descending from mountains and other elevated landforms provide intermittent channels that route stormwater runoff into basins to store water until percolation or evaporation occurs. All streams are intermittent, and naturally occurring standing water is ephemeral, evident only during and immediately after heavy rains. Levees have been erected to protect the cantonment from floodwaters. Substantial water flow and accumulation takes place only during greater-than-normal storm events, which are expected to occur approximately once every 10 years (USACE 2006). The Project area contains many ephemeral streams, drainages that contain flows only during and immediately following a storm event. Within the jurisdictional study area (50-foot buffer from each of the proposed alignments) a total of 17.667 acres of ephemeral stream were mapped (ECORP 2016a).

Alluvial fans are commonly observed in and around Fort Irwin. Bedload material composed of sand, gravel, cobbles, and rocks is deposited in alluvial fans during heavy rainfall events. Significant subsurface flows may occur in the unconsolidated sand and gravel channel deposits found in washes and alluvial fans, even after surface flows have ceased. Local groundwater recharge could occur along washes where water temporarily pools (USACE 2006).

Fort Irwin has six springs that produce small quantities of water and four intermittent springs that produce little to no water during the summer, depending on the seasonal amount of rainfall (USACE 2006). None of the springs are located in the immediate vicinity of the Project area.

#### 3.5.1.1 Waters of the U.S. Including Wetlands

Waters of the U.S. includes rivers, streams, estuaries, and most ponds, lakes, and wetlands. The Clean Water Act delegates authority over Waters of the United States to the USACE and U.S. Environmental Protection Agency (USEPA). Wetlands are transitional areas between terrestrial and aquatic systems. As defined by the USACE and USEPA, wetlands must have one or more of the following three attributes:

- At least periodically, the land supports predominantly hydrophytes.
- The substrate is predominantly undrained hydric soil.
- The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

A jurisdictional delineation was conducted on May 26 and 27, 2015. The Project area would be located within the Coyote-Cuddeback Lake (HUC 18090207) and the Mojave (HUC 18090208) Watersheds. Sub-watersheds include Paradise Springs-Coyote Lake (HUC 180902070307), Jack Spring (HUC 180902070306), and Garlic Spring (HUC 18090281501). Runoff in the Project area, from approximately the security checkpoint to the south end of

the Project, primarily flows north to south towards Coyote Lake (dry lake). Runoff in the Project area, from approximately the security checkpoint to the north end of the Project, primarily flows from west to east towards Langford Well Lake (dry lake). Both of these dry lakes are natural sinks with no outlets, and, therefore, “isolated.”

USACE guidelines for arid regions state that the presence of native riparian species in a dry wash indicates that the stream channel usually exhibits surface flow during small and moderate storm events (USACE 2006). No washes that meet the conditions specified in the USACE guidelines were identified in the Project area.

### 3.5.1.2 Jurisdictional Delineation Conclusion

A jurisdictional delineation was completed for the Project area (ECORP 2016a).

Although the various streams identified within the Project area are considered to be isolated and not subject to USACE jurisdiction, they are potentially regulated by the Regional Water Quality Control Board (RWQCB) because they support surface water runoff. Isolated non-navigable waters and wetlands excluded from USACE jurisdiction are subject to RWQCB authority and any discharge of waste (including fill) may require a Report of Waste Discharge and may be subject to Waste Discharge Requirements by the RWQCB.

#### Potential USACE Jurisdiction

None of the drainages occurring within the Project area are considered jurisdictional Waters of the U.S., subject to Section 404 of the CWA (33 U.S.C. 1344) because of the lack of a downstream connection to a navigable waterway. In the decision of *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (Solid Waste Agency of Northern Cook County [SWANCC]), 531 U.S. 159, the Supreme Court upheld a decision in 2001 that USACE could not regulate isolated, intrastate waters that do not bear a “significant nexus” to traditional navigable waters (at least in most cases). Runoff in the Project area, from approximately the security checkpoint to the south end of the Project, primarily flows north to south towards Coyote Lake (dry lake). Runoff in the Project area, from approximately the security checkpoint to the north end of the Project, primarily flows from west to east towards Langford Well Lake (dry lake). Both of these dry lakes are natural sinks with no outlets, and, therefore, “isolated.” Drainages in the Project area are isolated geologically from other groundwater basins, and the drainages are not considered “navigable” nor are they used for “interstate commerce.” Because they drain to natural sinks with no outlet, the ephemeral streams on the Project area are considered “isolated” and not subject to jurisdiction under Section 404.

#### Waters of the State of California

None of the drainages occurring within the Project area are considered Waters of the State of California.

### 3.5.2 Groundwater

Several groundwater basins have been identified within the vicinity of Fort Irwin including Bicycle Lake, Capital City, Coyote Lake, Goldstone Lake, Irwin, Langford Lake, and Superior Lake basin. Current water supply for Fort Irwin is groundwater from the Bicycle Lake, Langford Lake, and Irwin groundwater basins.

According to the U.S. Geological Survey (USGS), very little natural groundwater recharge occurs in these basins (USGS 1997a). Average annual natural recharge to the Irwin

groundwater basin is about 0.04 million gallons per day (mgd) or 50 acre-feet per year (afy) (USGS 1997b). Bicycle Lake and Langford Lake groundwater basins have a recharge rate of 0.03 mgd (30 afy) and 0.07 mgd (75 afy), respectively (CH2M HILL 2007).

### 3.5.2.1 Water Quality

Fort Irwin monitors the quality of its groundwater, as it is the only source for drinking water. Water from wells in all three basins has high fluoride concentrations, with 90 percent of all wells sampled having fluoride above the California maximum contaminant level (MCL) of 2 milligrams per liter (mg/L). Arsenic has also been detected at concentrations above the state MCL of 10 micrograms per liter ( $\mu\text{g/L}$ ) in 80 percent of the wells sampled. Potential sources of both fluoride and arsenic are the volcanic rocks common to the area. Water used for drinking is treated to required standards.

## 3.6 Air Quality

Air quality in a given location is defined by the ambient air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health and welfare of the general public. Seven major pollutants of concern, called criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), suspended particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>), fine particulate matter less than or equal to 2.5 microns in diameter (PM<sub>2.5</sub>), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants. Areas that violate a federal air quality standard are designated as non-attainment areas. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects. Lead has a unique quarterly averaging period. Second standards are also established for non-health impacts, such as plant damage.

The Federal Clean Air Act (CAA) places the responsibility on individual states to achieve and maintain the NAAQS. The primary mechanism for states to achieve and maintain the NAAQS is the EPA-required State Implementation Plan (SIP). The SIP identifies goals, strategies, schedules, and enforcement actions that will lead each state into compliance with the NAAQS. Each state has the authority to adopt standards stricter than those established under the federal program.

The California Air Resources Board (ARB) has also established the more stringent California Ambient Air Quality Standards (CAAQS). The State of California has also identified four additional pollutants for ambient air quality standards: visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. Areas within California in which ambient air concentrations of a pollutant are higher than the CAAQS and/or NAAQS are considered to be non-attainment for that pollutant. Table 4.2-1 shows both the federal and state ambient air quality standards.

Toxic air pollutants, also called hazardous air pollutants, are a class of pollutants that do not have ambient air quality standards but are examined on an individual basis when there is a

source of these pollutants. The State of California has identified particulate emissions from diesel engines as a toxic air pollutant.

Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse. GHGs are emitted by both natural processes and human activities. State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF<sub>6</sub>) (California Health and Safety Code Section 38505(g).) GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO<sub>2</sub>; therefore, CO<sub>2</sub> has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH<sub>4</sub>, which has a GWP of 28, and N<sub>2</sub>O, which has a GWP of 265. CO<sub>2</sub>, followed by CH<sub>4</sub> and N<sub>2</sub>O, are the most common GHGs that result from human activity. CO<sub>2</sub>, and to a lesser extent, CH<sub>4</sub> and N<sub>2</sub>O, are products of combustion and are generated from stationary combustion sources as well as vehicles. High global warming potential gases include GHGs that are used in refrigeration/cooling systems such as chlorofluorocarbons and hydrofluorocarbons.

Table 3.6-1. Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS1		CAAQS2
		Primary <sup>3</sup>	Secondary <sup>4</sup>	Concentration <sup>5</sup>
Ozone (O <sub>3</sub> )	1-Hour	-	Same as	0.09 ppm (180 µg/m <sup>3</sup> )
	8-Hour	0.08 ppm	Primary Standard	0.070 ppm (137 µg/m <sup>3</sup> ) <sup>note 7</sup>
Respirable Particulate Matter (PM <sub>10</sub> )	24-Hour	150 µg/m <sup>3</sup>	Same as Primary Standard	50 µg/m <sup>3</sup>
	Annual Arithmetic Mean	-		20 µg/m <sup>3</sup>
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	35 µg/m <sup>3</sup>	Same as Primary Standard	-
	Annual Arithmetic Mean	12.0 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>
Carbon Monoxide (CO)	8-Hour	9 ppm (10 µg/m <sup>3</sup> )	None	9.0 ppm (10 µg/m <sup>3</sup> )
	1-Hour	35 ppm (40 µg/m <sup>3</sup> )		20 ppm (23 µg/m <sup>3</sup> )
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard	0.030 ppm (56 µg/m <sup>3</sup> )
	1-Hour	0.100 ppm (188 µg/m <sup>3</sup> )		0.18 ppm (338 µg/m <sup>3</sup> )
Sulfur Dioxide (SO <sub>2</sub> )	Annual Arithmetic Mean	0.030 ppm	-	-
	24-Hour	0.14 ppm	-	0.04 ppm (105 µg/m <sup>3</sup> )
	3-Hour	-	1300 µg/m <sup>3</sup> (0.5 ppm)	-
	1-Hour	75 ppb (196 µg/m <sup>3</sup> )	-	0.25 ppm (655 µg/m <sup>3</sup> )
Lead (Pb) <sup>6</sup>	30-Day Average	-	-	1.5 µg/m <sup>3</sup>
	Calendar Quarter	1.5 µg/m <sup>3</sup>	Same as Primary Standard	-
	3-Month Rolling Average	0.15 µg/m <sup>3</sup>	Same as Primary Standard	-
Hydrogen Sulfide (HS)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m <sup>3</sup> )
Sulfates (SO <sub>4</sub> )	24-Hour			25 µg/m <sup>3</sup>
Visibility Reducing Particles	8-Hour (10 am to 6 pm, Pacific Standard Time)			In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.
Vinyl chloride <sup>6</sup>	24 Hour			0.01 ppm (26 µg/m <sup>3</sup> )

<sup>1</sup> NAAQS (other than O<sub>3</sub>, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O<sub>3</sub> standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the USEPA for further clarification and current federal policies.

<sup>2</sup> California Ambient Air Quality Standards for O<sub>3</sub>, CO (except Lake Tahoe), SO<sub>2</sub> (1- and 24-hour), NO<sub>2</sub>, PM<sub>10</sub>, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

<sup>3</sup> National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

<sup>4</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

µg/m<sup>3</sup> = milligrams per cubic meter

Source: CARB 2015

<sup>5</sup> Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

<sup>9</sup> The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Fort Irwin is located in San Bernardino County, within the Mojave Desert Air Basin (MDAB). Fort Irwin is under the jurisdiction of the Mojave Desert Air Quality Management

District (MDAQMD). The MDAQMD is the agency responsible for the administration of federal and state air quality laws, regulations, and policies in the MDAB.

Fort Irwin is within the Western Mojave Desert Ozone Nonattainment Area, which consists of the Antelope Valley portion of Los Angeles County and the southwestern portion of San Bernardino County. The Western Mojave Desert Ozone Nonattainment Area is classified as a severe-15 ozone nonattainment area under the 2008 ozone standard, indicating that the area has until 2023 to attain the standard, and is also classified as a nonattainment area for PM<sub>10</sub>. The MDAB is classified as an attainment/unclassified area for the NAAQS for all other criteria pollutants. The MDAB is considered a nonattainment area for the CAAQS for ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>. The MDAB is classified as an attainment/unclassified area for the CAAQS for all other criteria pollutants.

### 3.6.1 Regulatory Setting

#### 3.6.1.1 Federal

The USEPA is the agency responsible for enforcing the CAA of 1970 and its 1977 and 1990 amendments. The purpose of the CAA is to establish NAAQS, to classify areas as to their attainment status relative to the NAAQS, to develop schedules and strategies to meet the NAAQS, and to regulate emissions of criteria pollutants and air toxics to protect public health and welfare. Under the CAA, individual states are allowed to adopt ambient air quality standards and other regulations, provided they are at least as stringent as federal standards. The Clean Air Act Amendments (CAAA) (1990) established new deadlines for achievement of the NAAQS, dependent upon the severity of non-attainment.

The USEPA requires each state to prepare a State Implementation Plan (SIP), which describes how that state will achieve compliance with the NAAQS. A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all federal air quality standards. Each change to a compliance schedule or plan must be incorporated into the SIP. In California, the SIP consists of separate elements for each air basin, depending on the attainment status of that air basin.

The CAAA also requires that states develop an operating permit program that would require permits for all major sources of pollutants. The program would be designed to reduce mobile source emissions and control emissions of hazardous air pollutants through establishing control technology guidelines for various classes of emission sources.

**Executive Order 13693.** This EO, *Planning for Federal Sustainability in the Next Decade*, was signed by President Obama on March 19, 2015. EO 13693 supersedes EO 13514. EO 13693 defines three scope of emissions, which include the following: (a) scope 1: direct greenhouse gas emissions from sources that are owned or controlled by the Federal agency; (ii) scope 2: direct greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency; and (iii) scope 3: greenhouse gas emissions from sources not owned or directly controlled by a Federal agency but related to agency activities such as vendor supply chains, delivery services, and employee travel and commuting. EO 13693 sets forth goals for reducing GHG emissions from federal facilities.

**General Conformity.** Under 40 CFR Part 93 and the provisions of Part 51, Subchapter C., Chapter I, Title 40, Appendix W of the Code of Federal Regulations (CFR), of the CAA as Amended, federal agencies are required to demonstrate that federal actions conform with

the applicable SIP. In order to ensure that federal activities do not hamper local efforts to control air pollution, Section 176(c) of the CAA, 42 U.S.C. 7506(c), prohibits federal agencies, departments, or instrumentalities from engaging in, supporting, providing financial assistance for, licensing, permitting or approving any action which does not conform to an approved state or federal implementation plan. The provisions of Part 51, Subchapter C, Chapter I, Title 40, of the CFR, in effect December 27, 1993.

The USEPA general conformity rule applies to federal actions occurring in non-attainment or maintenance areas. Because Fort Irwin is located within the Western Mojave Desert Ozone Nonattainment Area, it is subject to the requirements of the General Conformity Rule.

Emissions of attainment pollutants are exempt from conformity analyses. Actions would conform to a SIP if their annual direct and indirect emissions remain less than the applicable *de minimis* thresholds. The applicable *de minimis* threshold for the Western Mojave Desert Ozone Nonattainment Area is 25 tons/year for ozone precursors (NO<sub>x</sub> and ROG), and 100 tons/year for PM<sub>10</sub>.

### 3.6.1.2 State

California established air pollution control programs before federal requirements were enacted. Responsibility for air quality management programs in California is divided between the California Air Resources Board (ARB), as the primary state air quality management agency, and air pollution control districts, as the primary local air quality management agencies. The ARB oversees air quality policies in California and is responsible for preparing and submitting the SIP to the USEPA. California established state ambient air quality standards (CAAQS) in 1969. These standards are generally more stringent and include more pollutants than the NAAQS. The California CAA was approved in 1988 and requires each local air district to prepare an air quality plan to achieve compliance with the CAAQS. Similar to the USEPA, the ARB designates counties in California as attainment or nonattainment with respect to the CAAQS. San Bernardino County, where Fort Irwin is located, is designated as nonattainment for the state PM<sub>10</sub>, PM<sub>2.5</sub>, and O<sub>3</sub> ambient air quality standards.

Several, more recent plans have been released to bring the region into attainment. These include:

- PM<sub>10</sub> Attainment Plans (2004 and 2013);
- PM<sub>10</sub> Attainment Demonstration and Maintenance Plan (1996 and ongoing); and
- Ozone Attainments Plans (2004 and 2008).

The overall trend in air quality indicates that both O<sub>3</sub> and PM<sub>10</sub>/PM<sub>2.5</sub> concentrations are decreasing. For the period 2011 to 2013, the area met the older federal 1-hour ozone standard. As a result, the ARB has requested that the region be deemed attainment for the 1-hour ozone standard.

### 3.6.1.3 Local

As indicated previously, the MDAQMD is the agency responsible for the administration of federal and state air quality laws, regulations, and policies. Included in the local air districts' tasks are monitoring of air pollution, maintenance of air quality standards through programs to control air pollutant emissions, and the promulgation of Rules and Regulations. MDAQMD Rules and Regulations that may apply to construction of the Verizon project include the following:

- Rule 403 – Fugitive Dust, which requires fugitive dust emissions to be restricted such that visible dust does not travel beyond the property line, and requires minimization of fugitive dust to the extent possible.
- Rule 403.2 – Fugitive Dust Control for the Mojave Desert Planning Area, which requires dust control measures to be implemented during construction, including:
  - watering,
  - reduction of trackout, covering of vehicles carrying loose materials,
  - stabilization of graded areas, and
  - reduction of nonessential earthmoving activities during high wind periods.

### 3.6.2 Existing Conditions

San Bernardino County, where Fort Irwin is located, is designated nonattainment for PM<sub>10</sub> for both federal and state standards. The southern portion of the installation (below the 90 Universal Transverse Mercator [UTM] grid line) is designated nonattainment for O<sub>3</sub> for both federal and state standards. The Proposed Action site is located north of the federal O<sub>3</sub> nonattainment area; therefore, the Proposed Action site is located in a federal attainment area for O<sub>3</sub>.

Air quality at Fort Irwin is influenced by the local climate. The area experiences hot summers, mild winters, infrequent rainfall, and moderate afternoon winds. The average high and low temperatures during the summer at Fort Irwin are 100°F and 70°F, respectively. The average high and low temperatures during the winter are 62°F and 37°F, respectively. Average annual precipitation is about 2.5 inches, with most precipitation falling in the winter or during isolated summer thunderstorms.

High particulate matter concentrations in the Mojave Desert are typically the result of wind erosion from exposed or disturbed land areas. Activities at Fort Irwin, such as vehicle travel on unpaved roads and training maneuvers, create fugitive PM<sub>10</sub> emissions. Fort Irwin has conducted PM<sub>10</sub> monitoring since 1994 and operates eight PM<sub>10</sub> monitoring sites within its boundary. Fort Irwin implements standard management practices to reduce particulate emissions, including but not limited to:

- Using water for short-term surface stabilization;
- Minimizing tracking of dirt onto paved roads;
- Covering haul trucks;

- Stabilizing sites with chemicals or vegetation;
- Paving parking lots; and
- Placing gravel to control windblown dust.

### 3.6.3 Climate Change and Greenhouse Gases

This section discusses the existing conditions, regulatory background, and potential greenhouse gas (GHG) emissions from the Proposed Action.

#### 3.6.3.1 Existing Conditions

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer). Climate change may result from any of the following conditions (USEPA 2010):

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); and
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, and desertification).

GHGs include the following pollutants (USEPA 2010):

- Carbon dioxide (CO<sub>2</sub>) is a naturally occurring gas and a by-product of burning fossil fuels and biomass, land use changes, and other industrial processes. It is the principal anthropogenic GHG that affects the Earth's radiative balance.
- Methane (CH<sub>4</sub>) has a global warming potential approximately 20 times that of CO<sub>2</sub>. CH<sub>4</sub> is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
- Nitrous oxide (N<sub>2</sub>O) has a global warming potential approximately 300 times that of CO<sub>2</sub>. Major sources of N<sub>2</sub>O include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
- Hydrofluorocarbons (HFCs) are compounds containing only hydrogen, fluorine, chlorine, and carbon. HFCs have been introduced as a replacement for the chlorofluorocarbons identified as ozone depleting substances.
- Perfluorocarbons (PFCs) are compounds containing only fluorine and carbon. Similar to HFCs, PFCs have been introduced as a replacement for chlorofluorocarbons. PFCs are also used in manufacturing and are emitted as by-products of industrial processes. PFCs are powerful GHGs.

- Sulfur hexafluoride (SF<sub>6</sub>) is a colorless gas that is soluble in alcohol and ether, and slightly soluble in water. This compound is a very powerful GHG used primarily in electrical transmission and distribution systems, as well as dielectrics in electronics.

### 3.6.3.2 Regulatory Background

**Federal.** The USEPA Mandatory Reporting Rule became effective on December 29, 2009, and sources required to report were to begin collecting data on January 1, 2010. In general, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of carbon dioxide equivalent (CO<sub>2</sub>e) emissions are required to submit annual reports to the USEPA. The USEPA reporting requirements continue to be updated. On November 8, 2010, reporting requirements for petroleum and natural gas systems were finalized. These regulations are currently in place and are codified in various subparts of 40 CFR 98.

In addition, the Supreme Court decision in *Massachusetts et al. v. Environmental Protection Agency et al.* (Supreme Court Case 05-1120) found that the USEPA has the authority to list GHGs as pollutants and to regulate emissions of GHGs under the CAA. On April 17, 2009, the USEPA found that CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub> may contribute to air pollution and may endanger public health and welfare. Currently, emissions of these GHGs are regulated under 40 CFR 98 for various industries.

Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*, was signed by President Obama on March 19, 2015. EO 13693 supersedes EO 13514. EO 13693 defines three scope of emissions, which include the following: (a) scope 1: direct greenhouse gas emissions from sources that are owned or controlled by the Federal agency; (ii) scope 2: direct greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency; and (iii) scope 3: greenhouse gas emissions from sources not owned or directly controlled by a Federal agency but related to agency activities such as vendor supply chains, delivery services, and employee travel and commuting. EO 13693 sets forth goals for reducing GHG emissions from federal facilities.

**State and Regional.** In 2006, the California State Legislature signed the Global Warming Solutions Act of 2006 (AB 32), which provides the framework for regulating GHG emissions in California under AB 32. This law requires ARB to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020. The statewide 2020 emissions limit is 427 million metric tons of carbon dioxide equivalents (CO<sub>2</sub>e) (ARB 2007). CO<sub>2</sub> emissions account for approximately 90 percent of the statewide GHG emissions (ARB 2007). CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub> emissions account for the remainder of the statewide GHG emissions (ARB 2007). This inventory was updated in August 2013.

