

**United States Department of the Interior  
Bureau of Land Management  
Las Cruces District Office  
1800 Marquess Street  
Las Cruces, NM 88005**

**Environmental Assessment for  
Southern Road Improvements  
Doña Ana and Sierra Counties**

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January 20, 2016

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January 20, 2016

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## List of Acronyms

AASHTO – American Association of State Highway and Transportation Officials

ACEC – Area of Critical Environmental Concern

APE – Area of Potential Effect

AQCR – Air Quality Control Region

BLM – Bureau of Land Management

BMP – Best Management Practice

BNSF – Burlington Northern Santa Fe Railroad

CAA – Clean Air Act

CARTA – El Camino Real de Tierra Adentro Trail Association

CEQ – Council on Environmental Quality

CFR – Code of Federal Regulations

CMP – Corrugated Metal Pipe

CR – County Road

CWA – Clean Water Act

cy – Cubic Yards

EA – Environmental Assessment

EO – Executive Order

EPA – Environmental Protection Agency

FAA – Federal Aviation Administration

FLPMA – Federal Land Policy and Management Act

FONSI – Finding of No Significant Impact

GHG – Greenhouse Gas

HAP – Hazardous Air Pollutant

IDT – Interdisciplinary Team

IM – Isolated Manifestation

ITA – Indian Trust Asset

KOP – Key Observation Point

LCDO – Las Cruces District Office

LOS – Level of Service

LSD – Logan Simpson Design

NAAQS – National Ambient Air Quality Standards

NAGPRA – Native American Graves Protection and Repatriation Act

NATA – National-Scale Air Toxics Assessment

NEAP – Natural Events Action Plan

NHPA – National Historic Preservation Act

NHT – National Historic Trail

NHT-CMP – El Camino Real de Tierra Adentro National Historic Trail Comprehensive Management Plan

NMBGMR – New Mexico Bureau of Geology and Mineral Resources

NMDGF – New Mexico Department of Game and Fish

NMDOT – New Mexico Department of Transportation

NMED – New Mexico Environment Department

NMRPTC – New Mexico Rare Plant Technical Council

NMSA – New Mexico Spaceport Authority

NPS – National Park Service

NRCS – Natural Resource Conservation Service

NRHP – National Register of Historic Places

MBTA – Migratory Bird Treaty Act

OAS – New Mexico Office of Archaeological Studies

OHV – Off Highway Vehicle

OHWM – Ordinary High Water Mark

OSE – Office of the State Engineer

PM – Particulate Matter

RMP – Resource Management Plan

ROW – Right-of-Way

SHPO – State Historic Preservation Officer

SLO – State Land Office

SQRU – Scenic Quality Rating Units

SWPPP – Stormwater Pollution Prevention Plan

SWQB – Surface Water Quality Bureau

TCP – Traditional Cultural Property

USACE – United States Army Corps of Engineers

USC – United States Code

USCB – United State Census Bureau

USFWS – United States Fish and Wildlife Service

VAU – Visual Assessment Unit

VRI – Visual Resource Inventory

VRM – Visual Resource Management



## **1 INTRODUCTION AND BACKGROUND**

On November 28, 2011, Doña Ana County and Sierra County submitted two Right-of-Way (ROW) applications for the improvement of existing county roads E-070, E-071, E-072, and A-013, under the authority of Title V of the Federal Land Policy and Management Act (FLPMA), as amended, with the Bureau of Land Management (BLM), Las Cruces District Office. Currently, Doña Ana and Sierra Counties hold a claim to the road (from road edge to road edge) under Revised Statute 2477 (RS-2477). The existing road is unpaved, with periodic blading performed by the counties when needed. The two counties are requesting legal access across public land in order to construct, operate, maintain, and terminate a ROW for improved access along the county roads. This Environmental Assessment (EA), prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, evaluates the consequences to the human environment associated with implementation of the *Southern Road Improvements Project*. This project is proposed by Doña Ana County and Sierra County, in partnership with the New Mexico Spaceport Authority (NMSA). The purpose of the EA is to assess the potential effects of proposed roadway improvements along a 23.6-mile section of county roads (CR) E-070, E-071, E-072 in Doña Ana County and CR A-013 in Sierra County, New Mexico (Figures 1 and 2). The majority of the proposed improvements will be contained within the existing roadway footprint.

The proposed project would be funded with state funds administered by the NMSA. Other participating agencies with interests in the project area include the State Land Office (SLO), which is a land owner in the area, and the National Park Service (NPS), which administers the El Camino Real de Tierra Adentro National Historic Trail (NHT) in partnership with the BLM. Several private landowners are also stakeholders in the project.

Land uses in the area include transportation, utility corridors, livestock grazing, residential development, and recreation. Most of the land in the vicinity is used for grazing livestock or low density residential development. The project area consists of county roads that comprise the main north/south route through the Jornada Del Muerto. However, the lack of towns and attractions in this area limits traffic mainly to ranching activities, access to residences and Spaceport America, utility maintenance, and sand and gravel operations.

### **1.1 Purpose and Need**

The purpose of the action alternatives in this EA is to provide all-weather, legal access from large, urban population centers in the south (principally Las Cruces, New Mexico, and El Paso, Texas) to the Spaceport America facility located to the north in Township 15S, Range 2W, Sections 23 and 24, across public land managed by the BLM and state and private lands. Legal access would be established in the form of right-of-way (ROW) grants issued by the BLM to Doña Ana and Sierra Counties.

The BLM purpose, as a multiple use agency, is to make public land and its resources available for use and development to meet National, regional, and local needs, consistent with National objectives, while simultaneously applying the principles of sustained yield governing the many resources the agency manages.

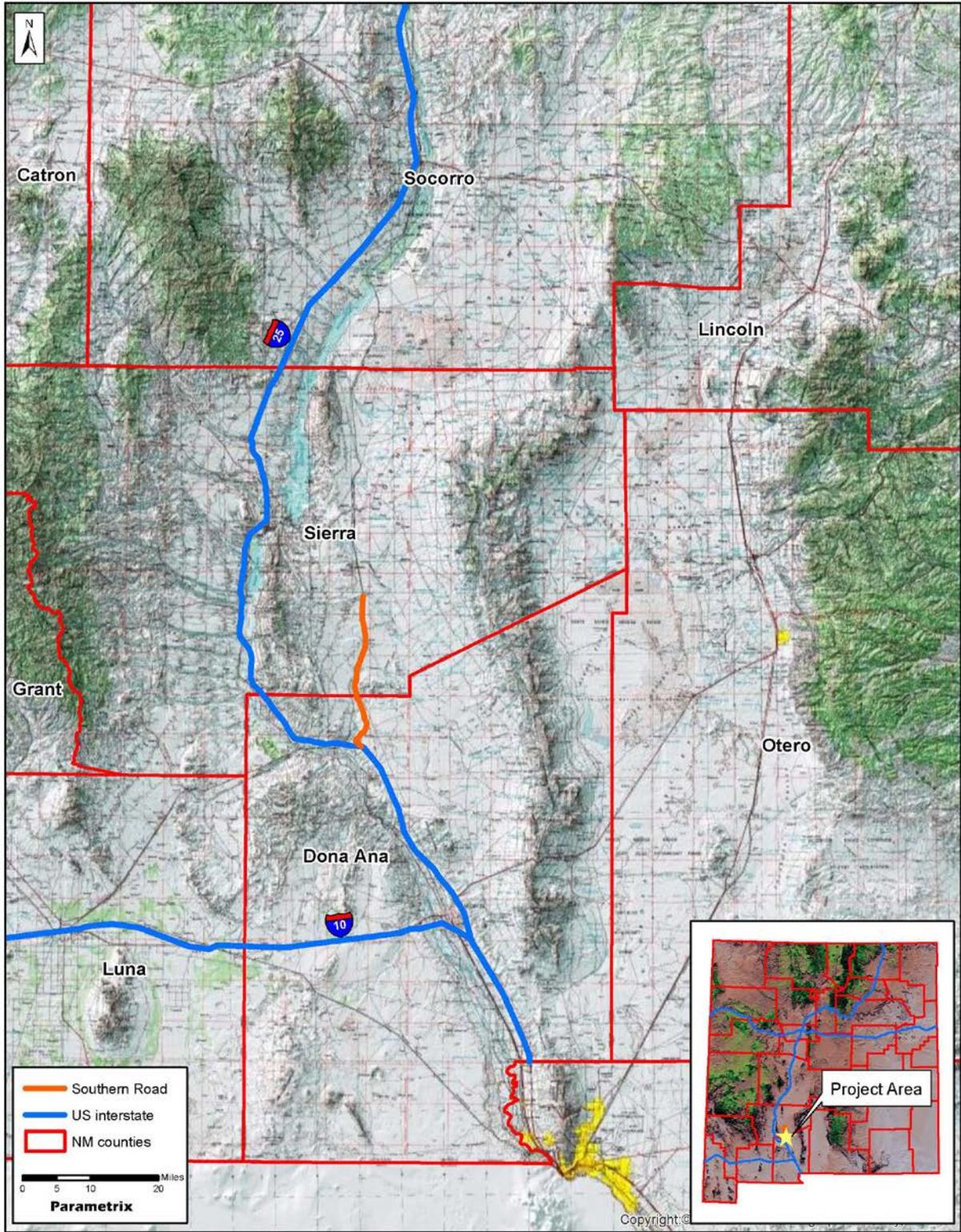


Figure 1. Project Vicinity Map

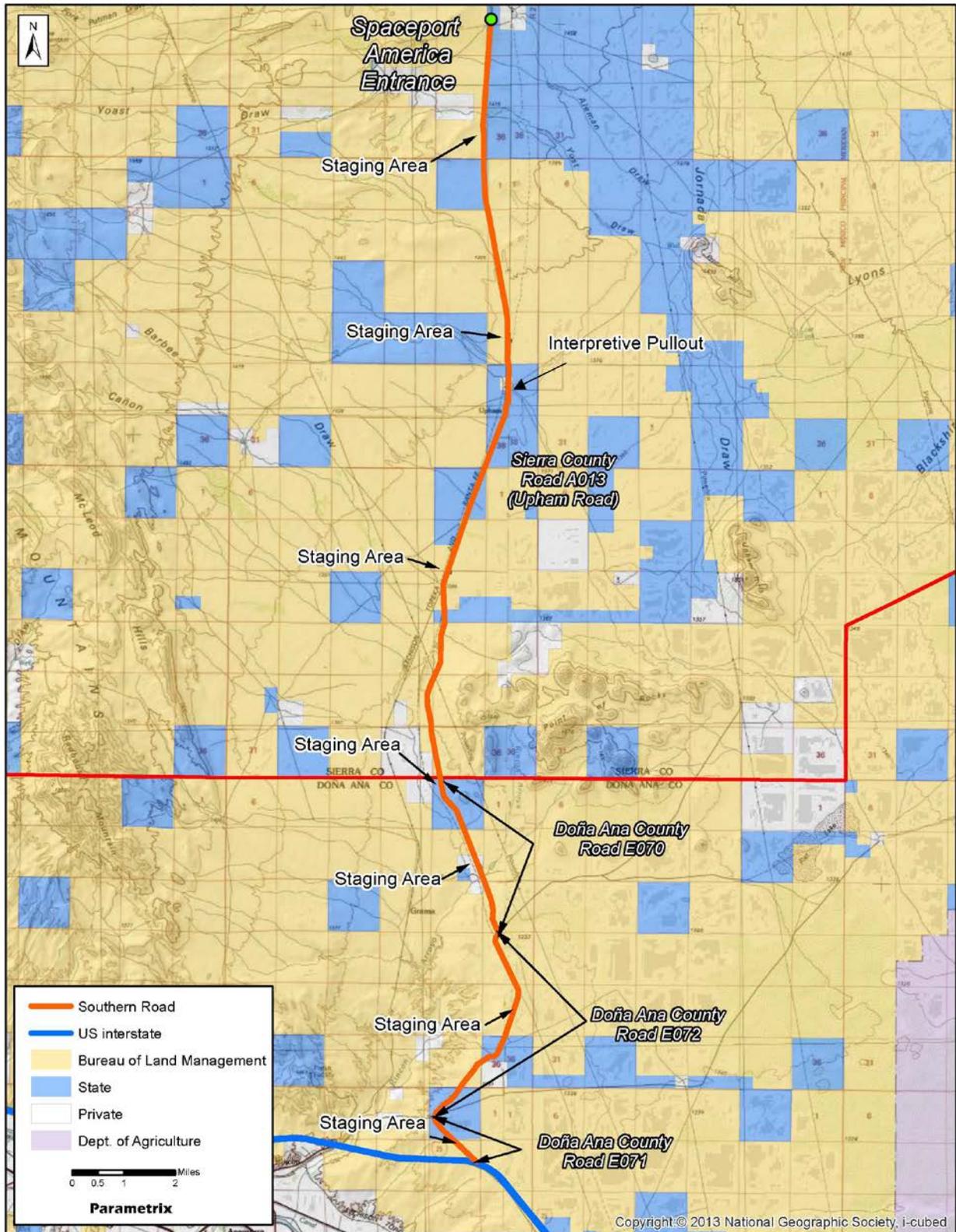


Figure 2. Project Area Map Showing Southern Road, Staging Areas, and Interpretive Pullout

The need is established by BLM's responsibility to respond to applications submitted by Doña Ana and Sierra counties for the subject road segments under section 501(a)(6) of the Federal Land Policy and Management Act (FLPMA), to issue a right of way (ROW) grant for the construction, maintenance, operation, and termination of roads on Public Land. The principles of sustained yield include safeguarding wildlife and their habitat, threatened species and their habitat, endangered species and their habitat, sensitive species and their habitat, water quality, soils, paleontological, archaeological, vegetation, and watershed functions. Goals and objectives for these resources were set forth in the in both the White Sands Resources Management Plan (October 1986), and the Mimbres Resource Management Plan (December 1993).

## **1.2 Decision to be Made**

If, after completion and public review of this EA, it is determined that implementation of the proposed action or the preferred alternative would not result in significant impacts to the environment, as defined by Council on Environmental Quality (CEQ) Regulation 1508.27, the BLM would issue a Finding of No Significant Impacts (FONSI) and the BLM District Manager would decide whether or not to issue the ROW Grants to Doña Ana County and Sierra County in the form of a Decision Record. The Decision Record would describe the District Manager's rationale for issuing the decision and would define appropriate mitigation measures if necessary.

If the BLM District Manager decides to issue the ROW grants NMNM 126133 and NMNM 126134 to Doña Ana County and Sierra County, respectively, the Decision Record would include general stipulations regarding the implementation of the road project, as well as special stipulations regarding required environmental or cultural mitigation measures. The stipulations are provided in this EA in Appendix A. The BLM-approved Plan of Development and associated construction drawings would divide the project into segments, defined by engineering stations. BLM would issue a Notice to Proceed for a particular segment when necessary mitigation efforts required for that segment have been completed. Construction to carry out the proposed project would not occur within a particular segment until BLM issues the Notice to Proceed for that segment.

If the BLM District Manager decides to issue the ROW grants, the ROWs would be granted for a term of 30 years with option to renew. Also, the BLM would issue a free use permit to Doña Ana County for 6,000 cubic yards of minerals materials to be used for road construction. The permit would only cover minerals materials taken and used within the ROW.

Finally, CenturyLink maintains an existing BLM authorization for a 10-foot easement for fiber optic conduit that is within or adjacent to the proposed ROW for the Southern Road. As part of the proposed Project, CenturyLink has submitted an application to the BLM requesting authorization to lower 16 portions of their fiber optic line, within their existing easement, so that it would not be impacted by the proposed Project construction. If the BLM District Manager decides to issue the road ROW grants to Doña Ana and Sierra Counties, he would also issue an authorization allowing for CenturyLink to lower the fiber optic line.

## **1.3 Plan Conformance**

Those portions of the action alternatives located in Doña Ana County on BLM land are subject to the management guidance described in the BLM's *Mimbres* RMP (BLM 1993). Those portions of the action alternatives located in Sierra County on BLM land are subject to the management guidance described in the BLM's *White Sands* RMP (BLM 1985). These two RMPs provide an extensive framework for managing BLM lands in Sierra and Doña Ana Counties and focus on the allocation of resources under the principles of multiple use and sustainable yield.

The action alternatives conform to the resource management guidance on page 11 of the *White Sands* RMP and pages 2 through 14 of the *Mimbres* RMP. Specifically, both RMPs contain a Rights-of-Way section that

states “the BLM grants utility and transportation rights-of-way leases, and permits to individuals, businesses, and governmental entities for the use of public land.” Further guidance provided under Rights-of-Way provides details about this management decision.

The action alternatives are consistent with the management goals and objectives described in the *El Camino Real de Tierra Adentro National Historic Trail Comprehensive Management Plan* (NHT-CMP) (NPS and BLM 2004). The NHT-CMP establishes objectives, policies, processes, and management actions needed to fulfill the preservation and public-use goals for the federally designated El Camino Real de Tierra Adentro National Historic Trail. In the NHT-CMP Visitor Experience section, Interpretive Media subsection - Wayside Exhibits, the development of interpretive pullouts is a management objective.

There are no restrictions in any other state, regional, or local planning documents that would prevent or limit the proposed action. The action alternatives are also free of any other restrictive designations that would prevent the actions on the land identified.

## **1.4 Scoping and Issues**

Both internal and external scoping were completed for the proposed action and preferred alternative presented in this EA. The details of the scoping process are described in the following subsections.

### **1.4.1 Internal Scoping**

Upon receipt of the ROW Grant applications from Doña Ana and Sierra Counties, BLM NEPA Interdisciplinary Team (IDT) members met informally on multiple occasions to discuss the anticipated effects of the action alternatives on the environment and BLM resources in the project area. The results of these discussions were carried forward into the project kickoff meeting held on May 3, 2012 at the BLM Las Cruces District Office (LCDO). Many additional meetings were held internally at BLM LCDO and with contractors at both the BLM LCDO and in the proposed project area to refine details of the proposed action and alternatives and discuss potential effects and mitigation.

### **1.4.2 External Scoping**

In November 2011, several meetings were held with grazing allotment permittees or their representatives to identify potential issues related to the proposed action and preferred alternative. On May 21, 2012, over 130 letters were mailed out to various agencies, organizations, tribes, elected officials, adjacent ROW holders, and individuals to solicit input on the proposed project. A list of these stakeholders can be found in Appendix B *Stakeholder List*. The 30-day public and agency scoping period ended on June 22, 2012. A public meeting was held on June 4, 2012, in Hatch, NM. Advertisements for the public meeting were placed in the Las Cruces *Sun News* on May 25 and June 1, 2012, the *Sierra County Sentinel* on May 25, 2012, and *The Herald* on May 30, 2012. A copy of the advertisement is located in Appendix C *Public and Agency Scoping*. The BLM received a total of 15 comments from agencies and the public. More details of the external scoping are provided in Chapter 5 *Individuals, Organizations, Tribes or Agencies Consulted*.

### **1.4.3 Resource Issues Identified**

As a result of internal and external scoping, a variety of issues were identified that will be analyzed in the EA. These issues would be addressed through project design, or mitigation, as described in detail in Section 4: *Environmental Effects*. The scoping comments asked what the effect of the project would be on the following:

Fencing

- the road with and without fencing on large mammals in the area of the corridor?
- the road with and without fencing on management of livestock grazing on grazing allotments?

- fencing on availability of water to livestock and wildlife?
- fencing on vegetation, including changes in grazing use by livestock and wildlife?
- road construction with or without fence on grazing permittee costs?
- increased driving speeds on livestock and wildlife with and without a fence?

#### Biological Resources

- road construction on vegetation along route and reroutes?
- restoring areas where the road is realigned versus abandoning and not restoring them?
- the project on biology and special status species?

#### Cultural Resources

- road construction on the El Camino Real de Tierra Adentro NHT?
- installation of culverts and water bars on the El Camino Real de Tierra Adentro NHT?
- road construction on other cultural resources?

#### Visual Resources

- a paved surface on the visual setting related to the NHT?
- fencing on public access to public lands?

#### Air and Water Resources

- low-water crossings on arroyos regarding erosion and surface water?
- road construction on air quality as a result of dust?
- road construction on water quantity and availability?

#### Safety

- an improved road and increased driving speeds with and without fencing on human safety?
- an improved road on traffic?
- increased traffic on the local ranches?
- an improved road on human trafficking and smuggling?
- the project on socioeconomics in the region?
- road construction on utilities or other rights-of-way?
- the project on temporary construction phases?
- Minerals & Soils
- the project on subsurface minerals?
- the project on climate change?
- the project on soils and topography?
- quarrying rock for crushed aggregate for construction?

