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DCP Midstream's Zia II Natural Gas Processing Plant and Pipeline Project

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1 PURPOSE AND NEED FOR ACTION

1.1 Background

DCP Midstream (DCP) has submitted a Standard Form (SF) 299 Right-of-Way (ROW) application to the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) requesting the long-term use of public lands for the purpose of construction and operation of the Zia II natural gas processing plant, and the installation of two gathering pipelines and a residue pipeline. The BLM has assigned this project the ROW case file number: NM-130191. The majority of the project is proposed on BLM-managed surface and the CFO would serve as lead federal agency for the undertaking.

The proposed project is located in near the Eddy and Lea County line, approximately 36 miles northeast of Carlsbad, New Mexico. The legal description for the plant site is: SW¼, Section 19, Township (T) 19 South (S), Range (R) 32 East (E), Lea County.

To support the plant, two belowground gathering pipelines approximately 50 miles in total length would be constructed and would be located north and south of the proposed plant location. The residue pipeline would be approximately 0.7 mile long. The legal descriptions for the pipelines are shown in Table 1.1.

Table 1.1. Legal Descriptions of Pipelines

Name	Length (miles)	Legal Description	County
North Gathering	7.5	T19S, R32E, Sections 18,19	Lea County
		T19S, R31E, Sections 1,12	Lea County
		T18S, R31E, Sections 24,25,36	Lea County
		T18S, R32E, Sections 18,19	Lea County
South Gathering	42	T19S, R32E, Sections 19,20,27,28,29,34,35,36	Lea County
		T20S, R32E, Sections 1,12,13,24	Lea County
		T20S, R33E, Sections 1,9,29,30,32	Lea County
		T21S, R32E, Sections 4,9,16,17,20,29,30,31	Lea County
		T22S, R31E, Sections 1,12,13,24,25,36	Eddy County
		T23S, R31E, Sections 1,12,13,24,25,36	Eddy County
		T24S, R31E, Sections 1,12,13,24,25,30	Eddy County
		T24S, R32E, Sections 30,31	Lea County
		T25S, R32E, Sections 6,7,18	Lea County
Residue Line	0.7	T19S, R32E, Sections 18,19	Lea County

In addition to the plant and pipeline facilities, DCP proposes to install several aboveground facilities to accommodate pigging (or pipeline maintenance) operations, block valves for safety, and meter stations for measurements. The legal descriptions for these facilities are shown in Table 1.2.

Table 1.2. Legal Description of Aboveground Appurtenant Facilities

Name	Pipeline	Size (feet)	Legal Description	County
ZZ-1 Tie In with Meter Station and 20” Launcher	North Gathering	100 × 100	W¼, Section 18, T18S, R32E	Lea County
Zia II North Lateral Tie In with 20” Receiver	North Gathering	At Zia II	SW¼, Section 19, T19S, R32E	Lea County
Cotton Draw Tie In with Meter Station and 20” Launcher	South Gathering	100 × 100	S½S½, Section 7, T25S, R32E	Lea County
Sand Dunes Tie In with Block Valve and Meter Station	South Gathering	100 × 100	E½E½, Section 24, T23S, R31E	Eddy County
Livingston Ridge Tie In with Block Valve	South Gathering	50 × 50	N½NE¼, Section 24, T22S, R31E	Eddy County
Hat Mesa Tie In with Block Valve	South Gathering	50 × 50	E½E½, Section 4, T21S, R32E	Lea County
Hwy 62 Block Valve	South Gathering	50 × 50	E½E½, Section 12, T20S, R32E	Lea County
Zia II 20” Receiver	South Gathering	At Zia II	SW¼, Section 19, T19S, R32E	Lea County
Residue Launcher	Residue Line	At Zia II	SW¼, Section 19, T19S, R32E	Lea County
Residue Receiver	Residue Line	100 × 100	S½S½, Section 7, T25S, R32E	Lea County

As part of the application process, a Plan of Development (POD) is required and has been prepared and submitted in accordance with BLM guidance. The appropriate information from the POD has been incorporated into the Proposed Action of this Environmental Assessment (EA). The POD would be used to identify construction plans and specifications, which include BLM stipulations, construction procedures, environmental requirements, and mitigation measures that would be implemented by DCP as part of the Proposed Action.

SWCA Environmental Consultants (SWCA) conducted a biological survey of the proposed disturbance areas and the results of that survey are included in the Biological Evaluation (BE), which is included as Appendix A. Additionally, SWCA prepared a cultural resources inventory for the proposed project area, which is on file with the BLM CFO. On-site visits with the applicant, SWCA, and the BLM were held on April 16, 2013, July 25, 2013, and July 26, 2013.

This EA complies with the requirements of the National Environmental Policy Act of 1969 (NEPA) and federal regulations found in 40 Code of Federal Regulations (CFR) Chapter V. The project record contains an interdisciplinary analysis to support the findings in this document and is located at the BLM CFO. This EA analyzes the site-specific impacts associated with the Proposed Action and its alternatives, identifies mitigation measures to potentially reduce or eliminate those impacts, and provides agency decision-makers with detailed information upon which to approve or deny the Proposed Action or an alternative.

1.2 Purpose and Need for Action

The BLM’s purpose is to provide DCP with the legal use of, and access across, public lands managed by the BLM by granting a ROW. The BLM’s mandate for multiple use of public lands includes development of energy resources in a manner that conserves the multitude of other resources found on public lands. The need for the action is established by the BLM’s responsibility under the Federal Land Policy and Management Act (FLPMA) to respond to an application for a ROW grant for use of federal land. The Zia II plant and associated pipelines are needed infrastructure in the Permian Basin to accommodate increased volumes of natural gas, which has put a strain on the currently available gathering and processing infrastructure. The BLM will decide whether to grant the ROW, and if so, under what terms and conditions.

1.3 Conformance with Applicable Land Use Plan(s)

The Proposed Action is in conformance with the 1988 Carlsbad Resource Management Plan (RMP) (BLM 1988). The 1988 RMP has been amended twice—once in 1997 and again in 2008. The 1997 Carlsbad Approved Resource Management Plan Amendment (RMPA) and Record of Decision (ROD) (BLM 1997) was developed to address management of oil and gas resources. The 2008 Special Status Species Approved RMPA and ROD (BLM 2008a) was developed to address management of the lesser prairie-chicken (*Tympanuchus pallidicinctus*; LPC) and the dunes sagebrush lizard (*Sceloporus arenicolus;* DSL). The 1988 RMP, as amended, provides for the integrated multiple use and sustained yield of resources for the planning area.