The first regulation adopted by ARB pursuant to AB 32 was the regulation requiring reporting of GHG emissions. The regulation requires large industrial sources emitting more than 25,000 metric tons of CO<sub>2</sub> per year to report and verify their GHG emissions from combustion of both fossil fuels and biomass-derived fuels (ARB 2008). The Proposed Action would not be considered a source of GHG emissions while in operation. Since 2011, all sources emitting more than 25,000 metric tons of CO<sub>2</sub> are subject to mandatory reporting and are subject to the Cap-and-Trade Program under AB 32.

Since MDAQMD has not adopted local thresholds for GHG emissions, the region relies on the ARB threshold of 25,000 metric tons of CO<sub>2</sub>.

**Potential for Greenhouse Gas Emissions.** The operation and movement of vehicles and construction equipment in the project area have the potential for GHG emissions. These emissions have been quantified and are included in the air quality analysis in Section 4.

## 3.7 Noise

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although exposure to very high noise levels can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

### 3.7.1 Regional Noise Environment

Fort Irwin is located within the 19,600-square-mile R-2508 Complex, a special-use airspace complex that includes all the airspace and associated land presently used and managed by Fort Irwin, the U.S. Air Force Flight Test Center at Edwards Air Force Base (AFB), and NAWS China Lake. The R-2502N and R-2502E Areas of the R-2508 Complex consist almost entirely of Fort Irwin. Military operations determine primarily the ambient noise environment within those areas. Military training exercises that contribute to noise at Fort Irwin include army vehicle ground maneuvers, artillery firing, air operations, air-to-ground gunnery, and transportation to, from, and within Fort Irwin during and after maneuvers.

Air operations at the Mojave B Range of NAWS China Lake and aircraft stationed at Edwards AFB also contribute to the ambient noise in the area.

### 3.7.2 Local Environment

The Proposed Action and Alternatives would be located on existing utility poles along established streets within the cantonment area and south outside the cantonment area generally following the alignment of a tank trail parallel to Fort Irwin Road and Fort Irwin Road.

The entire Project area for the Proposed Action and Alternatives is affected by noise sources that are common throughout Fort Irwin including overhead aircraft noise, vehicular traffic noise, and construction related noise. Aircraft noise is generated by aircraft using nearby facilities including the helipad associated with Weed Army Community Hospital and Bicycle Lake Army Airfield, which is located approximately 2.5 miles north of the cantonment. Vehicular traffic noise is generated from the cantonment's roadway network, including noise from tank routes located near Fort Irwin Road. Ongoing construction related noises from other projects are common in the cantonment. In addition to common noise sources, existing ambient noise conditions may also be affected by site-specific noise sources.

### 3.7.3 Sensitive Receptors

A number of noise-sensitive receptors are on-post, including schools, day care facilities, medical facilities, and residences. Most of the on-post housing units for military personnel are in the western section of the cantonment, bounded by North Loop Road, Outer Loop Road, Inner Loop Road, and Barstow Road, which are located near both of the proposed aerial routes for the fiber optic line. Neither underground routes are near these sensitive receptors.

### 3.7.4 Regulatory Considerations

The Department of the Army has established noise level limitations for activities in proximity to residential areas. Army Regulation 200-1 (AR 200-1) implements all federal laws concerning environmental noise for Army activities. This regulation specifies that a noise level of 65 to 75 dBA is normally acceptable, while a noise level of greater than 75 dBA is unacceptable. For noise-sensitive land uses, such as housing, schools, and hospitals, noise levels of greater than 65 dBA are considered incompatible.

The goals of the Environmental Noise Management Program (Army Regulation 200-1, Section 7) are to:

- Control environmental noise to protect the health and welfare of people, on- and off-post, impacted by Army-produced noise, including on- and off-post noise sources; and
- Reduce community annoyance from environmental noise to the extent feasible, consistent with Army training and materiel-testing activities.

Army environmental noise policies are based on land use compatibilities as indicated by objective noise levels. A number of noise measurements are used to assess compatibility, including the following:

- dB (decibel). A measurement of the sound pressure level.
- dBA (A-weighted sound pressure level). Sound pressure level, in decibels, as measured on a sound level meter using an A-weighting filter network, which de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitive range of the human ear.
- dBC (C-weighted sound pressure level). Sound pressure level, in decibels, as measured on a sound level meter using a C-weighting filter network, which emphasizes the very low frequency components of the sound.
- ADNL (A-weighted day-night level). Average A-weighted day-night noise level.
- CDNL (C-weighted day-night level). Average C-weighted day-night noise level.

Noise generated by transportation sources (such as vehicles and aircraft) and from continuous sources (such as generators) is assessed using ADNL. Impulsive noise resulting from armor, artillery, and demolition activities is assessed using CDNL. Noises from small

arms ranges are assessed using the peak unweighted sound level (dBP). Using these measurement scales, noise limits and associated zones are defined as shown in Table 3.7-1.

Table 3.7-1. Noise Compatibility Zones

Noise Zone	Population (% highly annoyed)	Transportation (ADNL)	Impulsive (CDNL)	Small Arms (dBP)
I	Less than 15%	Less than 65 dBA	Less than 62 dBC	Less than 87 dBP
II	15% - 39%	65-75 dBA	62-70 dBC	87-104 dBP
III	More than 39%	More than 75 dBA	More than 70 dBC	More than 104 dBP

Source: U.S. Army Regulation 200-1, Chapter 7, Environmental Noise Management Program

Noise-sensitive land uses such as housing, schools, and medical facilities are compatible with the noise environment in Zone I, normally incompatible in Zone II, and incompatible in Zone III.

According to the 2008 U.S. Army Environmental and Occupational Hygiene Laboratory Report, prepared by the Army Environmental Hygiene Agency, noise produced on the installation has minimal impacts to noise-sensitive uses due to the size and remote location of the installation. The size of the installation allows for the dispersion of noise. The only notable noise impact within the cantonment is associated with operation of the hospital helipad (Baker, 2008).

### 3.8 Cultural Resources

This section discusses cultural resources in relation to the Proposed Action and Alternatives, which is defined as the area of potential effect (APE) within and adjacent to the footprint of the Proposed Action and Alternatives. Cultural resources include artifacts and archaeological sites from the prehistoric and historic periods, and buildings, structures, and objects from the historic period. Native American cultural resources are of importance to Native Americans and can be from the prehistoric or historic periods.

Prehistoric cultural resources are objects or areas modified or used by people in the period that predates written records. Prehistoric cultural resources in California are generally the result of Native American activities and consist of isolated artifacts or archaeological sites. Prehistoric archaeological sites can include village sites, temporary camps, lithic (stone tool) scatters, roasting pits or hearths, milling features, pictographs or petroglyphs (rock art), rock features, and burial sites.

Native American resources are sites, areas, and materials important to Native Americans for religious, spiritual, or traditional reasons. These resources can include village sites, burial sites, rock art, rock features, or springs. The belief in the sacred character of physical places, such as mountain peaks, springs, or burial sites, is fundamental to Native American religion. Traditional rituals often prescribe the use of particular native plants, animals, or minerals. Thus, activities that might affect sacred areas, their accessibility, or the availability of materials used in traditional practices are of primary concern.

Resources from the historic period consist of buildings, structures, objects, and archaeological sites resulting from human activities that occurred during the period when

written records are available. In California the historic period begins with the arrival of the Spanish in A.D. 1769. Historic archaeological site types include town sites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military use of the land. Historic buildings and structures include houses, cabins, barns, bridges, and lighthouses, churches, post offices, and meeting halls, and early military structures such as hangars, administration buildings, barracks, officer quarters, warehouses, and guardhouses. The end of the historic period is considered to be 50 years before present.

### 3.8.1 Regulatory Considerations

Cultural resources affected by federally funded or federally-permitted projects are subject to the requirements of Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. Sections 470 through 470x-6) and its implementing regulations (36 CFR 800). Section 106 of the NHPA and its implementing regulations require federal agencies to take into account the impact of federal undertakings on significant cultural resources (historic properties). Historic properties are cultural resources that have been determined eligible for the National Register of Historic Places (NRHP). The Section 106 process is carried out by the federal agency in consultation with the State Historic Preservation Officer (SHPO). The Section 106 process consists of identifying cultural resources through records searches and field surveys, evaluating cultural resources to determine if they are historic properties using NRHP eligibility criteria (the federal agency makes the determination with concurrence from SHPO), assessing whether the effects of the undertaking on historic properties will be adverse, and consulting with the SHPO regarding these effects and any actions that might be taken to treat or mitigate them. The agreed-upon treatment is formalized in a Memorandum of Agreement (36 CFR 60.4).

The NRHP eligibility criteria (36 CFR 60.4) state that: the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess aspects of integrity of location, design, setting, materials, workmanship, feeling, association, and that:

- A. Are associated with events that have made a significant contribution to the broad patterns of our history;
- B. Are associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, region, or method of construction, or that represent the work of a master, or that possesses high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. Have yielded, or may be likely to yield, information important in prehistory or history.

In addition, the resource must be at least 50 years old, except in exceptional circumstances.

Section 101(d)(6)(A) of the NHPA, as amended, provides for properties of traditional religious and cultural importance to Native Americans (traditional cultural properties) to be determined eligible for inclusion in the NRHP.

### 3.8.2 Cultural Resources Identification

**Records Search.** ECORP Consulting, Inc. conducted records searches and field surveys in order to identify cultural resources in the Project area (ECORP 2016b). A cultural resources records search was conducted by an ECORP archaeologist in April 2015 at the San Bernardino Archaeological Information Center (SBAIC) at the San Bernardino County Museum, Redlands. The SBAIC is a unit of the California Historical Resources Information System (CHRIS). The records search provided information on the extent and location of previous surveys, previously identified prehistoric or historic archaeological site locations, architectural resources, historic properties, cultural landscapes, or ethnic resources within a 1-mile radius of the project site.

In addition to the archaeological records search at the SBAIC, an ECORP archaeologist contacted Fort Irwin cultural resources personnel to request a records search for any known resources that may not have been captured by the search at the SBAIC. During this process, ECORP staff members were informed by Base Archaeologist Brantley Jackson that survey reports and site records for all previously recorded resources at Fort Irwin have been sent to the SBAIC (ECORP 2016b).

The results of the records search at the SBAIC indicated that a total of 25 cultural resources investigations were conducted within the 1-mile records search radius of the Project area between 1946 and 2014. Of these 25 investigations, four overlap portions of the Project Area of Potential Effect (APE) (NADB-1066259, 1066261, 1067170, and 1067361), and four were located adjacent to the Project APE (NADB-1061314, 1061416, 1067336, and 1067341). The Project APE consists of the full extent of all Project components and all four build alternatives plus a 32-foot (10-meter) survey buffer on all sides of the underground routes and aerial placement routes, and a 98-foot (30-meter) survey buffer on all sides of the Staging Area. The records search results from the SBAIC revealed that 49 cultural resources have been previously recorded within the 1-mile records search radius. Of these 49 cultural resources, 24 are historic-period sites. Of the 24 historic-period sites, 14 are historic-age buildings located within the Fort Irwin cantonment area and the other 10 are historic period archaeological sites.

The remaining 25 resources include seven prehistoric sites, 11 prehistoric isolates, four historic-period isolates, two multicomponent sites, and one site of unknown age. Of these 49 previously recorded resources, one historic-age site, a wood pole transmission line (P36-010894/CA-SBR-10894), is located within the project APE. This utility line was previously evaluated for listing in the NRHP and was evaluated as not eligible.

A search of the Sacred Lands File was conducted by the Native American Heritage commission in Sacramento, California. This search was requested to determine whether there are sensitive or Sacred Native American resources in the vicinity of the Project area that could be affected by the Proposed Action or Alternatives. The Sacred Lands File did not indicate the presence of Native American cultural resources within 1-mile (1.6 kilometers) of the Project APE. In addition to the Sacred Lands File search, Fort Irwin has initiated consultation with twelve Native American tribes. Consultation between the Tribes and Fort Irwin is ongoing.

**Field Survey.** The initial archaeological field work was conducted by ECORP archaeologists between May 26 and 28, 2015, and consisted of an intensive systematic pedestrian survey. Following revisions to the APE boundary, an ECORP archaeologist conducted additional survey on September 25, 2015. This second survey was conducted to capture any areas not surveyed during the initial May surveys that were added to the APE as a result of Project design refinements. The entire Project APE was examined for the presence of cultural artifacts and features by walking parallel transects spaced 15 meters (49 feet) apart. Notes were taken on the environmental setting and disturbances within the Project APE. All archaeological resources encountered were mapped into a handheld Juno GPS unit, which has an accuracy ranging from sub-meter to 2 meters (6.5 feet).

During the survey of the Project APE, no prehistoric or historic-period sites or isolates were identified. One previously recorded historic-period site, a wood pole utility line (P36-010894/CA-SBR-10894), was updated. No properties listed in the NRHP, or eligible for listing in the NRHP, exist within the APE for the Proposed Action and Alternatives (ECORP 2016b).

## 3.9 Socioeconomics

This section describes the socioeconomic conditions in the Region Of Influence (ROI), including economic development, demographics, housing, quality of life, environmental justice, and the protection of children. The ROI for this study is defined as the geographical area within which social and economic impacts of project implementation are likely to occur. Major factors used to determine the ROI are the residency distribution of Fort Irwin employees, commuting distances and times, and locations of the businesses providing goods and services to Fort Irwin. Although the predominant economic and social impacts of the project proposed are likely to be centered in the area surrounding the installation, for purposes of the analysis in this section, the affected environment is defined as the entire county in which Fort Irwin is located (i.e., San Bernardino County). Economic impacts associated with the construction and operation phases of the project are assessed on a countywide basis. However, certain demographic and income data are reported for smaller geographical areas, such as a census tract. Because Fort Irwin is relatively isolated within a large county containing few large urban areas, housing and demographic impacts would be confined primarily to the installation and the neighboring urban area of Barstow.

### 3.9.1 Regulatory Considerations

Executive Order 12898, Environmental Justice, was issued by President Clinton on February 11, 1994. Objectives of this Executive Order include the requirement that every federal agency "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Executive Order 13045, Environmental Health and Safety Risks to Children, was signed by the President on April 21, 1997. This Executive Order acknowledges that children may suffer disproportionately from environmental health risks and safety risks. Therefore, the Executive Order requires each federal agency to make it a priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and

ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

### 3.9.2 Population

The total 2010 population for the census block groups intersecting the project area was 8,518 people, with a density of approximately 4 persons per square mile (Table 3.9-1). The majority of the people in Census Tract 250, Block Group 1 (5,006 of 8,850 persons) live in the Fort Irwin housing area. It is unlikely that these populations have changed significantly since 2010.

Table 3.9-1. Population and Area Census Block Groups

<b>Geographic Unit</b>	<b>Total Population (2010)</b>	<b>Area (Square Miles)</b>	<b>Population / Square Mile</b>
Fort Irwin			
Census Tract 250, Block Group 1	8,850	1,900	3.6
Census Tract 103, Block Group 4	790	100	16.8
Total	8,518	2,000	43
Barstow	22,639	41	547
San Bernardino County	2,035,210	20,056	101.5

Source: U.S. Census Bureau 2010

Notes: Approximately 5,006 persons live in the housing area on Fort Irwin.

### 3.9.3 Housing

#### 3.9.3.1 On-Post Housing

Fort Irwin has 2,376 housing units, 168 bachelor quarters, and 1,248 barrack spaces (Fort Irwin 2013a). The Proposed Action and Alternatives include various combinations of an Underground Route and an Aerial Placement Route. Both Aerial Placement Route alternatives would be installed in the cantonment area in and adjacent to housing areas. This component would be developed on existing utility poles around existing buildings and facilities.

#### 3.9.3.2 Off- Post Housing

Most of the military and civilian personnel who reside off-post live in Barstow and the adjacent small unincorporated communities of Lenwood, Hinkley, Yermo, Daggett, and Newberry Springs, or in the incorporated communities of Victorville, Hesperia, and Apple Valley.

### 3.9.4 Economic Development

Economic development in the region is described in terms of total employment by type of industry, unemployment, and personal income.

The San Bernardino County economic base is dominated by the services, trade, state, and local governments and manufacturing sectors. Since 2010, the unemployment rate in San Bernardino County has decreased. However, San Bernardino's unemployment rate has been higher than the state and nation since 2007 (County of San Bernardino 2014). The unemployment rate in San Bernardino County remains at 6.1 percent, slightly lower than

the State of California at 6.3 percent as of April 2015 (Bureau of Labor Statistics 2015a; Bureau of Labor Statistics 2015b).

### 3.9.5 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." The Executive Order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from Proposed Actions and identify alternatives that might mitigate the impacts.

Information concerning race, ethnicity and poverty levels for the City of Barstow, San Bernardino County, and the State of California is presented in Table 3.9-2. The proportion of the total population of minority groups is higher for San Bernardino County than for the City of Barstow and the State of California. Proportions of minority populations for all geographical areas exceed 50 percent. The proportion of the population below the poverty level in the City of Barstow is higher than for San Bernardino County and the State of California. The percentage of population under 18 years of age is higher in the City of Barstow than in the County of San Bernardino and in the State of California.

Table 3.9-2. Minority Populations and Persons Living Below the Poverty Level

	<b>City of Barstow</b>	<b>Barstow Vicinity (ZIP Code Area 92311)</b>	<b>San Bernardino County</b>	<b>State of California</b>
<b>Total Population</b>	<b>22,639</b>	<b>31,894</b>	<b>2,035,210</b>	<b>37,253,956</b>
Hispanic or Latino (regardless of race)	9,700	13,457	1,001,145	14,013,719
Non-Hispanic or Latino (except White)	5,193	5,749	356,467	8,283,984
Minority Population	14,893	19,206	1,357,612	22,297,703
Percent Minority Population	65.8%	60.2%	66.7%	59.9%
Percent of Population Below Poverty Level	22.2%	19.6%	16%	14.4%
Percent of Population Under 18 years	29.8%	19.6%	28.2%	24.3%

Source: Bureau of the Census, Census 2010, SF 3, American Fact Finder 2007-2011 American Community Survey 5- Year Estimates.

### 3.9.6 Protection of Children

Executive Order 13405 seeks to protect children from disproportionate environmental health and safety risks that might arise as a result of Army policies, programs, activities, and standards.

Fort Irwin has engaged in an aggressive Military Family Housing replacement and upgrade program in recent years. This program has resulted in the construction of 438 housing units since 2000. Potential health and safety concerns are often associated with the presence of lead-based paint and asbestos-containing material in residential and other buildings. With

the replacement and upgrade of on-post housing units, the potential of adverse effects to children has been reduced.

## 3.10 Hazardous and Toxic Substances

A Phase I Environmental Site Assessment (ESA) was completed by Petra Geotechnical, Inc. The Phase I ESA included a site reconnaissance and a review of pertinent literature and recent federal, state, and local government agency records (Petra 2015). This section summarizes the Phase I ESA report, which describes the hazardous and toxic substances found or potentially found within the alignments for the Proposed Action and Alternatives.

### 3.10.1 Regulatory Considerations

For this analysis, the terms hazardous waste, hazardous materials, and toxic substances include those substances defined as hazardous by CERCLA, RCRA, or TSCA. In general, these substances include those that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, might present substantial danger to public health or welfare or the environment when released into the environment (USEPA 1999).

At the state level, the Carpenter-Presley-Tanner Hazardous Substance Account Act (Health and Safety Code Sections 25340 through 25392) was enacted in 1981 to address concerns similar to those addressed by CERCLA. In addition, a facility where hazardous waste or hazardous substances are produced is subject to the California Hazardous Waste Control Law of 1971 (Health and Safety Code Sections 25100 through 25249).

### 3.10.2 Hazardous Waste Disposal

Fort Irwin has a RCRA permit as a large-quantity generator of hazardous waste. The installation does not operate any storage facilities, but it does operate 90-day accumulation points. The landfill is a Class III disposal area. The Directorate of Public Works for the installation is responsible for managing hazardous wastes, which are placed temporarily in a number of accumulation points distributed throughout the cantonment for less than 90 days prior to transport to an approved offsite hazardous waste disposal facility.

### 3.10.3 Special Hazards

**Polychlorinated Biphenyls.** Exterior pole-mounted and ground pad mounted transformers were observed within or near the portions of the Project area that are in the cantonment area. Visual observations taken during the Phase I ESA suggest the transformers were in good condition.

There were records reviewed that reported a polychlorinated biphenyl (PCB) transformer storage area within the cantonment area, near the intersection of 4th Street and E Avenue (FTIR-16). The case is listed by the State Water Resources Control Board "Open-Site Assessment" as of September 1, 2010. This site is also on the agencies, "Possible No Further Action" list. Based upon the distance to the project area, and the regulatory oversight status, this area does not appear to represent a recognized environmental condition with regards to the subject project at this time.

**Underground Storage Tanks.** The Phase I ESA found that no active or inactive underground storage tanks (USTs) were located on or directly adjacent to the alignments for the Proposed Action and Alternatives. The RWQCB GeoTracker website listed one leaking underground

storage tank (LUST) related to a waste oil tank mapped north of the proposed staging area. The site, identified as FTIR-28 (near South Loop and Langford Lake Roads) has a cleanup status reported as, "Completed-Case Closed" as of April 4, 2002. Based upon the limited ground disturbance associated with aerial placement of the fiber optic line on existing utility poles within the cantonment area, other known UST sites within the cantonment area are not anticipated to represent a recognized environmental concern at this time (Petra 2015).

**Above Ground Storage Tanks.** Field observations made during the Phase I ESA indicated that there are no above ground waste petroleum hydrocarbon storage tanks (ASTs) currently located in the immediate vicinity of the alignments for the Proposed Action and Alternatives, with the exception of three relatively large aboveground diesel storage tanks observed east of the staging area. These ASTs are separated from the planned staging area by a chain-link fence and boulder barricade. Although not defined as a fuel AST, an emergency generator near Building P12 was observed to have fuel storage capacity in their support base (Petra 2015).