## 2 PROPOSED ACTION AND ALTERNATIVES

### 2.1 Proposed Action

Doña Ana and Sierra Counties (Applicants) propose to upgrade the current alignment of Doña Ana CR E-070, E-071, and E-072 and Sierra CR A-013 with an all-weather, year-round surface. Doña Ana County would be responsible for design and construction. Upon completion, each county would be responsible for maintenance of the segment located within its own borders. The southern terminus of the proposed project would be the New Mexico Department of Transportation (NMDOT) ROW at the Upham exit (Exit 32) at Interstate 25 (I-25), BLM ROW number NM 126133. The northern terminus would be in Sierra County at the intersection of CR A-013 and CR A-039, the entrance to Spaceport America, BLM ROW number NM 126134. The total length is approximately 23.6 miles, with 8.7 miles in Doña Ana County and 14.9 miles in Sierra County. Table 1 presents the linear miles and acreage traversed by land ownership; the legal description of the project is as follows:

#### **New Mexico Principal Meridian, New Mexico, Sierra County**

##### BLM Land

- T. 15 South S., R. 2 W.,
  - sec. 26, E $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ E $\frac{1}{2}$ SE $\frac{1}{4}$ ;
  - sec. 35, E $\frac{1}{2}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$ .
- T. 16 S., R. 2 W.,
  - sec. 1, SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ ;
  - sec. 11, NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ ;
  - sec. 12, W $\frac{1}{2}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ ;
  - sec. 13, W $\frac{1}{2}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ ;
  - sec. 24, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ E $\frac{1}{2}$ SW $\frac{1}{4}$ ;
  - sec. 35, SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ .
- T. 17 S., R. 2 W.,
  - sec. 11, W $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ , NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ ;
  - sec. 14, W $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ ;
  - sec. 23, W $\frac{1}{2}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ ;
  - sec. 26, NW $\frac{1}{4}$ NW $\frac{1}{4}$ ;
  - sec. 27, E $\frac{1}{2}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$ ;
  - sec. 34, E $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ ;
  - sec. 35, SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ .

##### State Land

- T. 15 S., R. 2 W.,
  - sec. 24, W $\frac{1}{2}$ W $\frac{1}{2}$ SW $\frac{1}{4}$ ;
  - sec. 25, NW $\frac{1}{4}$ .
- T. 16 S., R. 2 W.,
  - sec. 2, E $\frac{1}{2}$ ;
  - sec. 25, E $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ ;
  - sec. 36, W $\frac{1}{2}$ .
- T. 17 S., R. 2 W.,
  - sec. 2, E $\frac{1}{2}$ ;
  - sec. 11, SE $\frac{1}{4}$ NW $\frac{1}{4}$ ;
  - sec. 14, SW $\frac{1}{4}$ .

Private Land

T. 16 S., R. 2 W.,  
sec. 25, E½SE¼NW¼.

**NMPM, Doña Ana County**

BLM Land

T. 18 S., R. 2 W.,  
sec. 11, NW¼NE¼, NE¼SW¼NE¼, W½SE¼NE¼;  
sec. 12, SW¼SW½SW¼;  
sec. 13, W½NW¼, NW¼SW¼, SW¼SW¼, SE¼SW¼;  
sec. 24, W½NE¼NW¼, E½NW¼NW¼, SE¼NW¼, NE¼SW¼, SW¼NW¼SE¼, SW¼SE¼;  
sec. 25, W½NE¼, E½SE¼SW¼, NW¼SE¼, NW¼SW¼SE¼;  
sec. 35, SE¼SE¼NE¼, NE¼SE¼, SW¼SE¼, SE¼SE¼.  
T. 19 S., R. 2 W.,  
sec. 11, NW¼NE¼, NE¼SW¼NE¼, SE¼NE¼, NE¼NE¼NW¼.

State Land

T. 18 S., R. 2 W.,  
sec. 2, NW¼, NE¼SW¼, W½W½SE¼;  
sec. 36, NW¼.  
T. 19 S., R. 2 W.,  
sec. 2, NW¼NE¼, W½.

Private Land

T. 18 S., R. 2 W.,  
sec. 11, SE¼.

**Table 1. Affected Land Ownership**

<b>Land Owner</b>	<b>Linear Miles</b>	<b>Total Acreage</b>	<b>Temporary Acreage</b>	<b>Permanent Acreage</b>
Bureau of Land Management	14.4	169.8	45.2	124.6
New Mexico State Trust Land	8.4	83.5	22.4	61.1
Privately Owned Land	0.7	8.9	3.8	5.1
Total All Land <sup>1</sup>	23.6	262.2	71.4	190.8

<sup>1</sup> Totals subject to rounding error.

Construction would occur in two phases. Phase I would include all of the components described below except for installation of the final road surface. The final road surface would consist of installation of a chip-seal surface over a base course, with separation fabric and/or geogrid material placed below the base course, and appropriate vertical curvature of the road to facilitate drainage, as described in more detail below. This final road surface would be constructed in Phase II.

Width of Right-of-Way

For most of the length of the project (see below for exceptions), a ROW 80 feet (ft) in width would be used during construction, which is expected to take 12 months to complete. Temporary ROW for seven two-acre staging areas along the route is also requested for equipment and material storage during construction. Five of the staging areas are located on BLM land, one is on State land, and one is on private land. These staging areas would be located along the route as shown in Figure 2. A 60-ft-wide ROW is requested for 30 years with option to renew, to allow for maintenance and minor improvements over time. An additional 20-ft-wide temporary ROW outside the 60-ft-ROW would also be requested. Concrete low-water crossings would be constructed at grade at all drainages, except at Yost Draw and Rincon Arroyo, where concrete box culverts (CBCs) would be installed (Figure 3). At Rincon Arroyo and Yost Draw, a permanent ROW 300 ft wide by 630 ft long and 320 ft wide by 2,220 ft long, respectively, is requested to allow for construction and maintenance of the proposed drainage and erosion-control improvements as well as for the installation of the CBCs. Thirteen locations along the road that are prone to standing water would include low water crossings to relieve flow from V-ditches (V-shaped ditches cut along both sides of a road to allow drainage of the road surface) into existing drainages; these locations are shown in Figure 3. All areas disturbed by the proposed action not covered by the new surface or gravel, including ROW, staging areas, and road realignment areas, would be restored to their natural pre-construction condition by the implementation of a BLM-approved revegetation plan.

All earth-disturbing activities, including grubbing, excavation, blading, etc., would occur within the 60-ft ROW. Activities occurring in the temporary ROW would be limited to driving or parking of vehicles, or other associated minimum-impact, ground-disturbing activities. After full development of the engineering plans for the project was completed, compliance with Section 106 of the National Historic Preservation Act was initiated and archaeological surveys were conducted. It was later discovered that in certain parts of the project, features such as cut-back slopes and water turn-outs extended into the temporary ROW, which would not be allowed.

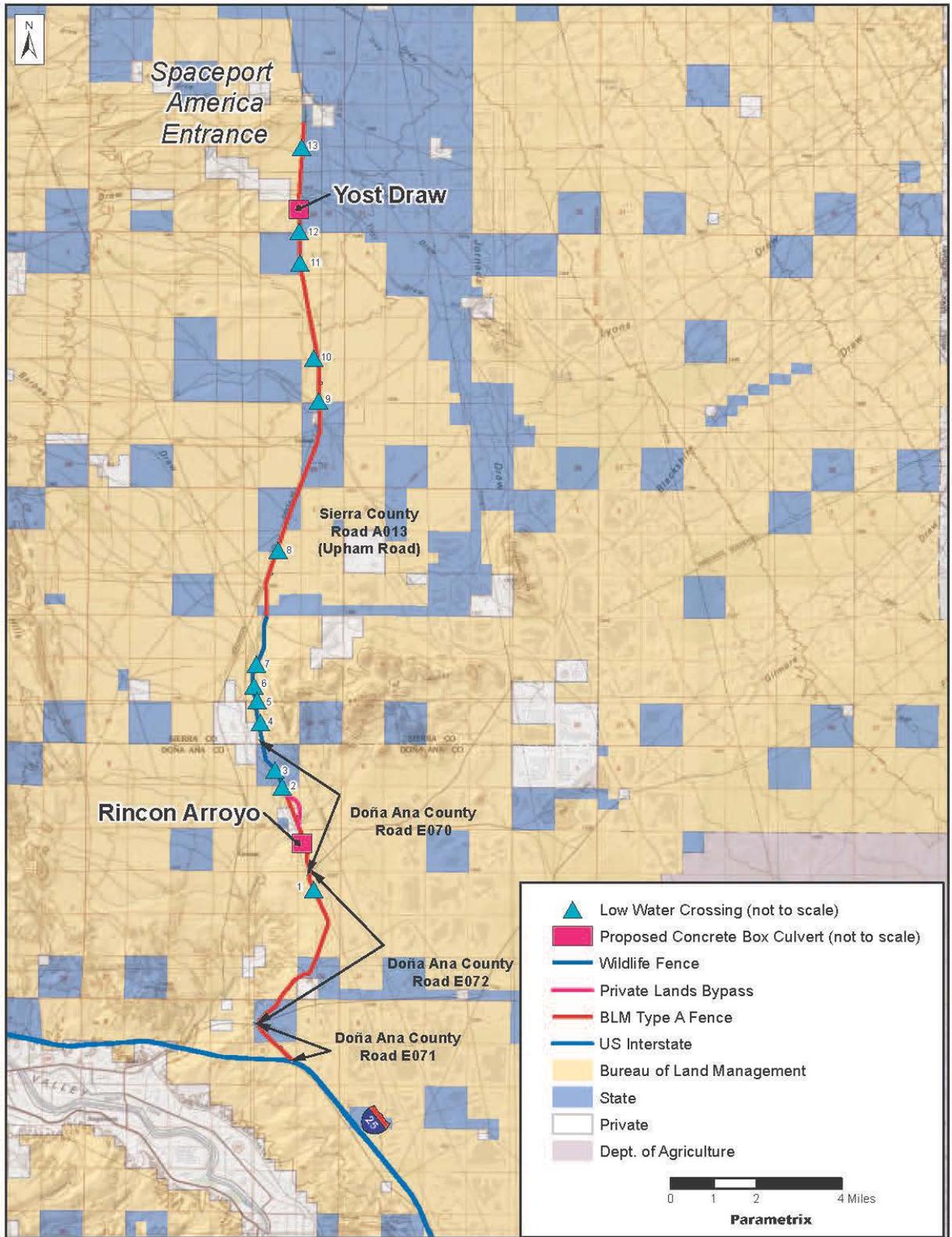


Figure 3. Locations of Concrete Box Culverts and Low Water Crossings

In most of these locations, the engineering was modified to keep all ground-disturbing activities within the 60-ft ROW. However, in some locations, the engineering could not be modified. Thus, in six portions of the road corridor, the 60-ft ROW and associated temporary ROW have been widened to accommodate the construction needs of the project. These locations are shown in Figure 4 and delineated by station numbers in Table 2.

**Table 2. Proposed ROW Widening**

<b>Station Start</b>	<b>Station End</b>	<b>Length</b>	<b>Side</b>	<b>Additional ROW Width (each side)</b>	<b>Total ROW Width</b>	<b>Total Temporary ROW Width</b>
342+00	348+00	600 ft	both	10 ft	80 ft	100 ft
405+00	412+00	700 ft	East	10 ft	70 ft	90 ft
424+00	427+00	300 ft	East	10 ft	70 ft	90 ft
521+00	527+00	600 ft	both	10 ft	80 ft	100 ft
560+00	575+00	1500 ft	both	10 ft	80 ft	100 ft
585+00	596+00	1100 ft	both	10 ft	80 ft	100 ft

The additional ROW totals 1.97 acres. Because these additional areas have not yet undergone archaeological survey, a commitment is included in the project stipulations (Appendix A) to conduct survey of these areas, plus a buffer of an additional 50 ft, prior to the BLM allowing construction activities in those areas in order to be fully compliant with Section 106 of the National Historic Preservation Act.

Road Surface and Alignment

The improved road would be constructed for all-weather, year-round use and would have two 12-ft-wide driving lanes with 4-ft-wide shoulders and appropriate drainage on both sides. Design and construction standards would conform to Doña Ana County typical design parameters. The Phase II improvements would include constructing a new base 6 inches in depth on top of a separation fabric and/or geogrid material for the driving lanes and shoulders, with a double penetration chip-seal surface on the driving lanes only. The double-penetration chip-seal surface consists of an application of oil at a specified rate followed by an overlay of half-inch crushed rock chips, then a second application of oil and an overlay of three-eighths-inch chips.

The horizontal (linear) alignment would remain the same for the most part, with changes in certain areas to improve curvature for safety, improve drainage, minimize erosion, and avoid trespass onto BNSF Railway ROW. The locations (sixteen total) where the proposed alignment would deviate from the existing roadway are minor corrections to smooth or eliminate existing curves. These locations are shown in Figure 5 and station numbers are provided in Table 3.

Portions of the existing alignment where these minor corrections would be made would be graded to match the surrounding terrain and restored by the implementation of a BLM-approved revegetation plan.

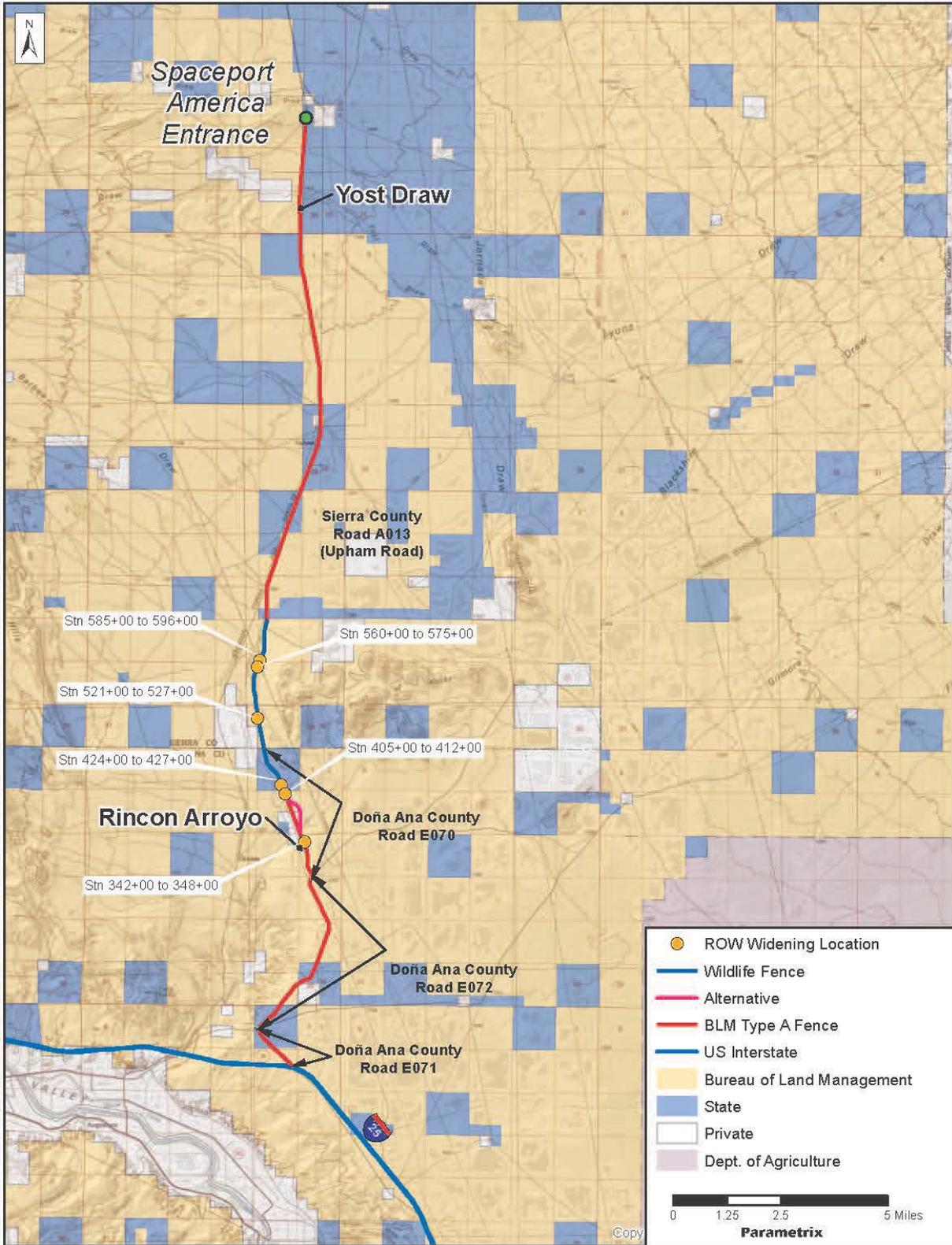


Figure 4. Right-of-Way Widening Locations

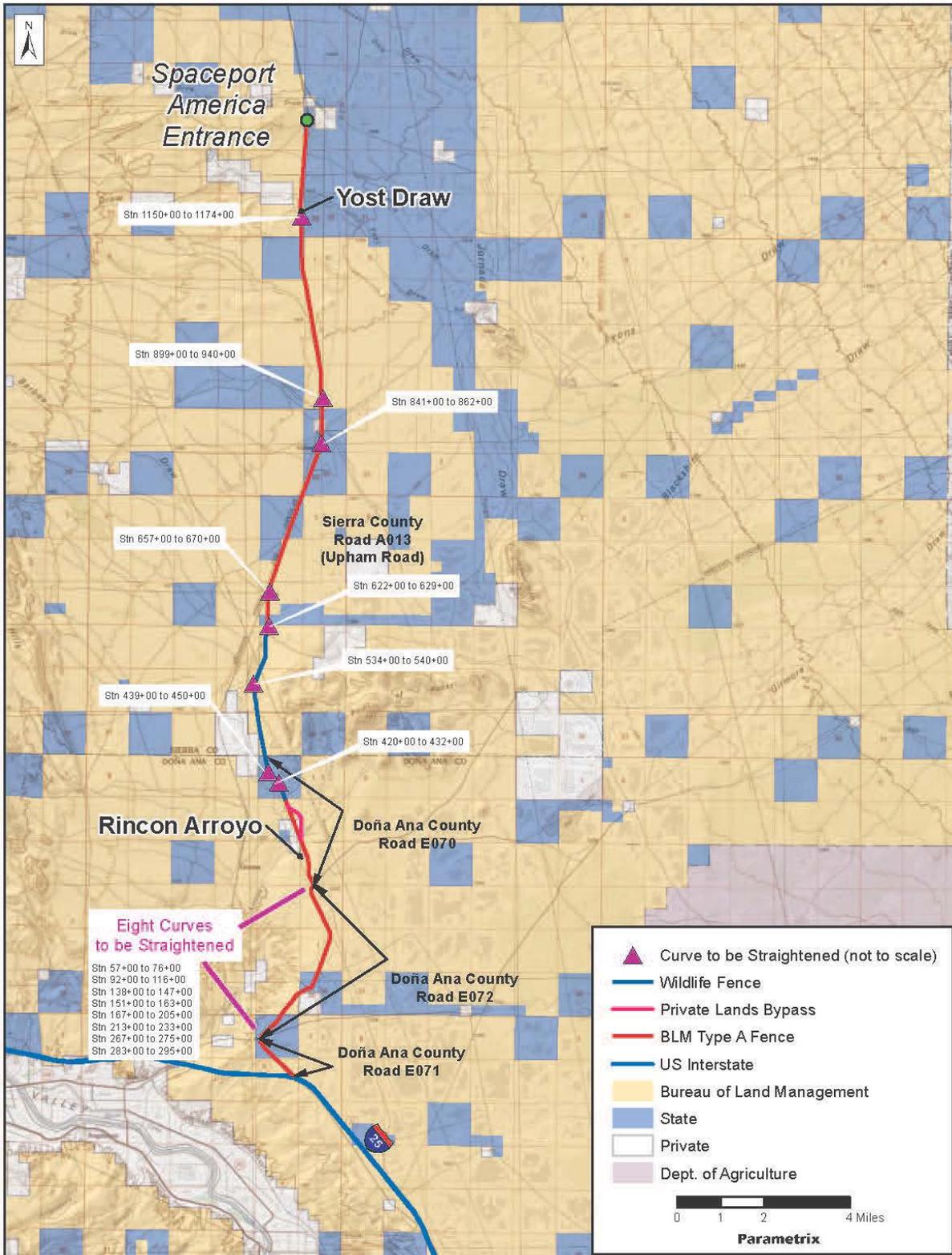


Figure 5. Locations of Road Alignment Adjustments for Curve Straightening

**Table 3. Proposed Curve Straightening Locations**

<b>Station Start</b>	<b>Station End</b>
57+00	76+00
92+00	116+00
138+00	147+00
151+00	163+00
167+00	205+00
213+00	233+00
267+00	275+00
283+00	295+00
420+00	432+00
439+00	450+00
534+00	540+00
622+00	629+00
657+00	670+00
841+00	862+00
899+00	940+00
1150+00	1174+00

The vertical alignment would also remain unchanged throughout except for the crossings at Rincon Arroyo (Station Number 352+63.70, see also Figure 3) and Yost Draw (Station Number 1161+61.71). The embankments of these drainages would be slightly lowered to a maximum grade of six percent to allow large, multiple-axle vehicles, such as tractor-trailer trucks, to cross. Six inches of steel-reinforced concrete, with concrete cut-off curtains on the upstream and downstream sides to prevent undercutting, would be placed on top of soil shaped and compacted to American Association of State Highway and Transportation Officials (AASHTO) standards. For Rincon Arroyo, the upstream and downstream aprons would be concrete to prevent erosion and allow for livestock and wildlife to cross under the road from one side to the other. For Yost Draw, animal crossing is not a concern, thus the upstream apron would be rip-rap and the downstream apron would be concrete to prevent erosion. Construction plan drawings for the CBCs are provided in Appendix D.