The 1988 RMP complies with the multiple use mandates established by FLPMA and the 43 CFR 1600 regulations governing multiple use planning. It allows the oil and gas industries reasonable opportunities to lease and explore, while protecting sensitive areas and other resources. Continuing management guidance states, "Public lands would remain open and available for mineral exploration and development unless withdrawal or other administrative action is necessary to protect other resource values" (BLM 1988:13).

The Pecos District Office, which includes the CFO and the Roswell Field Office, uses the "BLM General Requirements for Oil and Gas Operations on Federal Lands" as a Condition of Approval (COA) that describes general requirements and standard plan operations for oil and gas operations and ROWs as outlined in Appendix 2 of the Carlsbad Approved Resource Management Plan Amendment and Record of Decision (BLM 1997:Appendix 2:1-21), and the 2008 RMPA (BLM 2008a:2-3).

Utility corridors are recognized as an appropriate use of public lands by the BLM CFO 1988 RMP (BLM 1988:10-11), which provides management direction for designation of ROW corridors. The BLM encourages applicants to locate new facilities within designated ROW corridors. Deviations from designated corridors may be permitted based on the type and need of the proposed facility and lack of conflicts with other resource values and uses. In order to comply with Section 368 of the Energy Policy Act of 2005, the Pecos District would designate utility corridors for major projects such as interstate electric transmission lines, pipelines, and communications lines for interstate use (BLM 2008a:2-12).

The 2008 RMPA states that:

> "New projects of the type described above [utility corridors for major projects such as interstate electric transmission lines; pipelines; and communications lines for interstate use] that propose to cross the Planning Area would be evaluated based on the impacts to lesser prairie-chicken and sand dune lizard habitats and other resources to meet the overall objectives of this plan. These projects would not be located in ROW avoidance areas if other routes can meet the purposes of the project. (BLM 2008a: 2-13)

Impacts from the Proposed Action on LPC and DSL are discussed in Section 3.7.3 and in the BE (see Appendix A). In addition, the Proposed Action is not located in a ROW avoidance area. Therefore, the Proposed Action is in conformance with the RMP, as amended.

1.4 Relationship to Statutes, Regulations, or Other Plans

Various federal and state agencies regulate different aspects of oil and gas infrastructure development. Table 1.3 lists the environmental permits and approvals that could be required for the proposed project.

Table 1.3. Permits, Approvals and Clearances for Construction, Operation and Maintenance of the Facilities

Permit/Notification	Issuing Agency	Status
Federal Permit, Approval, or Clearance		
ROW Grant	BLM	Subject of this application.
ROW Grant	New Mexico State Land Office	Subject of this application.
Clearance under Section 7 of the Endangered Species Act	U.S. Fish and Wildlife Service	Surveys were conducted. Findings are described in Section 3.6 and in the BE (see Appendix A). Any consultation with the U.S. Fish and Wildlife Service would be managed by the BLM.
Clean Water Act Section 404 Permit (Nationwide Permit 12 for Utility Line Activities)	U.S. Army Corps of Engineers	No jurisdictional water bodies or wetlands would be impacted by the project; therefore, a Section 404 permit would not be required.
State Permit, Approval, or Clearance		
Air permit	New Mexico Environment Department	Permit application would be submitted in July, 2013.
Clearance under Section 106 of the National Historic Preservation Act	State Historic Preservation Office	Surveys were conducted. Findings are described in Section 3.7and in the associated cultural resources inventory report (Carlson et al. 2013). Any consultation with the State Historic Preservation Office would be managed by the BLM
Tribal Communications – Consultation to determine if the proposed project would have any impact on receptors of cultural importance	Native American Tribes	Any consultation with Native American tribes would be managed by the BLM.
Section 401 permit	New Mexico Environment Department	No state regulated water bodies or wetlands would be impacted by the project; therefore, a Section 401 permit would not be required.
Clean Water Act Section 402 General Construction (Stormwater) Permit	New Mexico Environment Department	Exempt Final Rule: Amendments to the Storm Water Regulations for Discharges Associated with Oil and Gas Construction effective June 12, 2006.
Hydrostatic test permit	New Mexico Environment Department	Permit application to be submitted and approved prior to any discharge of and hydrostatic test water.
Road crossing permits	Jurisdictional agency	DCP would apply for permits prior to construction activities.

1.4.1 Council on Environmental Quality Regulations

Parts 1500 through 1508 of the Council on Environmental Quality (CEQ) regulations (40 CFR 1500.3) provide stipulations applicable to and binding for all federal agencies for implementing the procedural provisions of NEPA, “except where compliance would be inconsistent with other statutory requirements.”

Additionally, the ROW grant holder is required to:

- comply with all applicable federal, state, and local laws and regulations;
- implement the Proposed Action in a way that is as consistent as possible with local, county, or state plans.

1.4.2 Endangered Species Act of 1973

The Endangered Species Act of 1973 (ESA) requires all federal departments and agencies to conserve threatened, endangered, and critical and sensitive species and the habitats on which they depend, and to consult with the U.S. Fish and Wildlife Service (USFWS) on all actions authorized, funded, or carried out by the agency to ensure that the action would not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat. Consultation with the USFWS, as required by Section 7 of the ESA, was conducted as part of the Special Status Species RMPA (Consultation No. 22420-2007TA-0033) to address cumulative effects of RMP implementation (BLM 2008a). The consultation is summarized in Appendix 10 of the RMP. The BLM is currently conducting consultation with the USFWS for this Proposed Action.

1.4.3 Clean Air Act

The Clean Air Act of 1970, as amended, establishes National Ambient Air Quality Standards (NAAQS) to control air pollution. The New Mexico Air Quality Bureau (NMAQB) oversees air quality regulations and standards for stationary sources of air pollution. Impacts to air quality from oil and gas exploration and development are controlled by mitigation measures developed on a case-by-case basis. As part of the planning and decision-making process, the BLM must consider and analyze the potential effects of its activities on air resources. This EA discusses the contributions of the Proposed Action to regulated air pollutants and greenhouse gas (GHG) emissions and includes general discussion of potential impacts.