**Unexploded Ordinance.** Military Munitions Response Program (MMRP) sites were identified within Fort Irwin based upon assessment of information provided by the Fort Irwin Environmental Management Division, historic maps and readily available regulatory databases. Review of the 14 historical Closed, Transferring, and Transferred (CTT) ranges on Fort Irwin indicated that the Small Arms Range (FTIR-004-R-01) backstop berms were situated near the southeasterly intersection of Barstow Road and Langford Lake Road in the early 1940s. This range was a combination of several small arms ranges with firing locations in approximately the same area with overlapping range fans. The westerly portion of the Small Arms Range included the Rifle Range and the westerly portion included the Transition Range. Final maps depicting the boundaries of the Small Arms Range, active from the early 1940s to the mid 1980s indicates that the former limits of the Small Arms Range encroaches into the area designated for Underground Route B, including the intersection of Fort Irwin Road and Outer Loop Road.

Three additional ranges were identified solely on historical Fort Irwin Vicinity and Range maps. A 1945 range map depicted Bombing Range M situated on the west side of Fort Irwin Road at about the halfway point of both underground routes. A Fort Irwin General Site Map from 1969 depicted the Scorpion Range in the same area as Bombing Range M, and the Lizard Gulch Range on the east side of Fort Irwin Road.

Operational Ranges within the southern third of the NTC Fort Irwin property, where the Project is planned, consists predominantly of maneuver/training areas. It is reported that munitions used in these areas consist of small and large caliber blanks (5.56mm, 7.62 mm, 0.50 caliber, 12 gage, 90 mm, and 105 mm), pyrotechnic/obscurant (tear gas hand grenades, simulator pyro main tank guns, simulator launch rockets, simulator explosive booby traps, and simulator projectile ground bursts) and other munitions (e.g., 2.75 inch high explosive rocket warheads, flares and signals). One of the maneuver/training ranges reportedly also included large caliber and large caliber practice munitions.

**Sumps, Pits, Pools, or Lagoons.** There were no sumps, pits, pools, or lagoons identified in the immediate vicinity of the Project area. However, waste electrolyte disposal pits were reported to have existed north of the Staging Area near Buildings 941 and 946. The pits are

listed in the Fort Irwin Installation Action Plan Report for Fort Irwin as “Response Complete (No Further Action). However, a record of decision document has not been prepared.

### 3.10.4 Recognized Environmental Conditions

Recognized environmental conditions (RECs) are defined by the American Society of Testing and Materials (ASTM) as any hazardous substance or petroleum product under conditions that indicate an existing, past, or material threat of release into the structures, ground, groundwater, or surface water at the subject site.

A Phase I Environmental Site Assessment was performed in conformance with the scope and limitations of ASTM Practice E 1527. During this assessment, one CTT range and three historic ranges were identified (see discussion in Unexploded Ordinance, above). Military munitions, unexploded ordinance (UXO), discarded military munitions, and munitions constituents, such as those that may exist within the ranges, are considered hazardous materials as defined by RCRA. These ranges are RECs for the Underground Route portions of all Alternatives. The waste electrolyte disposal pits located near the Staging Area would normally be identified as a REC; however, it is in proximity only to the Staging Area, where no subsurface excavations are proposed. Therefore, these pits have not been identified as a REC for the purposes of this EA. The assessment revealed no other evidence of RECs in connection with the alignments of the Proposed Action and Alternatives.

## 3.11 Transportation and Utilities

Transportation refers to the movement of vehicles throughout a road and highway network, as well as pedestrian and bicycle activity. The local transportation system at Fort Irwin consists of roadways, pedestrian walkways, and bike paths and is used for normal on-post traffic demands for everyday working, living, or recreational trips. In addition, personnel living off-post commute daily to and from work, and retired military and family members use the service facilities at the installation. The existing cantonment roadway network is adequate to serve the transportation needs of the roughly 15,000 people living and working on the installation. Due to its location, Fort Irwin has limited public transportation. The NTC express bus provides service between Barstow and Fort Irwin five times in the morning between 4:20 a.m. and 6:35 a.m., with five return routes between 3:45 p.m. and 6:00 p.m. Two additional early morning routes to Fort Irwin originate in the Victorville area, returning in the afternoon.

### 3.11.1 Transportation

**Local Roads and Conditions.** The road network at Fort Irwin resembles a wheel-and-spoke layout. The primary roads within the cantonment area are Outer Loop Road (also known as North Loop Road), Inner Loop Road, and South Loop Road. The proposed alignments are located along Fort Irwin Road, South Loop Road, Bastogne Street, Salerno Drive, and Barstow Road.

Fort Irwin Road is a two-lane defense access road (DAR). The U.S. Department of Transportation Federal Highway Administration administers the Federal Lands Highway Program, which includes survey, design, and construction of DARs and other roads for federal lands. The DAR Program was established for the military to fund the cost of public

highway improvements necessary to mitigate impacts of defense activity. Fort Irwin Road provides public and military access to Fort Irwin from Interstate 15, northeast of Barstow.

Fort Irwin Road is a paved, county-maintained road that provides one lane in each direction with numerous sections containing passing lanes. Through the DAR Program, the County of San Bernardino and the Army recently funded rehabilitation and other improvements on Fort Irwin Road. Fort Irwin Road also can be accessed by Irwin Road, which extends from Barstow northeast to Fort Irwin Road. Irwin Road has two lanes, one in each direction, and is maintained by the County of San Bernardino. The most recent traffic counts available indicate the average daily traffic for Fort Irwin Road was 5,182 vehicles. From 2002 to 2005 there were 11 fatalities on Fort Irwin Road (Fort Irwin 2013a).

**Project Roads and Conditions.** Underground Route A would start at the existing Verizon manhole pickup located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter and tank display. From here, the route would follow an existing tank trail approximately 165 feet west of Fort Irwin Road until the trail ends at Outer Loop Road. Underground Route A would be constructed using the trenching construction method until the route reached Outer Loop Road, which would be crossed using the direct bore construction method before transitioning to an aerial route at riser utility pole 4659666E.

Underground Route B would begin at the same existing Verizon manhole as Underground Route A. Underground Route B would be located approximately 72 inches to the west of Fort Irwin Road, and would be constructed with the direct bore construction method. Underground Route B would continue north/northeast on the west side of Fort Irwin Road to the intersection of Fort Irwin Road and Outer Loop Road, proceed west on the south side of Outer Loop Road and north on the west side of Barstow Road. At this point the fiber optic line would transition to an aerial placement route at riser 4659666E.

Aerial Placement Routes A and B would both begin at existing riser utility pole 4659666E on Barstow Road. Aerial Placement Route A would cross Barstow Road continue north on existing poles on the east side of Barstow Road, cross Barstow Road and Bastogne Street, continue north on the west side of Bastogne Street, travel briefly east on the north side of Salerno Drive to poles on the west side of Barstow Road, then travel north to terminate at the existing Verizon Fort Irwin Central Office located in Building 12. Aerial Placement Route B would follow along the west side of Barstow Road and then terminate at Building 12.

**Aviation and Airspace.** The nearest public airport to the project area (the Barstow-Daggett Airport) is located approximately 43 miles by road from the Installation. The nearest airstrip within Fort Irwin is the Bicycle Lake Army Airfield, located 2.75 miles to the northeast. The Project would not affect navigable airspace and would not require notice to the FAA regarding obstruction evaluation and/or airport airspace analysis (FAA 2015).

**Other Public Transportation/Routes.** The NTC Commuter Bus delivers commuters to Fort Irwin five days a week from surrounding cities such as Hesperia, Victorville, Helendale, Barstow, and Fort Irwin. The bus route follows Fort Irwin Road into the cantonment area which turns into South Loop Road (VVTA 2015). Both Underground Routes would begin

adjacent to the bus route along Fort Irwin Road, and Underground Route B would be located in the shoulder of Fort Irwin Road.

### 3.11.2 Utilities

This section describes communications infrastructure at Fort Irwin. Other utilities at Fort Irwin were not analyzed in detail because the Proposed Action and Alternatives would not affect water treatment and distribution, natural gas, solid waste, electrical, wastewater and stormwater utilities.

**Communications.** The Fort Irwin telecommunications network consists of information technology, telephone, and radio. There is an outside cable plant, which is a mix of direct buried, underground and aerial plastic insulated copper, fiber-optic and lead-core cables. The current manhole and duct system that supports this infrastructure is inadequate. This is because Fort Irwin has expanded beyond its original extent and all new cable is aerial or direct buried (Fort Irwin 2008).

Verizon currently provides facilities and equipment for internet, television, and telephone services for the cantonment area at Fort Irwin. There are approximately 350 miles of cable serving Fort Irwin, with 2,300 paired lines for local and commercial use. The cables can be expanded to a capacity of 5,000 paired lines. The lines at Fort Irwin are linked to Barstow through an underground cable, consisting of 40 lines that can become overloaded to the limitations of the switching equipment (Fort Irwin 2008; Fort Irwin 2011).

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## 4. Environmental Consequences

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Chapter 4 assesses the environmental consequences associated with the Proposed Action and Alternatives. Direct, indirect, and cumulative environmental impacts are described for each resource.

- Direct effects are caused by the action and occur at the same time and place (40 CFR Section 1508.8).
- Indirect effects are caused by the action and occur later in time or farther removed in distance but are still reasonably foreseeable (40 CFR Section 1508.8).
- Cumulative impacts are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR Section 1508.7).

Impacts were analyzed for each of the resources identified in the previous chapter as potentially affected by implementation of the Verizon Fort Irwin Fiber Optic Cable Project (Project). These resources include land use, soils, biological resources, cultural resources, water resources (groundwater), air quality, and utilities. Resources that would not be affected include aesthetics, geology/seismicity, noise, socioeconomics, transportation, hazards and toxic substances, and other utilities. These resources areas are not further discussed in this section.

### 4.1 Land Use Planning and Aesthetics

Potential impacts to land use and aesthetics were assessed for the construction and operation phases of the Proposed Action, Alternative 1, Alternative 2, Alternative 3, and the No Action Alternative. This analysis assesses the consistency of the Proposed Action and Alternatives with current land use plans and uses of the proposed site.

A significant impact on land use or aesthetics would occur if there is:

- Inconsistency with applicable federal, state, and local land use policy, plans, and/or designations;
- Loss of access to private or public land;
- Substantial degradation of the existing visual character or quality of the site and its surroundings; or
- A new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

#### 4.1.1.1 Proposed Action

The Proposed Action would include Underground Route A, Aerial Placement Route A, and the Staging Area. Construction activities would be temporary and would not interfere with the existing land uses or land use designations. Construction activities would change the

visual character of the area, but this impact would be temporary and would end when project construction ceases. Operation of the fiber optic line would not change or conflict with existing land use designations. The fiber optic line would be compatible with the other land uses in the Project area because it would be underground or above ground on existing utility lines. There would be no impacts to land uses or aesthetics from the Proposed Action.

#### 4.1.1.2 Alternative 1

Alternative 1 would include Underground Route B, Aerial Placement Route A, and a Staging Area. Impacts would be the same as the Proposed Action.

#### 4.1.1.3 Alternative 2

Alternative 2 would include Underground Route A, Aerial Placement Route B, and a Staging Area. Impacts would be the same as the Proposed Action.

#### 4.1.1.4 Alternative 3

Alternative 3 would include Underground Route B, Aerial Placement Route B, and a Staging Area. Impacts would be the same as the Proposed Action.

#### 4.1.1.5 No Action Alternative

With the No Action Alternative, the Proposed Action would not be implemented and current conditions would continue into the future. There would be no impacts to land uses or aesthetics in the project area.

#### 4.1.1.6 Cumulative Impacts

The Proposed Action and Alternatives would be compatible with land use designations and would not result in any additional impacts on land use. Construction projects are continually occurring within the Fort Irwin cantonment, which may temporarily or permanently affect the aesthetics of the landscape. Changes in the landscape within the cantonment and surrounding area are typically anticipated by most residents on Fort Irwin. No cumulative effects are anticipated on land use or aesthetics as a result of the Proposed Action or alternatives.

#### 4.1.1.7 Mitigation Measures

No significant impacts to land use or aesthetics would occur from construction and operation of the Project; therefore, no mitigation measures are required for land use or aesthetics.

## 4.2 Geology, Soils, and Mineral Resources

Geologic, soils, and mineral resources impacts are considered significant if:

- A geologic feature of unusual scientific value for study or interpretation would be disturbed;
- Geologic processes that would threaten human life or property (such as landslides or erosion) would be triggered or accelerated;
- Substantial alteration of topography would occur;

- Vehicular or other direct mechanical apparatus disturbs the upper dried clayey surface crust of dry lakebeds or playa deposits and exposes underlying fine sediment to wind erosion;
- Loss of established or potential mineral-bearing resources of economic value would occur; and/or
- Local mineral resources would be rendered inaccessible and therefore would require commodities to be transported from source areas at greater distances from the local markets.

#### 4.2.1 Proposed Action

**Geology.** Construction of the Proposed Action would involve a 14-inch-wide, 36-inch-deep trench from the existing Verizon manhole pickup, along an existing tank trail, to Outer Loop Road. The total work area that would be temporarily disturbed by trenching would be approximately 30 feet wide (15 feet on center from the trench). A maximum of 1,000 feet of trench would be open each day. Once the trench reaches Outer Loop Road, directional boring would be used to tunnel under Outer Loop Road to existing riser utility pole 4659666E. The total area that would be disturbed by the boring is approximately 30 feet by 75 feet around the bore and receiving pits. Once the utility pole is reached, the fiber optic line would be placed aerially on existing utility poles. Operation of the Verizon Fiber Optic Cable would not require routine maintenance but may require specific repairs. If specific repairs are required, the fiber optic line would be accessed using hand holes. No unique geological or physical features would be changed or disturbed, and no significant alteration to topography would occur as a result of the Proposed Action. The Project area is located on relatively low slope terrain with sparse vegetation. The risk to human life and property from landslides, lateral spreading, subsidence, liquefaction, or collapse is not considered significant.

**Soils.** The construction of the Proposed Action has the potential to cause soil erosion and remove topsoil from disturbed areas. Activities that could disturb soils include trenching, directional boring, operation of trucks and machinery on unpaved surfaces, and other ground disturbing activities. Disturbed soils and other disturbed areas have the potential to result in soil erosion or the loss of topsoil during a major rainfall event. Unprotected soils may also be lost during major wind storms and similar events. As discussed in Section 3.6 and 4.5 Air Quality, best management practices outlined within MDAQMD Rule 403 and 403.2 would be applied. Rule 403 - Fugitive Dust, requires fugitive dust emissions to be restricted such that visible dust does not travel beyond the property line, and requires minimization of fugitive dust to the extent possible.

Rule 403.2 - Fugitive Dust Control for the Mojave Desert Planning Area, requires dust control measures to be implemented during construction, including watering, reduction of track out, covering of vehicles carrying loose materials, stabilization of graded areas, and reduction of nonessential earthmoving activities during high wind periods.

With the implementation of Mitigation Measure G-1 (Section 4.2.7) and Mitigation Measure A-1 (Section 4.5-7), soil erosion from water and wind during construction would be reduced to a less than significant level. No soil erosion impacts would occur during operation because no routine maintenance would occur.

**Seismicity.** Several faults lie within the regional vicinity of the project site. Like most of southern California, the Proposed Action area is potentially subject to earthquakes, which could result in strong ground shaking and surface rupture in some areas. However, no permanent structures are proposed as part of the Proposed Action. The fiber optic line would be designed and constructed according to seismic design criteria in the current California Building Code. The likelihood that a seismic event would result in substantial damage or injury to personnel is considered remote and the same as the current condition. Therefore, seismicity impacts are considered less than significant.

**Mineral Resources.** There are no active or abandoned mines on the project site. The Proposed Action would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. The proposed project is located on Federal lands designated for military training. The Proposed Action would not result in the loss of availability of a locally-important mineral resource recovery site delineated on the general plan, specific plan or other land use plan. A less than significant impact would occur.

#### 4.2.2 Alternative 1

The components of Alternative 1 would be the similar to the Proposed Action, with the exception that the directional bore method of construction would be used for the entire underground portion of Alternative 1. Geologic conditions would be the same as discussed above and a less than significant impact would occur.

#### 4.2.3 Alternative 2

The components of Alternative 2 would be the similar to the Proposed Action. Geologic conditions would be the same as discussed above and a less than significant impact would occur.

#### 4.2.4 Alternative 3

The components of Alternative 3 would be the similar to Alternative 1. Geologic conditions would be the same as discussed above and a less than significant impact would occur.

#### 4.2.5 No Action Alternative

With the No Action Alternative, the Project would not be constructed and there would be no impact to geology, soils, or mineral resources. Seismic hazards would remain the same.

#### 4.2.6 Cumulative Impacts

No cumulative geological, soil, mineral, or seismic impacts would occur as a result of construction or operation of the Project because any potential impacts would be site specific and would be mitigated to a less than significant level.

#### 4.2.7 Mitigation Measures

**G-1:** Proper construction, soil management, and stormwater protection practices will prevent soil erosion and the loss of topsoil. Construction specifications will identify areas where soil excavation, grading, stockpiling, backfilling, or other disturbance may occur. The construction specifications will identify appropriate construction and soil management practices, such as stockpiling adjacent to the construction area,

minimizing areas of disturbance, and appropriate slopes for excavations and backfill. The construction specifications will also identify the proper methods for protection of disturbed or exposed soils to prevent erosion.

Prevention of soil erosion and loss of topsoil due to rainfall and stormwater will be addressed through the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will be prepared to identify site activities and conditions that may result in erosion or loss of topsoil due to stormwater runoff. Appropriate best management practices (BMPs) for protection of disturbed areas and stockpiled soil will be identified. These BMPs may include check dams, slope diversions, and temporary diversion dikes for runoff control. Other BMPs that could be implemented for sediment control could include compost filter berms and socks, fiber rolls, or berms; sediment basins, rock dams, filters, chambers, or traps; silt fences; and hay bales. Staked fiber rolls would be placed at all potential drainage features for the duration of construction and 2 weeks after completion of construction. Good housekeeping measures would be practiced during construction. Site-specific stormwater BMPs would be detailed in a construction SWPPP that would be prepared by the construction contractor prior to breaking ground. The SWPPP will also identify the applicable monitoring parameters and frequencies to be implemented in the case of storm events that occur during the construction period. The SWPPP will be submitted to the Lahontan Regional Water Quality Control Board and a copy must be maintained onsite during construction.

### 4.3 Biological Resources

This section describes the potential direct and indirect impacts of the Project, on vegetation communities, general wildlife, sensitive habitats and drainages/ jurisdictional waters, and sensitive plants and wildlife in the ROI. Direct impacts are those which affect the resource immediately, such as the removal of vegetation for staging areas or construction, or direct mortality of wildlife. Indirect impacts include those that may result from the project but are not immediate effects. An example of indirect impacts is the secondary results from the removal of vegetation, including increased erosion or the displacement of wildlife.

Impacts to biological resources are considered significant if one or more of the following criteria are met with the implementation of the Proposed Action or Alternatives:

- Any loss of individuals or populations of a federally listed or proposed endangered or threatened species or its habitat;
- Any loss of critical habitat and/or declining wildlife habitat which is sensitive or rare to the project region (i.e., wetlands, stabilized and partially stabilized desert sand fields, stabilized and partially stabilized desert dunes);
- Any fill or alteration of wetlands or waters of the United States regulated under the CWA and/or California Fish and Game Code.
- Substantial loss of populations or habitat of a FSOC, CSC, or otherwise regionally rare or sensitive species that could jeopardize the continued existence of that species in the project region;

- Substantial loss or long-term disruption of a major wildlife movement corridor;
- Loss of at least five percent of undisturbed habitats within a biogeographic region, such as that found in a single valley, mountain range, or coastline;
- Substantial loss of natural vegetation communities that are slow to recover; or
- Substantial loss of native plant or animal species or community diversity.

### 4.3.1 Proposed Action

#### 4.3.1.1 Construction Phase

Potential impacts to biological resources related to implementation of the Proposed Action (Underground Route A, Aerial Placement Route A, Staging Area) would be associated with ground disturbance during the substructure installation and placement of the fiber optic line. A new, approximately 7.8-mile fiber optic line would be installed by excavating a trench for the majority of the length of the route. The underground route would change to a directional bore method of construction for approximately 670 feet in order to trench under Outer Loop Road to existing riser utility pole 4659666E. Once the fiber optic line reaches the utility pole it would transition to an aerial route on existing utility poles.

The total maximum area that would be temporarily disturbed by trenching and boring is 7.8 miles long by 30 feet wide (28.19 acres). Each bore pit would temporarily impact 2,250 square feet; therefore two bore pits would temporarily impact approximately 4,500 square feet.

The hand holes would be buried a minimum of 10 inches below grade, making the surface disturbance a temporary impact while subsurface impacts would be permanent. Approximately 41 hand holes would be installed along the alignment of Underground Route A with one every 1,000 feet. Each hand hole is six square feet, therefore there would be approximately 246 square feet of permanent impacts related to the hand holes. The exact locations of each hand hole is not known at this time as their locations are able to be adjusted in the field based on the location of sensitive resources or blockages. Because of this, a maximum potential temporary impact area was determined to be 30 feet wide (fiber optic line in center) for the entire route, making the maximum temporary impact area approximately 28.19 acres. Therefore, the acreages and other amounts discussed in this section reflect the maximum potential impact and actual impacts are anticipated to be much less during project implementation.

The Proposed Action is anticipated to begin construction in spring 2016 and would take approximately 13 to 18 weeks to complete the underground portion of the project, which includes 11 to 16 weeks for trenching and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately 3 weeks. The total construction time is estimated to be 16 to 21 weeks.

**Flora.** Impacts in the construction work area around the trench for Underground Route A would entail vegetation crushing or removal and soil compaction from equipment. There would be approximately 2.82 acres of creosote bush scrub, 0.27 acre of disturbed creosote bush scrub, 0.82 acre of desert wash scrub, 0.47 acre of desert wash scrub/creosote bush scrub, 23.66 acres of disturbed unvegetated lands, and 0.15 acre of developed lands for a

total of 28.19 acres affected as a result of construction of the Proposed Action. There are no sensitive vegetation communities present in the Proposed Action alignment but each vegetation community could provide habitat to special-status plant and wildlife species. Individual creosote bushes and saltbushes have a slow growth rate to reach maturity, which is why removing these plants is considered an impact to their communities. The annual plants and smaller perennial shrubs for each community would be expected to grow back relatively quickly with suitable rainfall amounts. The maximum potential temporary loss of approximately 4.38 acres of desert scrub habitat (creosote bush scrub, disturbed creosote bush scrub, and desert wash scrub) out of the 28.19 acres of maximum potential impact area does not constitute loss of at least five percent of undisturbed habitat within a biogeographic region. Approximately 34 bore pits (84 percent) would be located in disturbed or developed areas that do not provide suitable habitat for native vegetation. As there are expansive areas of similar habitat present in the vicinity, the effect of vegetation removal on biological resources is anticipated to be minimal (ECORP 2016a).