#### Drainage

The road surface would be constructed with a two-percent crown to facilitate proper stormwater runoff. The road would be predominantly level in grade with a slight up-slope and down-slope where it goes over the rise at Point of Rocks (the location of this topographic feature appears in Figure 6). The pitch (cross-sectional slope) would be level throughout except at curves, which would be banked up to four percent.

All drainage crossings would be low-water crossings, except at Rincon Arroyo and Yost Draw, as previously described (see Figure 3). Cattle guards that cross the existing road, along with cross-fencing, would be replaced throughout. These cattle guards would cross the roadway and shoulders entirely and there would be no constrictions. Steel swing gates would be placed adjacent to the cattle guards.

## Ranch Waterlines

To allow area ranchers to extend waterlines across the road in the future, conduits constructed of PVC would be installed under the road. Each conduit would extend 5 ft past the 60-foot ROW permanent fence on each side of the road and would be capped and monumented with a marker extending no more than 2 ft above ground (see Figure 6). The approximate locations of these conduits have been determined through on-site consultation with affected ranchers. It is estimated that nine conduits would be installed.

## Construction Practices

The exact construction means, methods, and phasing would be subject to decisions made by the contractor selected for the project. The contractor will determine the sources for gravel or other borrow material, and if these sources are located on federally-administered lands, the contractor will provide confirmation that the source material is weed-free and that the proper permits (related to environmental compliance) for use of the source are obtained (see Stipulations in Appendix A). Contract specifications would include instructions on how much of the road may be under construction at any one time, when clearing activities may occur, maintenance of safety and traffic (in accordance with the *Manual on Uniform Traffic Control Devices*, a national publication used on all Doña Ana County road projects), and details of post-construction restoration requirements. The boundaries of the temporary ROW would be marked with metal posts and marine rope and flagging in the areas where construction is taking place, to limit movement of construction equipment and personnel. The engineer stations would be indicated on the staking and would remain intact until after BLM approves reclamation. In addition to temporary linear ROW, all temporary use areas would be staked, as well as areas where the 60-ft ROW would be widened; staking would be removed by the county after BLM approves reclamation.

Vegetation from clearing activities would be hauled away for disposal at nearby approved landfills. Old structures removed from the existing roadway, such as cattle guards and unusable fencing, would also be hauled to nearby landfills. Construction would begin with cutting, filling, and grading within the existing roadway. Subgrade work would run the entire length of the roadway and would be compacted per AASHTO standards. In Phase II, base course would be placed along the entire length of the roadway on the prepared subgrade and also compacted per AASHTO standards. The width of the base course would be up to 32 ft and the total volume would be approximately 377,813 cubic yards (cy). The double-penetration, bituminous, chip-sealed surface would be 24 ft wide and require approximately 108,000 cy of borrow material imported from off-site quarries. Approximately 6,000 cy of material would be excavated on-site and used at drainage crossings. The content of the borrow material would be native soil from the cut areas of the project. No culverts would be used at the designated low-water crossings. Doña Ana County would obtain a free use permit for minerals materials for this purpose.

According to Doña Ana County engineers, it is estimated that approximately 80 acre-ft of water would be used for construction of the proposed action (Corneles 2012). This water would be used to achieve the appropriate

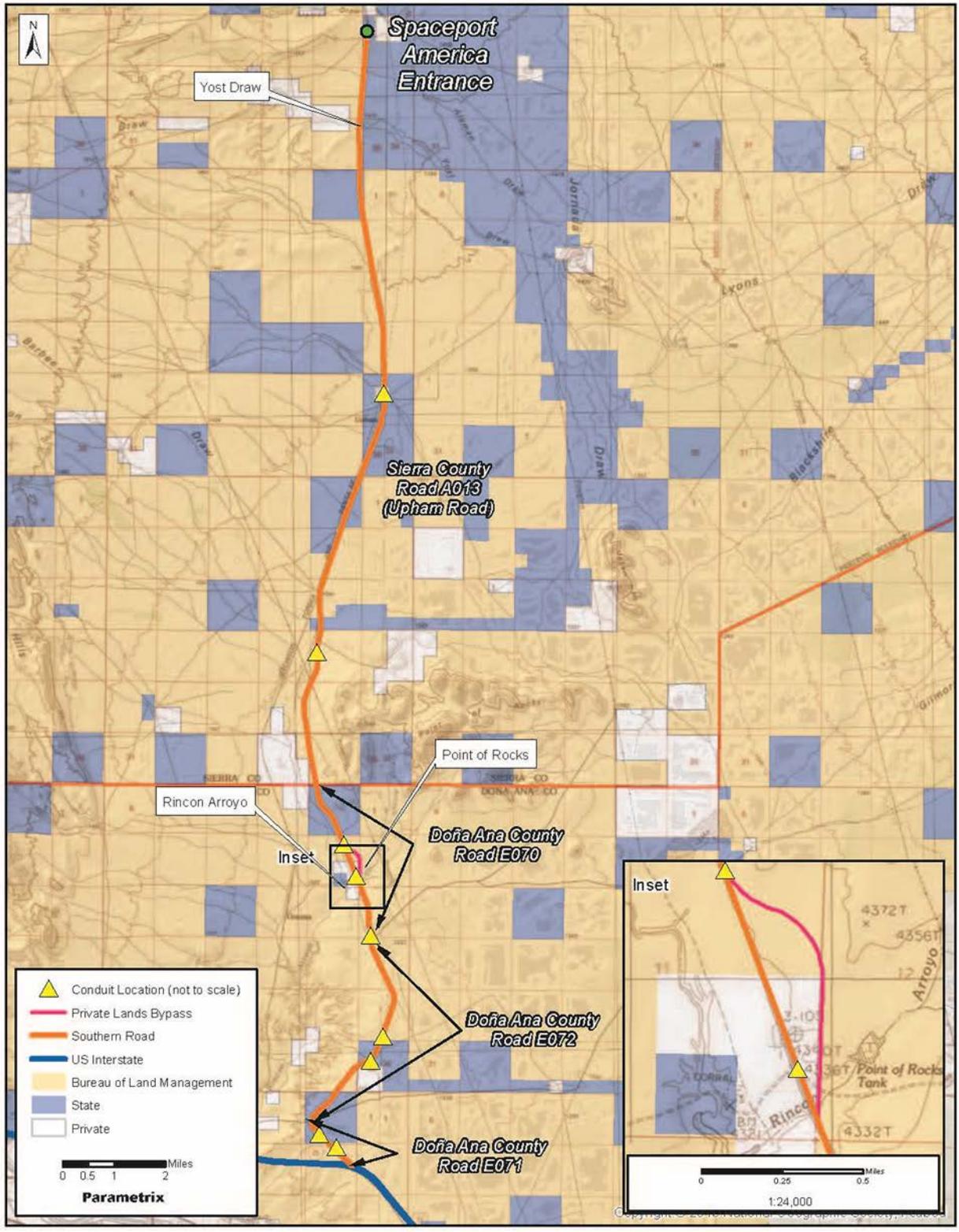


Figure 6. Project Area Map Showing Conduit Locations on Proposed and Alternative Route

amount of compaction of the roadway prior to application of the chip-seal surface. It would also be used to minimize potential impacts from dust created during project activities.

### Water Use

Water for construction would be obtained by the contractor in accordance with Doña Ana County Special Conditions that have been developed for this project. The Special Conditions state that:

The contractor shall locate a water supply for the project and contact **the State Engineer to complete any necessary permitting requirements**. The contractor is responsible for complying with all federal, state, and local requirements for obtaining water for the project.

All water used from a State Engineer permitted water source on this project must be metered by an accurate totalizing meter furnished and installed by the contractor under the supervision of the project manager. **The Contractor will be responsible for reporting each month the amount of water used by the Contractor to the Office of the State Engineer in accordance with the special provisions of the water permit.**

Coordination with the Office of the State Engineer (OSE) and monthly reporting practices would ensure that the quantity of water used under the proposed action would not impact water levels in private groundwater wells in the vicinity. The contractor would be required to obtain water from a different source should the OSE determine that regional groundwater levels could be threatened.

### Water Crossings

The Rincon Arroyo at the southern end of the project area drains to the Rio Grande and is thus considered by definition a jurisdictional water of the US, as it flows into an interstate water body. In addition, other minor drainages in the southern portion of the project area likely drain to the Rio Grande. For the Southern Road project, a preliminary jurisdictional determination will be requested from the USACE, which acknowledges that water bodies that exist in the project area may be jurisdictional waters of the US.

Rincon Arroyo has been affected by the existing road crossing, which has no formal low-water crossing or drainage structures. The proposed construction of a CBC at Rincon Arroyo would require that fill be placed within the ordinary high water mark (OHWM) here, as well as at the second CBC proposed for Yost Draw. In addition, construction of formal low-water crossings is proposed at 13 locations of more minor drainages in the project area.

Because the proposed action includes fill activities within the OHWM of multiple drainages that may be jurisdictional waters of the US, construction of the proposed action would require a permit from the USACE in compliance with Sections 404 and 401 of the CWA. Per consultation with the USACE Las Cruces office, (J. Riggs, personal communication 2014), each of the low-water crossings and CBCs will be considered to have independent utility so the total disturbance area at each crossing can be calculated and considered independently for CWA permitting purposes. Calculated disturbance acreage at the crossings (including CBCs) ranges from 0.04 to 0.44 acre; with no crossing exceeding the 0.5-acre limit of disturbance allowed under Nationwide Permit 14 *Linear Transportation Projects*. Therefore, a project-specific permit for the proposed project would not be required. A pre-construction notification would need to be completed and submitted to the USACE district engineer prior to commencement of project construction activities, as some of the crossings involve disturbance of greater than 0.1 acre. A copy of this PCN would also be submitted to NMED for water quality certification. A Section 404 Nationwide Permit Verification Letter would be requested from the USACE for the project.

Since the Rincon Arroyo is an ephemeral drainage, subject to running only during the first 24 hours following a rainstorm, CWA Section 401 water quality certification would already be complete if the project conforms to

the conditions defined in the letter to Mr. Allan Steinle, US Army Corps of Engineers, from James P. Bearzi, Chief, Surface Water Quality Bureau, NMED dated April 13, 2012 and included in Appendix C *Public and Agency Scoping*.

Fiber Optic Conduit

CenturyLink maintains an existing BLM authorization for a 10-foot easement for fiber optic conduit that is within or adjacent to the proposed ROW for the Southern Road. As part of the proposed Project, CenturyLink has submitted an application to the BLM requesting authorization to lower 16 portions of their fiber optic line, within their existing easement, so that it would not be impacted by the proposed Project construction. This work would include excavation to expose the existing conduit, then excavating a deeper trench 1 foot to the north (but still within the existing easement) to place the conduit. The new trench would be 18 inches wide and up to 4 ft deep. The portions of the fiber optic conduit to be lowered are shown in Table 4.

**Table 4. Locations of Fiber Optic Conduit to be Lowered**

<b>Station Numbers</b>	<b>Length (ft)</b>
235+00 to 243+00	800
248+00 to 254+00	625
315+00 to 319+00	400
325+00 to 328+00	325
375+00 to 395+00	2025
420+00 to 424+00	425
480+00 to 484+00	425
513+00 to 526+00	1325
567+00 to 572+00	525
589+00 to 608+00	1925
890+00 to 900+00	1025
952+00 to 959+00	700
1099+00 to 1102+00	325
1129+00 to 1133+00	350
1145+00 to 1155+00	1025
1213+00 to 1227+00	1425
<b>Total Footage</b>	<b>13,650</b>

Construction Personnel

The number of workers that would be employed by the project cannot be accurately estimated until the phasing has been set by the selected construction contractor. The Applicants estimate that the maximum workforce at the project site at any one time would be 100 persons and 30 pieces of heavy equipment. The types of heavy equipment that would be used include motor graders, dump trucks, water trucks, scrapers, loaders, backhoes, and various rollers (for compaction) among others. Many small pieces of equipment would also be used such as pickup trucks, trailers, and pumps. All earth-moving equipment would be pressure washed prior to arriving on site to minimize the potential for the introduction of noxious weeds. Road crews would generally begin work as early as 7:00 AM and end as late as 6:00 PM, Monday through Friday—although, depending upon need, work may also occur on weekends.

### Weed Control

As specified in the stipulations in Appendix A, the area of potential effects of the proposed action would be managed to control noxious weeds, both for reproduction and spread of these species within the project area, as well as restricting spread of these species to other areas. All heavy equipment would be cleaned to remove mud and dirt (along with potentially embedded noxious weed seeds) prior to entering and exiting public lands. The easement holder and the appropriate land-managing agency, BLM or County, would monitor the project area for noxious weed infestation. On BLM property the County would provide for treatment of noxious weeds, should they appear. The treatment method would be approved in advance of construction activities by the BLM Las Cruces District Office.

### Reclamation

In accordance with the stipulations in Appendix A, reclamation of the project area would be implemented incrementally in areas where construction is complete, with final reclamation completed after all construction has been finished. The contouring and stabilization components of reclamation will be carried out incrementally as the project proceeds. Reseeding in areas specified in Appendix A would occur between June 15 and July 15. Reclamation would be implemented, as directed by the authorized officer, and would include, but is not limited to, the 80-foot ROW, the wider ROW at the crossings of Rincon Arroyo and Yost Draw, the seven staging areas, and road realignment areas. Also in accordance with the stipulations (Appendix A), all components of the ROW will be staked and identified by engineer station, and staking will remain in place until BLM has accepted the reclamation.

### Hazardous Materials

No hazardous materials beyond the usual types of fuel, oil, and lubricants used in the construction equipment or machinery would be used for construction. Additionally, a heavy, emulsified asphalt oil would be used as an adhesive for the chip-seal gravel as is commonly used on all paved roads. The construction contractor would be required to clean up any spills of these materials immediately. Industrial wastes and toxic substances would be controlled per contract specifications in accordance with Doña Ana County ordinances. The Doña Ana County and Sierra County hazardous materials teams would respond if needed.

### Stormwater

A Stormwater Pollution Prevention Plan (SWPPP) would be required in accordance with US Environmental Protection Agency (EPA) regulations, as implemented by Doña Ana County Stormwater Ordinance 248. The SWPPP would include detailed measures and best management practices to control any soil movement from the construction corridor onto surrounding areas. It would also address soil disturbance controls, seeding, fertilization, and siltation control. The County's Director of Public Works is responsible for administering and coordinating implementation and enforcement of Stormwater Ordinance 248. Periodic inspections would be conducted by Doña Ana County to ensure compliance. Disturbed areas would be kept to the minimum necessary within the temporary ROW for construction.

### Road Maintenance

After completion of construction (Phases I and II), roadway inspections would occur at least quarterly. Specific maintenance activities would be scheduled as needed. Annual maintenance would include re-forming the

roadway drainage per design and fixing any erosion damage after rainfall events. It is anticipated that a major overlay would be required in the fifth year after construction. The overlay would likely be a new application of oil and chips.

### Safety

The width of the lanes, drainage-crossing designs, signs, striping, slope, and grades would all contribute to safety along the new roadway. New road signs for speed control, cattle and wildlife crossings, low- water crossings, and directional assistance would be installed. All road striping and signs would conform to the *Manual on Uniform Traffic Control Devices*. No signalized intersections are planned for the proposed project. The design speed of the road is 55 miles per hour (mph), but posted speed would be 35 mph.

### Disturbed Lands

Approximately 71.4 acres would be temporarily affected and 190.8 acres would be affected in the long-term. Of these totals, 45.2 acres of BLM land, 22.4 acres of State Trust land, and 3.8 acres of private land would be temporarily affected. Long-term effects would occur on 124.6 acres of BLM land, 61.1 acres of State Trust land, and 5.1 acres of private land (see Table 1).

### Interpretive Pullouts

The proposed action would include two additional road-side interpretive pullouts along the project route, related to El Camino Real de Tierra Adentro NHT. One of these would be located near the second proposed staging area south of the northern terminus of the project area on BLM land (see Figure 2). The location of the other pullout has not been determined, but would be located in the Jornada del Muerto, somewhere in the vicinity of the NHT. They would be similar in nature and size to the existing interpretive pullouts along the route, and feature displays of photographs and historic information related to the NHT, as well as hiking trails leading to viewpoints of the trail. BLM would construct the two additional pullouts, with funding to be provided by the Applicants. Design of the pullouts and development of the interpretive materials, such as kiosk or hiking trail signage, would be conducted collaboratively by the BLM, NPS, and NMSA, with input from El Camino Real de Tierra Adentro Trail Association (CARTA). Design specifications would be included in a Memorandum of Agreement (MOA) to be developed among these parties to resolve adverse effects to historic properties.

### Private Lands Bypass

The proposed action, as described above, may be modified so that the proposed route would bypass a parcel of private land as shown in Figure 6. The existing roadway through this private land would either be abandoned or obliterated and restored to a more natural condition, as preferred by the landowner. The staging area that would be located on private land would also be moved out of the private land and onto BLM land. The alternative route is included within the area referred to as the project area throughout this document, and this route is an alternative of both the proposed action as well as the preferred alternative.

## **2.2 Preferred Alternative**

The proposed action, as described in Section 2.1, would be modified to include permanent ROW fencing along the boundary of the 60-ft ROW. Where possible, existing fencing in functioning condition would be retained

and new fencing would tie directly into it. The majority of the proposed project area would be fenced with BLM Type-A fencing. Approximately 4 miles of fence would be built with wildlife specifications for bighorn sheep and deer (Figure 7).

Type-A fencing consists of barbed, galvanized, 12.5-gauge or larger diameter wire for the top three wires and barbless, double-strand, galvanized 12.5-gauge or larger diameter bottom wire. The 5.5 ft. steel T-posts are manufactured from wrought, rail, or new billet steel and weigh no less than 1.33 pounds per foot, exclusive of the anchor plate.

Type-A wire spacing from the ground level up is 16-22-30-42 (in inches). Wire spacing from ground level up:

- A - 16 inches from ground to first wire.
- B - 6 inches up from bottom wire.
- C - 8 inches from second wire.
- D - 12 inches from third wire (42 inches from ground level)
- E - 6 inches from top wire to top of post.

Steel "T" posts are set 16 ft and 6 inches apart with wire stays located at the midpoint between each pair of posts.

In the vicinity of Point of Rocks, approximately 4 miles of fence route would be built with wildlife specifications for bighorn sheep. This type fence would be located in Sections 23, 26, 27, 34 and 35 of T. 17 S., R. 2 W., and section 2 of T. 18 S., R. 2 W. The proposed fencing would be similar to BLM Type-A fence, except that the top wire would be barbless and set at 38 to 40 inches above the ground. The intermediate and bottom wires would remain the same distance from the ground as the Type-A fencing. Two equally spaced wire stays would be required between each set of posts, to keep the wire from twisting and entrapping the legs of leaping bighorn sheep or deer. The termini of this modified Type-A fencing are shown in Figure 7.

In consultation with area ranchers, BLM range specialists and project engineers incorporated the installation of PVC conduits into the design of the preferred alternative to allow area ranchers to extend waterlines across the road in the future and create a source of drinking water on both sides of the fenced ROW. Each conduit would extend 5 ft past the 60-foot ROW permanent fence on each side of the road and would be capped and monumented with a marker extending no more than 2 ft above ground. The locations of these nine conduits (see Figure 6) have been determined through on-site consultation with the ranchers or their representatives.

Cattle guards and steel swing gates would be installed in the fence at locations where the ROW fence would cross access routes such as other roads, driveways, established cattle crossings, or allotment boundaries, to allow for crossing by vehicles, restriction of cattle movement, and passage of cattle through the swing gates. In locations where the permanent fence crosses existing utility ROWs, the gates will be 16 ft in length, to accommodate the large equipment and vehicles that sometimes need to access these ROWs. Cattle guards would be installed at three existing interpretive BLM pullouts at the El Camino Real de Tierra Adentro NHT.