Modeling determined that the emissions from the Zia II gas plant facility would not exceed any ambient air quality standard or Class I or Class II prevention of significant deterioration (PSD) increment. Furthermore, it was found that there is no adverse impact to air quality related values in the nearest Class I area (Carlsbad Caverns National Park). All impact criteria were not exceeded, and there is expected to be no significant impact to air resources from the Proposed Action. See Air Resources Section 3.1 for analysis).

1.4.4 National Historic Preservation Act

Heritage resources are protected by the National Historic Preservation Act of 1966 (NHPA) (Public Law [PL] 89-665), as amended, and its implementing regulations (36 CFR 800) and other legislation, including NEPA (PL 91-852) and its implementing regulations (40 CFR 1500–1508). Other relevant laws include the Antiquities Act of 1906 (PL 52-209), the Archaeological and Historical Conservation Act of 1974 (PL 93-291), the Archaeological Resources Protection Act of 1979 (PL 96-95) and its regulations (36 CFR 296), the American Indian Religious Freedom Act (42 United States Code [USC] 1996), and the Native American Graves Protection and Repatriation Act of 1990 (PL 101-601). Executive Order (EO) 11593 of 1971 also requires that cultural resources be protected. Compliance with Section 106 responsibilities of the NHPA is achieved by following the BLM–New Mexico State Historic Preservation Office protocol agreement, which is authorized by the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. The BLM is currently conducting consultation with the State Historic Preservation Office regarding this Proposed Action.

1.4.5 Clean Water Act

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (codified at 40 CFR 112), protects surface water resources from pollution. The U.S Army Corps of Engineers has jurisdiction of navigable waters of the U.S. No jurisdictional water bodies or wetlands would be impacted by the project; therefore, a Section 404 permit would not be required.

1.4.6 Consistency with Valid and Existing Leases and Grants

The proposed ROW for the Zia II gas plant site includes several surface and subsurface, third-party leases and ROW grants (subsurface leases NMLC-068947 and NMLC-065863; ROW grants NM-0557941, NM-060146, NM-108364, NM-089668, and NM-090724).

DCP is currently in negotiations with the leaseholders to formalize an agreement by which the leaseholds would be allowed to access their current wells for operations and maintenance, but where no new drill sites or any surface operations of any type would be allowed. Where possible, leaseholders would be able to access their mineral/royalty interests via directional drilling from outside the perimeter of the 164-acre site.

DCP is also currently working on agreements with the ROW grantees that would allow access for operations and maintenance on existing pipelines, electric lines, and roads, but would disallow installation of any future surface facilities within the 164-acre site.

1.5 Scoping, Public Involvement, and Issues

Appropriate scoping helps identify issues, resources, and resource uses that could be impacted, reducing the chances of overlooking a potentially significant issue or reasonable alternative. Scoping takes place both internally within the BLM via meetings with resource specialists, as well as externally where the public is invited to comment.

Public scoping meetings were held on April 25, 2013, at the Pecos River Conference Center, consisting of an afternoon and evening session. The sessions were briefly introduced by BLM staff, then DCP representatives delivered a PowerPoint presentation describing its company culture, outlining the proposed project, and giving examples of similar projects DCP has completed at other locations. Graphic displays were provided outlining project plans and locations of the proposed plant and pipelines. BLM planning staff gave a brief PowerPoint presentation describing the NEPA process, the status of the proposed project, and procedures for public comment, including distributing substantive comment forms.

A 30-day public comment period was established (April 25–May 25, 2013). Upon conclusion of the formal presentation, comments from the audience were addressed. In the afternoon session one comment was an invitation from an Eddy County Commissioner to present the proposed project at a regularly scheduled council meeting.

Attendees were encouraged to pose any specific questions to the subject matter specialists available at the meetings, which included planning, wildlife, archeology, realty, and range specialists, as well as DCP representatives. Public attendance in the afternoon session totaled 19 people. The evening session had a single public member in attendance.

The BLM's Interdisciplinary Team of resource specialists conducted internal scoping on the Proposed Action on March 3, 2013, and identified several resource issues regarding the Proposed Action. Internal and external resource issues identified for the project are listed in Table 1.4.

In addition, the BLM CFO publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the CFO planning area. The log is located on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html).

Table 1.4. Internal and External Resource Issues for the Proposed Action

Resource	Issue	Identified by
Air Quality	How would the proposed project affect air resources and climate? How would the proposed project affect the nearby Carlsbad Caverns National Park Class I airshed?	BLM

Resource	Issue	Identified by
Travel/Transportation	Concern regarding the condition of the county road that would be used to access the plant project area.	Public
Livestock Grazing	Concern regarding the cutting of fences and damaging water pipelines and cattle guards.	Public
Socioeconomics	Concern that all the jobs would be brought in from Texas and money earned would be taken out of state, therefore not benefitting Eddy and Lea Counties.	Public
Soils	How would the surface disturbance associated with the proposed project affect soils and erosion? Would the proposed project impact any gypsum soils or open dunes?	BLM
Water Resources	How would the proposed project affect the salt playa areas near the proposed south pipeline? Would water be used in the production phase of the gas plant and if so where would the water come from?	BLM
Upland Vegetation	How would the surface disturbance associated with the proposed project affect upland vegetation? Would the proposed project impact any tree groves such as soapberry (*Sapindus* spp.) or China berry (*Melia azedarach*) groves?	BLM
Noxious Weeds and Invasive Species	How would the proposed project contribute to the spread of invasive or non-native species, such as African rue (*Peganum harmala*) or star thistle (*Centaurea solstitialis*)?	BLM
Wildlife and Special Status Species	How would the proposed project and associated noise impacts affect habitat for wildlife and migratory birds? How would the proposed project and associated noise impacts affect special status species with the potential to occur in the project area, including habitat for the LPC and DSL?	BLM
Cultural Resources	How would surface-disturbing activities affect cultural resources? Is there potential for cumulative or indirect impacts to known archeological sites?	BLM
Visual Resources	How would project construction and the existence of a gas plant impact visual values?	BLM
Livestock Grazing	How would the proposed project impact livestock grazing in the vicinity of the proposed plant and pipelines, specifically fence crossings and water line crossings?	BLM
Social and Economic Conditions	Oil and gas industry activities create employment opportunities. How would this project contribute to the local economies of Lea and Eddy Counties?	BLM
Public Health and Safety	How would proposed project construction and ongoing activities impact public health and safety?	BLM

1.5.1 Issues Considered but Not Analyzed

The following issue was considered but not analyzed in detail in this EA.