There are no anticipated direct or permanent impacts to the vegetation adjacent to Aerial Placement Route A because the fiber optic line would be installed using existing poles and existing roads for travel. Indirect impacts to the vegetation adjacent to the Aerial Route would include fugitive dust from driving on existing dirt roads.

There are no anticipated direct, indirect, temporary or permanent vegetation impacts to the Staging Area because it is a developed concrete pad that does not support vegetation.

#### Federally- or State-Listed Species

Based on field surveys of the Proposed Action alignment, a no effects determination was made for federally protected plant species as a result of construction or operation of the Proposed Action. Lane Mountain milkvetch is not anticipated to be present because the species generally occurs at higher elevations or on less disturbed sites than are found at the Proposed Action site or vicinity. As such, no impacts to this species would occur from implementation of the Proposed Action (ECORP 2016a).

#### Other Special-Status Species

During the focused survey for Lane Mountain milkvetch, alkali mariposa lily, Clokey's cryptantha, desert cymopterus, Booth's evening primrose, Barstow woolly sunflower, hot springs fimbriatylis, Parish's phacelia, and jackass clover, none of these species were observed in the Proposed Action area. Sixteen individual Mojave indigo bushes, a CRPR 4.3 (limited distribution, not very threatened in California) species, and two polygons (areas where more than one plant was concentrated) were observed in the Proposed Action area and would be affected by construction. The first polygon, located on Sheet 1 on Figure 3.4-2, occupied a total of 3,311 square feet, however only 448 square feet (13.5 percent) of that polygon fell within the maximum potential temporary impact area. The second polygon, located on Sheet 2 on Figure 3.4-2, occupied a total of 1,337 square feet; however, only 15 square feet (1.1 percent) of that polygon fell within the maximum potential temporary impact area. This species is not considered to be a special-status species as defined by the Fort Irwin INRMP. Therefore, no impacts to special-status plants would occur.

**Jurisdictional Waters.** The project site is located within the Coyote-Cuddeback Lake and the Mojave Watersheds. Sub-watersheds include Paradise Springs-Coyote Lake, Jack Spring,

and Garlic Spring. The Proposed Action alignment contains many ephemeral streams, drainages that contain flows only during and immediately following a storm event. Within the jurisdictional study area (50-foot buffer from the proposed alignments) a total of 17.667 acres of ephemeral stream were mapped. Runoff in the Proposed Action alignment flows towards dry lakes (Coyote and Langford Well Lakes) which are natural sinks with no outlets, and, therefore, "isolated." Drainages in the Proposed Action alignment are isolated geologically from other groundwater basins, and the drainages are not considered "navigable" nor are they used for "interstate commerce." Because they drain to natural sinks with no outlet, the ephemeral streams in the Proposed Action alignment are considered "isolated" and not subject to jurisdiction under Section 404. None of the drainages occurring within the Proposed Action alignment are considered jurisdictional Waters of the U.S., subject to Section 404 of the CWA (33 U.S.C. 1344) because of the lack of a downstream connection to a navigable waterway as defined by the *SWANCC vs. USACE* decision in 2001. Therefore, no impacts to jurisdictional Waters of the U.S. would occur from the implementation of the Proposed Action. Additionally, no USACE jurisdictional wetlands are present on or adjacent to the proposed site. Therefore, the Proposed Action would not have the potential to significantly affect wetlands under the jurisdiction of USACE.

## Fauna

### Federally- and State-Listed Species

Based on the field surveys of the Proposed Action area, "no effect" and "may affect, not likely to adversely affect" determinations were made for federally and state protected animal species as a result of construction or operation of the Proposed Action. Individual species are discussed below.

**Desert Tortoise.** During the focused desert tortoise survey and literature review, a total of eight pieces of tortoise sign was found and there are many previous records of tortoises crossing Fort Irwin Road, determining that tortoises use the Proposed Action area. Because of the availability of surrounding habitat for this species, the possibility exists that a tortoise may be encountered during the construction period. The maximum potential temporary loss of suitable habitat is 4.38 acres.

Direct impacts to tortoise would come in the way of mortality or injury as a result of being driven over by a project-related vehicle or equipment or falling in an open trench. Indirect impacts would occur in the way of temporary removal of suitable habitat and forage material, crushing an unoccupied burrow, or attracting pest species known to kill tortoises (ravens and coyotes) to the construction area. Although the surface disturbance would be considered a temporary impact, when the hand holes are capped and buried, a tortoise would not be able to dig a burrow in the six square feet per box located beneath the surface, resulting in a permanent impact. The existing utility poles to be used for Aerial Placement Route A are not suitable to support nesting by ravens. However, they do provide a perching area that the ravens could use to prey on desert tortoise. Although tortoises do occasionally wander into the cantonment area, it generally does not support a viable population of tortoises, and no new poles are proposed with the Proposed Action. Therefore there would be no change from existing conditions to the availability of perching areas for ravens (ECORP 2016a).

It is reasonably foreseeable that a tortoise would not be injured or killed during construction of the Proposed Action because of the mitigation measures required for the project (biological monitoring, delineating the boundaries of work, training all workers, and storing of all equipment at the Staging area at the close of each work day). Tortoise proof fencing for the construction of the Proposed Action is not recommended based on the relatively fast pace of project construction.

*Critical Habitat.* The temporary disturbance of 2.16 acres of undisturbed or recovering disturbed critical habitat is not likely to adversely affect the conservation value and function of critical habitat for the desert tortoise because the Proposed Action is in a narrow strip of land at the edge of a tank trail and effects to the primary constituent elements would be so minor that they are not measurable when considered within the context of the critical habitat unit.

There are no permanent impacts to this species anticipated as a result of the Proposed Action. The Proposed Action “may affect, but is not likely to adversely affect” the species. Temporary and indirect impacts in the form of increased disturbances and human/vehicle activity from the construction phase are anticipated. Impacts to desert tortoise would be minimized with mitigation measures discussed in Section 4.3.7 below.

**Southwestern Willow Flycatcher, Least Bell’s Vireo, and California Black Rail.** Riparian and wetland habitat are absent from the Proposed Action alignment. Therefore, the Proposed Action would result in a no effect determination for these species.

**Peregrine Falcon.** This subspecies would not be expected to be present at the Proposed Action alignment except as an occasional transient or forager. The species is not dependent on the habitat potentially disturbed by the Proposed Action; therefore, the Proposed Action would result in a no effect determination for this species.

**Swainson’s Hawk.** This species could migrate through Fort Irwin, but would not breed in the vicinity of the Proposed Action site or forage in the area for prolonged periods. Swainson’s Hawks were observed in 2014 flying east from one mile east of Fort Irwin Road. The species is not dependent on the habitat potentially disturbed by the Proposed Action; therefore, the Proposed Action would result in a no effect determination for this species.

**Mohave Ground Squirrel.** No Mojave Ground Squirrels were found in the study area. Round-tailed ground squirrels were found in the study area. Round-tailed ground squirrels are closely related to MGS and there are records of hybridization less than six miles from the Proposed Action site. Because of this, the round-tailed ground squirrels detected will be treated as MGS (i.e., mitigation measures will be incorporated).

The habitat requirements for this species are similar to that of the desert tortoise; therefore impacts are considered to be the same. There are no anticipated direct or permanent impacts to this species as a result of construction or operation of Aerial Placement Route A or use of the Staging Area. Temporary and indirect impacts in the form of increased disturbances and human/vehicle activity from the underground portion of the construction phase are anticipated, and would be minimized with mitigation measures.

**Other Special-Status Species.** Additional special-status species might occur on the Proposed Action site or in the vicinity. Of these species, desert kit fox, American badger, Bendire’s

thrasher, burrowing owl, long-eared owl, and loggerhead shrike have the potential to breed in the Proposed Action alignment, although none of these species were detected during the various focused surveys nor were there signs of previous dens or burrows in the survey areas.

In addition to breeding birds, a number of special-status birds and bats might forage within the Proposed Action site. These could include golden eagle, prairie falcon, Vaux's swift, ferruginous hawk, and pallid bat. While these species might avoid the project area during active construction, ample other foraging habitats are available nearby for these species, and no long-term impacts would be anticipated from implementation of the Proposed Action.

Permanent impacts, resulting from the buried hand hole boxes, are only anticipated for the ground-dwelling species (burrowing owl, badger, and kit fox). Temporary and indirect impacts in the form of increased disturbances and human/vehicle activity and noise from the construction phase are anticipated. Direct impacts to nesting birds and ground-dwelling species during the nesting and young-rearing season could occur in the way of nest abandonment or direct mortality during the vegetation removal, boring, and fiber optic line installation process.

The existing poles on which the fiber optic line will be installed for Aerial Placement Route A do not support an adequate structure for birds or raptors to build nests. The aerial placement is expected to take no longer than one week. This portion of the Proposed Action is in the cantonment area which already experiences existing vehicular and pedestrian traffic. Direct and permanent impacts to other special-status species are not anticipated. Temporary and indirect impacts in the form of increased disturbances and human/vehicle activity from the construction phase are anticipated. Mitigation measures to avoid effects to breeding birds, desert kit fox, and badger are provided in Section 4.3.7 below.

**Wildlife Corridors.** Significant wildlife corridors do not exist within the project area and the construction phase would not create a substantial barrier to wildlife movement. Therefore, no impact would occur.

**Potential Effects from Pest Species.** Construction activity could attract pest species, including ravens and coyotes, due to the increase in available food and water from construction trash and dust control. Additional construction traffic could result in road kill, which could be used by ravens or coyotes as potential food sources. Because ravens and coyotes are known to prey on juvenile and adult desert tortoises, increased populations of ravens and coyotes may affect desert tortoise populations at Fort Irwin. Impacts from pest species would not likely adversely affect desert tortoises with the implementation of mitigation measures described in Section 4.3.7.

#### 4.3.1.2 Operation Phase

Common and special-status wildlife may return to the Proposed Action area upon completion of construction for foraging or stopovers during migration periods. Expansive foraging habitats are available nearby for these species, and no long-term impacts would be anticipated from implementation of the Proposed Action. The temporary loss of desert scrub is not expected to interfere with the movement of any native resident or migratory bird or wildlife species, or with established native resident or migratory wildlife corridors. Significant wildlife corridors do not exist within the project area and the operational phase

would not create a substantial barrier to wildlife movement. Therefore, no impact would occur. Activities within the operational phase would be limited to remote testing of the cable and/or emergency maintenance via a hand hole; minimal surface disturbance is anticipated for operation of the Proposed Action. Therefore, minimal impacts on biological resources are anticipated from operations of the Proposed Action.

**Potential Effects from Pest Species.** Development in a desert environment tends to attract pest species, including ravens. Mitigation measures B-15 through B-18 (Section 4.3.7) and proper waste management during maintenance activities would minimize pest species on the site.

## 4.3.2 Alternative 1

### 4.3.2.1 Construction Phase

Potential effects to biological resources related to implementation of Alternative 1 (Underground Route B, Aerial Placement Route A, Staging Area) would be associated with ground disturbance during the substructure installation and placement of the fiber optic line. A new, approximately 8.1-mile fiber optic line would be installed using directional bore method of construction. Once the fiber optic line reaches the existing riser utility pole 4659666E, it would transition to an aerial route. The total area that would be temporarily disturbed by directional bore is approximately 30 feet by 75 feet from center line. Each bore pit would temporarily impact 2,250 square feet; therefore 43 bore pits would impact approximately 96,750 square feet, or 2.22 acres, of which approximately 0.0059 acres (258 square feet) would be permanent impacts from the hand hole boxes. Directional boring would be accomplished by placing approximately 43, 4-foot wide by 4-foot long by 40-inch deep bore and receiving pits 72 inches west of the edge of the pavement of Fort Irwin Road at approximately 1,000-foot intervals. Hand holes (small access boxes) 2-feet wide by 3-feet long by 30-inches deep would be placed in each bore/receive pit location.

The hand holes would be buried a minimum of 10 inches below grade, making the surface disturbance a temporary impact while subsurface impacts would be permanent. The exact locations of each hand hole is not known at this time as their locations are able to be adjusted in the field based on the location of sensitive resources or blockages. Because of this, a maximum potential temporary impact area was determined to be 30 feet wide (fiber optic line in center) for the entire route, making the maximum temporary impact area approximately 29.42 acres. Therefore, the acreages and other amounts discussed in this section are the maximum potential impact areas and actual impacts are anticipated to be much less during project implementation.

If the directional bore is blocked by unforeseen geologic substructure, a 1 foot by 36-inch trench may be required to bypass the blockage. It is unlikely that there are any geologic blockages present in the alignment of Underground Route B because it is within 72 inches of Fort Irwin Road, which was likely over-excavated (common practice to excavate the top 24-30 inches of soil to achieve adequate compaction for building a road or building pad) when it was constructed and therefore any larger rocks or boulders that could pose a blockage threat would have already been removed.

Alternative 1 would take approximately eight weeks to complete the directional bore portion of the project, which includes six weeks for substructure installation and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week

and approximately three weeks to complete the underground and aerial splicing and final testing. Total construction time would take approximately twelve weeks.

The timing for Alternative 1 is of shorter duration than described for the Proposed Action.

**Flora.** The construction work area around each bore pit would entail vegetation crushing or removal, and soil compaction from equipment. There would be approximately 0.06 acre of creosote bush scrub, 0.49 acre of disturbed creosote bush scrub, 0.28 acre of desert wash scrub, 1.48 acres of disturbed saltbush scrub, 0.04 acre of Mojave mixed woody scrub, 26.49 acres of disturbed unvegetated lands, and 0.58 acre of developed lands for a total of 29.42 acres affected as a result of construction of Alternative 1. Overall, because the hand holes would be buried 10 inches below the ground surface, there are no permanent impacts associated with Alternative 1. There are no sensitive vegetation communities present in Alternative 1 but each vegetation community could provide habitat to special-status plant and wildlife species. Individual creosote bushes have a slow growth rate to reach maturity, which is why it is considered an impact to that community. The annual plants and smaller perennial shrubs for each community would be expected to grow back relatively quickly with suitable rainfall amounts. The maximum potential temporary loss of approximately 2.35 acres of desert scrub habitat (creosote bush scrub, disturbed creosote bush scrub, Mojave mixed woody scrub, disturbed saltbush scrub, and desert wash scrub) out of the 29.42 acres of maximum potential impact area does not constitute loss of at least five percent of undisturbed habitat within a biogeographic region. Approximately 40 bore pits (92 percent) would be located in disturbed or developed areas that do not provide suitable habitat for native vegetation. As there are expansive areas of similar habitat present in the vicinity, the effect of vegetation removal on biological resources is anticipated to be minimal.

The impacts described for Aerial Placement Route A and the Staging Area were described under the Proposed Action. No impacts to vegetation are anticipated.

#### Federal- or State-Listed Species

Based on the field surveys of Alternative 1, a no effects determination was made for federally protected plant species as a result of construction or operation of Alternative 1. The Lane Mountain milkvetch is not anticipated to be present because the species generally occurs at higher elevations or on less disturbed sites than are found at the Alternative 1 alignment or vicinity. As such, no impacts to this species would occur from implementation of Alternative 1.

#### Other Special-Status Species.

During the focused survey for Lane Mountain milkvetch, alkali mariposa lily, Clokey's cryptantha, desert cymopterus, Booth's evening primrose, Barstow woolly sunflower, hot springs fimbriatilis, Parish's phacelia, and jackass clover, none of these species were observed in the Alternative 1 alignment. One individual Mojave indigo bush, a CRPR 4.3 (limited distribution, not very threatened in California) species, was observed in the alignment of Underground Route B and would be affected by construction. This species is not considered to be a special-status species as defined by the Fort Irwin INRMP. However, based on the flexible placement of the bore pits, it is likely that this plant could be avoided

during project implementation (ECORP 2016a). Therefore, no impacts to special-status plants would occur.

**Jurisdictional Waters.** The jurisdictional waters impacts are the same for Alternative 1 as described for the Proposed Action.

**Fauna.** Based on the field surveys of the Alternative 1 area, “no effect” and “may affect, not likely to adversely affect” determinations were made for federally and State protected animal species as a result of construction or operation of Alternative 1. Individual species are discussed below.

#### Federal- and State-Listed Species

**Desert Tortoise.** During the focused desert tortoise survey and literature review, a total of eight pieces of tortoise sign were found and there are many previous records of tortoises crossing Fort Irwin Road, determining that tortoises use the alignment of Underground Route B. Because of the availability of surrounding habitat for this species, the possibility exists that a tortoise may be encountered during the construction period. Measures that would be taken to avoid an effect to tortoises are provided in Section 4.3.7. The maximum potential temporary loss of suitable habitat is 2.35 acres out of the 29.42 acres.

Approximately 40 bore pits (92 percent) would be located in disturbed or developed areas that do not provide suitable habitat for desert tortoise. The directional boring is anticipated to take eight weeks (40 work days), which means that it would take, on average, one day to complete each of the 43 bore pits.

It is reasonably foreseeable that a tortoise would not be injured or killed during construction of Alternative 1 because of the mitigation measures required for the project (biological monitoring, delineating the boundaries of work, training all workers, and storing of all equipment at the staging area at the close of each work day). Tortoise proof fencing for the construction of Alternative 1 is not recommended based on the relatively fast pace of the project. Any tortoise in proximity to the alignment of Underground Route A would be “in harm’s way” because it would be adjacent to Fort Irwin Road, and would need to be relocated by an approved tortoise handler. Installing tortoise fencing adjacent to Ft Irwin Road may cause a negative effect because it could force a tortoise trying to cross Ft Irwin Road to remain on the shoulder next to traffic for an extended period of time until it reaches the end of the fencing.

Direct, indirect, permanent, and temporary impacts to this species for Alternative 1 are the same as that described for the Proposed Action.

*Critical Habitat.* The temporary disturbance of 1.76 acres of undisturbed or recovering disturbed critical habitat is not likely to adversely affect critical habitat for the desert tortoise because Underground Route B is in a narrow strip of land at the edge of an existing road and effects to the primary constituent elements would be so minor that they are not measurable when considered within the context of the critical habitat unit.

**Southwestern Willow Flycatcher, Least Bell’s Vireo, and California Black Rail.** Riparian and wetland habitat are absent from the Alternative 1 site. Therefore, Alternative 1 would result in a no effect determination for these species.

**Peregrine Falcon.** This subspecies would not be expected to be present at the Alternative 1 alignment except as an occasional transient or forager. The species is not dependent on the habitat potentially disturbed by Alternative 1; therefore, Alternative 1 would result in a no effect determination for this species.

**Swainson's Hawk.** This species could migrate through Fort Irwin, but would not breed in the vicinity of the Alternative 1 alignment or forage in the area for prolonged periods. Swainson's hawks were observed in 2014 flying east from one mile east of Fort Irwin Road. The species is not dependent on the habitat potentially disturbed by Alternative 1; therefore, Alternative 1 would result in a no effect determination for this species.

**Mohave Ground Squirrel.** Direct, indirect, permanent, and temporary impacts to this species for Alternative 1 are the same as that described for the Proposed Action.

**Other Special-Status Species.** Additional special-status species might occur on the Alternative 1 site or in the vicinity. Of these species, desert kit fox, American badger, Bendire's thrasher, burrowing owl, long-eared owl, and loggerhead shrike have the potential to breed in the Alternative 1 alignment, although none of these species were detected during the various focused surveys nor were there signs of previous dens or burrows in the survey areas.

In addition to breeding birds, a number of special-status birds and bats might forage on the Alternative 1 site. These could include golden eagle, prairie falcon, Vaux's swift, ferruginous hawk, and pallid bat. Although these species might avoid the project area during active construction, ample other foraging habitats are available nearby for these species, and no long-term impacts would be anticipated from implementation of Alternative 1.

Wetlands and riparian habitats are absent from the Alternative 1 site. Therefore, additional special-status species that typically utilize these habitats would not be affected by implementation of Alternative 1.

Direct, indirect, permanent, and temporary impacts to these species for the alignment of Underground Route B and Aerial Placement Route A are the same as that described for the Proposed Action. Mitigation measures to avoid effects to breeding birds, desert kit fox, and badger are provided in Section 4.3.7 below.

#### ***Potential Effects from Pest Species***

The potential effects from pest species for Alternative 1 are the same as those described for the Proposed Action.

#### **4.3.2.2 Operation Phase**

Common and special-status wildlife may return to the Alternative 1 area upon completion of construction for foraging or stopovers during migration periods. Expansive foraging habitats are available nearby for these species, and no long-term effects would be anticipated from implementation of Alternative 1. The temporary loss of desert scrub is not expected to interfere with the movement of any native resident or migratory bird or wildlife species, or with established native resident or migratory wildlife corridors. Significant wildlife corridors do not exist within the project area and the operational phase would not create a substantial barrier to wildlife movement. Therefore, no effects would occur.

Activities within the operational phase would be limited to remote testing of the cable and/or emergency maintenance via the hand hole; minimal surface disturbance is anticipated for operation of Alternative 1. Therefore, minimal effects are anticipated on biological resources from operations of Alternative 1.

### *Potential Effects from Pest Species*

The potential effects from pest species for Alternative 1 are the same as those described for the Proposed Action.

## 4.3.3 Alternative 2

### 4.3.3.1 Construction Phase

Potential effects to biological resources related to implementation of Alternative 2 (Underground Route A, Aerial Placement Route B, Staging Area) would be associated with ground disturbance during the substructure installation and placement of the fiber optic line. Potential effects to biological resources related to implementation of Underground Route A and the Staging Area are the same as previously described for the Proposed Action. The timing for Alternative 2 is the same as described for the Proposed Action. Impacts resulting from implementation of Aerial Placement Route B will be discussed in this section.

**Flora.** There are no anticipated direct or permanent impacts to the vegetation adjacent to Aerial Placement Route B because the fiber optic line would be installed using existing poles, existing roads for travel, and previously developed staging area. Indirect effects to the vegetation adjacent to the Aerial Route would include fugitive dust from driving on existing dirt roads.

#### Federal or State-Listed Species

Based on the field surveys of Aerial Placement Route B, a no effects determination was made for federally protected plant species as a result of its construction or operation. The Lane Mountain milkvetch is not anticipated to be present because the species generally occurs at higher elevations or on less disturbed sites than are found at the Aerial Placement Route B alignment or vicinity. As such, no impacts to this species would occur from implementation of Alternative 2.