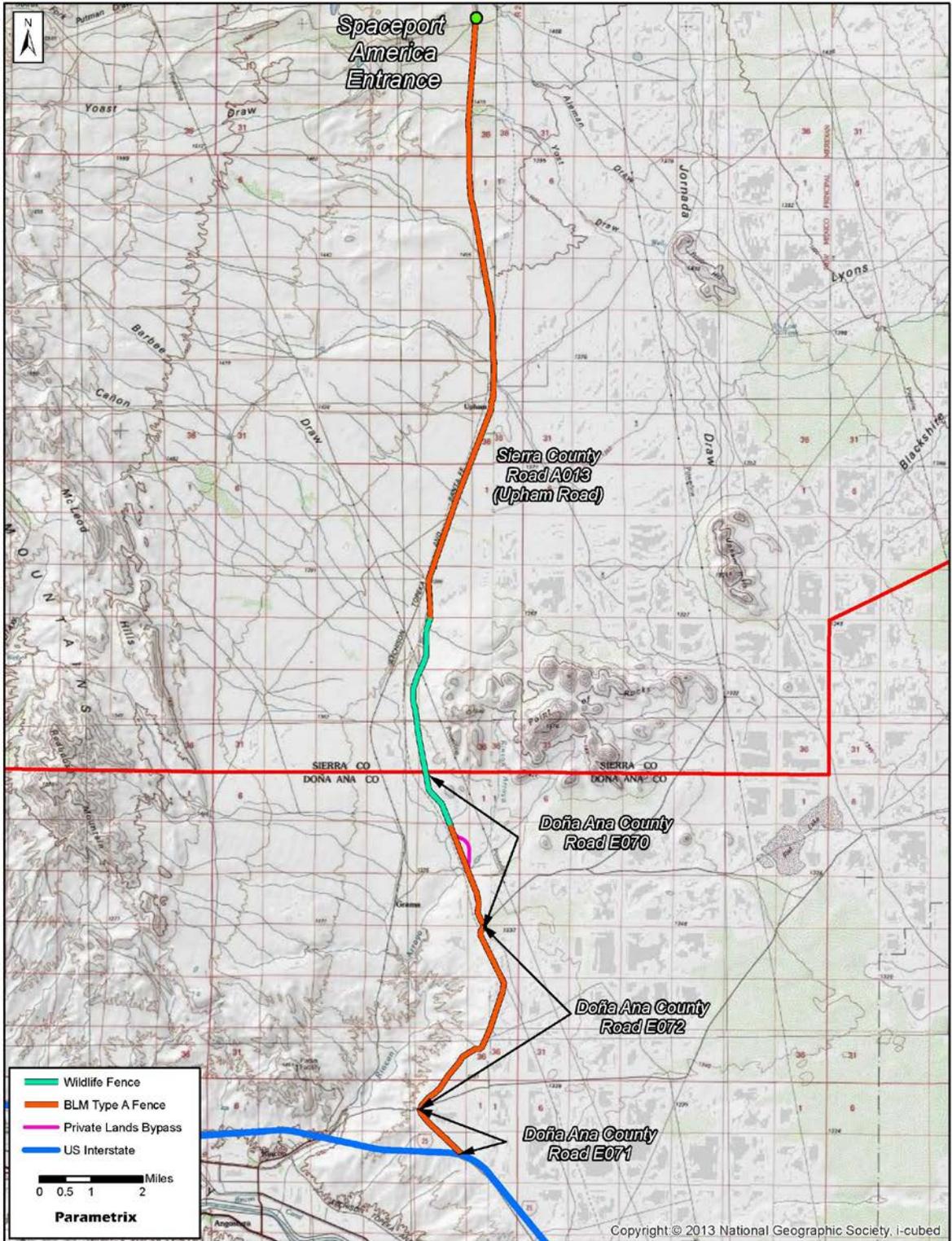


Figure 7. Locations of Proposed Fencing

### **2.3 No Action Alternative**

This alternative would be the rejection by BLM of the request from the Applicants for ROW Grants. Without the ROW Grants, none of the action alternatives would be implemented. The existing location and condition of the roadway from Exit 32 on I-25 to CR A-039 would remain unchanged. Maintenance activities, such as blading when necessary, would continue.

### **2.4 Alternatives Considered, but Eliminated from Detailed Analysis**

Early in the design phase, stakeholders suggested using an old Jeep trail from Hatch, New Mexico, over the mountains to CR A-013. Doña Ana County engineers determined that it would cost approximately two to three times as much to develop as the current proposed action alternatives, making it infeasible. For this reason, this alternative was eliminated from further detailed analysis.

### 3 AFFECTED ENVIRONMENT

#### 3.1 Geology and Topography

The project area is located in the Chihuahuan Basins and Playas ecoregion, which is characterized by internally drained basins, alluvial fans, and river valleys at elevations below 4,500 ft. Basins were formed during Tertiary Basin and Range tectonic activity, and are filled with Quaternary and late Tertiary alluvium from surrounding mountains (Griffith et al. 2006). The proposed project would be implemented in the Jornada del Muerto, a broad valley measuring approximately 60 miles long by 18 miles wide.

The topography of the region includes fault block mountains and plateaus, inactive volcanoes and lava flows, and wide, rolling basins, of which the Jornada del Muerto is one (FAA 2008).

#### 3.2 Soil

Soil found in the study area is typically alkaline or saline in the orders Aridisols and Entisols (Griffith et al. 2006), and ranges from low to high rill and sheet erosion potential. Characteristics for the specific soil series found in the project area are outlined in Table 5 (Zia 2012 and NRCS 2012).

**Table 5. Soil Types in the Project Area**

Soil Name	County	Percent Slope	Drainage Class	Flooding/ ponding	Erodibility
<b>Berino-Bucklebar association</b>	Doña Ana	Berino: 1 to 5	Well-drained	No	Low to moderate
		Bucklebar: 1 to 5			
		Doña Ana: 1 to 5			
<b>Berino-Doña Ana association</b>	Doña Ana	Berino: 1 to 5	Well-drained	No	Low to moderate
		Doña Ana: 1 to 5			
<b>Bluepoint-Caliza-Yturbide complex</b>	Doña Ana	Bluepoint: 5 to 15	Bluepoint: somewhat excessively drained	No	Low
		Caliza: 15 to 40	Caliza: well-drained		
		Yturbide: 1 to 8	Yturbide: excessively drained		
<b>Cave-Harrisburg association</b>	Doña Ana	Cave: 1 to 5	Well-drained	No	Moderate
		Harrisburg: 1 to 5			
<b>Mimbres silty clay loam</b>	Doña Ana	0 to 3	Well-drained	Occasionally flooded	Moderate
<b>Rock outcrop-Torriorthents association</b>	Doña Ana	15 to 50	Rock outcrop: not described	No	Not described*
			Torriorthents: Well-drained		
<b>Simona-Harrisburg association</b>	Doña Ana	Simona: 1 to 5	Simona: well-drained	No	Low to moderate
		Harrisburg: 1 to 10	Harrisburg: well-drained		

Soil Name	County	Percent Slope	Drainage Class	Flooding/ ponding	Erodibility
<b>Delnorte-Cave-Tencee complex, moderately rolling</b>	Sierra	Delnorte: 3 to 15 Cave: 1 to 9 Tencee: 1 to 9	Well-drained	No	Moderate
<b>Doña Ana-Tres Hermanos association, gently sloping</b>	Sierra	Doña Ana: 1 to 9 Tres Hermanos: 1 to 9	Well-drained	No	High
<b>Largo-Sotim association, gently sloping</b>	Sierra	Largo: 1 to 5 Sotim: 1 to 5	Well-drained	No	Moderate
<b>Largo very fine sandy loam, gently sloping</b>	Sierra	1 to 5	Well-drained	Occasionally flooded	High
<b>Marconi silty clay loam</b>	Sierra	0 to 3	Well-drained	Frequently flooded	Moderate
<b>Nickel-Chamberino association, gently sloping</b>	Sierra	Nickel: 1 to 7 Chamberino: 1 to 5	Well-drained	No	Low
<b>Nickel-Tencee-Delnorte complex, moderately sloping</b>	Sierra	Nickel: 1 to 15 Tencee: 1 to 15 Delnorte: 1 to 15	Well-drained	No	Low
<b>Stellar-Continental association, gently sloping</b>	Sierra	Stellar: 1 to 9 Continental: 1 to 9	Well-drained	No	Moderate

\* NRCS Web Soil Survey does not provide these data.

The Berino-Doña Ana association and Mimbres silty clay loam are classified as farmland of statewide importance.

### 3.3 Minerals

The primary mining activity in the Jornada del Muerto consists of pits and quarries for aggregate materials. Aggregate material is currently mined in the Jornada del Muerto in south-central Sierra County. Oil and natural gas drilling is mostly limited to the southeastern and northwestern parts of the state, far outside the project area. New Mexico's active coal mines are exclusively in the northwestern part of the state (New Mexico Bureau of Geology and Mineral Resources [NMBGMR] 2012).

Mining claims are known to exist in Doña Ana and Sierra Counties, including many small claims in the Caballo Mountains; however, the BLM is not aware of any mining claims in the proposed project area (M. Smith, personal communication 2012).

### 3.4 Realty and Utilities

The project area described in the proposed action and preferred alternative overlaps with six existing ROWs in the project area, as listed in Table 6 below. Any access roads that lead to the fiber optic, utility, and railroad ROWs would be gated with a 16-ft steel gate (see Appendix A *Stipulations*).

**Table 6. Authorized Rights-of-Way in Project Area**

<b>BLM Serial Number</b>	<b>Holder Name</b>	<b>Rights-of-Way</b>
NMNM 125774	El Paso Electric Company	Power Transmission Line
NMNM 064746	El Paso Electric Company	Power Transmission Line
NMNM 002419	El Paso Electric Company	Power Transmission Line
NMLC 0058001	Tri-State G&T Association	Transmission Line
NMNM 125697	Qwest C/O CenturyLink	Fiber Optic Transmission Cable
NMNM 0315710	NM State Hwy Dept.	Non-energy Facility
NMNM 0359307	NM State Hwy Dept.	Non-energy Facility
NMNM 0370830	NM State Hwy Dept.	Non-energy Facility

Source: BLM, Las Cruces District Office, Realty

The CenturyLink fiber optic line is located adjacent to the county roads of the proposed project, with the exception of Doña Ana CR E-071 at the southern end. CenturyLink maintains an existing BLM authorization for a 10-ft easement for the conduit/cable. In some locations the cable crosses from one side of the road to the other. The cable is buried between 1 and 4 ft below the current ground surface. The BNSF Railway's El Paso Subdivision main track is located west of the project area and does not overlap the proposed project area. For the northern 11.5 miles, the tracks run parallel and adjacent to the road alignment to the west. Both CenturyLink and the BNSF utilize the existing county roads to access their ROWs.

### 3.5 Livestock Grazing

There are six active grazing allotments in the project area: Rincon, Thorn Well, Flat Lake, Lewis Cain Ranch, McClenan Ranch, and Bar Cross Ranch. The BLM authorizes livestock grazing through 10-year term livestock grazing permits. While the allotments are administered by the BLM, they also include New Mexico State Trust land and private land (Figure 8). However, not all lands within the allotments are owned or controlled by the grazing permittees. Table 7 lists the allotments (from south to north) with allotment number and total size.

**Table 7. BLM Livestock Grazing Allotments**

<b>Allotment Name</b>	<b>Allotment No.</b>	<b>Size (acres)</b>	<b>Number of Permitted Livestock</b>
Rincon	03067	14,813.07	89 cattle
Thorn Well	03063	14,652.87	95 cattle
Flat Lake	16053	96,566.58	633 cattle, 10 horses
Lewis Cain Ranch	16022	64,136.33	703 cattle, 16 horses
McClenan Ranch	16056	28,781.02	294 cattle
Bar Cross Ranch	06020	54,743.04	730 cattle, 10 horses

Source: BLM, Las Cruces District Office, GIS Data 2012

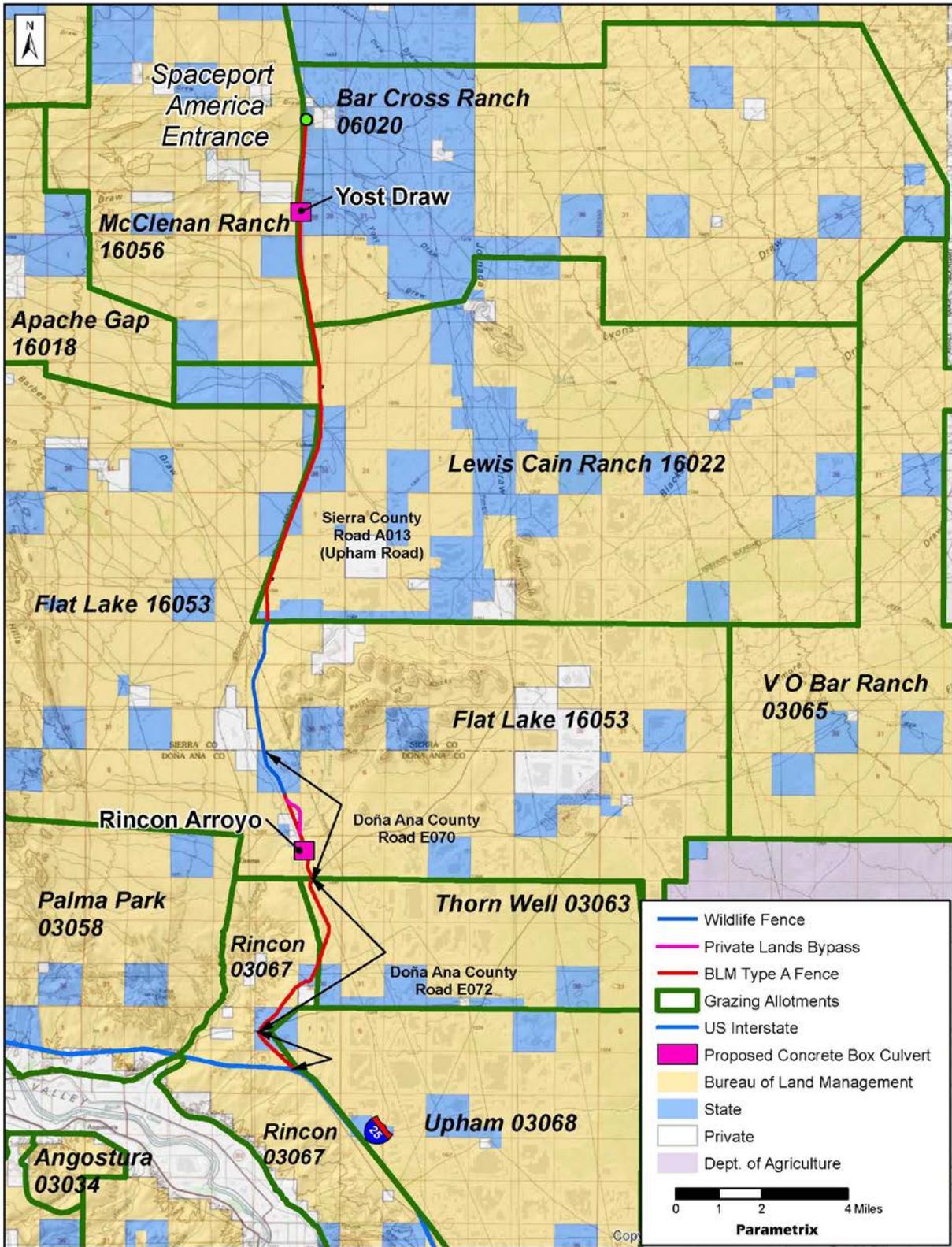


Figure 8. Project Area Map Showing Grazing Allotments

### 3.6 Visual Resources

Because the project is primarily located within lands managed by the BLM, a visual resources assessment was developed (LSD 2014a) based on the BLM's Visual Resource Management (VRM) system (BLM 2010). The BLM developed the VRM system to manage scenic resources and reduce the impact of development on the scenery.

The characteristic landscape in the project area is typified by flat to rolling landforms with moderately dense desert scrub vegetation 3 to 5 ft in height, and dispersed built forms such as occasional ranches, roads, transmission lines, radio towers, signs, fences, railroad tracks, and the Spaceport America facilities. The Point of Rocks landform is an exception to the relatively flat topography, rising up in rounded conical and angular mountain landforms near the midpoint of the project area. Existing vegetation is dominated by mesquite and creosote bush. The existing roadway alignment is dominated by expansive panoramic views to distant mountain ranges. From the project area, views of the surrounding landscape appear as mostly undeveloped because the low, relatively dense vegetation effectively limits views of adjacent road alignments in the area.

The VRM system begins with a visual resource inventory (VRI), which assigns VRI classes to BLM lands based on scenic quality, visual sensitivity to potential changes in the landscape, and visual distance zone offsets from key viewing platforms. Scenic quality as defined by the BLM is the measure of the visual appeal of a tract of land. In the VRI process, public land is given an A, B, or C rating, based on the evaluation of the following seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. Class A scenery typically has a higher degree of landscape relief, diversity of water, and vegetation, which harmoniously combine and result in a high level of aesthetic appeal. Class B scenery has less variety in the elements that comprise the landscape, but still has some diversity and visual interest. Class C scenery typically does not have much diversity in terms of landscape features, and rates the lowest from an aesthetic perspective. Sensitivity levels are a measure of public concern for the maintenance of scenic quality associated with a given tract of BLM land. Public lands are assigned high, medium, or low sensitivity by analyzing the various indicators of public concern, including type of user, amount of use, public interest, adjacent land uses, and special areas, among other factors. Per BLM guidance, landscapes are subdivided into three distance zones based on relative visibility from Key Observation Points (KOPs). The three distance zones are foreground-middle ground (0 to 5 miles), background (15 miles), and seldom seen (greater than 15 miles). The three factors, scenic quality, sensitivity levels, and distance zones, are combined into four VRI Classes (I to IV) to represent the relative visual value of an area with VRI Class I being the most valued and Class IV having the lesser visual value. VRI classes provide a baseline for existing visual conditions.

The 2010 Las Cruces Field Office VRI identified the project area as being located within two scenic quality rating units (SQRU)—“San Andres Bajada” and “Point of Rocks.” Both of these SQRUs were classified as having Class B scenic quality. The majority of the project vicinity was designated as VRI Class III, with the exception of the Point of Rocks and Rincon Arroyo areas, which include VRI Class II designations.

Four VRM classes (I, II, III, and IV) are established for BLM-administered lands through the RMP process. Under the *El Camino Real de Tierra Adentro National Historic Trails – Comprehensive Management Plan* (NPS, BLM 2004), the entire project area along the Southern Road has been designated as VRM Class II due to the presence of El Camino Real near and within the project area. The objective of VRM Class II areas is to retain the existing character of the landscape. The level of change to the characteristic landscape in these areas should be low, and management activities may be seen, but should not attract attention of the casual observer.

### 3.7 Cultural Resources

Cultural resources is a broad term, encompassing a wide variety of objects, features, and locations of cultural significance—including archaeological sites and isolated artifacts; historic buildings and structures (including

linear structures such as trails, roads, and irrigation ditches); and sacred sites and traditional cultural properties (TCPs). Section 106 of the National Historic Preservation Act (NHPA) requires the BLM, as the lead federal agency for this project, to determine an area of potential effects (APE) in consultation with other agencies and consulting parties and identify and assess effects to historic properties—those cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP)—within the APE. To comply with Section 106, as well as other applicable state and federal regulations, a systematic pedestrian cultural resources survey of the project area was conducted. The area surveyed included the requested temporary ROW and staging areas plus the alternative route and three 300-ft-wide areas located at the proposed crossings of Rincon Arroyo (one on the existing route and one on the alternative route) and at Yost Draw. It also included a 50-foot-wide buffer around the requested temporary ROW. The purpose of the survey was to identify, record, evaluate, and assess potential effects to, all cultural resources within the project area including historic districts, archaeological sites, and isolated manifestations (IMs)—as well as historic buildings, structures, and objects at least 50 years old.

The results of the pedestrian survey are documented in two reports prepared by the Museum of New Mexico's Office of Archaeological Studies (OAS) (2013a, 2013b). The first OAS report (2013a) documents the survey of the project area defined by the proposed action. The second OAS report (2013b) documents the survey of the alternative route at Rincon Arroyo. Detailed information regarding the methods and results of the survey and management recommendations for documented resources are presented in these two documents.

In summary, the survey and resource recording work was conducted intermittently between September 26, 2011 and September 20, 2013. The OAS crew surveyed the project area as defined by the proposed action and preferred alternative, shown in Figures 2 and 6. In addition to the pedestrian archaeological survey, a buffer area 50 ft in width surrounding the entire survey area was also examined by OAS crews for standing elements of the historic built environment.

As discussed in the proposed action, after full development of the engineering plans for the project were completed, it was discovered that in certain parts of the project, features such as cut-back slopes and water turn-outs extended into the temporary ROW, which would not be allowed. In some of these locations the engineering could not be modified to keep all ground-disturbing activities within the 60-ft ROW. Thus, in six portions of the project area, the 60-ft ROW and associated temporary ROW would be widened to accommodate the construction needs of the project (see Table 2 and Figure 4). Because these additional areas have not yet undergone archaeological survey, a commitment is included in the project stipulations (see Appendix A) to conduct surveys of these areas, plus a buffer of an additional 50 ft, prior to the BLM allowing construction activities in those areas.

### Cultural History of the Project Area

Although the cultural history of the project area has great time depth, the dominant cultural feature recorded is the Spanish Colonial-period El Camino Real de Tierra Adentro (the Royal Road of the Interior), which linked the capital of New Spain (Mexico City) with San Juan Pueblo, the first Spanish Colonial capital of what would become New Mexico. This trail is an archaeological site, a multiple-property listing in the NRHP, and a designated National Historic Trail and is discussed in greater detail further below.

Human occupation of the Jornada del Muerto region extends 12,000 years into the past, when Paleoindian hunters wandered a lush grassland/woodland environment in the basin, subsisting on now-extinct megafauna of the late Pleistocene such as mammoth. Paleoindian remains typically consist of isolated projectile points, or hearths and small artifact scatters—as a result of their mobile lifestyle, low population density, and the great time depth and extensive disturbance that has occurred since deposition. Paleoindian sites have been recorded in the region surrounding the Southern Road project area, including on the Spaceport America facility.

The environmental changes that occurred at the end of the Pleistocene lead to the extinction of some animal species, changes in biotic distributions, and a shift in human adaptive strategies. The Archaic period (6000 B.C. to A.D. 200) coincides with the advent of the Holocene, when the cooler, wetter Pleistocene climatic regime was replaced with essentially modern environmental conditions. The Archaic adaptation has been interpreted as a response to these climatic changes, and is characterized by a more generalized subsistence strategy than that of the Paleoindian period. There was a greater reliance on small-bodied game and wild plant food gathering and processing. Mobility was more restricted in extent and was cyclical, and sites were more often reoccupied and reused, likely on a seasonal basis. The Archaic is further characterized by increased tool form diversity with an emphasis on grinding implements, used for processing plant foods. Sites dating to the Archaic period are more common than those of the preceding Paleoindian period, and were identified within the survey area for the Southern Road project.