Native American Religious Concerns

For the Proposed Action, identification efforts were limited to reviewing existing published and unpublished literature, the site-specific Class III survey report prepared for the Proposed Action, and a review by the BLM's cultural resources program regarding the presence of Traditional Cultural Properties identified through ongoing BLM tribal consultation efforts. The Proposed Action would not impact any known Traditional Cultural Properties, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 USC 1996) or EO 13007.

2 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

DCP is seeking authorization to construct and operate a new natural gas processing plant and approximately 50 miles of gathering and residue pipelines, herein referred to as the project or Proposed Action. If completed, the Proposed Action would contribute an additional 200 million standard cubic feet per day (MMSCFD) of natural gas supply to markets. The project would be primarily located within Lea and Eddy Counties, New Mexico, and would expand the existing natural gas gathering system that is currently in the area. The majority of the land is managed by the BLM; however, the pipelines would cross approximately 4 miles of state-owned land and 1 mile of privately owned land (Figure 2.1). Construction would begin following approval of the Proposed Action and granting of the ROW. Table 2.1 shows the proposed acreage of impacts by landownership.

Table 2.1. Acreages of Proposed ROW and Surface Disturbance by Landownership

Project Element	Land Ownership	Acreage Included in the Proposed ROW	Short-term Disturbance Acres	Long-term Disturbance	Exclusion Area Acreage
Zia II gas plant site	BLM	164	6	63*	102
Pipeline gathering system	BLM	454	453.5	.5**	0
	State of New Mexico	60	60	0	0
	Private	13	13	0	0
Temporary use areas (11 total)	BLM (9) State (2)	3	3	0	0
Total Acreage of ROW		***694***	***535.5***	***63.5***	***102***

*Includes the 62-acre plant facility area and 1-acre access from Lusk Road
** ZZ Tie in access road

Description of the Zia II Gas Plant

The ROW for the natural gas processing plant is proposed on 164 acres of BLM-managed surface, located in southeast New Mexico approximately 36 miles northeast of Carlsbad (Figure 2.2). The legal description of the plant site is SW¼, Section 19, T19S, R32E, Lea County, New Mexico. The permanent footprint of the plant facility would consist of 62 acres (1,800 × 1,500 feet) for the plant facility and 1 acre (1,160 × 40 feet) for the access road. During construction, approximately 6 additional acres of disturbed area around the plant itself would be utilized for materials and staging, for a total of 69 acres of ground disturbance. The 164 acres plant site boundary would have a BLM-specified four-strand barb-wired fence, while the 62-acre plant facility would have a 6-foot chain link fence with three strands of barb-wire on top. The area inside the plant site boundary but not occupied by the plant facility is a 102-acre exclusion area or area that would have no surface disturbance but would exclude wildlife and recreationists.

The plant is located in unincorporated Lea County with no residential or commercial areas nearby. Construction access to the plant site would be from Lusk Road. DCP is proposing to build a new permanent access road from Lusk Road to the plant site.

Description of the Proposed Pipeline Gathering System

The proposed ROW would be 90 feet wide. This includes a 50-foot-wide permanent ROW for the pipeline and 40 feet of temporary use or construction area used for project-related vehicle traffic and stockpiling of soils and other working items. The ROW will only be bladed for 75 feet, the remaining 15 feet would have the vegetation removed but there would be no topsoil disturbance. In sensitive areas the ROW may be narrowed to 75 feet with a 50-foot permanent and 25-foot temporary work area.

A 20-inch outside diameter (O.D.) 7.5-mile gathering pipeline would be built north of the plant connecting an existing DCP pipeline (Eddy County ZZ-1 pipeline) to the Zia II plant. To the south there would be a 20-inch O.D. 42-mile gathering pipeline connecting an existing DCP pipeline (Cotton Draw 10200 pipeline) to the Zia II plant. There would also be a 12.75-inch O.D. 0.7-mile residue pipeline. The residue pipeline would have two delivery points to the existing Transwestern and El Paso transmission pipelines. The pipelines would primarily be below ground, but would have some associated aboveground facilities. The associated facilities would include pig launcher/receiver facilities, metering facilities, and several block valves.

To access the pipeline construction corridor and staging areas, DCP would use existing public roads, as well as numerous private roads. None of the existing proposed access roads would require upgrade or improvement prior to use. A new permanent access road would be built to access the tie-in point at the Eddy County ZZ-1 pipeline. The road would be approximately 900 feet long by 25 feet wide.