#### Other Special-State Species

During the focused survey for Lane Mountain milkvetch, alkali mariposa lily, Clokey's cryptantha, desert cymopterus, Booth's evening primrose, Barstow woolly sunflower, hot springs fimbristylis, Parish's phacelia, jackass clover, and Mojave indigo bush, none of these species were observed in the Aerial Placement Route B alignment. No impacts to special-status plants would occur.

**Jurisdictional Waters.** The jurisdictional waters impacts are the same for Alternative 2 as described for the Proposed Action.

## **Fauna**

#### Federal- and State-Listed Species

Based on the field surveys of the Proposed Action area, "no effect" and "may affect, not likely to adversely affect" determinations were made for federally and State protected

animal species as a result of construction or operation of Alternative 2. Individual species are discussed below.

**Desert Tortoise.** During the focused desert tortoise survey, no desert tortoise sign was found in the vicinity of the Aerial Placement Route B alignment. However, the literature review revealed multiple tortoise records in the vicinity of the Route, determining that tortoises could appear in the Aerial Placement Route B area. Because of the availability of surrounding habitat for this species, the possibility exists that a tortoise may be encountered during the construction period. Measures that would be taken to avoid an effect to tortoises are provided in Section 4.3.7. There is no suitable habitat for tortoise that would be impacted, either permanently or temporarily as a result of construction of Aerial Placement Route B.

Direct and indirect impacts to this species for Alternative 2 are the same as that described for the Proposed Action.

There is no critical habitat present in the Aerial Placement Route B area.

**Southwestern Willow Flycatcher, Least Bell's Vireo, and California Black Rail.** Riparian and wetland habitat are absent from the Aerial Placement Route B area. Therefore, Aerial Placement Route B would result in a no effect determination for these species.

**Peregrine Falcon.** This subspecies would not be expected to be present at the Aerial Placement Route B site except as an occasional transient or forager. The species is not dependent on the habitat potentially disturbed by Aerial Placement Route B; therefore, Aerial Placement Route B would result in a no effect determination for this species.

**Swainson's Hawk.** This species could migrate through Fort Irwin, but would not breed in the vicinity of the Aerial Placement Route B area or forage in the area for prolonged periods. Swainson's hawks were observed in 2014 flying east from one mile east of Fort Irwin Road. As there is no suitable habitat in the Aerial Placement Route B area, a no effect determination for this species can be made.

**Mohave Ground Squirrel.** Direct, indirect, permanent, and temporary impacts to this species for Aerial Placement Route B are the same as that described for the Proposed Action.

**Other Special-Status Species.** Additional special-status species might occur on the Aerial Placement Route B site or in the vicinity. Of these species, desert kit fox, American badger, Bendire's thrasher, burrowing owl, long-eared owl, and loggerhead shrike have the potential to breed in the Aerial Placement Route B site, although none of these species were detected during the various focused surveys nor were there signs of previous dens or burrows in the survey areas. Mitigation measures to avoid effects to breeding birds, desert kit fox, and badger are provided in Section 4.3.7.

In addition to breeding birds, a number of special-status birds and bats might forage on the Aerial Placement Route B site. These could include golden eagle, prairie falcon, Vaux's swift, ferruginous hawk, and pallid bat. Although these species might avoid the project area during active construction, ample other foraging habitats are available nearby for these species, and no long-term effects would be anticipated from implementation of Aerial Placement Route B.

Wetlands and riparian habitats are absent from the Aerial Placement Route B site. Therefore, additional special-status species that typically utilize these habitats would not be affected by implementation of Aerial Placement Route B.

Direct, indirect, permanent, and temporary impacts to these species for Aerial Placement Route B are the same as that described for Aerial Placement Route A. The existing poles that the fiber optic line will be installed on for Aerial Placement Route B do not support an adequate structure for birds or raptors to build nests on.

**Potential Effects from Pest Species.** The potential effects from pest species for Aerial Placement Route B are the same as those described for the Proposed Action.

#### 4.3.3.2 Operation Phase

Common and special-status wildlife may return to the Aerial Placement Route B area upon completion of construction for foraging or stopovers during migration periods. Significant wildlife corridors do not exist within the project area and the operational phase would not create a substantial barrier to wildlife movement. Therefore, no impact would occur.

Activities within the operational phase would be limited to remote testing of the cable. No effects on biological resources are anticipated from operations of Aerial Placement Route B.

**Potential Effects from Pest Species.** The potential effects from pest species for Aerial Placement Route B are the same as those described for the Proposed Action.

### 4.3.4 Alternative 3

#### 4.3.4.1 Construction and Operation Phase

Potential effects to biological resources related to implementation of Alternative 3 project components (Underground Route B, Aerial Placement Route B, Staging Area) have been previously described under Alternatives 1 and 2. The timing for Alternative 3 is the same as described for Alternative 1.

### 4.3.5 No Action Alternative

#### Flora

With the No Action Alternative, the proposed Verizon Fort Irwin Fiber Optic Cable Project would not be constructed and current conditions would be expected to continue. There would be no new effect on plant communities.

#### Fauna

With the No Action Alternative, the proposed Verizon Fort Irwin Fiber Optic Cable Project would not be constructed. Current conditions would be expected to continue and no new impacts to wildlife, including general wildlife and special-status species that encompass federal- and state-listed species and other special-status species, would occur.

### 4.3.6 Cumulative Impacts

Fort Irwin is continually developing the cantonment area, reducing the amount of vegetated habitat. Potential affects to biological resources from operations within Fort Irwin are addressed through implementation of the Integrated Natural Resources Management Plan and are consistent with the BO for Operations and Activities at Fort Irwin (ECORP 2016a). Some loss of native habitat would occur as a result of the Proposed Action and Alternatives;

however, this loss is minimal in the context of the ample intact habitat available in the vicinity. Due to the small amount of habitat loss and the lack of other reasonably foreseeable projects, effects to native desert scrub habitat at the project site would be insubstantial. Mitigation has been provided for effects to special status species. This project will be consistent with the BO for Cantonment Infrastructure Activities. Any cumulative impacts may affect, but are not likely to adversely affect the biological resources with mitigation.

#### 4.3.7 Mitigation Measures

**Desert Tortoise.** To avoid potential effects to this federally listed species, the following measures would be implemented consistent with USFWS guidelines during implementation of the Proposed Action or Alternatives.

- B-1: Within two weeks prior to the onset of construction, a pre-construction desert tortoise survey shall be conducted by an authorized biologist within all work areas that contain desert tortoise habitat and that would be affected, directly or indirectly, by project activities. If no tortoises or active burrows are identified, then construction would proceed without interruption. If active burrows or tortoises are identified, construction would be delayed and consultation with the Fort Irwin Directorate of Public Works (DPW) Environmental Division regarding compliance with the USFWS BO for Operations and Activities at Fort Irwin would occur.
- B-2: Before construction begins, personnel working on the site shall receive a briefing on the desert tortoise, detailing the life history of a desert tortoise and the protocol to follow if a tortoise is encountered at the work site.
- B-3: During construction, a biological monitor shall be available to observe construction activities and verify that no tortoises wander into the construction site. If a tortoise is present, construction in the immediate vicinity would be halted and coordination with the Fort Irwin DPW Environmental Division regarding compliance with the USFWS BO for Operations and Activities at Fort Irwin would occur.
- B-4: To avoid wildlife pitfalls, at the end of each day, the biological monitor shall ensure that all potential wildlife pitfalls, such as trenches and bores, have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends or at certain distances to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations shall be inspected periodically throughout the day and at the end of the work day. Any wildlife encountered during the construction process shall be allowed to leave the construction area unharmed.
- B-5: To avoid entrapment of desert tortoise, any construction pipe, culvert, or similar structure with a diameter greater than three inches, stored less than eight inches above ground for one or more nights, shall be inspected for tortoises before the material is moved, buried, or capped. These structures may be capped or placed on pipe racks as an alternative to required inspections.
- B-6: Workers shall check underneath each on-site, parked vehicle or piece of equipment prior to moving it. If a desert tortoise is observed, the vehicle shall not be moved until the tortoise is relocated from the area.

B-7: Prior to construction start construction boundaries will be clearly delineated on the ground using flagging, survey lath, or wooden stakes.

**Mohave Ground Squirrel.** Implementation of mitigation measures B-1 through B-7 will also avoid impacts to Mohave ground squirrel. In addition to the above mentioned mitigation measures, the following mitigation measure shall be implemented to further avoid impacts to Mohave ground squirrel.

B-8: To the most practicable extent possible, the construction crews shall site bore pits and other excavation in areas where squirrel burrows are not located.

**Other Special-status Species (Fauna).** Prairie falcon, burrowing owl, long-eared owl, Vaux's swift, loggerhead shrike, and Bendire's thrasher have the potential to breed, forage, or inhabit the alignments for the Proposed Action and Alternatives. Additionally, pallid bat, American badger, and desert kit fox potentially occur in the vicinity of the Proposed Action and Alternatives due to the presence of suitable habitat. To avoid potential effects on nesting birds, including birds protected under the MBTA, and other special-status wildlife species the following measures shall be implemented as part of the Proposed Action and Alternatives.

B-9: To avoid take of any species protected under the MBTA, a pre-construction nesting bird survey shall be conducted by a qualified biologist not more than seven (7) days prior to the onset of ground disturbance that is to occur between February 15 and September 15. The nest surveys shall include the project site and adjacent areas within 500 feet of the project site. If nesting migratory birds are not observed during the survey, site preparation and construction activities may begin. If an active migratory bird nest is located, a buffer shall be established around the nesting location at a distance recommended by the monitoring biologist in coordination with the Fort Irwin Directorate of Public Works (DPW) Environmental Division. Typically this is a minimum of 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors), until juveniles have fledged and there is no evidence of a second attempt of nesting. Stakes or signs shall be used to clearly mark the nest buffer. Construction shall not be permitted within the buffer areas while the nest continues to be active. A biological monitor shall be present during construction to monitor the nest(s), make sure construction activities are not disturbing the nest, and document any findings. Once the monitoring biologist determines that the nest is no longer active, the buffer shall be removed and construction activities may resume in that area.

B-10: Land and vegetation clearing should occur outside the breeding season for birds listed under the MBTA, defined as February 15 to August 31. If land and vegetation clearing occurs during the breeding season, then implementation of B-8 will prevent impacts to nesting birds during these activities.

B-11: A pre-construction take avoidance survey shall be conducted no less than 14 days prior to initiating ground disturbing activities using the methods described in CDFW Staff Report on Burrowing Owl Mitigation (CDFW 2012) and in consultation with the Fort Irwin Directorate of Public Works (DPW) Environmental Division. Identified active nests shall be protected from disturbance with a buffer distance determined through monitoring the behavior of the owls and according to CDFW

guidelines (2012) which identifies buffer distances based on the time of year and level of disturbance associated with construction activities.

Mitigation measures could also include passive relocation of burrowing owls outside of the nesting season (September 1 through January 31). A specific mitigation methodology for the owl shall be determined in consultation with the Fort Irwin DPW Environmental Division.

- B-12: During the pre-construction survey, biologists shall survey for desert kit fox dens. Active dens that are identified shall be flagged for avoidance and protected from ground-disturbing activities with a buffer distance determined through monitoring the behavior of the fox(es) and coordination with the Fort Irwin DPW Environmental Division. During the pup-rearing season, maternity dens shall be protected and avoided (1 January through 31 July). If avoidance of a non-maternity den is not feasible, the Fort Irwin DPW Environmental Division shall be contacted about approved kit fox passive relocation measures (den collapse after burrow scoping) outside of breeding and pup-rearing season (August 1 to January 1).
- B-13: Domestic dogs shall not be allowed on the construction site.
- B-14: During the pre-construction survey, biologists shall survey for badger dens. If present, occupied badger dens shall be flagged for avoidance and ground-disturbing activities avoided within 50 feet of the occupied den. During the pup-rearing season, maternity dens shall be avoided (15 February through 1 July) and a minimum 200-foot buffer established. Buffers may be modified with the concurrence of the Fort Irwin Directorate of Public Works (DPW) Environmental Division. If avoidance of a non-maternity den is not feasible, the Fort Irwin DPW Environmental Division shall be contacted about approved badger relocation techniques.

**Pest Species.** Construction activity might attract additional pest species, including ravens, where additional food, trash, or water is available. To avoid potential impacts, the following measures would be implemented at the work areas:

- B-15: To preclude attraction of common ravens and coyotes, construction trash, including construction worker food trash, shall be placed in sealed containers and emptied at the close of each business day. The project area shall be kept as clean of debris as possible. Each water source will be caged or netted to prevent use by ravens.
- B-16: All road-killed animals shall be reported to the Fort Irwin Directorate of Public Works (DPW) Environmental Division, Natural Resources Section immediately.
- B-17: Water used for construction shall be used in a manner that does not result in the formation of standing water that may attract pest species. Water trucks with open tops shall be covered securely at the end of each work day.
- B-18: Structures shall have appropriate nesting deterrent mechanisms installed such as bird spikes and auditory or visual deterrents to discourage and/or prevent common ravens from using structures as nesting substrates.

## 4.4 Water Resources

Impacts to water resources are considered significant if:

- Groundwater table levels are reduced to such an extent that spring flows are diminished or production at existing wells within the basin or adjacent interconnected basins falls below economically feasible or practical engineering limits;
- Groundwater quality changes occur because of increasing salinity or mineral content that can negate the water's value for domestic, industrial, or agricultural consumption;
- Existing surface water drainage patterns are altered;
- The quality of ephemeral surface water resources available for wildlife at dry lakes, spring flows, or linear riparian systems with ephemeral flows is degraded; and/or
- Increases in water quality constituents could lead to a violation of specific state and Federal standards.

### 4.4.1 Proposed Action

#### Construction Phase

**Surface Water.** The project area contains many ephemeral streams, drainages that contain flows only during and immediately following a storm event. Within the jurisdictional study area (50-foot buffer from the proposed alignments) a total of 17.667 acres of ephemeral stream were mapped. The potential for direct and indirect impacts to surface waters would be minimized through the implementation of a Stormwater Pollution Prevention Plan (SWPPP), which would include BMPs to prevent construction pollutants and products from violating any water quality standard or any waste discharge requirements. No adverse impacts to surface waters are expected.

**Potential Impacts on Jurisdictional Waters.** As described in Section 3.5, no USACE jurisdictional waters are present on or adjacent to the project site. No impacts to USACE jurisdictional waters would occur from construction of the Proposed Action. The 17.667 acres of ephemeral streams on the project site are not considered Waters of the State of California. California Fish and Game Code Section 1600 does not apply to activities by the federal government. The Proposed Action would comply with Sections 401 and 402 of the Clean Water Act. A less than significant impact would occur.

**Groundwater.** Project construction would require less than 1 acre-foot of water for use during typical construction tasks and activities such as dust control, soil compaction, and general housekeeping practices. The source of water during construction would be Title 22 (tertiary) Wastewater Effluent. Based on the reuse of treated wastewater effluent for construction activities, including dust suppression, no impacts to groundwater resources would occur.

**Drainage Patterns.** The Proposed Action would be constructed starting at the existing Verizon manhole pickup following an existing tank trail to Outer Loop Road and eventually

connecting to utility riser pole 4659666E located in the Fort Irwin cantonment area (Underground Route A). The Verizon Fiber optic line would then follow Aerial Placement Route A, the line would cross Barstow Road continue north on existing poles on the east side of Barstow Road, cross Barstow Road and Bastogne Street, continue north on the west side of Bastogne Street, travel briefly east on the north side of Salerno Drive to poles on the west side of Barstow Road, then travel north to terminate at the existing Verizon Fort Irwin Central Office located in Building 12. Additionally the Proposed Action would use a 210-foot by 70-foot area for construction staging in the cantonment area south of Langford Lake Road and west of H Avenue. During construction trenching and directional boring would take place; however, drainage patterns would not be significantly altered from the existing conditions. Prevention of soil erosion and loss of topsoil due to rainfall and stormwater will be addressed through the preparation of a SWPPP (See Mitigation Measure G-1). Additionally, a drainage plan would be designed by a registered civil engineer to safely retain, detain, and/or convey stormwater runoff. No adverse impacts to drainage patterns are expected.

### Operation Phase

**Surface Water.** Installation of the fiber optic line would result in a very minor increase in impervious surface area, approximately 246 square feet, from the hand holes that would be installed along the buried portion of the line for future access. It is expected that the increase of stormwater runoff will be insubstantial because the majority of the project area is composed of permeable surfaces. The drainage plan for the project site would include post-construction BMPs and would be designed by a registered civil engineer to safely retain, detain, and/or convey stormwater in a manner that would minimize direct and indirect impacts to surface waters on and off-site. No adverse impacts to surface waters are expected.

**Potential Impacts on Jurisdictional Waters.** As described in Section 3.5, no USACE jurisdictional waters are present on or adjacent to the project site. No impacts to USACE jurisdictional waters would occur from construction of the Verizon Fiber Optic Project.

**Groundwater.** Fort Irwin obtains all its potable water from groundwater.

The fiber optic line would not require water for operation because no routine maintenance would occur. No impacts would occur to groundwater from the operation of the Proposed Action.

**Drainage Patterns.** There may be occasional access to one or more hand holes for repairs. Impacts to drainage patterns during operation of the fiber optic line would be less than previously discussed under the construction phase.

## 4.4.2 Alternative 1

**Surface Water, Groundwater, Drainage Patterns.** Alternative 1 includes similar components as the Proposed Action with less ground disturbance because Underground Route B would be constructed using the directional bore method instead of trenching. Therefore, construction and operation of Alternative 1 would result in similar, but less intensive, impacts to water resources than discussed above for the Proposed Action. Impacts would be less than significant.

*Potential Impacts on Jurisdictional Waters.* Jurisdictional waters would not be affected during operations.

#### 4.4.3 Alternative 2

*Surface Water, Groundwater, Drainage Patterns.* Alternative 2 includes similar components as the Proposed Action. Therefore, construction and operation of Alternative 2 would result in similar impacts to water resources as discussed above for the Proposed Action. Impacts would be less than significant.

*Potential Impacts on Jurisdictional Waters.* Jurisdictional waters would not be affected during operations.

#### 4.4.4 Alternative 3

*Surface Water, Groundwater, Drainage Patterns.* Alternative 3 includes similar components as Alternative 1. Therefore, construction and operation of Alternative 3 would result in similar but less intensive impacts to water resources than discussed above for the Proposed Action. Impacts would be less than significant

*Potential Impacts on Jurisdictional Waters.* Jurisdictional waters would not be affected during operations.

#### 4.4.5 No Action Alternative

With the No Action Alternative, the Proposed Action would not be implemented and current hydrological conditions would continue into the future. There would be no impacts to water resources.

#### 4.4.6 Cumulative Impacts

The Proposed Action or Alternatives would not cause groundwater levels to drop or groundwater quality to degrade. Cumulative impacts on groundwater withdrawal can occur from the water needs created by new construction. However, Fort Irwin is planning to construct a more efficient wastewater treatment plant that would produce recycled water for construction and maintenance purposes. Fort Irwin is also planning to reduce consumption throughout the cantonment by upgrading building facilities that require water with more efficient components. The Verizon Fort Irwin Fiber Optic Cable Project would not contribute to any significant cumulative impacts to water resources.

#### 4.4.7 Mitigation Measures

Impacts to surface waters or drainage patterns as a result of construction and operation of the Proposed Action or Alternatives; would be mitigated with mitigation measure G-1(see Section 4.2.7). No impacts to groundwater are expected.

### 4.5 Air Quality

Potential impacts to air quality from the Verizon Fort Irwin Fiber Optic Cable Project would be mainly associated with construction. The analysis therefore involves estimating emissions generated from the proposed construction activities and assessing potential

impacts on air quality. No increase in emissions is associated with operation of the fiber optic cable.

Significant air quality impacts would occur if implementation of any of the alternatives would directly or indirectly:

- expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- cause a net increase in pollutant or pollutant precursor emissions that exceeds relevant emission significance thresholds (such as the numerical values of major source thresholds for nonattainment pollutants); or
- conflict with adopted air quality management plan policies or programs; or
- exceed caps (limits) as imposed by Federal and California greenhouse gas regulations. Note, these regulations are in the draft stage

Criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. The MDAQMD has adopted guidelines for assessing air quality impacts under the California Environmental Quality Act (CEQA) and the Federal Conformity Rule (MDAQMD 2009). The MDAQMD's thresholds apply to CEQA projects except for the thresholds that are relevant to ozone precursors. The MDAQMD's thresholds for ozone precursors (NO<sub>x</sub> and ROG) are 25 tons/year, equivalent to the *de minimis* thresholds under the General Conformity Rule.

To determine the significance of construction impacts, emissions from the project were compared with the federal major source thresholds for attainment pollutants and the *de minimis* thresholds for ozone precursors. The federal major source thresholds for criteria pollutants is 100 tons per year, which is the major source threshold under 40 CFR 70, the Federal Operating Permit Program, for all pollutants. The *de minimis* thresholds for ozone precursors are 25 tons/year for NO<sub>x</sub> and ROG, and the *de minimis* threshold for PM<sub>10</sub> is 10 tons/year.

For purposes of this air quality analysis, project emissions associated with the proposed action would be potentially significant if they exceed these thresholds. This is a conservative approach, as the analysis compares emissions from both project-related stationary and mobile sources to these thresholds.

If emissions exceed a significance threshold described above, further analysis of the emissions and their consequences would be performed to assess whether there was likelihood of a significant impact to air quality. The nature and extent of such analysis would depend on the specific circumstances. The analysis could range from simply a more detailed and precise examination of the likely emitting activities and equipment, to air dispersion modeling analyses. If proposed action emissions were determined to increase ambient pollutant levels from below to above a national or state ambient air quality standard, these emissions would be significant.

### 4.5.1 Proposed Action

The Proposed Action involves the installation of a fiber optic cable at Fort Irwin. As discussed in Section 2, the Proposed Action would include the following project components:

- Underground Route A;
- Aerial Placement Route A; and
- Staging Area

#### Construction Emissions

The Proposed Action is anticipated to begin construction in spring 2016 and would take approximately 13 to 18 weeks to complete the underground portion of the project, which includes 11 to 16 weeks for trenching and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately three weeks.