The Formative period (A.D. 200 to 1400) refers to the beginnings of agricultural settlements and is generally characterized by an intensification of farming practices and a shift in settlement to more sedentary or semi-sedentary villages. In the region of the lowland deserts of southern New Mexico, settlement patterns shifted from small, dispersed residential sites on basin floors, to larger, more aggregated settlements on the alluvial fans at the edges of the regional basins. It was during this transition to formative adaptations that brownware ceramics were introduced into the region. Formative period sites in south-central New Mexico are attributed to the Jornada Mogollon culture, which is poorly represented in the project vicinity. Just seven of the sites identified within the survey area for the Southern Road project date to this period or have components dating to the period. None of them represent an aggregated settlement, however. All six are primarily scatters of stone tools and debitage, with one or a few associated potsherds and the occasional hearth or roasting pit feature—suggesting that Formative period use of the area surveyed was limited to temporary campsites and other short-term uses of the landscape.

Some sites in the project area lack artifacts that are diagnostic of particular time periods and may be of Archaic or Formative period affiliation. Some of these sites could also date to the Protohistoric/European Contact period. Groups such as the Mansos were documented by the Spanish explorers of the 1500s, who were the first Europeans in southern New Mexico. Apache tribes entered the greater Southwest by about A.D. 1500 and were encountered by expeditions such as those led in the late sixteenth century by Francisco Sanchez Chamuscado, Antonio de Espejo, and Francisco Leyva de Bonilla.

The first permanent Spanish settlement of New Mexico occurred in 1598, when the wealthy nobleman Juan de Oñate was appointed governor and the first colonial capital—in the area of the present-day Pueblo of Ohkay Owingeh (formerly San Juan Pueblo)—was established. Beginning in the late sixteenth century, mission caravans administered by the Franciscans to bring goods from the south to the new colony regularly traveled through southern New Mexico between the areas of present-day Socorro and El Paso. Known as El Camino Real de Tierra Adentro (the Royal Road of the Interior), the caravan route linked the capital of New Spain (Mexico City) with the colonial capital at San Juan Pueblo.

This 1,604-mile-long caravan route, which followed trails used for millennia by Native Americans, played a critical role in the settlement and commerce of the new colony and was part of a network of royal roads throughout New Spain. Its importance was not diminished with Mexican independence and it continued to be used heavily by settlers, merchants, missionaries, and soldiers for centuries—not declining significantly in use until the completion of the AT&SF Railroad line between El Paso and Santa Fe in 1882.

El Camino Real de Tierra Adentro was designated a National Historic Trail in 2000 and 11 segments of the trail within New Mexico are listed in the NRHP as part of a multiple property listing. Several of these segments are located within the Jornada del Muerto; those in the vicinity of the Southern Road project area include the Jornada Lake, Yost Draw, Point of Rocks, and Rincon Arroyo segments. The trail variously parallels, crosses, as well as underlies, the proposed route of the Southern Road. Segments of this braided, linear resource also lie within the broader visual resources study area for the project.

Other important resources dating to the Historic period lie along the Southern Road project route, including sites related to El Camino Real and the AT&SF Railroad. With the coming of the railroad in 1881, sidings were established within the Jornada del Muerto at Engle, Aleman, Upham, and Alivio. Settlement in the Aleman area, located adjacent to the Spaceport America facility, resulted from its establishment as the first permanent water source along the Camino Real, with the digging of a well in 1867 for the ranch named “El Aleman.” Ranching flourished as more wells were dug in the basin. The stations at Engle, located to the north of the project area, and at Upham and Alivio, recorded as historic archaeological sites in the Southern Road inventory survey, served as shipping points for cattle bound for the beef markets of the Midwest. Cattle ranching dominated the economy of south-central New Mexico by the late nineteenth and early twentieth century, and much of the region has been cattle rangeland since the 1880s.

The next major development in the region came with the construction of Elephant Butte Reservoir. The dam was built from 1912 to 1916, with additional construction on the irrigation system extending through at least 1942. Settlements in the area experienced a short-lived period of rapid growth and prosperity as a result of the construction of the Elephant Butte dam. The majority of settlements of the Jornada del Muerto followed a similar pattern of fitful growth that was finally stunted by the creation of White Sands Proving Grounds (now known as White Sands Missile Range) in 1945. Today, the region surrounding the project area remains very remote and sparsely populated, with an economy dominated by small-scale ranching, the missile range, the railroad, and recreation related to Elephant Butte Reservoir.

### Cultural Resources Inventory Results

#### **Archaeological Sites**

A total of 39 archaeological sites and 174 IMs were documented by OAS in their reports (2013a, 2013b). The Museum of New Mexico-Laboratory of Anthropology (LA) Site Record numbers assigned to these sites, and detailed descriptions and interpretations of each of these resources, are provided in the OAS reports (2013a, 2013b). The prehistoric sites recorded range from very small lithic artifact scatters to very large lithic procurement areas, and also include numerous fire-cracked rock features—as well as mixed scatters with lithic, ceramic, and ground-stone artifacts (OAS 2012a:175). Late nineteenth- and early twentieth-century ranching, mining, and/or railroad-related remains were recorded on 17 sites, including at two historical settlement sites in the project area—the former AT&SF Railroad sidings of Upham and Alivio. In addition, five sites (LA 80077, LA 80078, LA 111000, LA 1743436, LA 173392, and LA 173436) were documented that include segments of El Camino Real.

Of the 39 sites documented, seven are recommended by OAS as ineligible for inclusion in the NRHP as they are unlikely to provide further information important to the prehistory or history of New Mexico; therefore no protection or treatment of these sites is warranted. For this same reason, the IMs were recommended not eligible for inclusion in the NRHP, and requiring no protection or treatment.

Of the remaining 32 sites, one is recommended to be of undetermined eligibility to the NRHP and 31 are recommended eligible—including all five sites that include segments of El Camino Real. The BLM and New Mexico SHPO have concurred with the recommendations of eligibility provided by OAS (see correspondence in Appendix E *Section 106 Consultation*).

#### **El Camino Real de Tierra Adentro National Historic Trail**

In addition to its status as an NRHP multiple-property listing and as a part of five archaeological sites that contain segments of this historic route, El Camino Real de Tierra Adentro is also a designated National Historic Trail that was added to the National Trails System by Congress in October 2000. The designated historic trail is managed jointly by BLM and NPS, under a Comprehensive Management plan (NPS and BLM 2004). Thus, impacts to the trail from the proposed action are considered further below, in the context of effects to individual segments or sites, as well as to the trail as a whole.

## **Tribal Resources**

As part of the evaluation of potential impacts to cultural resources, BLM conducted government-to-government consultation with tribes with possible interests in the project area. None of the respondents indicated concerns about specific, known native resources in the project area; therefore, there are no known traditional cultural properties (TCPs) or Indian Trust Assets (ITAs) in the project area.

## **Visual Resources**

In addition to the broader visual resource inventory and analysis of the project area and surrounding viewshed (LSD 2014a), Logan Simpson Design prepared an assessment of impacts to the visual landscape with respect to historic properties (LSD 2014b). This study considered potential visual effects to cultural resources that have been determined eligible, or recommended as eligible, for inclusion in the National Register of Historic Places (NRHP), and are further considered significant visual resources. The visual resources fieldwork was conducted on July 18 and 19, 2012. Details of the visual study are presented in LSD's report (2014a) and in Section 4.5 *Visual Resources*. The assessment of impacts to visual resources that are also considered cultural resources is summarized in Section 4.6 *Cultural Resources*.

For the purpose of inventorying cultural resources that could be subject to potential visual effects from the project, a two-mile corridor, measured as one-mile on each side of the project centerline, was defined as the study area. One hundred and twenty-one known archaeological sites are located within the study area. Of the 121 identified sites, 34 are classified as prehistoric, 39 are classified as historic, and 21 are classified as multi-component. No data is available to provide a classification of the remaining 27 sites.

Because the database for the visual evaluation contains few sites with a recorded determination of eligibility, BLM-Las Cruces cultural staff members determined the potential eligibility of sites based on the available site type and feature information. This analysis resulted in a determination that 34 of the 121 sites were eligible under a combination of Criteria A, B, C, and D. Resources eligible under Criterion A are those that are associated with events that have made a significant contribution to the broad patterns of our history; Criterion B applies to those that are associated with the lives of significant persons in our past; Criterion C applies to those that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and Criterion D applies to those that have yielded or may be likely to yield, information important in history or prehistory (NPS 1990). Of the 121 sites, 34 sites were eligible under a combination of Criteria A, B, C, and D, 23 were determined to be eligible under Criterion D only, and the remaining 64 sites were unevaluated, not eligible, or eligible with no criteria designation.

The National Trails System Act (NTSA) was established in part "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." One of the focus areas of the NTSA is "scenic areas and along historic travel routes of the Nation which are often more remotely located", which aligns with the general location of the portion of El Camino Real de Tierra Adentro NHT located near the project. As noted in the NTSA, "National historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment" (US Code 2009).

Although several of the sites mentioned above represent portions of El Camino Real de Tierra Adentro NHT, the trail as a whole has also been determined eligible under Criteria A, B, and D. Approximately 37.8 miles of the trail alignment are located within a five-mile radius of the project. As shown in Figure 9, the trail crosses into the road and then is collocated with the existing road alignment for approximately 0.9 miles, beginning approximately 1.2 miles south of the project's crossing with Rincon Arroyo and extending southward. The trail also crosses the road alignment in one other location farther to the north, near the Upham town site (see Figure 9).

### 3.8 Vegetation

The project area is located within the Chihuahuan Basins and Playas ecoregion (Griffith et al. 2006). Vegetation in this region has been characterized as Plains-Mesa Scrub and Desert Grasslands (Dick- Peddie 1993). The area and its immediate surroundings surveyed by Zia have been disturbed due to construction and maintenance of the roadway and by grazing activities; however, vegetation composition remains consistent with Griffith et al. and Dick-Peddie's habitat descriptions (Zia 2012). Dominant vegetation includes honey mesquite (*Prosopis glandulosa*), creosote bush (*Larrea tridentata*), and silverleaf nightshade (*Solanum elaeagnifolium*). The areas that were not located along the existing road had fewer invasive roadside species.

### 3.9 Noxious Weeds

Saltcedar (*Tamarix ramosissima*), a New Mexico Class C noxious weed, was identified in Yost Draw during the biological survey. This was the only location where it was found in the project area. African rue (*Peganum harmala*) is a NM Class B noxious weed that has been identified at two locations on the Southern Road by BLM staff.

### 3.10 Wildlife

The dominant habitat type in the project area is mesquite-creosote shrublands. Wildlife species identified during the biological surveys consisted of animals common to southwestern New Mexico (Zia 2011, Parametrix 2012). Mammalian and reptilian species observed included black-tailed jackrabbit (*Lepus californicus*) and western whiptail (*Aspidoscelis tigris*). Indicators of wildlife usage included bird nests, small mammal burrows, middens, tracks, and scat.

The existing road passes through a noted large game corridor, which includes bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*).

### 3.11 Special Status Species and Migratory Birds

Lists of special status species in Doña Ana and Sierra Counties, compiled by the New Mexico Department of Game and Fish (NMDGF), US Fish and Wildlife Service (USFWS), New Mexico Rare Plant Technical Council (NMRPTC), and BLM, were consulted prior to the field survey, as was the USFWS list of migratory bird species protected under the Migratory Bird Treaty Act (MBTA). The survey area was subsequently evaluated for potential special status species habitat. No LCDO BLM sensitive species were observed in the project area during the biological survey.

Sierra County contains designated critical habitat for Todsens' pennyroyal (*Hedeoma todsenii*) and Mexican spotted owl (*Strix occidentalis lucida*); however, the closest critical habitat for these species is located approximately 21 miles northeast and 40 miles west of the project area, respectively. Potential habitat for the Mexican spotted owl in Doña Ana County exists only in the Organ Mountains, approximately 40 miles to the southeast.

The Migratory Bird Treaty Act (MBTA) protects over 1500 migratory bird species (see 50 C.F.R. 10.13, List of Migratory Birds) in the United States and its territories. This act and Executive Order 13186 provide protection to migratory bird species, which includes protection of their nests and eggs. Migratory birds, such as lark bunting (*Calamospiza melanocorys*), black-throated sparrow (*Amphispiza bilineata*), Brewer's sparrow (*Spizella breweri*) and chipping sparrow (*Spizella passerina*), and several nests were observed during the biological surveys. None of the nests were active at the time of the surveys.

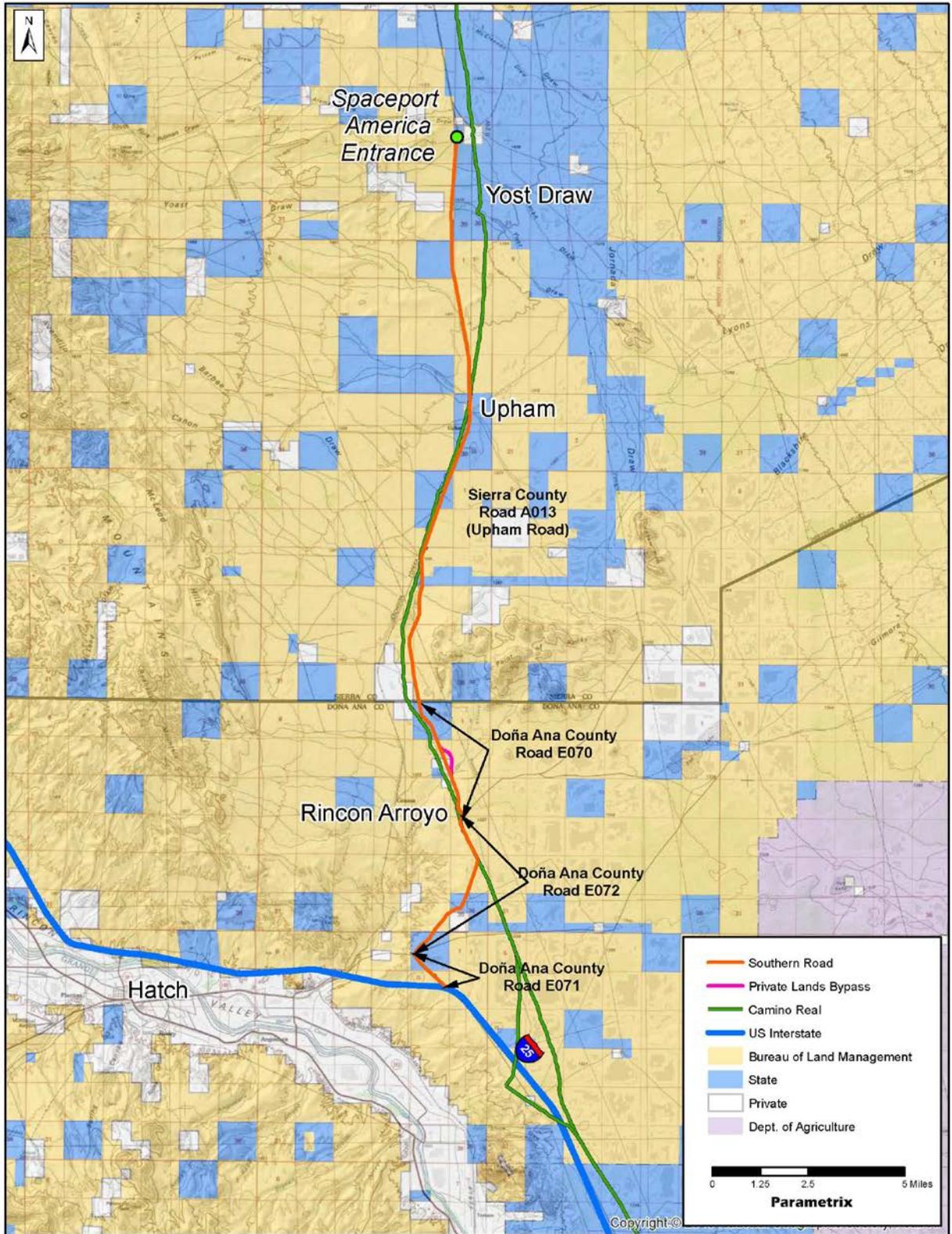


Figure 9. Project Area Map Showing El Camino Real and the Southern Road

Executive Order 13186 directs federal agencies to take actions to implement the MBTA and contribute to the conservation and management of migratory birds and their habitats. The BLM and USFWS in 2010 entered into a Memorandum of Understanding (MOU) to implement the Order. In the MOU, the BLM agreed to evaluate at the project level, the effects of proposed actions on migratory birds focusing on species of concern, priority habitats, and key risk factors. If measurable negative effects to migratory bird populations are identified, BLM is to implement measures to reduce take.

The USFWS identified bird species of concern by Bird Conservation Region (BCR) in Birds of Conservation Concern (BCC) (USFWS 2008). The project site is in the Chihuahuan Desert BCR, for which a total of 31 bird species of concern are listed. As categorized by Rustay and Norris (New Mexico Partners in Flight 2007) in the New Mexico Bird Conservation Plan, habitat in the project area is primarily Chihuahuan Desert Shrub.

A comparison of the current U.S. Fish and Wildlife Service Region 2 species list for Doña Ana and Sierra Counties (<https://ecos.fws.gov/ipac/>) and the current BLM New Mexico sensitive species list, with species habitat requirements, distribution information, and habitats in the area of potential impact, indicates there is potential for 29 SSS to occur in the project area. Habitat in the proposed project area and species distribution information indicate there is reasonable potential for at least 23 bird species of conservation concern to occur at the sites at least part of the year (Table 8). Discussion of each SSS/BCC follows Table 8.

**Table 8. Special Status Species and Birds of Conservation Concern with Potential to Occur in the Proposed Project Area**

<b>Species</b>	<b>Status</b>
<b>Mammals</b>	
Townsend’s big-eared bat	BLMS
Black-tailed prairie dog	BLMS
White-sided jackrabbit	BLMS
<b>Birds</b>	
Aplomado falcon	F Experimental, non-essential
Baird’s sparrow	BLMS, BCC
Bald eagle*	BLMS, BCC
Bell’s vireo	BCC
Bendire’s thrasher	BLMS, BCC
Black-chinned sparrow	BCC
Cassin’s sparrow	BCC
Chestnut-collared longspur	BCC
Elf owl	BCC

<b>Species</b>	<b>Status</b>
Ferruginous hawk	BCC
Golden eagle	BCC
Lark bunting	BCC
Loggerhead shrike	BCC
Long-billed curlew*	BCC
McCown's longspur	BCC
Painted bunting	BCC
Peregrine falcon*	BCC
Snowy plover*	BCC
Sprague's pipit	BLMS, BCC
Virginia's warbler	BCC
Yellow warbler*	BCC
Western burrowing owl	BLMS
<b>Plants</b>	
Sand pricklypear	BLMS
Night-blooming cereus	BLMS

F = Federal; BLMS = Bureau of Land Management New Mexico Sensitive Species; BCC = Birds of Conservation Concern

\*Migration potential occurrence only.

### **Townsend's big-eared bat**

This species has the potential to occur in the project area, as it has been detected on White Sands Missile Range and San Andres National Wildlife Refuge east of the project area. Day roosts include caves or mine tunnels, while the species may be found at night in abandoned buildings (BISON-M 2015a). Mine adits and caves at Point of Rocks could provide habitat in and adjacent to the project area.

### **Black-tailed prairie dog**

Southwestern New Mexico is the extreme southwestern limit of the range of this species (BISON-M 201b). The New Mexico Game and Fish Department classifies black-tailed prairie dogs as extirpated from southwestern New Mexico (BISON-M 2015b). It is unlikely any black-tailed prairie dogs will be in the project area.

### **White-sided jackrabbit**

Although grasslands occur within the project area, and this species historically inhabited the Playas Valley, white-sided jackrabbits have only been documented in the Animas Valley in Hidalgo County, New Mexico (BISON-M 2015), outside of the project area.

### **Aplomado falcon**

The Aplomado falcon may utilize grasslands in or near the proposed project area. Twenty-three captive bred Aplomado falcons were released in 2007 on White Sands Missile Range, east of the project area, and at Engle,

approximately 13 miles north of the project area. Aplomado falcons may potentially utilize the woody vegetation within the project area for roost sites (NMACP 2007; Cartron 2010).

#### **Baird's sparrow**

In southern New Mexico, Baird's sparrows prefer areas with dense grass cover. Baird's sparrows typically arrive in the Southwest from September to mid-October and remain through early April (NMACP 2007). This species could utilize dense grass cover in the project area during migration, and has been documented on White Sands Missile Range and the Jornada Experimental Range (NMOS 2015).

#### **Bald eagle**

This species may occur in or near the proposed project area, and has been documented occasionally near Lake Lucero at the southern end of White Sands Missile Range; however, Lake Lucero is not permanent and it has no food source for eagles. A transient bald eagle may travel through the project area during winter, and migrate or utilize habitat in the San Andres Mountains, but is unlikely to remain in the project area.