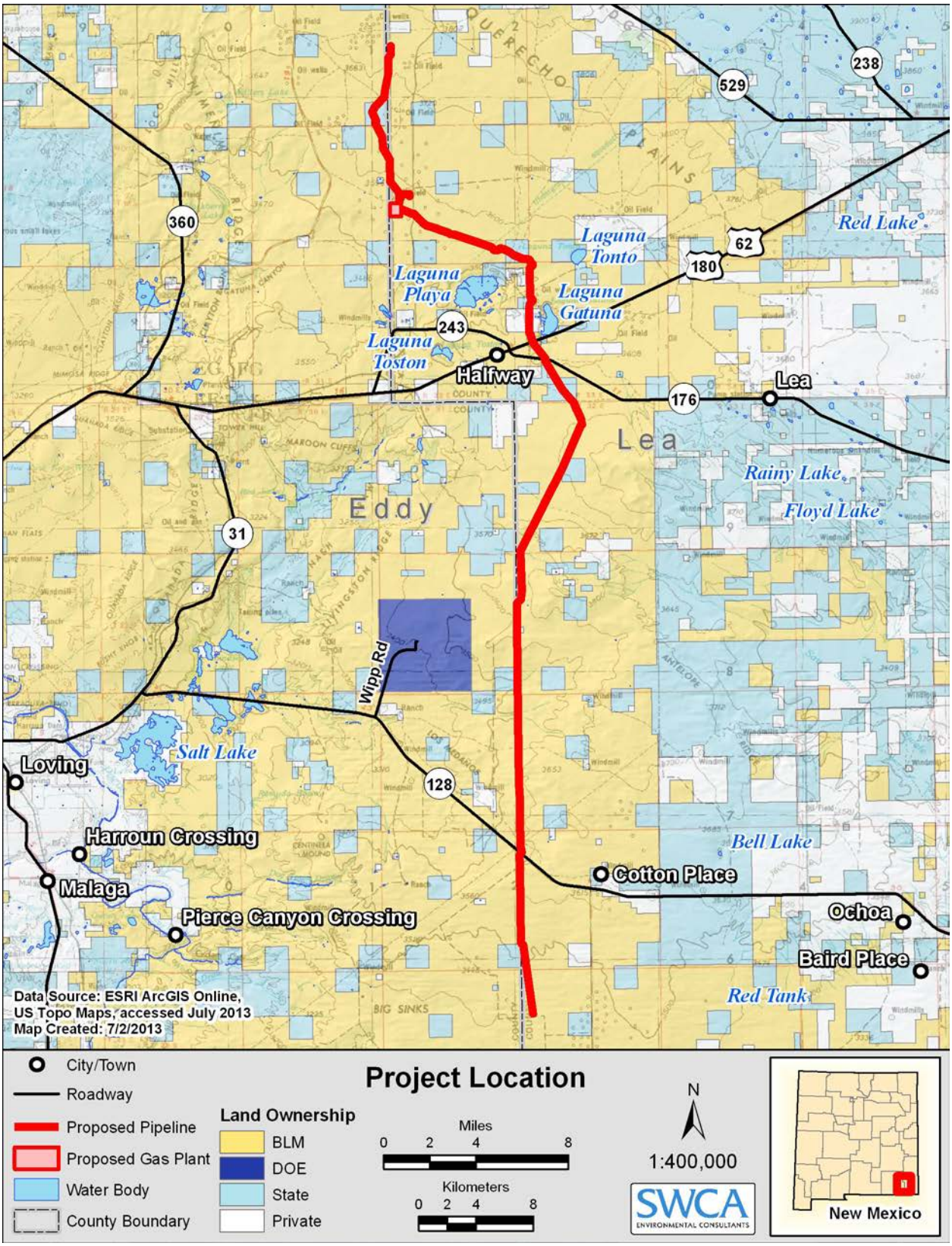

Figure 2.1. Project location map.

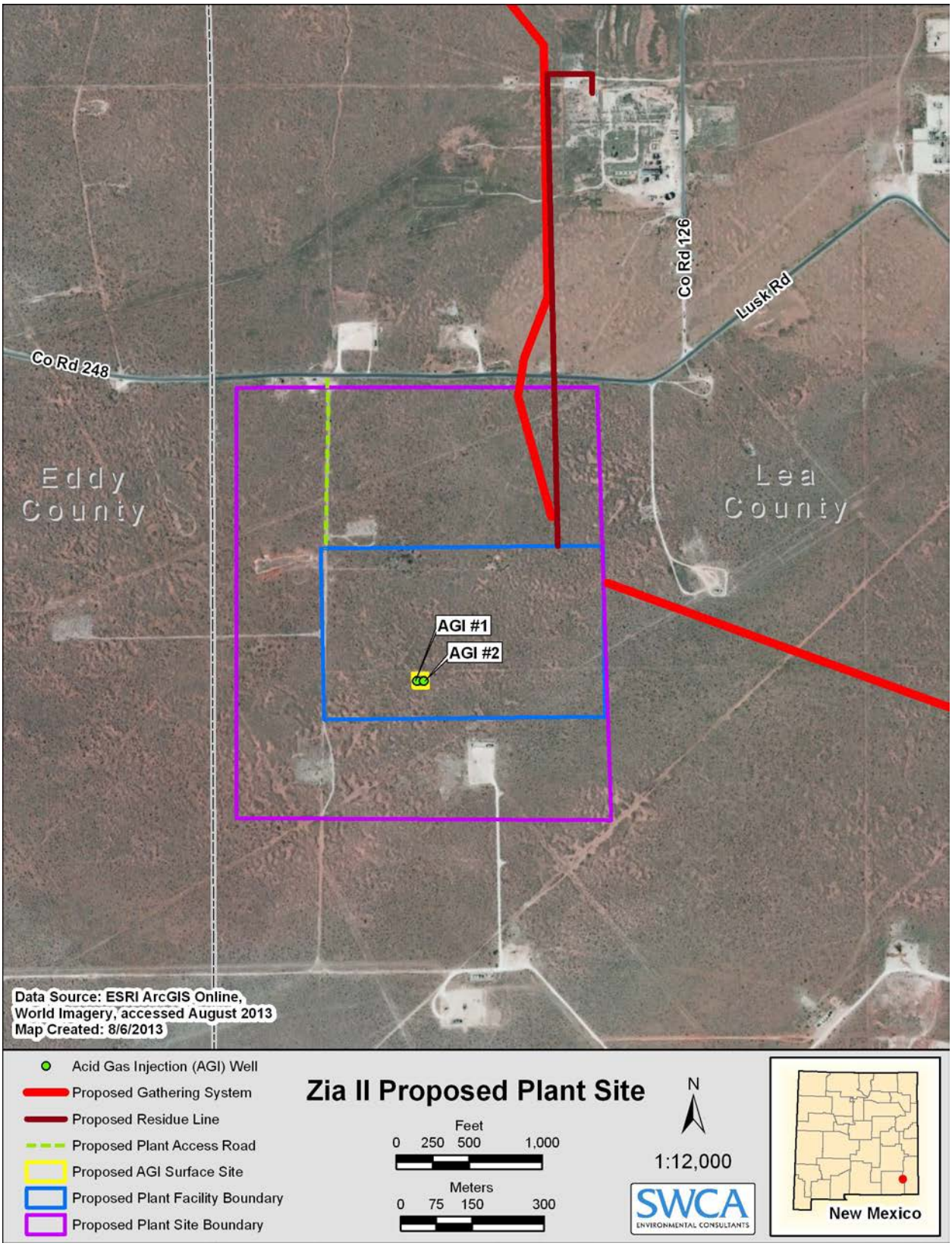

Figure 2.2. Plant site vicinity map.