Construction equipment would include the following:

- 1 - Large excavator
- 1 - Excavator
- 1 - Rock Saw
- 3 - Trailers
- 2 - Backhoes
- 1 - Water Truck
- 3 - Gang Trucks
- 1 - Cable Dolly
- 1 - Vacuum Trailer
- 1 - Bore Machine

To calculate emissions associated with construction, the CalEEMod Model, Version 2013.2.2 (ENVIRON 2013) was used. The CalEEMod Model is the latest version of the land use model in California, and takes into account emission factors for construction equipment from the ARB's OFFROAD model and emission factors for on-road vehicles from the ARB's EMFAC2011 model.

Construction emissions are summarized in Table 4.5-1. As shown in Table 4.5-1, emissions are below the major source thresholds for attainment pollutants, and are below the *de minimis* thresholds in the General Conformity Rule for ozone precursors and PM<sub>10</sub>.

Table 4.5-1. Proposed Action Construction Emissions

Emissions, Total tons						
Construction Phase	ROG	NOx	CO	SOx	PM <sub>10</sub>	PM <sub>2.5</sub>
<i>Trenching</i>						
Fugitive Dust	-	-	-	-	0.19	0.0994
Heavy Construction Equipment	0.2854	3.2204	1.7739	0.00334	0.1475	0.1363
Haul Trucks	0.00577	0.01024	0.091	0.00001	0.00032	0.00014
Construction Worker Travel	0.0034	0.00566	0.05626	0.00002	0.00621	0.00172
<b>Subtotal</b>	<b>0.29457</b>	<b>3.2363</b>	<b>1.92116</b>	<b>0.00337</b>	<b>0.15403</b>	<b>0.13816</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No

Emissions, Total tons						
Construction Phase	ROG	NOx	CO	SOx	PM <sub>10</sub>	PM <sub>2.5</sub>
<i>Aerial Placing</i>						
Heavy Construction Equipment	0.00406	0.0434	0.0247	0.0001	0.0023	0.0021
Vendor Trucks	0.0001	0.0006	0.0014	0.00	0.0001	0.00003
Construction Worker Travel	0.0001	0.0001	0.0013	0.00	0.0002	0.00004
<b>Subtotal</b>	<b>0.00426</b>	<b>0.0441</b>	<b>0.0274</b>	<b>0.0001</b>	<b>0.0026</b>	<b>0.00217</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No
<i>Underground Placing</i>						
Heavy Construction Equipment	0.0034	0.0326	0.0241	0.00003	0.0025	0.0023
Vendor Trucks	0.0002	0.0013	0.0029	0.0000	0.0001	0.0001
Construction Worker Travel	0.0002	0.0003	0.0025	0.0000	0.0003	0.0001
<b>Subtotal</b>	<b>0.0038</b>	<b>0.0342</b>	<b>0.0295</b>	<b>0.00003</b>	<b>0.0029</b>	<b>0.0025</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No
<i>Underground and Aerial Splicing</i>						
Heavy Construction Equipment	0.0051	0.0488	0.0362	0.00005	0.00376	0.00346
Vendor Trucks	0.0003	0.0019	0.0043	0.0000	0.0002	0.0001
Construction Worker Travel	0.0002	0.0004	0.0038	0.00001	0.0005	0.0001
<b>Subtotal</b>	<b>0.0056</b>	<b>0.0511</b>	<b>0.0443</b>	<b>0.00006</b>	<b>0.00446</b>	<b>0.00366</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No
<b>Total Emissions</b>						
<b>Total Annual Emissions</b>	0.31	3.36	2.02	0.0036	0.35	0.24
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No

As shown in Table 4.5-1, construction emissions under the proposed action would not exceed the significance thresholds for any criteria pollutant.

### Operations Emissions

The Proposed Action would not create emissions during the operation of the Verizon Fiber Optic Line. No regular maintenance would take place therefore no emissions would be associated with regular scheduled maintenance. Occasional repair activities, as they are needed would result in lower emissions than the project's construction, which did not exceed MDAQMD thresholds. Therefore, as with the construction emissions, operational emissions would be below the thresholds of significance. As a result, the Proposed Action would not interfere with current air quality plans to bring the region into compliance with air quality standards. Impacts would be less than significant.

General conformity means compliance with the plan's purpose of attaining or maintaining the NAAQS. This means ensuring that a federal action would not: (1) cause a new violation of the NAAQS, (2) contribute to any increase in the frequency or severity of violations of existing NAAQS, or (3) delay the timely attainment of any NAAQS interim or other attainment milestones.

According to the MDAQMD *Federal Conformity Guidelines*, a project conforms if it (1) complies with all applicable district rules and regulations, (2) complies with all proposed control measures that are not yet adopted from the applicable plans, and (3) is consistent with the growth forecasts in the applicable plans (MDAQMD 2009; revised 2011).

The Proposed Action would result in a short-term net increase in PM<sub>10</sub> emissions from construction activities. Peak construction emissions were compared to the *de minimis*

threshold to evaluate general conformity applicability. Analysis indicates that annual emissions would be 0.35 tons for construction, well below the *de minimis* threshold of 100 tons per year (SRA 2015). Therefore, the Proposed Action would not require a general conformity determination. As required by the Army, a Record of Non-Applicability (RONA) would be used to document that the Proposed Action is exempt from general conformity requirements.

The Proposed Action would comply with the applicable MDAQMD Rules and Regulations, and would comply with proposed control measures presented in the *List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health and Safety Code §39614(d)* (MDAQMD 2005). This analysis demonstrates that the Proposed Action conforms to the MDAQMD's approved air quality plan because the emissions of the nonattainment pollutant, PM<sub>10</sub>, would be less than the general conformity *de minimis* threshold.

#### 4.5.2 Alternative 1

As discussed in Section 2, Alternative 1 would include the following project components:

- Underground Route B;
- Aerial Placement Route A; and
- Staging Area

This alternative is anticipated to begin construction in spring 2016. The directional bore portion of the project would take approximately eight weeks to complete, including six weeks for substructure installation and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately three weeks.

Table 4.5-2 presents the emissions for Alternative 1. As shown in Table 4.5-2, the emissions for the alternative are below the major source thresholds for attainment pollutants, and are below the *de minimis* thresholds in the General Conformity Rule for ozone precursors and PM<sub>10</sub>.

Table 4.5-2. Alternative 1 Construction Emissions

Construction Phase	Emissions, tons/year					
	ROG	NOx	CO	SOx	PM10	PM2.5
<i>Boring</i>						
Fugitive Dust	-	-	-	-	0.004	0.0005
Heavy Construction Equipment	0.03	0.38	0.19	0.0004	0.02	0.02
Haul Trucks	0.03	0.25	0.35	0.0007	0.02	0.01
Construction Worker Travel	0.002	0.003	0.03	0.00004	0.003	0.0009
<b>Subtotal</b>	<b>0.062</b>	<b>0.633</b>	<b>0.57</b>	<b>0.00114</b>	<b>0.047</b>	<b>0.0314</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No
<i>Aerial Placing</i>						
Heavy Construction Equipment	0.004	0.05	0.03	0.0001	0.003	0.002
Vendor Trucks	0.0001	0.0007	0.002	0.00	0.0001	0.00003
Construction Worker Travel	0.0001	0.0002	0.001	0.00	0.0001	0.00004
<b>Subtotal</b>	<b>0.0042</b>	<b>0.0509</b>	<b>0.033</b>	<b>0.0001</b>	<b>0.0032</b>	<b>0.00207</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No

Emissions, tons/year						
Construction Phase	ROG	NOx	CO	SOx	PM10	PM2.5
<i>Underground Placing</i>						
Heavy Construction Equipment	0.004	0.034	0.024	0.00003	0.003	0.0025
Construction Worker Travel	0.0002	0.0003	0.003	0.00	0.0003	0.0001
<b>Subtotal</b>	<b>0.0042</b>	<b>0.0343</b>	<b>0.027</b>	<b>0.00003</b>	<b>0.0033</b>	<b>0.0026</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No
<i>Underground and Aerial Splicing</i>						
Heavy Construction Equipment	0.006	0.055	0.039	0.00005	0.004	0.004
Construction Worker Travel	0.0003	0.0005	0.005	0.00001	0.0005	0.0001
<b>Subtotal</b>	<b>0.0063</b>	<b>0.0555</b>	<b>0.044</b>	<b>0.00006</b>	<b>0.0045</b>	<b>0.0041</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No
<b>Total Annual Emissions</b>						
<b>Total Annual Emissions</b>	<b>0.08</b>	<b>0.77</b>	<b>0.67</b>	<b>0.001</b>	<b>0.06</b>	<b>0.04</b>
Significance threshold	25	25	100	100	100	100
Exceeds threshold?	No	No	No	No	No	No

### 4.5.3 Alternative 2

As discussed in Section 2, Alternative 2 would include the following project components:

- Directional Bore Route A;
- Aerial Placement Route B; and
- Staging Area

This alternative is anticipated to begin construction in spring 2016 and take 16 to 21 weeks to complete. Alternative 2 is similar to the Proposed Action; therefore, it is anticipated that emissions from construction of Alternative 2 would be the same as the Proposed Action. As discussed in Section 4.5.1, emissions are below both the major source thresholds and the *de minimis* thresholds in the General Conformity Rule for ozone precursors and PM<sub>10</sub>.

### 4.5.4 Alternative 3

As discussed in Section 2, Alternative 3 would include the following project components:

- Directional Bore Route B;
- Aerial Placement Route B; and
- Staging Area

This alternative is anticipated to begin construction in spring 2016 and take 12 weeks to complete. Alternative 3 is similar to Alternative 1; therefore, it is anticipated that emissions from construction of Alternative 3 would be the same as Alternative 1. As discussed in Section 4.5.2, emissions are below both the major source thresholds and the *de minimis* thresholds in the General Conformity Rule for ozone precursors and PM<sub>10</sub>.

### 4.5.5 No Action Alternative

Under the No Action Alternative, the Verizon Fort Irwin Fiber Optic Cable Project would not be constructed. No air emissions would be associated with the No Action Alternative; however, the No Action Alternative would not meet the purpose and need of the proposed action.

### 4.5.6 Cumulative Impacts

Cumulative impacts are the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

As shown in Table 4.5-1, construction emissions would be well below the MDAQMD thresholds; therefore, the Proposed Action or Alternatives would not be expected to have an adverse cumulative effect on air quality.

### 4.5.7 Mitigation Measures

No significant impacts to air quality are expected as a result of construction and operation of the Verizon Fort Irwin Fiber Optic Cable Project. However, all build alternatives would be required to comply with MDAQMD Rules 403 and 403.2 (Mitigation Measure A-1).

**A-1:** The Proposed Project shall comply with MDAQMD Rules 403 and 403.2 to reduce fugitive dust. The Rules' requirements are below:

Rule 403 – Fugitive Dust, requires fugitive dust emissions to be restricted such that visible dust does not travel beyond the property line, and requires minimization of fugitive dust to the extent possible.

Rule 403.2 – Fugitive Dust Control for the Mojave Desert Planning Area, requires dust control measures to be implemented during construction, including watering, reduction of track out, covering of vehicles carrying loose materials, stabilization of graded areas, and reduction of nonessential earthmoving activities during high wind periods.

## 4.6 Climate Change and Greenhouse Gases

### 4.6.1 Proposed Action

Emissions of greenhouse gases (GHG) are considered to have a potential cumulative impact on global climate. The emissions associated with construction of the Proposed Action would temporarily increase regional emissions of CO<sub>2</sub> and other GHG during construction activities. Scientists are in general agreement that the Earth's climate is gradually changing, and that change is due, at least in part, to emissions of CO<sub>2</sub> and other GHG from manmade sources. The anticipated magnitude of global climate change is such that a significant cumulative impact on global climate exists.

To calculate GHG emissions associated with the Proposed Action, emissions attributable to Scopes 1, 2, and 3 as defined in EO 13693 have been estimated. Scope 1 emissions include those emissions attributable to sources that are owned and operated by the Federal government. Scope 2 emissions include those emissions that are direct greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency. There would be no emissions under Scopes 1 and 2 for the Proposed Action.

Scope 3 emissions include greenhouse gas emissions from sources not owned or directly controlled by a Federal agency but related to agency activities such as vendor supply chains, delivery services, and employee travel and commuting. For the Proposed Action, these GHG emissions include emissions associated with construction of the Proposed Action.

Currently, there are no formally adopted or published NEPA thresholds for GHG emissions. On February 18, 2010, the Council on Environmental Quality (CEQ) released draft guidance on addressing climate change in NEPA documents. The draft guidance, which has been issued for public review and comment, recommends quantification of GHG emissions, and proposes a threshold of 25,000 metric tons of CO<sub>2</sub>e emissions. The CEQ indicates that use of 25,000 metric tons of CO<sub>2</sub>e emissions as a reference point would provide federal agencies with a useful indicator, rather than an absolute standard of significance, for agencies to provide action-specific evaluation of GHG emissions and disclosure of potential impacts. In the absence of formally-adopted thresholds of significance, this EA compares GHG emissions that would occur from the Proposed Action with the 25,000 metric ton level.

The Proposed Action would generate GHG emissions from construction related activities. Construction would result in a short-term increase in GHG emissions. Table 4.6-1 summarizes the annual GHG emissions associated with construction of the Proposed Action. These data show that the annual CO<sub>2</sub>e emissions estimated for the Preferred Alternative would be less than the proposed significance threshold of 25,000 metric tons of CO<sub>2</sub>e. Therefore, the Proposed Action would not result in significant GHG emissions and would have a less than significant impact.

Table 4.6-1. Proposed Action Construction GHG Emissions

Scenario/Activity	Metric Tons per Year <sup>1</sup>			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
Construction				
Total Construction GHG Emissions	336.49	0.0946	0.0000	339.14
Notes: <sup>1</sup> CO <sub>2</sub> e = (CO <sub>2</sub> * 1) + (CH <sub>4</sub> * 28) + (N <sub>2</sub> O * 265).				

Operational impacts would be limited to emissions from work trucks that would be used for repair of the fiber optic line on an as-needed basis. These emissions would be lower than those described for construction and would also not exceed 25,000 metric tons of CO<sub>2</sub>e.

#### 4.6.2 Alternative 1

The GHG emissions from Alternative 1 would be similar to the Proposed Action. Impacts would be less than significant.

#### 4.6.3 Alternative 2

The GHG emissions from Alternative 2 would be similar to the Proposed Action. Impacts would be less than significant.

#### 4.6.4 Alternative 3

The GHG emissions from Alternative 3 would be similar to the Proposed Action. Impacts would be less than significant.

#### 4.6.5 No Action Alternative

With the No Action Alternative, the Verizon Fort Irwin Fiber Optic Cable Project would not be constructed and no new construction would occur. Because there would be no change

from existing activities, the No Action Alternative would not result in an increase in GHG emissions during construction. No impacts would occur.

#### 4.6.6 Cumulative Impacts

Cumulative impacts are the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Global climate change impacts are, by definition, cumulative. As shown in Table 4.6-1, the annual CO<sub>2</sub>e emissions estimated for the Proposed Action would be less than the proposed significance threshold of 25,000 metric tons of CO<sub>2</sub>e. Changes to global climate change from the Proposed Action or alternatives would not be significant.

#### 4.6.7 Mitigation Measures

No significant emissions of GHGs are expected as a result of construction and operation of the Verizon Fort Irwin Fiber Optic Cable Project; therefore, no mitigation measures are required.

### 4.7 Noise

Determination of a significant noise impact is based on Army Regulation 200-1, which implements all federal laws concerning environmental noise for Department of the Army activities. This regulation specifies that a noise level of 65 to 75 dBA is generally acceptable, while a noise level of greater than 75 dBA is unacceptable. At sensitive receptors, such as residences, noise levels of greater than 65 dBA are considered unacceptable. A significant noise impact is defined as a noise level of greater than 75 dBA, or of 65 dBA at the location of any sensitive receptors.

#### 4.7.1 Proposed Action

Noise impacts associated with construction and operation of the Proposed Action are expected to be minimal because construction would occur during normal working hours. The trenching would create temporary noise impacts; however it would take place primarily outside of the cantonment area along the tank trail parallel to Fort Irwin Road. There are no noise sensitive receptors along the underground route outside the cantonment area. The point where the underground route switches to the aerial placement route is located at the edge of the cantonment area. There are residential properties, an intermediate school, and military buildings located along the aerial placement route.

**Construction.** Construction of the Verizon Fort Irwin Fiber Optic Cable Project would result in temporary noise impacts from the operation of equipment and vehicles required for trenching, boring, and aerial placement. As previously stated in Section 3.7.2 Local Environment, the Project area's existing noise environment includes overhead aircraft noise, vehicular traffic noise, and construction related noise. The construction of the Proposed Action would temporarily increase the amount of heavy construction equipment and vehicles in the area resulting in an increase of the existing ambient noise. The trenching portion of the Proposed Action would take place outside of the cantonment area, along a tank trail parallel to Fort Irwin Road. No sensitive receptors are nearby. The boring and aerial placement portions of the Proposed Action would take place in the cantonment area,

which is already exposed to a similar noise setting. Construction would be limited to normal working hours. Therefore the temporary increase in ambient noise would not create a significant impact.

**Operation.** Once the fiber optic line is installed, it would not involve day to day operations. In the event the fiber optic line needs to be repaired, work would take place during normal daytime working hours. Noise would be related to the use of heavy equipment, similar to that described for construction, above, except that the noise would be limited to the area of repair rather than the entire alignment. Operation noise impacts from the Proposed Action would be less than significant.

#### 4.7.2 Alternative 1

Noise impacts from Alternative 1 would be the same as impacts discussed for the Proposed Action above. Impacts would be less than significant.

#### 4.7.3 Alternative 2

Noise impacts from Alternative 2 would be the same as impacts discussed for the Proposed Action above. Impacts would be less than significant.

#### 4.7.4 Alternative 3

Noise impacts from Alternative 3 would be the same as impacts discussed for the Proposed Action above. Impacts would be less than significant.

#### 4.7.5 No Action Alternative

Existing conditions would continue under the No Action Alternative, and no significant noise impacts would be produced.

#### 4.7.6 Cumulative Impacts

Cumulative impacts would result from individually minor but collectively significant actions taking place over a period of time. Construction activities associated with the Proposed Action and Alternatives would temporarily increase the existing ambient noise levels. Operation noise would only take place as needed for repairs and would take place during normal working hours. Noise generated by construction and operation activities is expected to be similar to existing ambient noise levels and compatible with the current noise setting. Cumulative noise impacts are not expected from the Proposed Action or Alternatives.

#### 4.7.7 Mitigation Measures

No significant impacts have been identified, and no mitigation is necessary.

### 4.8 Cultural Resources

A significant impact on cultural resources (adverse effect) would occur if historic properties (NRHP-eligible resources) are destroyed, altered, or moved, or if their historical setting is altered.

### 4.8.1 Proposed Action

The results of the literature and records search and an intensive pedestrian field survey indicated that there was one previously recorded historic-period site, a wood pole utility line (P36-010894/CA-SBR-10894). P36-010894 was previously evaluated as not eligible for the NRHP and ECORP agreed with this evaluation. Therefore, no historic properties would be affected by the construction or operation of the Proposed Action and no significant impacts would occur. The Proposed Action would comply with post-review discovery procedures pursuant to 36 CFR 800.13(b)(1), (2), or (3) in the event that any previously undiscovered archaeological remains are uncovered during construction (ECORP 2016b).

### 4.8.2 Alternative 1

Cultural resources impacts from Alternative 1 would be the same as impacts discussed for the Proposed Action above. Impacts would be less than significant.

### 4.8.3 Alternative 2

Cultural resources impacts from Alternative 2 would be the same as impacts discussed for the Proposed Action above. Impacts would be less than significant.

### 4.8.4 Alternative 3

Cultural resources impacts from Alternative 3 would be the same as impacts discussed for the Proposed Action above. Impacts would be less than significant.

### 4.8.5 No Action Alternative

With the No Action Alternative, there would be no known historic properties affected, as no construction would occur.

### 4.8.6 Cumulative Impacts

Because the Proposed Action and alternatives would not affect historic properties they would not contribute to cumulative effects on cultural resources when combined with the actions of other projects.

### 4.8.7 Mitigation Measures

No mitigation measures are necessary for cultural resources.

## 4.9 Socioeconomics

For purposes of socioeconomic analysis, the following conditions would result in a significant socioeconomic impact:

- Significant changes in the local labor force or employment;
- Increases in population that would reduce public service levels or aggravate any existing adverse conditions in affected communities; and
- Significant reductions in property taxes that would affect local government programs.

- The significance criteria for environmental justice/health and safety risks to children are:
  - Significant adverse environmental or human health impacts that would fall disproportionately on minority or low income populations, or populations less than 18 years of age.
  - Areas with low-income, minority, and juvenile populations.

#### **4.9.1 Proposed Action**

##### **Population**

A temporary increase in employment for construction is expected. No additional workers would be required to operate and maintain the Proposed Action. These additional construction jobs would be filled from the local labor pool and no significant demands on the local labor force would occur. There would be no need for additional employees during the operation of the Proposed Action. The Proposed Action would not cause increases in the local population. Therefore no demand for housing or community services would occur. No land would be acquired and no impacts to the tax base would occur. The Proposed Action would not have any adverse effects on the population at Fort Irwin.

##### **Environmental Justice**

The Proposed Action would not result in a change in property taxes that would affect local government programs because the Proposed Action would be built within Fort Irwin. The zip code in the project area has been identified as having a slightly higher percentage of low-income population than the County of San Bernardino as a whole. This zip code does not have a higher percentage of juvenile populations than the County of San Bernardino as a whole. The development pattern in this area is generally near established communities, in this case the Fort Irwin housing area. However, no significant adverse environmental or human health impacts are expected with the construction or operation of the Proposed Action due to the inclusion of Mitigation Measures listed throughout this Environmental Assessment. Therefore, even though the residents of Fort Irwin are in a zip code with a higher low income population, these populations would not be disproportionately affected.

#### **4.9.2 Alternative 1**

Impacts to socioeconomics and environmental justice with Alternative 1 would be the same as described for the Proposed Action.

#### **4.9.3 Alternative 2**

Impacts to socioeconomics and environmental justice with Alternative 2 would be the same as described for the Proposed Action.

#### **4.9.4 Alternative 3**

Impacts to socioeconomics and environmental justice with Alternative 3 would be the same as described for the Proposed Action.

#### 4.9.5 No Action Alternative

With the No Action Alternative, existing conditions would remain. No significant effects would result.