#### **Bell's vireo**

In southern New Mexico habitats, this species utilizes dense vegetation of scrubby woodlands and mesquite (Brown 2010, NMACP 2007). Bell's vireos have been documented on White Sands Missile Range (Kamees and Burkett 1996) and San Andres Wildlife Refuge (NMOS 2015), and could utilize the project area as a travel corridor.

#### **Bendire's thrasher**

Bendire's thrashers utilize areas with cholla species, creosote bush, and yuccas and degraded grassland vegetation (NMACP 2007). It breeds in shrub-invaded grassland areas, and shrub-dominated areas with sparse grass cover and various shrub species. Bendire's thrashers could utilize the project area as a travel corridor.

#### **Black-chinned sparrow**

The species could occur in the project area. Black-chinned sparrows inhabit brushy or grassy slopes of the southwestern United States and northern Mexico. Typical habitat configuration consists of moderately dense shrubs from 3 to 7 ft tall mixed with rocky outcroppings, a large grass component, and scattered large shrubs or trees (NMACP 2007).

#### **Cassin's sparrow**

This species has been documented on White Sands Missile Range and San Andres Wildlife Refuge and utilizes short-grass and mixed-grass prairies. Cassin's sparrows winter throughout southern New Mexico and could winter in the project area in the scrubland habitat (USFWS 2006).

#### **Chestnut-collared longspur**

This species has been documented on the grasslands near Engle, on the Armendaris Ranch grasslands, on White Sands Missile Range, and just east of the Upham Road in the project area (ebird 2015).

#### **Elf owl**

Although elf owls will utilize Chihuahuan Desert scrub habitat, cottonwoods and sycamores are important trees for the elf owl. It is unlikely this species has the potential to utilize the project area (Cartron 2010).

#### **Ferruginous hawk**

Nonbreeding ferruginous hawks have been documented throughout southern New Mexico, primarily in grasslands and shrub-steppes, generally associated with prairie dog towns. This species could utilize the open areas within the project area as a travel corridor during migration (Cartron 2010).

**Golden eagle**

Although cliffs are the most common nesting substrate for golden eagles, trees or man-made structures are also used. Golden eagles typically forage in open grassland or shrubland habitat, and could use the Chihuahuan Desert shrubland habitat within the project area for travel corridors and foraging sites (Cartron, 2010; NMACP 2015). Golden eagles have been documented on White Sands Missile Range.

**Lark bunting**

Non-breeding and migrant lark buntings have been documented on White Sands Missile Range, on San Andres Wildlife Refuge (NMOS 2015), at Engle, Upham, and on the Jornada Experimental Range (NMOS 2015) in late summer and in the fall. This species potentially occur in the project area, utilizing shrubs, which are important to this species for protective cover (BISON-M 2015), and as travel corridors.

**Loggerhead shrike**

Loggerhead shrikes occur in the proposed project area and were observed during field surveys. They occur in grassland and shrub-invaded habitats with an open aspect.

**Long-billed curlew**

This species has been documented in grasslands in Doña Ana County on the Jornada Experimental Range, located approximately 5 miles west of the project area, and on San Andres National Wildlife Refuge. The species utilizes grassland habitat and rangeland, and prefers open areas. This species could use the project area as a travel corridor during migration (BISON-M 2015).

**McCown's longspur**

This species is documented as a migrant and utilizes croplands and short-grass plains; it has been documented on the Jornada Experimental Range (eBird 2015). This species could utilize the project area as a travel corridor.

**Painted bunting**

This species is documented as a migrant and utilizes shrubland and chaparral habitat; it has been documented on the Jornada Experimental Range (NMOS 2015). This species could migrate through the shrubland habitat and utilize the project area as a travel corridor.

**Peregrine falcon**

This species has been documented on White Sands Missile Range (Kamees and Burkett 1996) and on the Armendaris Ranch (eBird 2015). No records for this species indicate it has utilized the project area, and it is unlikely to do so.

**Snowy plover**

This species has been observed at Lake Lucero on the White Sands Missile Range (NMOS 2015) and Big Salt Lake north of Lake Lucero (NMOS 2015). This species is considered a rare migrant, however, and generally utilizes salt pans at lagoons and estuaries. It is unlikely to utilize the project area.

**Sprague's pipit**

This species migrates through areas such as weedy fields, grasslands with dense herbaceous vegetation, or grassy agricultural fields, and is tolerant of some grazing areas. Sprague's pipits have been observed in the grasslands at Engle (NMOS 2015) and could utilize the shrubland habitat within the project area as a travel corridor.

**Virginia's warbler**

Virginia's warblers have been documented in the San Andres Mountains during fall migration (eBird 2015). This species is generally associated with dense shrubby habitat and could utilize the project area as a travel corridor.

**Yellow warbler**

Yellow warblers utilize open scrub and chaparral habitat, and areas containing water. The species has been detected in San Andres Canyon on San Andres Wildlife Refuge and along the Rio Grande (eBird 2015); it could utilize the project area as a travel corridor.

**Western burrowing owl**

Burrows large enough for burrowing owls have been identified in the project area, and burrowing owls have been observed at Engle and White Sands Missile Range. Burrowing owls utilize burrows generally associated with prairie dogs. No records for this species indicate it has utilized the project area, and it is unlikely to do so.

**Sand prickly pear**

The sand prickly pear occurs in sandy areas, particularly semi-stabilized sand dunes among open Chihuahuan desert scrub, often with honey mesquite and a sparse cover of grasses at elevations of 3,800-4,300 ft. No available records indicate this species occurs within the project area. It is unlikely this species will be affected by the project.

**Night-blooming cereus**

The night blooming cereus is known to occur within the Chihuahuan Desert habitat among creosote bushes. No known night-blooming cereus occur in the project area. The nearest known population occurs on the west side of Las Cruces in the Robledo Mountain and Sierra de las Uvas (BLM 2011). It is unlikely this plant will be affected by the project.

**3.12 Air Resources****3.12.1 Air Quality**

Under the authority of the Clean Air Act (CAA) and the CAA amendments, the EPA established a set of National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), Particulate Matter (PM) with diameter 10 microns or less (PM<sub>10</sub>) and 2.5 microns or less (PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). The project area is in attainment of both federal and state NAAQS (EPA 2010). There are no current air quality monitors in the project area.

The EPA conducts a periodic National-Scale Air Toxics Assessment (NATA) that quantifies hazardous air pollutant (HAP) emissions by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of recent NATA documents shows that cancer, neurological and respiratory risks in the project area are well below national levels (EPA 2011).

Emissions in the project area come from mobile and natural sources such as:

- Motor vehicles (engine emissions and fugitive dust from unpaved roads);
- Rail traffic (engine emissions); and
- Wind (natural particulates).

During the dry spring months (April, May, and June), windstorms and blowing dust can become a problem throughout the area. Excessive dust in the air can impair driving visibility and, when breathed, be potentially

harmful to people with a high-risk of respiratory conditions. A Natural Events Action Plan (NEAP) was prepared for Doña Ana County and released in December 2000 and updated in 2005 by the Air Quality Bureau of the New Mexico Environment Department (NMED 2000). The NEAP is designed to mitigate health impacts from man-made sources of windblown dust where natural soils have been disturbed by human activities. Mitigation measures described in the NEAP that would be appropriate for the current action include, but are not limited to, the following:

- dust suppression using water or chemical suppressants;
- slowing or ceasing construction activities during high wind events;
- covering or containing stockpiled material;
- watering stockpiled materials that are susceptible to movement by wind;
- reducing on-site traffic speeds; and
- phasing of clearing, construction, and stabilization activities to minimize the length of time unstable soil is exposed.

### **3.12.2 Climate**

The climate of this region is characterized by an extended summer season and a mild fall and winter. Data from the nearby Aleman Ranch meteorological tower from 1971 to 2000 shows the normal daily temperatures range from 23.7 to 54.9 degrees Fahrenheit in January to 62.5 to 92.6 degrees Fahrenheit in July (NCDC 2003).

Average precipitation in the region is about 11.3 inches. Measurable precipitation occurs on an average of 46 days per year. Only 6 days each year receive more than 0.5 inches. More than half of the total annual precipitation occurs between July and October, on average, and the lowest totals generally occur in March and April. The region receives about 5.9 inches of snowfall annually, mostly in January and February (NCDC 2005).

Wind speeds in the region are usually moderate, although relatively strong winds may accompany occasional frontal activities that occur in late winter and spring when thunderstorms form. When these storms appear, frontal winds may exceed 30 miles per hour for several hours, and can occasionally exceed 50 miles per hour. The average annual wind speed in the region is about 8.4 miles per hour, with monthly totals that range from a low of 7.1 miles per hour in December to a high of 10.5 miles per hour in April (NCDC 2005).

Climate change and greenhouse gases have been addressed in the BLM Air Resources Technical Report for Oil and Gas Development (BLM 2014). According to the report, "Climate change is a statistically-significant and long-term change in climate patterns", and comprises both warming and cooling deviations from the average climate that can arise from natural sources and human activities. Fluctuations in solar radiation, plate tectonics, and volcanic eruptions are among the natural contributors to climate change. Greenhouse gases (GHGs), particularly water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), contribute to the warming of earth's atmosphere by trapping heat. Human activities have significantly increased GHG levels since the industrial revolution.

Particulate matter (PM), also known as atmospheric aerosols, also contributes to climate change. Therefore, the analysis in this document is based on past and current weather patterns, and the effects of future climate changes are not discussed further in this EA, except to note here that the effects of potential increases in rainfall intensity would be lessened by paving of the road.

## **3.13 Water Resources**

### **3.13.1 Surface Water**

Waters of the United States are defined by 33 CFR Part 328.3 (b) and are protected by Section 404 of the Clean Water Act (CWA) (33 United States Code (USC) 1344), which is administered and enforced by the United States Army Corp of Engineers (USACE). Section 404 of the CWA, as amended, provides for the protection of waters

of the United States through regulation of the discharge of dredged or fill material. Water quality within the project area is regulated through Section 401 of the CWA, and enforced by the Surface Water Quality Bureau (SWQB) of the NMED or the EPA. Jurisdictional waterways include water channels that exhibit a definite channel and a significant connection with a known jurisdictional, navigable waterway.

The project area is located in the Rio Grande Basin Watershed. There are no perennial surface water sources in the Jornada del Muerto. The project area crosses two named arroyos: Rincon Arroyo and Yost Draw (see Figures 3 and 6). In addition, there are several minor unnamed drainages in the project area that are tributaries to these larger arroyos. Rainfall in the project area averages approximately 10.63 inches, with most of the rainfall occurring during the month of August (Zia 2012). Several locations along the road are prone to standing water following rainfall events, and the proposed action includes construction of low-water crossings in these areas (see Figure 3).

Rincon Arroyo is an ephemeral tributary that drains south to the Rio Grande and is thus considered by definition a jurisdictional water of the US, as it flows into an interstate water body. Yost Draw has previously been determined *not* to be jurisdictional, as it empties into the Jornada del Muerto Closed Basin, along with other smaller drainages in the northern half of the project area. Yost Draw and the other drainages of this closed basin were the subject of an approved jurisdictional determination, issued by the USACE in 2007 for the Spaceport America commercial space launch facility site. This determination is no longer valid, however, as it expired two years after its issuance, following standard regulatory practice. For the Southern Road project, a preliminary jurisdictional determination will be requested from the USACE, which acknowledges that water bodies that exist in the project area may be jurisdictional waters of the US. The preliminary jurisdictional determination letter would be on file prior to construction.

### **3.13.2 Groundwater**

The primary aquifer underlying the project area occurs in near-surface unconsolidated alluvium and basin fill. Most groundwater wells in the site area are completed in this alluvial aquifer. Ground water recharge in the central Jornada Basin occurs primarily as a mountain-front recharge from the Caballo and San Andres Mountains. A recharge estimate for the entire Jornada Basin is about 5,200 acre-ft per year (FAA 2008). It is estimated that approximately 80 acre-ft of water would be used for construction of the proposed project (Corneles 2012) and this is negligible given the recharge estimate. The construction contractor will identify local water resources for use in constructing the project.

### **3.14 Recreation**

The project area is used for a number of dispersed recreational activities. The Camino Real de Tierra Adentro NHT and related cultural resources account for much of the recreational activity in the project vicinity. The only developed recreation facilities in the area relate to the Camino Real and presently consist of three interpretive pullouts along the proposed project area. The pullouts at Yost Escarpment and Point of Rocks have parking areas, kiosks, trails, lookouts, and signage. The pullout at Upham Exit, also referred to as the Jornada del Muerto – Visitor Orientation, has a kiosk and benches, but installation of mounted exhibits is pending.

The area is used for hiking, in particular at the Point of Rocks, because of the unobstructed views it offers of the Jornada basin. Sierra County is open to off highway vehicle (OHV) use but OHV use in Doña Ana County is restricted to designated routes. Other recreational uses in the area include wildlife viewing and photography, as well as casual hunting of small game such as rabbits and doves; some deer hunting also occurs in the vicinity. The Caballo Mountains, where there are views of the surrounding landscape, can be reached via an access road off the Southern Road (Gomez, pers. com. 2012).

### **3.15 Public Health and Safety**

The existing roadway bisects land currently used for livestock grazing and associated agricultural purposes on a combination of BLM-managed lands, State Trust lands, and private ranches. Currently no hazardous materials are handled and no hazardous wastes are produced within the proposed roadway area, except for very small quantities associated with ranching machinery maintenance and operations. These operations include use of herbicides and pesticides.

One EPA-regulated site was located by the EPA during their database search, which appears to be within 100-meters of the proposed project area. This site is in the NMED Petroleum Storage Tank Bureau (PSTB) database. One underground storage tank was removed from the site. In addition, it is listed as a confirmed release that received a no-further-action status on December 2, 1993. NMED was contacted during the scoping efforts for the proposed project and the PSTB did not respond, indicating that they did not have any active sites within the project vicinity.

Jet fuel, hydrocarbon fuels (kerosene, alcohol, and liquid methane), cryogenic propellants (liquid oxygen, liquid hydrogen), hydrogen peroxide, and nitrous oxide are expected to be delivered to Spaceport America in DOT-approved trucks and containers (FAA 2008). Parametrix interviewed NMSA regarding the transportation of hazardous materials as well as any historical spills. The majority of the hazardous materials, such as nitrous oxide and rocket fuel are, and will continue to be, transported on the northern access road as the sources are in Phoenix, Arizona or Los Angeles, California (Gutman, pers. com. 2012). Materials transported via the southern route would consist of fuel from refineries in El Paso or Mexico. NMSA is unaware of any hazardous materials spills that have occurred on the southern access road to Spaceport America.

Southwest Engineering, Inc. (2011) prepared a traffic impact analysis for the southern access road to Spaceport America. All of the roadway sections are currently operating at a Level of Service (LOS) "A," as defined by AASHTO. LOS is a measure of traffic volume and congestion, and level "A" indicates no congestion, very low volume, and the ability of vehicles to travel unimpeded (AASHTO 2011). There have been a few incidences of trucks hitting cattle on the roadway within the project area (Whitney, pers. com. 2012).

The US Border Patrol check station is located on I-25, south of the exit to the project area. A representative from the United States Border Patrol was interviewed regarding concerns about the potential increase illegal activities (Northrop, pers. com. 2012). Human and drug trafficking are known to occur in the vicinity of the project area; however, no statistical data was available for use in the analysis for this EA.

### **3.16 Environmental Justice**

Executive Order 12898 (EO 12898) on Environmental Justice requires the analysis of potential effects on social and economic conditions to identify disproportionate and adverse impacts on low income or minority population groups, accessibility to community services, or other factors that affect community wellbeing, employment and economic development. EO 12898 seeks to prevent federal policies and actions from creating disproportionately high or adverse health and environmental impacts to minority or low-income populations. Tables 9 and 10 present the most recently obtained census data on income, poverty, race, and ethnicity for the two-county area, New Mexico, and the United States.

New Mexico's land area is 121,298 square miles, with a 2010 population of 2,059,179 (US Census Bureau 2012). It is the fifteenth least-populated state in the US, and has approximately 17 persons per square mile. Of the two counties in the proposed project area, Doña Ana County has the greatest population density, with 55 persons per square mile; it is the second most populated county in New Mexico. The total land area of Doña Ana County is 3,807 square miles. Sierra County, with 4,179 square miles of land area, has a population density of only 2.9 persons per square mile.

As of the 2010 census, the largest racial group in New Mexico is identified as white, with 68.4% of the population. Persons (of any race) further identifying their ethnicity as Hispanic or Latino comprise 46.3% of the state's total population. Doña Ana County's population is 74.1% white and 65.7% further identifies as Hispanic or Latino, while 93.7% of Sierra County's population is white and 28.4% identifies as Hispanic or Latino.

**Table 9. Income and Poverty by Jurisdiction**

<b>Jurisdiction</b>	<b>Per Capita Income (2006 – 2010)</b>	<b>Median Household Income (2006 – 2010)</b>	<b>Percent Individuals Living Below Poverty (2006 – 2010)</b>
United States	\$27,334	\$51,914	13.8%
New Mexico	\$22,966	\$43,820	18.4%
Doña Ana County	\$18,315	\$36,657	24.5%
Sierra County	\$16,667	\$25,583	22.5%

Source: USCB 2012.

**Table 10. Race and Ethnicity Summary for Counties in Project Area**

<b>Subject</b>	<b>USA</b>	<b>New Mexico</b>	<b>Doña Ana County</b>	<b>Census Tract 13.01 (Doña Ana County)</b>	<b>Census Tract 14 (Doña Ana County)</b>	<b>Sierra County</b>	<b>Census Tract 9824 (Sierra County)</b>
<b>Total Population</b>	308,745,538	2,059,179	209,233	14,825	4,328	11,943	5,060
White	72.4%	68.4%	74.1%	89.6%	98.5%	93.7%	97.3%
Black or African American	12.6%	2.1%	1.7%	1.3%	0.0%	0.7%	0.0%
American Indian, Alaskan Native	0.9%	9.4%	1.5%	0.6%	0.1%	2.5%	0.7%
Asian	4.8%	1.4%	1.1%	1.4%	0.0%	0.4%	0.0%
Native Hawaiian, Pacific Islander	0.4%	0.1%	0.1%	0.0%	0.1%	0.05%	0.0%
Some other race	6.2%	15.0%	18.5%	5.4%	1.3%	8.3%	2.0%
Two or more races	2.9%	3.7%	3.0%	1.6%	0.0%	2.6%	0.0%
Hispanic or Latino (any race)	16.3%	46.3%	65.7%	58.8%	78.9%	28.4%	30.6%
White, non- Hispanic	63.7%	40.5%	30.1%	36.9%	21.0%	67.6%	68.7%

Source: USCB 2012

### 3.17 Past, Present, and Reasonably Foreseeable Activities

The CEQ's regulations (40 CFR § 1500 – 1508) implementing the procedural provisions of NEPA, define cumulative impacts as: *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR § 1508.7).* The combined, incremental effects of human activity, referred to as cumulative impacts, can pose a serious threat to the environment. While they may be insubstantial by themselves, cumulative impacts accumulate over time, from one or more sources, and can result in the degradation of important resources. Because federal projects cause

or are affected by cumulative impacts, this type of impact must be assessed in documents prepared under NEPA. This section identifies those other actions that have occurred, are occurring, or are expected to occur in the project area that, when added to the proposed action and preferred alternative, may result in cumulative impacts to the environment. The analysis of those potential cumulative impacts is presented in Section 4: *Environmental Effects*.

There are seven other past, present, and reasonably foreseeable activities in the project area with potential to result in secondary or cumulative effects. Livestock grazing has been continuous in the region for over 100 years. More recently, the Spaceport America facility was constructed along with improvements to CR A013 and CR A039. As a result of construction activities associated with the proposed action, a local source of gravel would be required, which would be quarried from undetermined locations near the project area. Additional traffic to the Spaceport America facility would be expected on the improved road from the south. A Spaceport America Welcome Center would likely be constructed in or near Hatch, New Mexico, designed to attract Spaceport visitors and as a starting location for bus tours to the Spaceport America facility. Spaceport America and portions of the Southern Road are in the Abres 4A Extension Call-up Area of the White Sands Missile Range (WSMR), as described in the Final EIS for Spaceport America (FAA 2008). The call-up area is the land needed for testing in which surface owners and lessees of land have agreed to vacate the land to accommodate testing requirements.

## **4 ENVIRONMENTAL EFFECTS**

### **4.1 Impacts of the Proposed Action**

#### **4.1.1 Geology and Topography**

With the exception of minor curvature adjustments, the proposed action would not change the location or route of the Southern Road. There may, however, be a need for heavy equipment to operate outside of the existing road bed, and traffic along the road may at times be directed around construction areas onto the ROW on either side of the existing road. A maximum of 60.75 acres of land in the Southern Road ROW including seven two-acre temporary staging areas, would be temporarily disturbed by the proposed action. Construction in the ROW would not result in noticeable short- or long-term effects to the geology or topography of the region.