2.1.1 Construction Phase

Plant: The plant would be designed and built in accordance with all applicable state and federal design codes and regulations. Typical construction activities associated with the plant and other aboveground facilities would include clearing and grading, installation of foundations, equipment and piping, and cleanup and restoration. Equipment would typically be shipped to the sites by truck after construction commences. The equipment would be offloaded and when ready for installation, positioned on the foundations, leveled, grouted, and secured.

Pipelines: The construction ROW for the pipelines would include a 50-foot permanent ROW and 40 feet of temporary workspace for a total permitted width of 90 feet (Figure 2.3). The ROW may be narrowed to 75 feet in sensitive areas. Some extra workspace may be needed to accommodate construction in some areas along the pipeline routes. There are 11 proposed temporary use areas totaling approximately 3.0 acres. General pipeline construction procedures would be employed, such as survey and staking, clearing and grading, trenching, pipe-stringing, bending, and welding, lowering-in, and backfilling. The construction would be followed by cleanup and restoration.

The equipment required for construction of the plant and pipeline would include trenchers, trackhoes, sidebooms, and other tractors. In addition, personal trucks, welding trucks, cranes, and flatbed trailers would be required. The majority of heavy equipment that would be necessary would remain on-site at the plant or on the construction ROW minimizing activity on public roads. Prior to construction, if any loads are oversized or overweight, the appropriate permits would be obtained by the contractor.

The pipeline trench would be excavated with a backhoe or ditching machine to a depth sufficient to provide the minimum cover required by DCP specifications. Typically, the trench would be approximately 5 to 6 feet deep to allow for at least 3 feet of cover. In areas with consolidated rock, the minimum cover would be at least 18 inches. In certain areas, deeper burial would be required resulting in an increased trench depth. The 20-inch lines would require a total trench depth of 56 to 60 inches to ensure the 36-inch cover requirement. In order to comply with Occupational Health and Safety Administration (OSHA) standards, a trench width of 84 inches minimum would be required due to the sandy type of soil in the project area. Trenching width requirements for unconsolidated sand are much greater than for other types of soil due to the angle of repose. DCP calculates that due to this and the fact that the topsoil pile would be about 5 feet beyond the spoil distance a trench width of 30 feet would be required (Figure 2.3). The size of the pipe would require larger equipment such as a Cat 72 H sideboom. The width of this equipment is 15 feet, with a length of 20 feet. To properly move this and other equipment around, the passing lane would need to be 20 feet, with the sideboom placed about 25 feet from the center of the trench. If the need arises to move soil to the other side of the trench, an additional 15 feet (minimum) for the spoil pile would be required. This adds up to 60 feet on the right side of the trench (see Figure 2.3).

Construction noise would be highly variable. Many construction machines operate intermittently, and the types of machines in use at a construction site would change with the construction phase. The equipment used in the project may include backhoes, side booms, welding machines, work trucks, and front-end loaders. The U.S. Environmental Protection Agency (EPA) has published data on typical noise levels from construction equipment. Based on the EPA data, the highest noise levels from construction would be from graders and backhoes, which generate maximum noise levels near 90 A-weighted decibels at 50 feet from the equipment. Such levels would be clearly audible but temporary in nature.

Construction of the proposed project would take approximately 14 months and would begin in January 2014 and be completed by March 1, 2015. The projected in-service date for the project is March or April 2015. During peak construction there may be as many as 500 contractors working at the plant and on the pipelines; however, the average is expected to be closer to 300.