#### 4.9.6 Cumulative Impacts

The Proposed Action or Alternatives would not have any socioeconomic impacts or create any environmental justice conditions therefore, no cumulative adverse effects would occur from the Proposed Action or Alternatives.

#### 4.9.7 Mitigation Measures

No specific mitigations are necessary for either socioeconomics or environmental justice.

### 4.10 Hazardous and Toxic Substances

Hazardous and toxic substances impacts are considered significant if:

- The generation of hazardous substances and/or materials would expose the general public to health risks through direct exposure, groundwater contamination, and/or airborne contaminants; and/or
- The generation of hazardous substances and/or materials would expose wildlife or vegetation outside of the project area in a manner that is detrimental to longevity or propagation.

#### 4.10.1 Proposed Action

**Construction.** Some hazardous materials, such as diesel fuel and other petroleum products, would be used at the site during construction of the Verizon Fort Irwin Fiber Optic Cable Project. The transport of hazardous materials by truck is regulated by federal safety standards under the jurisdiction of the U.S. Department of Transportation. Any potential spills or leaks from equipment associated with the operation of the Proposed Action would be addressed in an approved Spill Prevention, Control, and Countermeasures Plan (SPCCP), and staff would be properly trained to respond (Petra 2015).

A SWPPP listing BMPs to prevent construction pollutants and products from violating any water quality or waste discharge requirements would be prepared for the Proposed Action. Uncontrolled releases of hazardous substances are not anticipated and would be prevented through the implementation of BMPs listed in the SWPPP.

A project-specific Health and Safety Plan would be prepared and followed to avoid significant risks or health hazards associated with the transport, storage, and use of hazardous materials and hazardous waste. The Health and Safety Plan will include all applicable federal, state, and local regulations and manufacturers' specifications regarding the proper transport, storage, and use of hazardous materials and hazardous waste.

**Polychlorinated Biphenyls.** During the Phase I ESA, Petra found records that reported a PCB transformer storage area within the cantonment area. However, based on the distance to the

Proposed Action alignment, and the regulatory oversight status, this area does not appear to represent a REC with regards to the Proposed Action (Petra 2015).

***Underground Storage Tanks.*** The Phase I ESA found that no active or inactive underground storage tanks (USTs) were located on or directly adjacent to the Proposed Action site. The RWQCB GeoTracker website listed one former LUST related to a waste oil tank mapped north of the proposed staging area. This site has a cleanup status reported as, “Completed-Case Closed” as of April 4, 2002. Because the regulatory oversight agency provided a “Case Closed” status and the report of soil contamination only, this listing does not appear to represent a REC with regards to the subject project at this time.

Based upon the limited ground disturbance associated with aerial placement of the fiber optic line within the cantonment area, other known UST sites within the cantonment area are not anticipated to represent a recognized environmental concern at this time (Petra 2015).

***Above Ground Storage Tanks.*** As described in the Environmental Setting (Section 3.10), three relatively large above ground diesel storage tanks were observed east of the staging area. These ASTs are separated from the planned staging area by chain-link fencing and a boulder barricade. In addition, an emergency generator with attached diesel fuel tank was observed near Building P12 (Petra 2015). However, these AST are not anticipated to represent a REC at this time because they are outside of the areas that would be disturbed by the Proposed Action.

***Unexploded Ordinance.*** Three historic ranges have been identified near the alignment of Underground Route A. The CTT range boundary is adjacent to and slightly overlapping Barstow Road in the location of Aerial Placement Route A. The historic ranges Bombing Range M and the Scorpion Range are situated on the west side of Fort Irwin Road, near Underground Alignment A approximately 3.5 miles to 4.5 miles from the beginning of the alignment at the existing Verizon manhole pickup (located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter and tank display). The historic range Lizard Gulch Range is on the east side of Fort Irwin Road, approximately 0.5 mile to 1.5 miles from the beginning of the alignment at the existing Verizon manhole pickup.

Trenching and other ground-disturbing activities associated with the Proposed Action could affect military munitions, UXO, discarded military munitions, and munitions constituents associated with historic ranges Bombing Range M, the Scorpion Range, and Lizard Gulch Range, if they are present. Although Aerial Placement Route A is adjacent to and slightly overlaps the CTT (Small Arms Range) boundary, it is unlikely that a hazard exists from the Proposed Action because placement of the fiber optic cable would be on existing utility poles and no ground disturbance is proposed for this portion of the alignment. Impacts would be avoided with Mitigation Measure H-1 (Section 4.10.7) (Petra 2015).

***Sumps, Pits, Pools, or Lagoons.*** The waste electrolyte disposal pits, reported to have existed north of the Staging Area, are not considered to be a REC because they are outside of the areas that would be disturbed by the Proposed Action.

**Operation.** Operation of the Project would not require the use of hazardous materials for the operation and maintenance of the facility because no routine maintenance is required. In the

case that emergency repairs or maintenance are necessary, it is likely that work trucks with oils and/or lubricants would be used. Any potential spills or leaks from equipment associated with the operation of the Proposed Action would be addressed in an approved Spill Prevention, Control, and Countermeasures Plan (SPCCP), and staff would be properly trained to respond.

No grading or trenching would take place for emergency repairs because the fiber optic line would be accessed using the hand holes and repaired using the 50-foot coils of fiber optic line that would be left in the hand hole during construction. Therefore, no hazardous materials would be expected to be encountered during operation of the fiber optic line. A less than significant effect would occur.

#### 4.10.2 Alternative 1

Construction and operation of Alternative 1 would result in similar impacts from hazardous and toxic substances as the Proposed Action, with the exception of Unexploded Ordinance, which is discussed below.

*Unexploded Ordinance.* One CCT (Small Arms Range) and three historic ranges have been identified near the alignment of Underground Route B. The CTT range boundary is also adjacent to and slightly overlapping Barstow Road in the location of Aerial Placement Route A. The CTT (Small Arms Range) boundary overlaps Underground Route B near the intersection of Fort Irwin Road and Outer Loop Road. The historic ranges Bombing Range M and the Scorpion Range are situated on the west side of Fort Irwin Road, near Underground Alignment A approximately 3.5 miles to 4.5 miles from the beginning of the alignment at the existing Verizon manhole pickup (located on the west side of Fort Irwin Road, approximately 0.25 mile south of the Fort Irwin welcome sign and static helicopter and tank display). The historic range Lizard Gulch Range is on the east side of Fort Irwin Road, approximately 0.5 mile to 1.5 miles from the beginning of the alignment at the existing Verizon manhole pickup.

Construction of bore pits, directional boring, and other ground-disturbing activities associated with Alternative 1 could affect military munitions, UXO, discarded military munitions, and munitions constituents associated with historic ranges Bombing Range M, the Scorpion Range, and Lizard Gulch Range, if they are present. Although Aerial Placement Route A is adjacent to and slightly overlaps the CTT (Small Arms Range) boundary, it is unlikely that a hazard exists from Alternative 1 because placement of the fiber optic cable would be on existing utility poles and no ground disturbance is proposed for this portion of the alignment. Impacts would be avoided with Mitigation Measure H-1 (Section 4.10.7) (Petra 2015).

#### 4.10.3 Alternative 2

Construction and operation of Alternative 2 would result in similar impacts from hazardous and toxic substances as the Proposed Action. Impacts would be less than significant with Mitigation Measure H-1 (Section 4.10.7).

#### 4.10.4 Alternative 3

Construction and operation of Alternative 3 would result in similar impacts from hazardous and toxic substances as Alternative 1. Impacts would be less than significant with Mitigation Measure H-1 (Section 4.10.7).

#### 4.10.5 No Action Alternative

With the No Action Alternative, the Project would not be constructed and there would be no impacts related to hazardous and toxic substances. Current conditions would continue into the future.

The inspection and monitoring of hazardous materials storage and handling facilities would continue to be performed under the auspices of Fort Irwin regulations promulgated according to the Department of Public Works. Under these regulations, Fort Irwin would continue to comply with the RCRA for the inventory, storage, handling, recycling, and disposal of hazardous materials. Therefore, no significant adverse impacts are anticipated.

#### 4.10.6 Cumulative Impacts

No cumulative hazards or toxic substances impacts would occur as a result of construction or operation of the Proposed Action or Alternatives because any potential impacts would be reduced to a less than significant level by complying with applicable regulations regarding the transport, storing, and use of hazardous materials and implementing BMPs as part of a SWPPP, a project-specific Health and Safety Plan, and a SPCCP and implementation of Mitigation Measure H-1 (Section 4.10.7).

The use of hazardous materials associated with ongoing construction activities from other actions on Fort Irwin would continue to occur. Other actions would also be required to comply with regulations regarding the transport, storing, and use of hazardous and toxic substances. No cumulative impacts are expected from the Proposed Action or Alternatives.

#### 4.10.7 Mitigation Measures

Mitigation Measure H-1 would avoid potential impacts from potential hazards associated with the CTT and historic ranges.

**H-1:** A qualified UXO contractor shall monitor trenching activities in the areas in proximity to historic ranges, approximately 3.5 miles to 4.5 miles from the beginning of the alignment at the existing Verizon manhole pickup and approximately 0.5 mile to 1.5 miles from the beginning of the alignment at the existing Verizon manhole pickup. If a hazard is identified, construction in the immediate vicinity will be halted and coordination with the Fort Irwin DPW Environmental Division regarding removal of the hazard would occur. Additionally, project plans would include the development of an approved Spill Prevention, Control, and Countermeasures Plan (SPCCP) to avoid potential spills or leaks of contaminants associated with the Verizon fiber optic line.

### 4.11 Transportation and Utilities

Potential impacts to transportation and utility infrastructure and performance are assessed for both the construction and operations phases of the Proposed Action and its Alternatives.

Transportation effects are considered significant if emergency vehicles cannot perform their duties or if traffic routes are disrupted for the long-term. Impacts to the utilities infrastructure would be considered significant if there are long-term disruptions in service or if emergency facilities such as hospitals or firefighting operations have service disruptions.

#### **4.11.1 Proposed Action**

##### **4.11.1.1 Transportation**

During the estimated 16- to 20-week construction period, vehicle trips associated with workers and deliveries to the Staging Area and daily construction area along the alignment would occur. Construction workers would commute to Fort Irwin daily. Estimated daily construction worker vehicle trips, and delivery trips would be minimal, and the Fort Irwin transportation system has adequate capacity to accommodate this increase in daily trips.

The Proposed Action underground route would start at the existing Verizon manhole pickup and follow along the tank trail located west of Fort Irwin Road until it reached Outer Loop Road. Directional boring would then be used to tunnel under Outer Loop Road until the fiber optic line reaches existing riser utility pole 4659666E. It is expected to take approximately 13 to 18 weeks to complete the underground portion of the project, which includes 11 to 16 weeks for trenching and two weeks for placement of the fiber optic line. Aerial placement would take approximately one week. Underground and aerial splicing and final testing would take approximately 3 weeks. The total construction time is estimated to be 16 to 21 weeks. A maximum of 1,000 feet of trench would be open each day. Any open trenches or bore pits would be covered or barricaded at the end of the day, and temporary fencing would be placed to secure the location for the duration the trenches remain open. Construction would take place in one section at a time to limit the impacts to traffic.

Impacts to traffic on Fort Irwin Road would not occur, however, tank and large vehicles that regularly use the tank trail may not be able to use portions of the tank trail during construction. Additionally, portions of Outer Loop Road and other roads in the cantonment area may have temporary lane closures during boring or aerial placement activities. Traffic control would be in compliance with the Work Area Traffic Control Handbook, the California Manual on Uniform Traffic Control Devices, and Fort Irwin requirements. Detailed traffic control methods would be provided in a TCP as required by Mitigation Measure T-1 (Section 4.11.7). Methods outlined in the TCP may include signs informing motorists to reduce speed, worker ahead signs, traffic cones, light boards, and flag control personnel would be used as required. These measures would reduce traffic impacts from the Proposed Action.

##### **4.11.1.2 Utilities**

The Proposed Action is designed to provide Fort Irwin residents with improved communication services that would achieve Fort Irwin's goal to "Ensure that utilities are sufficient to accommodate potential growth." As discussed above in Section 3.11.2, the current system that supports the communication infrastructure is inadequate and the underground cables can become overloaded (Fort Irwin 2008). The new Verizon fiber optic line would address these issues by increasing the broadband capacity. A beneficial impact would occur.

## 4.11.2 Alternative 1

### 4.11.2.1 Transportation

Impacts to transportation from Alternative 1 would be similar as described above for the Proposed Action; however, the underground route (directional boring method) for Alternative 1 would take place along Fort Irwin Road, approximately 72 inches to the west of the pavement. The directional boring is estimated to take 8 weeks. Open bore and receive pits would be barricaded and temporary fencing would be placed to secure each location while the pit remains open.

The aerial placement would take place along Barstow Road, Bastogne Street, and briefly along Salerno Drive. Aerial placement is estimated to take one week. Total construction time is estimated to be twelve weeks. Construction would take place in one section at a time to limit the impacts to traffic.

During construction, lanes of traffic may need to be closed on Fort Irwin Road, Outer Loop Road and in the cantonment area during boring or aerial placement activities. Traffic control would be in compliance with the Work Area Traffic Control Handbook, the California Manual on Uniform Traffic Control Devices, and Fort Irwin requirements. Detailed traffic control methods would be provided in a TCP as required by Mitigation Measure T-1 (Section 4.11.7). Methods outlined in the TCP may include signs informing motorists to reduce speed, worker ahead signs, traffic cones, light boards, and flag control personnel would be used as required. These measures would reduce traffic impacts from the Alternative 1 to less than significant.

### 4.11.2.2 Utilities

Impacts on utilities from Alternative 1 would be the same as described above for the Proposed Action. Beneficial impacts would occur.

## 4.11.3 Alternative 2

### 4.11.3.1 Transportation

Impacts to transportation from Alternative 2 would be similar as described above for the Proposed Action. The underground route for Alternative 2 is the same as the Proposed Action. The Aerial Placement Route for Alternative 2 would run directly down the west side of Barstow Road, and road lanes may need to be closed during construction. Detailed traffic control methods would be provided in a TCP as required by Mitigation Measure T-1 (Section 4.11.7). These measures would reduce traffic impacts from Alternative 2 to less than significant.

### 4.11.3.2 Utilities

Impacts on utilities from Alternative 2 would be the same as described above for the Proposed Action. Beneficial impacts would occur.

## 4.11.4 Alternative 3

### 4.11.4.1 Transportation

Impacts to transportation from Alternative 3 would be similar as described above in the Proposed Action and Alternative 1. The underground route for Alternative 3 is the same as

Alternative 1. The Aerial Placement route is the same as the Proposed Action. Detailed traffic control methods would be provided in a TCP as required by Mitigation Measure T-1 (Section 4.11.7). These measures would reduce traffic impacts from Alternative 3 to less than significant.

#### 4.11.4.2 Utilities

Impacts on utilities from Alternative 3 would be the same as described above for the Proposed Action. Beneficial impacts would occur.

#### 4.11.5 No Action Alternative

With the No Action Alternative, existing conditions would remain. Broadband capacity would remain insufficient to meet the needs of users in the Verizon Fort Irwin service area.

#### 4.11.6 Cumulative Impacts

The number of personnel assigned to Fort Irwin fluctuates throughout the year and with changes in mission. Addition of new facilities, and modifications to existing facilities and infrastructure, are ongoing at Fort Irwin. The transportation infrastructure and utility systems of the installation are adequate to accommodate these fluctuations and the overlap of multiple changes. Adverse cumulative impacts to transportation or utilities would not occur. Cumulative impacts to utilities would be beneficial.

#### 4.11.7 Mitigation Measures

No specific mitigations are necessary for Utilities. Incorporation of Mitigation Measure T-1 below would reduce the effects to transportation and traffic to less than significant.

**T-1:** During construction a traffic control plan will be designed and implemented, which could include lane closures and detours. Flaggers would be used only where determined needed. The construction contractor will coordinate with appropriate Fort Irwin personnel to ensure that emergency operations are not impacted by construction activities. If necessary, construction could occur during low-traffic volume periods, such as at night.

### 4.12 Cumulative Impacts

In addition to the direct and indirect impacts associated with implementation of the Proposed Action, NEPA requires that cumulative impacts be analyzed and disclosed. A cumulative impact is an impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

#### 4.12.1 Regulatory Compliance

The requirement to assess cumulative impacts as part of the EA process is set by NEPA (40 CFR 1508.7) and further discussed within the Army context by 32 CFR 651.16, *Environmental Analysis of Army Actions*. Further guidance on this process is provided by the CEQ in its document, *Considering Cumulative Impacts under the National Environmental Policy Act* (CEQ 1997).

Cumulative impacts result from the incremental effect of separate past, present, and reasonably foreseeable future actions on the environment, regardless of what agency or person undertakes those actions. They can accrue from individually minor but collectively significant actions taking place over an extended period of time. Taken in sum, all environmental damage is incremental, occurring one action at a time. However, determining the significance of the collective actions requires an understanding of their effect on the larger environment.

#### 4.12.2 Cumulative Impact Analysis

The cumulative impact analysis is prepared at a level of detail that is reasonable and appropriate to support an informed decision by the U.S. Army in selecting a preferred alternative. To do this, it is necessary to identify those actions that may interact with the potential impacts of the Proposed Action. This is done by defining the greatest extent of potential impacts from the Proposed Action and then identifying those actions that also have impacts within that area. This is known as the cumulative impact analysis area.

Given the scale of the Proposed Action and its potential impacts, the cumulative impact analysis area for this EA comprises the Fort Irwin cantonment area, and the area generally within two miles of the Underground Route alignments. Where necessary for individual issue areas, the analysis area was expanded or restricted based on the spatial and temporal extent of the issue-specific effects of the Proposed Action, Alternative 1, Alternative 2, Alternative 3, and the No Action Alternative.

Having defined the cumulative impact analysis area, the past, present, and reasonably foreseeable future actions that could interact with the Proposed Action to produce cumulative impacts also must be identified. These actions are described briefly in the following sections.

The cumulative impacts on a resource become significant when the sum total of impacts from individual projects pushes those impacts beyond the identified significance criterion for that resource. This determination depends on the resource being assessed and the individual project impacts on that resource.

##### 4.12.2.1 Past Actions

For this analysis, past actions are those that were completed within the analysis area before June 2014 (the baseline date for this EA). These include past actions at Fort Irwin and past land use and development trends in the region around the Installation, as generally described below:

- Training activities conducted by Fort Irwin's assigned personnel and units;
- Construction, alteration, repair, rehabilitation and maintenance of buildings, structures, site improvements, and utility systems as required ensuring that Installation ranges are capable of meeting training standards and requirements;
- Range maintenance at Fort Irwin as necessary to ensure the long-term viability of plant growth, reduce erosion, reduce the potential for inadvertent impacts to listed species, and to maintain a professional, military appearance; and

- Natural and cultural resources management programs including the continued adherence to Fort Irwin's management plans that have been designed to protect the existing diverse fish, wildlife and plant habitats present on the Installation. The Installation would continue coordination with the SHPO and the ACHP concerning management of cultural resources. Natural and cultural resources management policies and actions at Fort Irwin include the continuation of programs to reduce and eliminate damage to the environment such as the INRMP, ESMP, and ICRMP, as well as Endangered Species Act (ESA) Section 7 Consultation with the USFWS when applicable.

#### 4.12.2.2 Present Actions

Present actions are those that were taking place in the analysis area as of June 2014. These include:

- Current operations and training activities on the Installation ranges;
- Ongoing construction projects at the Installation ranges;
- Ongoing construction of new facilities, as well as modifications to existing facilities and infrastructure; and
- Current Installation resource management programs (cultural or natural), other governmental agency and private sector land use activities and development projects being implemented within the cumulative impact analysis area.

#### 4.12.2.3 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions are limited to those that have been approved and can be identified and defined with respect to timeframe and location. Actions that meet these criteria and will be located in the cumulative impacts analysis area are listed below.

Reasonably foreseeable future actions include the following:

- Planned projects include construction of a new hospital, site design and operation of the landfill, a concentrating photovoltaic system, and wastewater treatment plant infrastructure improvements.

### 4.12.3 Potential Cumulative Effects of the Proposed Action and Alternatives

**Land Use Planning and Aesthetics.** The Proposed Action and Alternatives would be compatible with land use designations and would not result in any additional impacts on land use or changes to views. Construction projects are continually occurring within the Fort Irwin cantonment, which may temporarily or permanently affect the aesthetics of the landscape. Changes in the landscape within the cantonment and surrounding area are typically anticipated by most residents on Fort Irwin. No cumulative effects are anticipated on land use or aesthetics as a result of the Proposed Action or Alternatives.

**Geology, Soils, and Mineral Resources.** No cumulative geological, soil, mineral, or seismic impacts would occur as a result of construction or operation of the Proposed Action or Alternatives because any potential impacts would be site specific and would be mitigated to a less than significant level.

**Biological Resources.** Fort Irwin is continually developing the cantonment area, reducing the amount of vegetated habitat. Some loss of Mojave creosote bush scrub and Mojave Desert wash scrub would occur from the Proposed Action or Alternatives; however, because the habitat is degraded and ample higher quality habitat is available in the region and outside of the cantonment area, the loss of habitat resulting from the Proposed Action and Alternatives would not be significant. Cumulative impacts to biological resources would be less than significant with mitigation.

**Water Resources.** The Proposed Action and Alternatives would not cause groundwater levels to drop or groundwater quality to degrade. Cumulative impacts on groundwater withdrawal can occur from the water needs created by new construction. However, Fort Irwin is planning to construct a more efficient wastewater treatment plant that would produce recycled water for construction and maintenance purposes. Fort Irwin is also planning to reduce consumption throughout the cantonment by upgrading building facilities that require water with more efficient components.

**Air Quality.** Future development within the cantonment and in the surrounding community would contribute to air emissions and could increase the potential for sediment runoff and associated deposition in downstream areas. Both on and off the Installation, these impacts would be controlled by proper application of state recommended and required BMPs on the construction sites. Construction emissions for the Proposed Action or Alternatives would be well below the MDAQMD thresholds; therefore, the Proposed Action or Alternatives would not be expected to have an adverse cumulative effect on air quality.

**Noise.** Cumulative impacts would result from individually minor but collectively significant actions taking place over a period of time. Noise impacts from the Proposed Action and Alternatives would be temporary and would only occur during construction. It is unlikely that all projects at Fort Irwin would be constructed at the same time. Because of the short duration of noise impacts from the construction of the Proposed Action and Alternatives and because of the low level of noise generation during operation similar to the existing condition, cumulative noise impacts are not expected.