#### **4.1.2 Soil**

Soil in the ROW and staging areas would be disturbed during construction, possibly resulting in temporary erosion and sediment movement during rain events. Disturbance would include activities such as grubbing/clearing and blading of vegetation; excavation of cut-and-fill areas; material storage; asphalt and guardrail placement; rip-rap placement; cattle guard placement; sign placement; and fencing. Temporary beneficial effects would result from the application of water to construction areas to control fugitive dust and eolian erosion, in accordance with Doña Ana County's requirements under NEAP (Ordinance No. 194-2000) regarding instituting standard and project-specific BMPs. Other measures would include providing stormwater drainage to prevent off-site soil transport and use of chemical suppressants to stabilize soil, and would be maintained until a re-vegetation plan is implemented. The re-vegetation plan would include scarifying compacted soil and seeding, as well as measures to stabilize soils, as necessary, until new vegetation is sufficiently established to control erosion.

In addition to disturbance from clearing and grading activities, a chip-sealed road would shed water onto the soil at the road edges, potentially causing temporary localized erosion and affecting road-edge stability until roadside vegetation is fully re-established. Planned erosion control measures would include water turnouts, culverts, and riprap, and will be specified in the SWPPP. Low water crossings would be used instead of culverts and the current gradient of the drainage bottom would be maintained, thus allowing surface water flow and soil movement in the project area to remain unchanged from the present condition. The impervious chip-sealed road would increase soil moisture along the edge of the road following rain events, which could lead to denser roadside vegetation. The denser vegetation along the edge of the road could further reduce soil erosion in the project area.

An additional approximately 2.7 acres of soil would be disturbed during construction if the private lands bypass is constructed. Grading of the route, with the removal of vegetation, would expose bare soil and decrease water infiltration, thereby increasing the likelihood that heavy rains during the late summer would result in soil erosion and sediment movement. This would be a short-term effect that would end upon successful re-vegetation of disturbed areas not under the new chip-sealed surface. The alternate route would be subject to the SWPPP, which would state that erosion and offsite sediment transport would be mitigated and controlled.

#### **4.1.3 Minerals**

Access to existing mining claims in the project vicinity, such as the many claims in the Caballo Mountains, would not be curtailed by the proposed action. In fact, an improved road would facilitate access for claimants and their equipment.

Mineral rights beneath the roadway on private land would continue to be accessible. If a reasonable person considered the mineral estate beneath the existing road valuable enough that mitigating the impacts to the road made economic sense, then they could develop the estate. Project proponents have negotiated with private holders of mineral interests to release those interests to the Counties.

6,000 cubic yards of minerals materials would be excavated and used within the ROW for road construction. Existing materials in the ROW are not known to contain valuable mineral resources; therefore, it is not anticipated that the proposed action would impact minerals materials.

There would be no additional effects as a result of the interpretive pullouts. Construction of the private land bypass would primarily affect vegetation and soil, and would have no noticeable effect on the geology or topography of the region.

Private mineral rights located beneath the existing roadway in the area that would be bypassed by the private lands bypass would remain available to those who hold those rights. The alternate route would not result in the loss of any mineral rights.

#### **4.1.4 Realty and Utilities**

There would be no conflicting use between the ROW requested and the other utilities in the project area. As discussed above in Section 2: *Proposed Action and Alternatives*, CenturyLink has submitted an application to the BLM as part of the proposed Project, requesting authorization to lower 16 portions of their fiber optic line, within their existing easement, so that it would not be impacted by the proposed Project construction. If the BLM District Manager decides to issue the road ROW grants to Doña Ana and Sierra Counties, he would also issue an authorization allowing for CenturyLink to lower the fiber optic line. CenturyLink is confident that its utility would not be impacted (See correspondence in Appendix F *Stakeholder Correspondence*).

Access to transmission lines and the BNSF ROW would remain unrestricted during and after project construction because gates and cattle guards would be installed. The proposed action would avoid trespass on BNSF Railway ROW, with some areas requiring minor changes to the horizontal alignment of the road to ensure avoidance.

There would be no additional effects as a result of the interpretive pullouts and there would be no additional effects as a result of the private land by-pass.

#### **4.1.5 Livestock Grazing**

Small portions of the grazing allotments where the road is being rerouted would become unusable for ranching activities because they would be covered by the roadbed (see Figure 8).

The 60-ft ROW would have long-term effects on BLM grazing allotments in the project area. The size of areas affected by the temporary and long-term rights-of-way and staging areas are summarized in Table 11. These are approximations of areas that use the width of the temporary and permanent rights-of-way without subtracting out the acreage already consumed by the existing county roads.

The areas that would be affected represent an average of 0.1 percent of the total size of the allotments. Short-term impacts to rangeland from the temporary ROW and staging areas would be mitigated by restoring disturbed areas to their natural pre-construction condition according to a BLM-approved revegetation plan. Long-term impacts would permanently remove very small portions of the allotments and transfer them to road ROW status. These areas are small enough that they would not alter permit conditions.

The Flat Lake Allotment would be bisected by a fence under the proposed action. However, the proposed construction of a CBC at Rincon Arroyo (see Figure 3) would allow cattle to pass beneath the roadway and

access both sides of the allotment. Measures would be included in the design of this CBC to allow the movement of cattle from one part of the allotment to the other beneath the roadway at this location. Specifically, a concrete apron would be constructed upstream and downstream of the CBC to allow cattle to enter the CBC and travel under the roadway (Armijo, pers. com. 2014). Although livestock grazing patterns would be changed by the division of the allotment, the CBC along with locations of existing livestock waters would allow for livestock grazing to continue without undue impact from the division. The division fence could allow for improved livestock management on this allotment.

Under this alternative, livestock would continue to freely access the roadway. With the improved, unfenced road surface, vehicle speed would increase and collisions with livestock would also increase, causing greater loss of stock. In addition, increased vegetation along the roadside, as described in the Soils section, would cause cattle to concentrate near the road, increasing the potential for collisions.

**Table 11. Effects to BLM Grazing Allotments**

<b>Allotment Name</b>	<b>Allotment No.</b>	<b>Size (acres)</b>	<b>Area Affected by Temporary 80-ft ROW (acres)</b>	<b>Area Affected by Temporary Staging Areas</b>	<b>Percent of allotment with direct short-term effects</b>	<b>Area Affected by 60-ft ROW (acres)</b>	<b>Percent of Allotment with direct long-term effects</b>
Rincon	03067	14,813.07	33.4	2	0.24	25.08	0.17
Thorn Well	03063	14,652.87	20.0	0	0.14	15.02	0.10
Flat Lake	16053	96,566.58	61.55	4	0.07	46.16	0.05
Lewis Cain Ranch	16022	64,136.33	69.21	4	0.10	51.91	0.08
McClenan Ranch	16056	28,781.02	0	0	0	0	0
Bar Cross Ranch	06020	54,743.04	45.74	2	0.08	34.29	0.06

Source: BLM LCDO.

One of the interpretive pullouts would be located on the Lewis Cain grazing allotment. This estimated 0.46-acre pullout would be located within an area already identified as a temporary staging area for construction of the proposed action. Without taking into account that portion that would be located in the new ROW, this area represents 0.00007 percent of the total land area in that allotment. An insubstantial amount of grazing land would be removed by the creation of pullouts. The private lands by-pass is located in the Flat Lake grazing allotment. The effects of this action on the ranching operations of this allotment will not differ from the current operations.

#### **4.1.6 Visual Resources**

Visual Assessment Units (VAUs) were identified to help analyze potential impacts to visual resources in areas with similar landscape characteristics throughout the project area. Three VAUs were identified based on changes in the existing terrain, vegetation, and cultural modifications along the project alignment. For this assessment, general change in visual character was based on comparing post-project conditions with existing

visual elements and patterns within the VAUs. Twelve KOPs were identified and established to determine potential effects from specific key locations. The KOPs were primarily identified based on the likelihood of visibility of the project, and the increased recreational use or importance of observation points. Eleven of the KOPs were used to evaluate the Proposed Action; the remaining KOP was used to evaluate the private lands by-pass. These locations were determined through consultation with Las Cruces BLM staff.

Contrast rating evaluations were performed from each KOP using BLM Form 8400-4. The potential impact of the construction and maintenance activities associated with the Proposed Action on visual character were described in terms of the magnitude of change in the existing visual elements and patterns from the existing visual condition. An analysis of visual dominance, scale, continuity, and contrast is used in determining to what degree the proposed pipeline and associated surface facilities would attract attention and to compare the relative change in character with the existing characteristic landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast that would be created by the proposed action. Consideration of the amount of visual contrast created is directly related to the amount of attention that is drawn to an element in the landscape. The magnitudes of the changes for this assessment were categorized as very low, low, moderate, and high. The definitions of these categorizations align directly with very low, low, moderate, and high degrees of visual contrast and amounts of attention drawn to elements in the landscape.

A visibility analysis was also performed for the project and was used to assist in the selection of the KOPs. This analysis identified where the project would be visible if there were no vegetation or structures to screen the proposed roadway project. Based on a “bald” landscape, the visibility analysis reflects the worst-case scenario in determining the potential scenic impacts. Each of the KOPs fall within areas deemed ‘visible’ in the visibility analysis. Based on the visibility analysis, the roadway would be visible from approximately 50 percent of the area within a 5-mile range of the alignment.

The magnitude of change for each of the three VAUs was determined to be very low, meaning that the landscape character would remain intact with no apparent change to the existing visual elements in the landscape. Of the 11 KOPs that were used to evaluate the proposed action, seven had a contrast rating of “none,” and four had a rating of “weak.” The “weak” contrast ratings were generally based upon a low level of change associated with the elements of the proposed roadway improvements. More specifically, these changes were associated with contrast from the color and texture of the proposed road surface from KOPs directly adjacent to the proposed action and also from contrast associated with lines, form, color and texture of the proposed road and cut slopes that would be created at the low water crossings.

There would be no additional effects as a result of the interpretive pullouts. The private lands by-pass is located within one of the three VAUs established for this analysis. The magnitude of change for the VAU in which the alternate route is located was determined to be very low. The landscape character would remain intact with no apparent change to the existing visual elements in the landscape. One KOP was included to evaluate this alignment and had a contrast rating of ‘weak’. This rating was generally based upon a low level of change associated with the line, form, color, and texture of the proposed roadway improvements—namely, the changes in landscape as a result of vegetation removal, exposure of light colored soils, and additional yet similar linear elements introduced by the new roadway. There would be no additional effects as a result of the private lands by-pass.

#### **4.1.6.1 Mitigation**

The degree of contrast from the KOPs would be compliant with the management objectives of the project area’s VRM Class II designation. The following mitigation measures, however, are recommended to further reduce potential visual impacts from the Proposed Action and are included in the project stipulations listed in Appendix A.

- Clearing should be limited in area to the maximum degree practical, and vegetation should be trampled rather than cleared where permanent vegetative clearing is not necessary.
- The limits of clearing should be irregular where possible and straight clearing lines should be avoided by leaving selected clumps of vegetation near the edge of the clearing limit. All disturbed areas should be reseeded to the limits of clearing with native seeding mix, and rock/soil staining should be used to blend with undisturbed areas.
- Vegetation outside of the specified clearing limits should be preserved and protected.
- Final cut and fill slopes should be designed to blend with the form, line, color, and texture of the surrounding landscape. The appearance of constructed slopes should be improved by rounding the toes and tops of slopes, warping, blending the ends of slopes, and varying slope ratios.
- Where needed, the contractor should use erosion control matting made of natural earth-tone material.

All permanent erosion and sediment control BMPs (riprap/rock mulch) that are visible from the roadway should be obtained from a rock source that blends with the natural color of the adjacent undisturbed natural landscape to the maximum extent practical.

#### **4.1.7 Cultural Resources**

Of the 32 sites in the project area that are considered eligible or undetermined for the NRHP, OAS has recommended that 28 will be adversely affected as a result of the proposed action and/or preferred alternative. Five of the sites recorded in the project area contain segments of El Camino Real de Tierra Adentro NHT and three may be adversely affected (LA 80077, LA 80078, and LA 173436). Potential impacts to sites are described below, as well as possible mitigation measures to avoid, minimize, or mitigate these effects. In addition, potential effects to El Camino Real as a whole—as an NRHP-listed historic property and as a National Historic Trail—are also considered, along with possible mitigation measures.

Potential impacts include (1) direct impacts from construction activities, (2) visual impacts resulting from changes to the roadway surface and the addition of fencing, and (3) indirect/cumulative effects that may occur as a result of increased traffic and visitation to the trail. Positive impacts to the NHT and archaeological sites are also possible—such as the reduction in opportunities for off-road use of areas adjacent to the Southern Road with the addition of fencing, which could be damaging to sites or to segments of El Camino Real. Other positive impacts may result from the chip-sealing of the road, which should serve to reduce the incidence of vehicles meandering or diverging from the roadway onto the unpaved roadsides. In addition, the lower visual contrast of the chip-sealed surface as compared to the current unimproved road surface (see discussion below in section 4.3.2 *Impacts of No Action on Visual Resources*) would have a positive impact on cultural resources such as El Camino Real, as the improved road would be less visible than it is currently where it falls within the viewshed of the historic trail.

As discussed above, with regard to improved access to cultural resources such as El Camino Real de Tierra Adentro NHT as a result of the proposed road improvements, the interpretive pullouts could also result in adverse indirect/cumulative effects that may occur as a result of increased visitation to the NHT—encouraged by the interpretive signage of the pullouts. At the same time, this increased access and improved public education/outreach can be considered an additional (positive) impact resulting from the interpretive pullouts, improving the public’s experience of the historic trail and potentially encouraging greater public involvement in protecting and preserving this resource.

If the private lands by-pass is selected for construction of the Southern Road there would be no additional effects, positive or negative, to cultural resources beyond those discussed above in regard to the proposed action and preferred alternative. Potential impacts from road improvements and fencing to the two

archaeological sites along the alternative route would be similar to those that may result from project construction along other portions of the route.

#### **4.1.7.1 Mitigation**

Because there will be adverse effects to NRHP-eligible cultural resources, the BLM has determined that the proposed project will have an *adverse effect* and a Memorandum of Agreement (MOA) will be developed to resolve those effects. Per Section 106 of the NHPA, a determination regarding the most appropriate measures to avoid, minimize, or mitigate the potential adverse effects to cultural resources resulting from the proposed action and preferred alternative will be negotiated among the lead federal agency (BLM) and consulting parties, and specified in the MOA. A list of parties invited to consult on development of the MOA, and their responses, is provided in Appendix E *Section 106 Consultation*.

These mitigation measures could involve a variety of strategies, such as temporary fencing and monitoring of resources during construction for avoidance, if feasible, or archaeological testing and data recovery focused on the affected portions of sites for which avoidance is not feasible. Other strategies could also be implemented to minimize and/or mitigate the effects. These could include, but are not limited to, archival and oral-historical research, interpretation and educational outreach, and long-term (post-construction) monitoring and patrol of the affected resources such as El Camino Real. Site-specific mitigation recommendations are made in the cultural resource survey reports produced by OAS (2013a, 2013b); specific mitigation measures will be determined in consultation between the BLM and consulting parties, in developing mitigation plans for the sites and El Camino Real de Tierra Adentro NHT. As with the process for developing and implementing mitigation measures, the process for handling any unanticipated discoveries of cultural materials (e.g., structural remains, historic and prehistoric artifacts) will be specified in the MOA and determined in consultation with the BLM and consulting parties.

Several tribes stated that if archaeological materials or human remains are discovered during construction, the applicant should immediately stop construction and notify the appropriate agencies and tribes. The Hopi Tribe expressed a desire for continuing consultation with BLM should any prehistoric sites be identified that would be damaged by project activities, including a request to be provided with any proposed treatment plans for review and comment (see Appendix G *Tribal Consultation*). If ground-disturbing activities anywhere in the project area uncover human remains, all work would cease immediately in accordance with either the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) or relevant State statutes. The area around the discovery would be secured and the relevant law enforcement personnel (e.g., local police or County Coroner), BLM, and the New Mexico State Historic Preservation Office (SHPO) would be notified. Such construction activities may then only continue with the written approval of BLM.

In addition to these mitigation measures and stipulations, a commitment is included in the project stipulations (see Appendix A) to conduct archaeological survey of six portions of the project area where the 60-ft ROW and associated temporary ROW would be widened to accommodate the construction needs of the project (see Table 2 and Figure 4). These additional areas must be surveyed prior to the BLM allowing construction activities in those areas.

#### **4.1.8 Vegetation**

The proposed action would result in temporary impacts to a maximum of 283.8 acres of vegetation within the project area. Vegetation destroyed by clearing activities would be hauled away for disposal at nearby approved landfills. Implementation of a BLM-approved re-vegetation plan in all areas not part of the roadway would reduce the permanent loss of vegetation to a degree nearly equal with the existing conditions.

The interpretive pullouts would result in the permanent loss of approximately 0.9 acre of vegetation. Approximately half of this would occur outside of the proposed permanent ROW. The proposed private lands

by-pass would result in the permanent loss of approximately 2.7 acres of vegetation. If the private landowner whose land the alternate route would be circumventing chooses to have the abandoned section of roadway obliterated and restored to a natural condition, then there would be no net permanent loss of vegetation.

#### **4.1.9 Noxious Weeds**

African rue is a NM Class B noxious weed. This particular weed has a high possibility of becoming established along the roadway via road construction activities. Seed may be transported to the site in soil that sticks to vehicles and earth-moving equipment. Measures would be taken to prevent the spread and establishment of this species and other noxious and invasive weeds.

Salt cedar, found only in Yost Draw along the project area, is a Class C New Mexico Noxious weed and may be managed at the County's and BLM's discretion.

#### **4.1.10 Wildlife**

The proposed action would not be expected to have an effect on wildlife populations in the region. Application of a new chip-sealed surface and the subsequent increased vehicle speed would increase the potential for collisions with wildlife. Without a ROW fence, large mammals would be able to freely access the roadway. However, new signs for speed control would be installed.

Wildlife species are differentially affected by the presence of roads, depending on their behavioral responses (attraction or avoidance). Fahrig and Rytwinski (2009) cite many studies on the effects of roads on wildlife abundance (e.g. Jaeger et al. 2005, Forman et al. 2003, Carr and Fahrig 2001). In general, species that are attracted to roads but are slow-moving would have higher levels of mortality due to vehicular traffic. Species that avoid habitat near roads due to vehicle emissions or noise disturbance would have lower levels of mortality, but could be negatively affected by the loss of that habitat. These negative effects could be exacerbated by the proposed road improvements.

Some species are positively affected by the presence of roads, including species that find prey or carrion on road surfaces and can avoid oncoming vehicles. Other species that avoid roads but do not avoid adjacent habitat can benefit when roads are present. The application of a new road surface could improve adjacent habitat by shedding more water onto roadsides.

Individuals of certain wildlife species could be negatively affected by the proposed action, but the impacts are not anticipated to result in negative effects to local populations.

#### **4.1.11 Special Status Species and Migratory Birds**

The alternate route would have no impact on Baird's sparrow, burrowing owl, northern aplomado falcon, or any of the listed bat species. The small amount of habitat removed for the alternate route would not constitute a threat to these species, and they are all mobile enough to avoid construction activities. The alternate route may result in the loss of a few individual dune prickly pear and night-blooming cereus; however, no long-term effects would be expected. Pre-construction surveys for night-blooming cereus would be conducted and any plants likely to be affected by the project would be avoided or transplanted.

If vegetation clearing at the beginning of the construction of the proposed action in areas of suitable migratory bird habitat occurs between October 1 and February 15, outside of the nesting season, this clearing would not affect migratory birds. The only effect of this would be a short-term loss of potential nesting habitat until re-vegetation is completed. If the proposed construction initiates or continues into the nesting season, a qualified biologist would examine the habitat immediately ahead of construction activities for active nests. If an active nest is found, an area of 150 ft on either side of the nest would be avoided and bypassed by construction activities until such time as the biologist on site determines that the young have fledged and the nest is no

longer being actively used. At that point, the nest and surrounding habitat would be cleared as necessary by the construction contractor to complete construction in that area (see stipulations in Appendix A). As a result, there would be no effects to migratory birds. The proposed private lands by-pass may affect migratory bird habitat. These potential affects would be mitigated as described for the rest of the project area.

#### **4.1.12 Air Resources**

The chip-sealed surface of the proposed action would have a beneficial long-term impact on air quality by reducing the amount of airborne particulates generated by wind and traffic on the current dirt road. Fugitive dust in the construction area would be minimized by following Doña Ana County's requirements under the NEAP (Ordinance No. 194-2000) and instituting standard and project-specific BMPs, such as dust suppression using water or chemical suppressants; slowing or ceasing construction activities during high wind events; covering or containing stockpiled material; watering stockpiled materials that are susceptible to movement by wind; reducing on-site traffic speeds; and phasing of clearing, construction, and stabilization activities to minimize the length of time unstable soil is exposed.

There would be no additional effects as a result of the interpretive pullouts. The private lands by-pass realignment would lengthen the project area by approximately 0.1 mile. Due to the small difference between alternatives in relation to potential fugitive dust, any additional impacts of this alternative on air quality resources would be so small as to be undetectable.

#### **4.1.13 Water Resources**

##### **4.1.13.1 Surface Water**

Calculated disturbance acreage at the crossings (including CBCs) ranges from 0.04 to 0.44 acre, with no crossing exceeding the 0.5-acre limit of disturbance allowed under Nationwide Permit 14 *Linear Transportation Projects*. Therefore, a project-specific permit for the proposed project would not be required. A pre-construction notification would need to be completed and submitted to the USACE district engineer prior to commencement of project construction activities, as some of the crossings involve disturbance of greater than 0.1 acre.