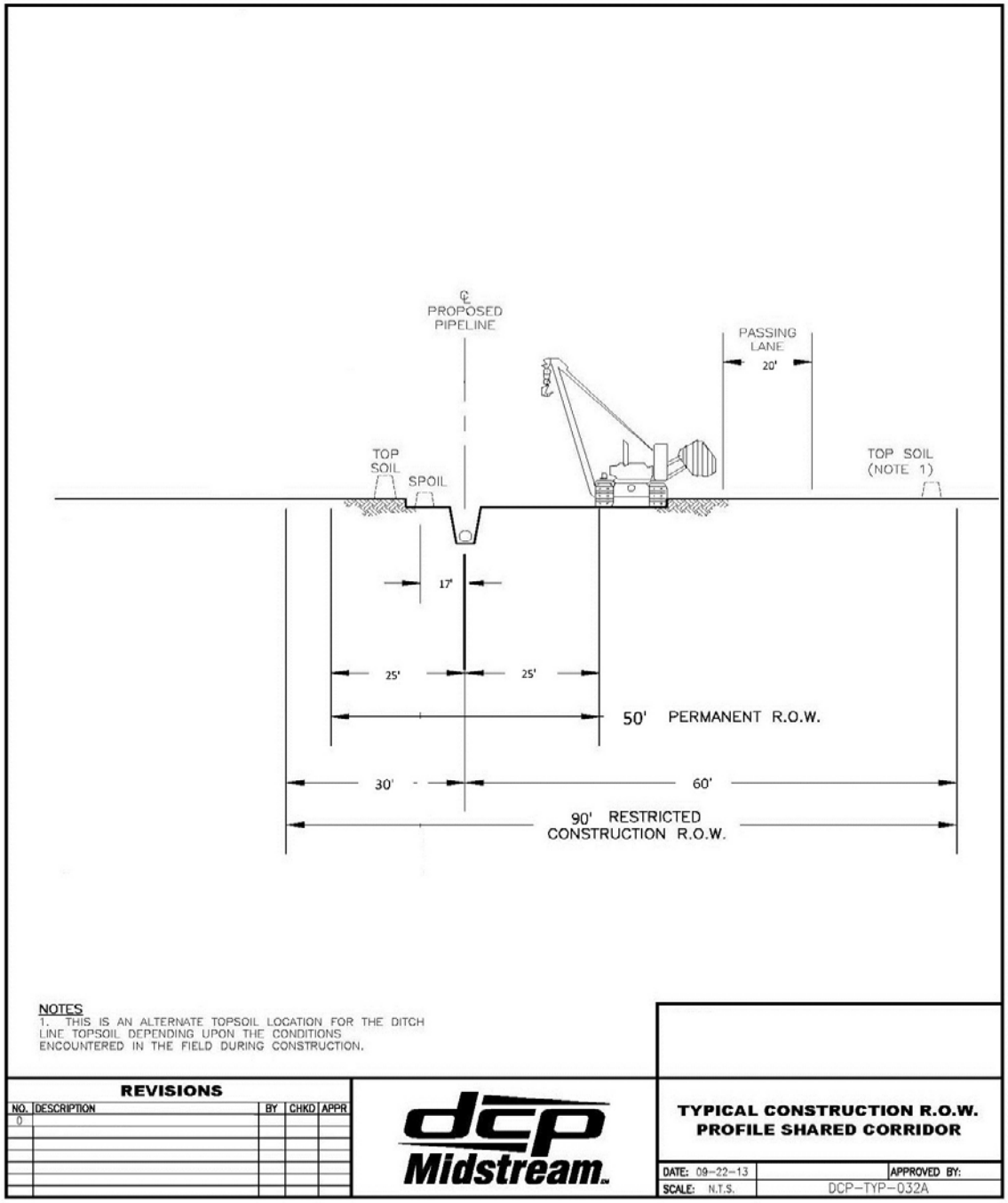

Figure 2.3. Typical ROW.

2.1.2 Operations Phase

The operational life of the plant and pipelines is expected to be approximately 40 years, although the facility could continue operations beyond that if justifiable. Approximately 22 full-time jobs would be staffed for the plant facility and associated gathering pipelines. The operation of the plant and gathering system would also employ contract positions for ongoing maintenance operations.

Plant: The facility would be designed for 200 MMSCFD of natural gas processing and consist of two 1,000-gallon-per-minute amine plants, one 200 MMSCFD glycol dehydrator, one 200 MMSCFD cryogenic processing skid, and one 5,000-barrel-per-day condensate stabilizer, with associated vessels, heaters, metering stations, and flares. The facility would have a truck loadout facility for produced water and condensate. Approximately 10 trucks per day would travel to and from the facility.

There are two acid gas injection wells proposed for the facility to sequester byproducts of carbon dioxide (CO_2) and hydrogen sulfide (H_2S). The acid gas injection wells would be located inside the 164-acre plant site area.

The conceptual design calls for injection at rates of up to 13 million standard cubic feet per day of treated acid gas. The treated acid gas is expected to be composed of approximately 89% CO_2 and 11% H_2S; in total the wells would sequester approximately 25,000 tons of H_2S and 244,000 tons of CO_2 per year. The injection zones targeted are the Permian Cherry Canyon and Brushy Canyon formations, with injection occurring through perforations located from 5,550 to 6,050 feet below ground surface. The first injection well would be drilled vertically to a depth of 6,100 feet. The second injection well would be drilled at an angle, reaching a true vertical depth of 6,100 feet but an overall total well depth of 6,700 feet. All depths stated in this section refer to true vertical depth.

Preliminary design indicates that the wells would have a 20-inch-diameter conductor casing to a depth of 40 feet, a 13⅜-inch-diameter surface casing to a depth of 1,025 feet to protect fresh water resources, a 9⅝-inch-diameter intermediate casing to a depth of 2,700 feet, and a 7-inch-diameter production casing to a depth of 6,100 feet (with perforations from 5,550 to 6,050 feet). The acid gas would be delivered via 3-inch-diameter tubing located within the production casing. A packer located at about 5,500 feet would prevent acid gas from moving upwards in the production casing once it exits the tubing. The conductor casing, surface casing, intermediate casing, and the production casing would all be cemented continuously to the surface in order to act as a barrier for any potential vertical migration of injected fluids and to ensure that the well is sealed from any overlying aquifers. The BLM requires cement bond logs and pressure testing to ensure the integrity of the cement seals. The injection zones would be perforated after cementing and testing.

DCP intends to dispose into both wells simultaneously for operational advantages. Products such as produced water, condensate, and natural gas liquid are assumed to be trucked at this point, although alternative pipeline options are being evaluated. These wells would be approved through the New Mexico Oil Conservation Division (NMOCD), which includes evaluation of construction details and public notice to allow review of the application by nearby well owners. These wells would also require submittal and approval of an Application for Permit to Drill (APD) to the BLM.

Utilities: Plant utilities are still undergoing evaluation and have not been determined. Items such as electricity, water, and communications are still being developed. At this time, water either could be trucked or could be piped to the site from an existing well located approximately 0.25 mile northeast of the plant (the Lusk well). If trucked, water would require approximately three transports per day. If piped, water would be delivered through a 4-inch-diameter pipeline within an existing corridor of disturbance. The raw water requirement of the plant would be approximately 30 gallons per minute, or 43,200 gallons per day. Another possible option would be drilling of a water supply well within the plant site.

Sanitary waste disposal at the plant site would utilize a conventional septic field. The septic field would follow design standards required under state health regulations, and would require permitting through the New Mexico Environment Department Liquid Waste Program.

Noise: Noise during operations of the plant would be generated from equipment such as compressors, air fin cooling fans, gas-fired heaters, and pumps. See design features listed below for wildlife in Section 2.1.3 for measures to mitigate impacts to wildlife from noise.

Lighting: Lighting at the gas plant would be designed to illuminate the equipment for safety and security purposes allowing night-shift DCP personnel to inspect the natural gas equipment while performing their work. Typically exterior lighting is provided at all exits, in process areas, and in truck loading areas.

Lighting is also needed for piping to assist in the detection of leaks. Many of the lights would only need to be on when there are people actively working or present in certain areas.

The lighting at the gas plant would be installed so as to not shine directly on adjacent properties or create hazards to motor vehicle operators on surrounding roads. These lights would be directed downward and inward. It should also be noted that the gas plant facility is located within a larger plat of land and is set back from roadways and the plant boundary fence, which further minimizes the impacts of lighting on adjacent roadways. No colored lighting would be used, which may be confused with emergency service vehicles or traffic control devices.

Pipelines: The 50 miles of 20-inch O.D. 0.375 wall raw natural gas gathering pipelines would have a maximum allowable operating pressure (MAOP) of above 1,000 pounds per square inch gauge (psig), with the initial operating pressure between 300 and 650 psig. Road crossings and bores would use 0.500 wall pipe.