**Cultural Resources.** Because the Proposed Action and Alternatives would not affect cultural resources, they would not contribute to cumulative effects on cultural resources when combined with the actions of other projects.

**Socioeconomics.** The Proposed Action and Alternatives would not have any socioeconomic impacts or create any environmental justice conditions therefore, no cumulative adverse effects would occur from the Proposed Action or Alternatives.

**Hazardous and Toxic Substances.** No cumulative hazards or toxic substances impacts would occur as a result of construction or operation of the Proposed Action and Alternatives because any potential impacts would be reduced to a less than significant level by complying with applicable regulations regarding the transport, storing, and use of hazardous materials and implementing BMPs as part of a SWPPP, a project-specific Health and Safety Plan, and a SPCCP, and with the implementation of Mitigation Measure H-1.

The use of hazardous materials associated with ongoing construction activities from other actions on Fort Irwin would continue to occur. Other actions would also be required to

comply with regulations regarding the transport, storing, and use of hazardous and toxic substances. No cumulative impacts are expected.

The construction activities could also have the potential for a slight increase in small spills or leaks of hazardous substances from construction equipment. These spills would generate small quantities of contaminated media (i.e., soil, vegetation) requiring disposal. However, these impacts would be relatively minor and would be controlled through proper application of BMPs on the construction sites.

**Transportation and Utilities.** The transportation infrastructure and utility systems of the installation are adequate to accommodate these fluctuations and the overlap of multiple changes. Adverse cumulative impacts to transportation or utilities would not occur.

**Summary of Cumulative Impacts.** Projects occurring on Fort Irwin (in addition to the Proposed Action) would be required to follow the BMPs described in this EA. As long as these BMPs are properly implemented and maintained for each project, there would not be significant effects on land use and planning aesthetics, geology, soil, and mineral resources, biological resources, water quality, air quality, noise, cultural resources, socioeconomics, hazardous and toxic substances, transportation, or utilities. When necessary, the biological resources, water resources, and cultural resources categories also would require consultation with the appropriate state and federal agencies, and impacts on the respective resources would be avoided by following the agency recommendations.

## 4.13 Summary of Mitigation Measures

Measures would be implemented to ensure that adverse environmental impacts of construction and operation of the Preferred Alternative would be avoided or minimized. These measures would be incorporated into the final design, implemented by the construction contractor and/or operations contractor, and included in the contract documents. A summary of the measures is presented in Table 4.13-1.

Table 4.13-1. Summary of Mitigation Measures

Resource	Potential Impact	Mitigation Measure
<b>Geology, Soils, and Mineral Resources</b>		
Soil erosion	<b>G-1:</b>	<p>Proper construction, soil management, and stormwater protection practices will prevent soil erosion and the loss of topsoil. Construction specifications will identify areas where soil excavation, grading, stockpiling, backfilling, or other disturbance may occur. The construction specifications will identify appropriate construction and soil management practices, such as stockpiling adjacent to the construction area, minimizing areas of disturbance, and appropriate slopes for excavations and backfill. The construction specifications will also identify the proper methods for protection of disturbed or exposed soils to prevent erosion.</p> <p>Prevention of soil erosion and loss of topsoil due to rainfall and stormwater will be addressed through the preparation of a</p>

Resource	Potential Impact	Mitigation Measure
		<p>Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will be prepared to identify site activities and conditions that may result in erosion or loss of topsoil due to stormwater runoff. Appropriate best management practices (BMPs) for protection of disturbed areas and stockpiled soil will be identified. These BMPs may include check dams, slope diversions, and temporary diversion dikes for runoff control. Other BMPs that could be implemented for sediment control could include compost filter berms and socks, fiber rolls, or berms; sediment basins, rock dams, filters, chambers, or traps; silt fences; and hay bales. Staked fiber rolls would be placed at all potential drainage features for the duration of construction and 2 weeks after completion of construction. Good housekeeping measures would be practiced during construction. Site-specific stormwater BMPs would be detailed in a construction SWPPP that would be prepared by the construction contractor prior to breaking ground. The SWPPP will also identify the applicable monitoring parameters and frequencies to be implemented in the case of storm events that occur during the construction period. The SWPPP will be submitted to the Lahontan Regional Water Quality Control Board and a copy must be maintained onsite during construction.</p>
<b>Biological Resources</b>		
	Desert tortoise (May Affect, Not Likely to Adversely Affect)	<p><b>B-1:</b> Within two weeks prior to the onset of construction, a pre-construction desert tortoise survey shall be conducted by an authorized biologist within all work areas that contain desert tortoise habitat and that would be affected, directly or indirectly, by project activities. If no tortoises or active burrows are identified, then construction would proceed without interruption. If active burrows or tortoises are identified, construction would be delayed and consultation with the Fort Irwin Directorate of Public Works (DPW) Environmental Division regarding compliance with the USFWS BO for Operations and Activities at Fort Irwin would occur.</p>
	Desert tortoise (May Affect, Not Likely to Adversely Affect)	<p><b>B-2:</b> Before construction begins, personnel working on the site shall receive a briefing on the desert tortoise, detailing the life history of a desert tortoise and the protocol to follow if a tortoise is encountered at the work site.</p>

Resource	Potential Impact	Mitigation Measure
Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-3:</b>	During construction, a biological monitor shall be available to observe construction activities and verify that no tortoises wander into the construction site. If a tortoise is present, construction in the immediate vicinity would be halted and coordination with the Fort Irwin DPW Environmental Division regarding compliance with the USFWS BO for Operations and Activities at Fort Irwin would occur.
Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-4:</b>	To avoid wildlife pitfalls, at the end of each day, the biological monitor shall ensure that all potential wildlife pitfalls, such as trenches and bores, have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends or at certain distances to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations shall be inspected periodically throughout the day and at the end of the work day. Any wildlife encountered during the construction process shall be allowed to leave the construction area unharmed.
Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-5:</b>	To avoid entrapment of desert tortoise, any construction pipe, culvert, or similar structure with a diameter greater than three inches, stored less than eight inches above ground for one or more nights, shall be inspected for tortoises before the material is moved, buried, or capped. These structures may be capped or placed on pipe racks as an alternative to required inspections.
Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-6:</b>	Workers shall check underneath each on-site, parked vehicle or piece of equipment prior to moving it. If a desert tortoise is observed, the vehicle shall not be moved until the tortoise is relocated from the area.
Desert tortoise (May Affect, Not Likely to Adversely Affect)	<b>B-7:</b>	Prior to construction start construction boundaries will be clearly delineated on the ground using flagging, survey lath, or wooden stakes.
Mohave ground squirrel	<b>B-8</b>	To the most practicable extent possible, the construction crews shall site bore pits and other excavation in areas where squirrel burrows are not located.
Other special-status species (Fauna) (Migratory Birds)	<b>B-9:</b>	To avoid take of any species protected under the MBTA, a pre-construction nesting bird survey shall be conducted by a qualified biologist not more than seven (7) days prior to the onset of ground disturbance that is to occur between February 15 and September 15. The nest surveys shall include the project

Resource	Potential Impact	Mitigation Measure
		<p>site and adjacent areas within 500 feet of the project site. If nesting migratory birds are not observed during the survey, site preparation and construction activities may begin. If an active migratory bird nest is located, a buffer shall be established around the nesting location at a distance recommended by the monitoring biologist in coordination with the Fort Irwin Directorate of Public Works (DPW) Environmental Division. Typically this is a minimum of 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors), until juveniles have fledged and there is no evidence of a second attempt of nesting. Stakes or signs shall be used to clearly mark the nest buffer. Construction shall not be permitted within the buffer areas while the nest continues to be active. A biological monitor shall be present during construction to monitor the nest(s), make sure construction activities are not disturbing the nest, and document any findings. Once the monitoring biologist determines that the nest is no longer active, the buffer shall be removed and construction activities may resume in that area.</p>
	<p>Other special-status species (Fauna) (Migratory Birds)</p>	<p><b>B-10:</b> Land and vegetation clearing should occur outside the breeding season for birds listed under the MBTA, defined as February 15 to August 31. If land and vegetation clearing occurs during the breeding season, then implementation of B-8 will prevent impacts to nesting birds during these activities.</p>
	<p>Other special-status species (Fauna) (Burrowing Owl)</p>	<p><b>B-11:</b> A pre-construction take avoidance survey shall be conducted no less than 14 days prior to initiating ground disturbing activities using the methods described in CDFW Staff Report on Burrowing Owl Mitigation (CDFW 2012) and in consultation with the Fort Irwin Directorate of Public Works (DPW) Environmental Division. Identified active nests shall be protected from disturbance with a buffer distance determined through monitoring the behavior of the owls and according to CDFW guidelines (2012) which identifies buffer distances based on the time of year and level of disturbance associated with construction activities.</p> <p>Mitigation measures could also include passive relocation of burrowing owls outside of the nesting season (September 1 through January 31). A specific mitigation methodology for the owl shall be determined in consultation with the Fort Irwin DPW Environmental Division.</p>

Resource	Potential Impact	Mitigation Measure
Other special-status species (Fauna) (Kit Fox)	<b>B-12:</b>	During the pre-construction survey, biologists shall survey for desert kit fox dens. Active dens that are identified shall be flagged for avoidance and protected from ground-disturbing activities with a buffer distance determined through monitoring the behavior of the fox(es) and coordination with the Fort Irwin DPW Environmental Division. During the pup-rearing season, maternity dens shall be protected and avoided (1 January through 31 July). If avoidance of a non-maternity den is not feasible, the Fort Irwin DPW Environmental Division shall be contacted about approved kit fox passive relocation measures (den collapse after burrow scoping) outside of breeding and pup-rearing season (August 1 to January 1).
Other special-status species (Fauna) (Kit Fox)	<b>B-13:</b>	Domestic dogs shall not be allowed on the construction site.
Other special-status species (Fauna) (American Badger)	<b>B-14:</b>	During the pre-construction survey, biologists shall survey for badger dens. If present, occupied badger dens shall be flagged for avoidance and ground-disturbing activities avoided within 50 feet of the occupied den. During the pup-rearing season, maternity dens shall be avoided (15 February through 1 July) and a minimum 200-foot buffer established. Buffers may be modified with the concurrence of the Fort Irwin Directorate of Public Works (DPW) Environmental Division. If avoidance of a non-maternity den is not feasible, the Fort Irwin DPW Environmental Division shall be contacted about approved badger relocation techniques.
Pest species	<b>B-15:</b>	To preclude attraction of common ravens and coyotes, construction trash, including construction worker food trash, shall be placed in sealed containers and emptied at the close of each business day. The project area shall be kept as clean of debris as possible. Each water source will be caged or netted to prevent use by ravens.
Pest species	<b>B-16:</b>	All road-killed animals shall be reported to the Fort Irwin Directorate of Public Works (DPW) Environmental Division, Natural Resources Section immediately.
Pest species	<b>B-17:</b>	Water used for construction shall be used in a manner that does not result in the formation of standing water that may attract pest species. Water trucks with open tops shall be covered securely at the end of each work day.

Resource	Potential Impact	Mitigation Measure
	Pest species	<p><b>B-18:</b> Structures shall have appropriate nesting deterrent mechanisms installed such as bird spikes and auditory or visual deterrents to discourage and/or prevent common ravens from using structures as nesting substrates.</p>
Air Quality	Fugitive Dust	<p><b>A-1:</b> During construction the contractor shall employ dust suppression BMPs, to comply with MDAQMD Rules 403 and 403.2 to reduce fugitive dust. The Rules' requirements are below:</p> <p>Rule 403 – Fugitive Dust, requires fugitive dust emissions to be restricted such that visible dust does not travel beyond the property line, and requires minimization of fugitive dust to the extent possible.</p> <p>Rule 403.2 – Fugitive Dust Control for the Mojave Desert Planning Area, requires dust control measures to be implemented during construction, including watering, reduction of track out, covering of vehicles carrying loose materials, stabilization of graded areas, and reduction of nonessential earthmoving activities during high wind periods.</p>
Hazardous and Toxic Substances	Historic Ranges	<p><b>H-1</b> A qualified UXO contractor shall monitor trenching activities in the areas in proximity to historic ranges, approximately 3.5 miles to 4.5 miles from the beginning of the alignment at the existing Verizon manhole pickup and approximately 0.5 mile to 1.5 miles from the beginning of the alignment at the existing Verizon manhole pickup. If a hazard is identified, construction in the immediate vicinity will be halted and coordination with the Fort Irwin DPW Environmental Division regarding removal of the hazard would occur. Additionally, project plans would include the development of an approved Spill Prevention, Control, and Countermeasures Plan (SPCCP) to avoid potential spills or leaks of contaminants associated with the Verizon fiber optic line.</p>

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<b>Resource</b>	<b>Potential Impact</b>	<b>Mitigation Measure</b>
Transportation	Traffic	<b>T-1:</b> During construction a traffic control plan will be designed and implemented, which could include lane closures and detours. Flaggers would be used only where determined needed. The construction contractor will coordinate with appropriate Fort Irwin personnel to ensure that emergency operations are not impacted by construction activities. If necessary, construction could occur during low-traffic volume periods, such as at night.

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## 5. List of Preparers

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<b>Name</b>	<b>Degree(s)</b>	<b>Years of Experience</b>
Alfredo Aguirre	B.S., Urban and Regional Planning	6
Evelyn Chandler	B.A., Political Science B.A., Anthropology/Sociology M.A., Archaeology and Heritage	22
Emily Graf	B.A., Environmental Studies	5
Marc Guidry	B.A., Geography M.S., Geographic Information Systems	5
Brad Haley	B.A., Environmental Studies	10
Roger Mason, Ph.D.	B.A., Anthropology Ph.D., Anthropology (Archaeology)	31
Donald Mitchell	B.S., Biology M.S., Zoology	28
Freddie Olmos	B.A., Environmental Analysis & Design	14
Anne Surdzial, AICP	B.S., Environmental Science	24
Scott Taylor	B.A., Biology	23

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## 6. References and Persons Consulted

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- [ARB] California Air Resources Board
- 2007 Staff Report: California 1990 Greenhouse Gas Emissions Level and 2020 Limit. December.
  - 2008 Scoping Plan. December.
- [BLM] Bureau of Land Management
- 1996 Draft Environmental Impact Statement for the Army's Land Acquisition Project for the National Training Center, Fort Irwin, California, and Proposed Amendment to the California Desert Conservation Area Plan. December.
- [Bureau of Labor Statistics] U.S. Bureau of Labor Statistics
- 2015a Unemployment Rate- Not Seasonally Adjusted, San Bernardino County, CA. Available at [http://www.google.com/publicdata/explore?ds=z1ebjpgk2654c1\\_&met\\_y=unemployment\\_rate&idim=county:CN0607100000000:CN0606500000000&fdim\\_y=seasonality:U&hl=en&dl=en](http://www.google.com/publicdata/explore?ds=z1ebjpgk2654c1_&met_y=unemployment_rate&idim=county:CN0607100000000:CN0606500000000&fdim_y=seasonality:U&hl=en&dl=en) Accessed June 11, 2015.
  - 2015b Unemployment Rates for States Monthly Rankings Seasonally Adjusted Apr. 2015. Available at <http://www.bls.gov/web/laus/laumstrk.htm>. Accessed on June 11, 2015
- [CARB] California Air Resources Board
- 2013 Ambient Air Quality Standards (AAQS). Accessed at <http://www.arb.ca.gov/research/aaqs/aaqs.htm>, as of July 2, 2013.
- [CDMG] California Division of Mines and Geology
- 1962 Geologic Atlas of California: Trona. Available at [ftp://ftp.consrv.ca.gov/pub/dmg/pubs/gam/GAM\\_023\\_Trona/GAM\\_023\\_Map\\_1962.pdf](ftp://ftp.consrv.ca.gov/pub/dmg/pubs/gam/GAM_023_Trona/GAM_023_Map_1962.pdf). Accessed on December 11, 2013.
  - 1999 Fault-Rupture Hazard Zones in California. Revised 1997, Supplements 1 and 2 added 1999.
- [CEQ] Council on Environmental Quality
- 2010 Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. February.
- CH2M HILL
- 2007 Final Report Regional Water Supply Investigation, Fort Irwin Military Reservation. October.

## [County of San Bernardino]

- 2014 Community Indicators Report. Available at [http://cms.sbcounty.gov/Portals/21/Resources%20Documents/CIR\\_2014\\_Report.pdf](http://cms.sbcounty.gov/Portals/21/Resources%20Documents/CIR_2014_Report.pdf) . Accessed on June 8, 2015.

## [ECORP] ECORP Consulting, Inc.

- 2016a Biological Technical Report for Verizon Fiber Optic Line Project, Fort Irwin, California.
- 2016b Cultural Resources Inventory for the Verizon Fiber Optic Line Project, Fort Irwin, California.

## [FAA] Federal Aviation Administration

- 2015 Obstruction Evaluation / Airport Airspace Analysis. Accessed at <https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp>? June 26.

## [Fort Irwin] U.S. Army Garrison Fort Irwin

- 2008 Real Property Master Plan Update, Fort Irwin, California, IMCOM West Region. Michael Baker Jr., Inc. December.
- 2011 Environmental Assessment/ Initial Study Construction and Operation of the Fort Irwin Water Treatment Plant and Bicycle Lake Water Main Extension.
- 2013a Facts and Figures. Available at <http://www.irwin.army.mil/Visitors/Info/Pages/FactsandFigures.aspx>. Accessed on December 5, 2013.
- 2013b Environmental Assessment Construction and Operation of a Concentrating Photovoltaic (CPV) Facility.

## [MDAQMD] Mojave Desert Air Quality Management District

- 1995 Federal Particulate Matter (PM10) Attainment Plan. July.
- 2005 List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health and Safety Code §39614(d). June 27.
- 2009 California Environmental Quality Act (CEQA) and Federal Conformity Guidelines. February.

## [NRCS] National Resources Conservation Service

- 2015 Web Soil Survey. Available at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed on June 8, 2015.

## [Petra] Petra Geotechnical, Inc.

- 2015 Phase I Environmental Site Assessment, Proposed Verizon- Ft. Irwin Fiber Optic Project, United States Army Garrison, Fort Irwin, San Bernardino County, California 92310.

- [SRA] Scientific Resource Associates  
2015 Emissions Calculations for the Fort Irwin Verizon Fiber Optic Project.
- [USACE] U.S. Army Corps of Engineers  
2006 Integrated Natural Resources Management Plan and Environmental Assessment (INRMP&EA). 2006-2011. National Training Center and Fort Irwin. Environmental Division, Directorate of Public Works.
- [U.S. Census Bureau] United States Census Bureau  
2013 American Fact Finder. 2007-2011 American Community Survey 5-year estimates.  
  
2010 State and County Quickfacts. Available at <http://quickfacts.census.gov/qfd/states/06/0604030.html>. Accessed on December 9, 2013.
- [USEPA] United States Environmental Protection Agency  
2010 Glossary of Climate Change Terms. <http://epa.gov/climatechange/glossary.html>. Accessed March 25, 2014.
- [USGS] U.S. Geological Survey  
1997a Regional Water Table (1996) and Water-Level Changes in the Mojave River, the Morongo, and the Fort Irwin Ground-Water Basins, San Bernardino County California. Prepared by G.O. Mendez and A.H. Christensen. USGS Water-Resources Investigation Report 97-4160.  
  
1997b Ground-Water Hydrology and Water Quality of Irwin Basin at Fort Irwin National Training Center, California. Prepared by J.N. Densmore and C.J. Londquist. USGS Water-Resources Investigation Report 97-4092.
- [VVTA] Victor Valley Transit Authority  
2015 NTC Commuter Bus. Accessed at: <http://vvta.org/bus/ntc-commuter/> June 26.

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## 7. Distribution List

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Fort Irwin Directorate of Public Works  
Environmental Division, Building 602  
Attn: Clarence Everly  
P.O. Box 105085  
Fort Irwin, CA 92310-5085

Barstow Library  
Attn: Reference Department  
304 East Buena Vista  
Barstow, CA 92311

Fort Irwin Post Library  
Attn: Reference Department  
P.O. Box 105091  
Building 331, 2nd Street  
Fort Irwin, CA 92310

NASA Management Office  
ATTN: Peter Robles  
Jet Propulsion Labs, M/S 180-801  
4800 Oak Grove Ave.  
Pasadena, CA 91109

BLM  
Barstow Field Office  
2601 Barstow Rd  
Barstow, CA 92311

Center for Biological Diversity  
351 California Street #600  
San Francisco, CA 94104

Adams, Broadwell, Joseph & Cardozo  
Attention: Janet M. Laurain  
601 Gateway Boulevard, Suite 1000  
South San Francisco, CA 94080

China Lake Naval Weapons Center  
Attention : RLA, Community Plans & Liaison  
429 E Bowen, Building 981  
Mail Stop 4001  
China Lake, CA 93555

Edwards Air Force Base  
AFFTC/XRX Bldg 0001, Room 110  
#1 South Rosamond Blvd.  
Edwards AFB, CA 93524-1936

U.S. Environmental Protection Agency  
Region IX Office  
75 Hawthorn Street  
San Francisco, CA 94105

California Regional Water Quality  
Control Board/Lahontan Region  
14440 Civic Drive, Suite 200  
Victorville, CA 92392-2306

U.S. Air Force  
Western Region Environmental Officer  
50 Fremont Street, Suite 2450  
San Francisco, CA 94105-2230

Defenders of Wildlife  
1303 "J" Street, Suite 270  
Sacramento, CA 95814

Stephanie Lucero  
National Indian Justice Center and California  
Indian Museum and Cultural center  
5250 Aero Drive  
Santa Rosa, CA 95403

FAA Western-Pacific Regional Headquarters  
PO Box 92007  
Los Angeles, CA 90009

San Bernardino County Planning Dept.  
385 North Arrowhead Avenue, 1st Floor  
San Bernardino, CA 92415-0182

The Nature Conservancy  
California Field Office  
201 Mission Street  
4th Floor  
San Francisco, CA 94105

Native American Heritage Commission  
1550 Harbor Boulevard  
West Sacramento, CA 95691

California Department of Fish and Wildlife  
3602 Inland Empire Boulevard  
Suite C-220  
Ontario, CA 91764

Michael Lozeau  
Lozeau - Drury LLP  
410 12<sup>th</sup> Street, Suite 250  
Oakland, CA. 94607

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