Chip-sealing the road and installing low-water crossings, water turnouts, and culverts, would have the beneficial effects of creating channel stabilization, re-establishing overland water flows, and minimizing erosion.

Since the Rincon Arroyo is an ephemeral drainage, subject to running only during the first 24 hours following a rainstorm, CWA Section 401 water quality certification would already be complete if the project conforms to the conditions defined in the letter to Mr. Allan Steinle, US Army Corps of Engineers, from James P. Bearzi, Chief, Surface Water Quality Bureau, NMED dated April 13, 2012 and included in Appendix C *Public and Agency Scoping*.

##### **4.1.13.2 Groundwater**

Comments received during the scoping process identified concerns about potential impacts to groundwater wells in the vicinity, which could result from excessive water use during construction of the proposed action. According to Doña Ana County engineers, it is estimated that approximately 80 acre-ft of water would be used for construction of the proposed action (Corneles 2012). This water would be used to achieve the appropriate amount of compaction of the roadway prior to application of the chip-seal surface. It would also be used to minimize potential impacts from dust created during project activities. The amount of water used would be negligible given the 5,200 acre-ft of recharge per year estimated in the Jornada Basin.

The interpretive pullouts will have no additional effects from those described in the proposed action. The private lands by-pass will have no additional effects from those described in the proposed action.

#### **4.1.14 Recreation**

An improved road would facilitate recreational use in the project area by providing a more visitor-friendly means of accessing cultural and natural resource settings, as well as Spaceport America itself. Visitors to the area who may not have traveled on the Southern Road due to its present condition would be more likely to drive on the improved road. Bus and shuttle access to Spaceport America would also be improved. Such improved access would further the joint objectives of the BLM, NPS, and the National Trails Act in providing a recreational and educational experience related to the NHT. In addition to the recreational benefit of this aspect of the preferred alternative, these areas could also be used for viewing locations during launches at Spaceport America. Along with improved access to the NHT, these pullouts would create a richer educational and interpretive experience of the Camino Real for visitors to the project area. There would be no additional effects as a result of the private lands by-pass.

#### **4.1.15 Public Health and Safety**

##### Hazardous Materials

Construction activities would result in the generation of small volumes of hazardous wastes. The hazardous materials expected to be used are common to construction and include diesel fuel, gasoline, and propane to fuel the construction equipment; and hydraulic fluids, oils and lubricants. Appropriate materials management techniques would be followed to minimize their use and manage waste disposal. Impacts stemming from the use of hazardous materials and hazardous and non-hazardous wastes during construction are not anticipated because they would be handled, stored, and used in compliance with all applicable regulations. Procedures would be in place to minimize potential impacts from spills of hazardous materials and hazardous waste.

The two state-regulated sites documented in the database search are localized in Rincon and the contamination has not spread to the project vicinity. There are no known sources of hazardous materials that would be exposed as a result of the proposed action.

##### Traffic

The proposed action would not lower the level of service of the roadway and would support predicted traffic levels out to 2030. The improved curves in the road along with the chip-sealed surface would facilitate higher-speed vehicular travel. Without a ROW fence, cattle would continue to be able to wander into the roadway. Higher rates of speed result in a correspondingly longer stopping distance, thus, more collisions with cattle would be expected without ROW fencing.

##### Other

A representative from the United States Border Patrol was interviewed regarding concerns about the potential increase illegal activities (Northrop, pers. com. 2012). The increase in construction vehicles and road improvements may enable smugglers to blend in to the construction traffic. In addition, the improved access may create a back-road route for smugglers. The increase in this type of activity could threaten traveler safety. The US Border Patrol would address these issues by increasing patrols in the area, which could increase traffic. The proposed action may have an effect on the US Border Patrol by requiring an increase in immigration law enforcement coverage of the area.

#### **4.1.16 Environmental Justice**

A number of positive effects can be expected as a result of the proposed action, including benefits to the economic condition of the region, which has a sizeable population of minority and low-income persons. At least 90 people are estimated to be employed working either directly or indirectly on the proposed action (Corneles, pers. com. 2012); increased employment would be an economic benefit to individuals, regardless of income and ethnicity and thereby also benefit local businesses. Any increase in workforce and revenue would be temporary, however, lasting only as long as construction is underway.

Easier access to employment for people living along the road and working in one of the nearby towns or cities would result from an improved roadway. Economic benefits to business enterprises along the road, and to vendors or concessioners running Spaceport-related businesses out of Hatch, Las Cruces and other communities (e.g., bus trips, tours or shuttles to Spaceport America), are also likely if the road is improved.

Access to schools, libraries, health-care facilities, community centers, and government entities would be facilitated by construction of the improved road. The improved road would also provide better access by police, fire, and other emergency services to the area. Minority and low-income groups would benefit from the proposed action. There would be no negative effects to low-income or minority populations and the proposed action would be in compliance with EO 12898.

## **4.2 Impacts of the Preferred Alternative**

### **4.2.1 Geology and Topography**

The effects of the preferred alternative would not differ from those described for the proposed action.

### **4.2.2 Soil**

Controlled access to roadside areas resulting from the installation of ROW fence under the preferred alternative would have the beneficial effect of decreasing soil erosion; negative effects of the preferred alternative would not differ from those described for the proposed action.

### **4.2.3 Minerals**

The installation of cattle guards and gates at roads to mining claims accessed from the Southern Road would continue to allow access to these resources.

### **4.2.4 Realty and Utilities**

In locations where the permanent fence would cross existing utility ROWs, the gates would be 16 ft in length, to accommodate the large equipment and vehicles that sometimes need to access these ROWs. Otherwise, effects of the preferred alternative would not differ from those described for the proposed action.

### **4.2.5 Livestock Grazing**

There would be both short- and long-term effects on livestock grazing activities as a result of the preferred alternative due to fencing. Currently, cattle in BLM grazing allotments in the project area are able to cross county roads in search of forage and water. The proposed fencing would restrict livestock movement and their ability to access portions of four (out of a total of six) allotments in the project area. In addition, there would be no access to water in the smaller portions of the allotments cut off by the proposed action. Table 12 lists the allotments in the project area and the portions that would be separated as a result of proposed action.

**Table 12. Grazing Allotment Areas Affected by the Proposed Action**

<b>Allotment Name</b>	<b>Allotment No.</b>	<b>Size (acres)</b>	<b>Areas that would be separated by the proposed action (estimated in acres)</b>	<b>Percentage of allotment that would be separated</b>
Rincon	03067	14,813.07	290 acres in SE	0.034
Thorn Well	03063	14,652.87	162 acres in NW	0.017
Flat Lake	16053	96,566.58	40,105 E side; 56,462 on W side	0.415
Lewis Cain Ranch	16022	64,136.33	2,165 acres in NW 82 acres in SW	0.034 in NW 0.001 in SW
McClenan Ranch	165056	28,781.02	0	0
Bar Cross Ranch	06020	54,743.04	0	0

The Lewis Cain Ranch Allotment would have two areas cut off from the main portion of the allotment (0.034 percent and 0.001 percent). The smaller of these parcels (82 acres) is not large enough (either environmentally or economically) to support the transfer of cattle and would cease to be part of the allotment. To be able to continue to use the larger parcel and to maintain the associated 29 cattle on the grazing permit, the rancher would have to install rangeland improvements to provide water to livestock in the parcel, and would need to be able to transfer cattle across the paved road and fenced ROW.

The Flat Lake Allotment would be bisected by fence with the preferred alternative. However, the proposed construction of a CBC at Rincon Arroyo (see Figure 3 and Appendix D) would allow cattle to pass beneath the roadway and access both sides of the allotment. Measures would be included in the design of this CBC to allow the movement of cattle from one part of the allotment to the other beneath the roadway at this location. Specifically, a concrete path would be laid over the riprap upstream and downstream of the CBCs to allow cattle to cross the riprap and travel through the CBCs. Without this modification, riprap pads typically act as cattle guards, preventing cattle from accessing a route through a CBC (Armijo, pers. com. 2014). Although livestock grazing patterns would be changed by the division of the allotment, the CBC along with locations of existing livestock waters would allow for livestock grazing to continue without undue impact from the division. The division fence could allow for improved livestock management on this allotment.

The proposed CBC at Yost Draw is located at the boundary between two allotments: Bar Cross Ranch on the east and McClenan Ranch on the west (see Figure 8). Animal crossing at this location is not a concern, thus the upstream apron would be riprap and the downstream apron would be concrete to prevent erosion (see Appendix D).

On the Thorn Well Allotment, the preferred alternative would create a 162-acre, long, narrow pasture that would cut off livestock from any source of water. To use the parcel, the rancher would need to be able to transfer cattle across the paved road and fenced ROW. The rancher would have to install rangeland improvements to provide water to the pasture. If that were infeasible, the rancher would be affected by the unrecoverable loss of one cow from the Thorn Well grazing permit.

The Rincon Allotment would be divided by the proposed action, creating a long, narrow, 290-acre pasture east of the road. The pasture would have two narrow “pinch points,” where the road ROW fence would closely approach existing fences, but would not tie into them. Access to water on both sides of the ROW fence would be altered, and the new, narrow pasture would need to be carefully managed to avoid overgrazing. These challenges would result in long-term economic and logistical effects to ranchers in the Rincon, Thorn Well, and

Lewis Cain ranch allotments. The Flat Lake, Bar Cross Ranch, and McClenan Ranch allotments would experience these effects to a lesser degree, but would still have issues related to access to their allotments.

While the installation of PVC conduits beneath the road and ROW, and the installation of cattle guards and steel swing gates would minimize some of the effects, the preferred alternative would nonetheless impose changes to ranching operations and cattle grazing patterns in the southern four allotments. In addition, there would be long-term economic effects to ranchers who have to install and maintain new waterlines and watering facilities and transfer cattle across the road. However, the areas that would be affected represent well less than one percent (0.017 to 0.034) of the total usable allotment. Ongoing coordination with area ranchers would be required to monitor potential long-term effects from the proposed action.

Ranchers will benefit long-term from fencing along the ROW through reduced mortality of cattle. Fencing will create a barrier that will prevent cattle from entering the project area, thus eliminating the potential for vehicle/cattle collisions.

#### **4.2.6 Visual Resources**

The effects of the preferred alternative would not differ from those described for the proposed action. The fence would not introduce a noticeable element of sufficient magnitude to alter the character of the landscape.

#### **4.2.7 Cultural Resources**

There would be additional adverse effects to NRHP-eligible cultural resources as a result of the preferred alternative—due to ground-disturbing activities related to installation and maintenance of fencing within the boundaries of the sites recommended eligible to the NRHP. At the same time, there would be beneficial effects resulting from fencing the road ROW. The fence would help to prevent off-road driving, providing some protection to archaeological sites by making it more difficult to access the sites by motorized vehicle from the roadway.

#### **4.2.8 Vegetation**

Fencing would create an area of grazing exclusion within the 60-ft ROW. This exclusion would lead to a higher density of herbs and forbs along the roadside and a corresponding increase in biological diversity.

#### **4.2.9 Noxious Weeds**

The effects of the preferred alternative would not differ from those described for the proposed action.

#### **4.2.10 Wildlife**

Fencing would increase habitat fragmentation by creating a potential barrier for big game species movement. However, deer have the ability to jump Standard BLM Type-A fencing, which must have a smooth bottom wire. The proposed modified wildlife-friendly fencing near the Point of Rocks area would reduce the potential for mortality of bighorn sheep and pronghorn that occasionally get tangled in Standard Type-A fencing. These species would more easily be able to cross the roadway in this area where bighorn sheep may potentially be found.

There should be no effects to wildlife as long as the proposed BLM standard fence with smooth bottom wire is utilized, except for the section by Point of Rocks, where the modified fence will provide added accessibility to desert bighorn sheep. In addition, no “double” fencing should occur on any part of the fence construction. For example, if a fence exists on a boundary, the county should not install another fence adjacent to the existing fence, thus eliminating any potential of wildlife getting trapped in between two fences (Guzman, pers. com. 2012).

#### **4.2.11 Special Status Species and Migratory Birds**

Installation of the fence would create some potential for affecting active migratory birds depending upon when the fence would be installed. If it would be installed entirely outside of the nesting season, as previously defined, there would be no effects to migratory birds. If some or all of it would be installed during the active nesting season, the same method of discovering and avoiding migratory birds would be employed as described for construction of the proposed action and there would be no effects.

If night-blooming cereus or sand prickly pear plants are discovered and would be affected by project construction activities, plants would be avoided or transplanted to a suitable location.

##### **4.2.11.1 Mitigation**

Clearing and grubbing activities that occur during the nesting season (February 15 through October 1) would require the presence of a qualified biologist on site to examine habitat immediately ahead of construction activities for active migratory bird nests. If an active nest is found, an area of 150 ft on either side of it would be avoided and bypassed by construction activities until such time as the biologist on site determines that the young have fledged and the nest is no longer being actively used. At that point, the nest and surrounding habitat would be cleared as necessary by the construction contractor to complete construction in that area.

#### **4.2.12 Air Resources**

The effects of the preferred alternative would not differ from those described for the proposed action.

#### **4.2.13 Water Resources**

The effects of the preferred alternative would not differ from those described for the proposed action.

#### **4.2.14 Recreation**

Installation of fencing along the ROW would not prevent access to recreational opportunities. Any fencing on BLM land would be equipped with signs informing the public that access to the land is allowed (Gomez, pers. com. 2012).

#### **4.2.15 Public Health and Safety**

Increased traffic volume and speeds on an improved road surface would potentially result in increased vehicle collisions with cattle in the roadway. The addition of fencing throughout the project area would reduce the opportunity for cattle to wander into the roadway, thus reducing the potential for vehicle/cattle collisions. The proposed wildlife fencing near the middle of the project area would not be as effective at withstanding pressure from cattle.

#### **4.2.16 Environmental Justice**

The effects of the preferred alternative would not differ from those described for the proposed action.

### **4.3 Impacts of No Action**

The following resource topics would not be affected by this alternative: Geology and Topography, Minerals, Realty and Utilities, Livestock Grazing, Vegetation, Noxious Weeds, Wildlife, Special Status Species and Migratory Birds, and Environmental Justice.

#### **4.3.1 Soil**

If the ROW were not granted, soil erosion on and alongside the current road would remain the same. Soil erosion that would occur as a result of construction traffic would otherwise not occur. In addition, without the

drainage improvements of the proposed action, the existing poor road drainage conditions would continue to negatively impact soil erosion along the roads, as vehicles attempt to navigate around saturated portions of the road during and after storm events. Continued grading of the road would continue to channelize water flows and cause soil erosion. The benefits of controlling access to roadside areas through the installation of ROW fence would also not occur under the No Action Alternative.

#### **4.3.2 Visual Resources**

The overall light color of the existing road would continue to contrast moderately with the surrounding landscape, and would continue to attract attention. Poor road conditions associated with rain events could also lead to additional vegetative trampling on the sides of the roadway as vehicles attempt to navigate around saturated portions of road. The unimproved condition of the roadway may also continue to limit access to those seeking interpretation of the visual and cultural resources highlighted by the existing and proposed interpretive pullouts.

#### **4.3.3 Cultural Resources**

The overall light color of the existing road would continue to contrast moderately with the surrounding landscape, and would continue to attract attention. This contrast would constitute a continuing visual impact to the setting of historic properties such as El Camino Real de Tierra Adentro. In addition, visitor access to the trail would continue to be limited by the existing poor road conditions and limited number of interpretive pull-outs. Also, damage to cultural resources located along the road from off-road driving may continue to pose a threat without the proposed ROW fencing.

#### **4.3.4 Air Resources**

Under the no action alternative, the existing condition of the roadway would remain unchanged. The unpaved road would continue to generate airborne particulates from vehicular traffic and wind. Although the level of impact to air quality is not sufficient to threaten air quality standards, the no action alternative would continue to generate fugitive dust on a long-term basis.

#### **4.3.5 Water Resources**

##### **4.3.5.1 Surface Water**

Surface water will remain unchanged and current water quantities would be maintained. Surface water flow could be changed by continued grading of the existing dirt road, potentially resulting in erosion that alters drainages and overland flows.

##### **4.3.5.2 Groundwater**

Under the No Action Alternative, no additional groundwater would be used and current water quantities would be maintained.

#### **4.3.6 Recreation**

As a result of the existing condition of the roadway, visitation to the area to experience el Camino Real de Adentro NHT, see Spaceport America, recreate on BLM land in the project area, and experience the Jornada del Muerto in general, would remain difficult to access from the south. Rainy periods that make the road impassable would continue to hinder recreation in the area.

#### **4.3.7 Public Health and Safety**

Vehicular collisions with cattle crossing the roadway would continue as they have in the past. Vehicles would continue to get stuck in muddy sections of the road after heavy rains and the hazard of crossing Rincon Arroyo and Yost Draw would remain.

#### **4.4 Secondary and Cumulative Impacts**

##### Land Use

Long-term secondary impacts to regional land use from the proposed action would be an increase in vehicular traffic volume and associated operational and air quality issues related to such an increase. The Traffic Impact Analysis conducted for this project indicated that the number of vehicle trips on the improved road between Hatch, New Mexico, and Spaceport America would increase in relation to Spaceport activities, from 388 during construction in 2012, to 228 in 2014, to 708 in 2023 (Southwest Engineering 2011). The study concluded, however, that “based on the remote location of the facility and the lack of other developments in the area, the new development will not have a detrimental effect on the roadway systems in this area for either the 2012, 2014, or 2032 years” (Southwest Engineering 2011:31).

##### Minerals

Approximately 486,000 cubic yards of crushed aggregate would be quarried from local sources for use in construction of the proposed action. The preferred alternative would not require any additional aggregate. Local quarry operators would obtain this material by developing new pits near the project area. These pits would be required to comply with all applicable regulations required by the land owner on whose property the pits would be sited.

##### Air Quality

An increased volume of traffic in the project area would lead to the secondary effect of increased exhaust emissions. This increase was considered for its potential long-term cumulative effects on regional air. According to the Final EIS for Spaceport America, the road averaged 20 vehicles per day in 2008 (FAA 2008). Once the Spaceport America facility is opened, this number is anticipated to increase. According to the Traffic Impact Analysis conducted for this project, traffic patterns would fluctuate in accordance with Spaceport activities. Average daily trips on the Southern access road are estimated to be 388 in 2012, 228 in 2014, and 708 in 2032. These estimates were based on assumptions made in 2011 regarding construction schedules, number of workers, increasing services at the Spaceport, and transit buses for public visitation of the Spaceport (Southwest Engineering Inc. 2011; 19–20).

The region is currently in attainment of state and national air quality standards. The increases in traffic projected by the Traffic Impact Study would not require the construction of lights at intersections and would not impact the operability of the road (Southwest Engineering Inc. 2011). The projected increases would not result in a noticeable increase in greenhouse gas (GHG) emissions or other air pollutants. A long-term beneficial effect is an expected decrease in some particulates resulting from paving of the road surface.

##### Cultural Resources

Indirect/cumulative effects to cultural resources such as El Camino Real de Tierra Adentro NHT and archaeological sites along the route may result from increased traffic and visitation to the trail due to improved access. In addition to the road improvements, the interpretive pullouts provide roadside parking areas and kiosk maps encourage pedestrian visitation to the NHT. At the same time, improved access and visitation opportunities and public outreach materials at the pullouts may result in long-term benefits, as

improving the public's experience of the NHT could result in greater public involvement in protecting and preserving this historic resource.

### Recreation

Long-term secondary impacts to recreation from the proposed action and preferred alternative are expected to be beneficial. As a result of improved access and increased use of the project area, resulting from the proposed road improvements and the interpretive pullouts, public awareness and enjoyment of cultural resources such as the NHT would increase. Long-term recreational benefits from improved visitor access to destinations such as Spaceport America are also anticipated.

## 5 INDIVIDUALS, ORGANIZATIONS, TRIBES, OR AGENCIES CONSULTED

A public meeting was held in Hatch, New Mexico on June 4, 2012, from 4:00 to 7:00 PM. A total of forty-one agency personnel, members of the public, and project team members attended this open house event. The public was able to review the project details and provide input to the NMSA consultant team and the BLM. The public also had the opportunity to contact the LCDO and provide input on this project. The project was listed on the New Mexico BLM Website NEPA Log:  
[http://www.blm.gov/nm/st/en/prog/planning/nepa\\_logs.html](http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html).

Advertisements were placed in the *Las Cruces Sun News* on May 25 and June 1, 2012, the *Sierra County Sentinel* on May 25, 2012, and *The Herald* on May 30, 2012. A copy of the advertisement is located in Appendix C *Public and Agency Scoping*.

The date, time, location, and purpose of the public meeting was picked up from the newspapers and broadcast on both radio and television in the greater Las Cruces area during the two-week period immediately prior to the public meeting.

The BLM contacted local government, private entities, tribal governments, and state and federal agencies at the initiation of the project to solicit input on potential impacts and concerns. A copy of the scoping letter is located in Appendix C *Public and Agency Scoping*. A complete list of agencies contacted is located in Appendix B *Stakeholder List* and a copy of the written responses are included in Appendix C *Public and Agency Scoping*.

All the comments received during public and agency outreach were documented in a spreadsheet and provided to the BLM (Appendix C *Public and Agency Scoping*).

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