The 0.7 mile of 12.75-inch O.D. 0.375 wall natural gas residue pipeline would have a MAOP of 1,440 psig, with initial operating pressure of approximately 1,000 psig. Operating temperatures would be ambient conditions. When in operation, the pipeline and associated aboveground features would not generate a significant amount of noise.

2.1.3 Project Construction and Operation Design Features

The following applicant-committed environmental protection measures have been incorporated into the project design of the Proposed Action for the construction and operations phases to lessen or avoid impacts to resources. Throughout this document these are referred to as the Proposed Action's design features. These features are organized below under the resource they are designed to protect, although some of these measures are designed to protect or mitigate impacts to multiple resources. This document also refers to best management practices (BMPs), which are industry- or agency-recommended construction methods that are routinely implemented to minimize impacts to resources. Where practical, these BMPs have been incorporated into the project's design features.

Air Quality

- Air quality impacts associated with construction projects generally arise from fugitive dust generation by construction equipment. Furthermore, large earth-moving equipment, such as skip loaders, trucks, and other mobile sources, are powered by diesel or gasoline, which are sources of combustion emissions, including nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). Fugitive dust results from land clearing, grading, excavation, and vehicular traffic. The amount of dust generated is a function of the type of construction activity, the silt and moisture contents of the soil, the wind speed, the frequency of precipitation, the level of vehicular traffic and the types of vehicles used, and the roadway characteristics (i.e., paved or unpaved). Emissions would be greater during drier summer and autumn months and in locations with fine-textured soils. During summer and autumn, dust suppression techniques such as watering or application of a chemical stabilizer would be used in construction zones to minimize fugitive dust impacts.
- Reasonable precautions would be used to prevent fugitive dust from becoming airborne, including 1) using water or chemicals to control dust where possible, 2) covering open bodied trucks at all times while transporting materials likely to produce airborne dusts, 3) promptly removing earth or material from paved streets, and 4) re-establishing vegetation in temporary work areas as quickly as possible.
- The Zia II facility has undergone preliminary air emission calculations, which are provided in the air quality analysis (see Section 3.1). Detailed modeling, as required by state and federal agencies, was also completed. The facility is undergoing permitting under a PSD process. The site emissions would all be controlled under Best Available Control Technology (BACT).
- The Zia II facility includes two acid gas injection wells that would sequester approximately 25,000 tons of H_2S and 244,000 tons of CO_2 per year. For a natural gas plant, these waste acid gases would normally be flared off or recovered in a sulfur recovery unit (SRU). An SRU removes H_2S

but does not remove CO_2, which is vented to atmosphere. If the waste acid gas is flared, H_2S is oxidized to sulfur dioxide (SO_2), and then the SO_2 and CO_2 are vented to atmosphere. The plant includes an emergency acid gas flare for when the acid gas injection wells are not operational. Design features include three 50% compression units with electric drives.

Soils and Vegetation

- DCP would restrict construction activities and the storage of construction materials and equipment to the areas described above. To minimize sedimentation and erosion during construction of the project, DCP is committed to following BMPs, including installing erosion and sediment control devices, using proper grading techniques, conducting periodic inspections, and stabilizing disturbed areas in a timely manner. Following construction, permanent BMPs would be used to prevent sedimentation and erosion. DCP would follow the BLM's "Gold Book" standards and guidelines (BLM 2007) or DCP's internal standards depending, on whichever is more stringent.
- DCP would use public and existing roads as much as possible to lessen new surface disturbance and habitat fragmentation. No temporary access roads would be built.
- All access to the plant site would be from the newly constructed permanent road.
- All construction activities shall be confined to the minimum area necessary.
- The construction ROW would be delineated and clearly marked to prevent accidental disturbance of any unnecessary acreage.

2.1.4 Stabilization and Rehabilitation of the Plant and Other Aboveground Facilities

Once construction is completed, the boundaries for the plant would be permanently identified with a 6-foot-high chain link fence with three-stand barb-wire on top. Inside the fence line the area would be covered with 2 to 3 inches of ¾-inch road base and would slope 1% to 3%. All vegetation within the fence line would be managed through the use of herbicides.

In addition to the 63.5 acres for the plant facility area and access roads, an additional 6 acres around the 164-acre plant site may be temporarily disturbed during construction. Outside the fence line the following measures would be taken to stabilize and rehabilitate the disturbed area:

- The disturbed areas would be returned as much as possible to their pre-disturbed state as quickly as possible.
- The areas would be regraded to conform to the original contours.
- Topsoil from the disturbed areas would not be stockpiled for more than 60 days and would be redistributed over the surface.
- Temporary and permanent BMPs to prevent sedimentation and erosion during construction and following construction would be implemented.
- Areas outside the fence line that are cleared due to construction or other activities associated with the project would be seeded with a native grass mixture or with some other suitable reclamation mixture approved of by the landowner.
- The soil would be suitably prepared and amended as necessary in preparation for seeding, unless recommended fertilizer would not be applied.
- Weed-free straw or other suitable mulching material would be used.
- Final revegetation would begin when the last of the construction is completed.

2.1.5 Stabilization and Rehabilitation of the Pipeline ROWs

- DCP would conduct restoration activities in accordance with landowner agreements, permit requirements, and written recommendations from the local soil conservation authority or other duly authorized agency.
- Final stabilization and rehabilitation measures for pipeline ROWs, in general, involve regrading the disturbed area to near pre-disturbance contour, re-spreading topsoil, applying soil amendments if necessary, applying a prescribed seed mixture, mulching, and placing runoff and

erosion control structures such as water bars, erosion control mats, and wattles (slope interruption devices). The goal of final reclamation is to 1) restore primary productivity of the site and establish vegetation that would provide for natural plant and community succession, and 2) establish a vigorous stand of desirable plant species that would limit or preclude invasion of undesirable species, including invasive, non-native species. DCP would follow the BLM's 'Gold Book' standards and guidelines (BLM 2007) or DCP's internal standards, depending on whichever is more stringent.

- To assist with the stabilization and rehabilitation of the pipeline ROWs, during construction topsoil would be handled separately from subsoil materials. At all construction sites, topsoil would be stripped to provide sufficient quantities to be re-spread to a depth of at least 4 to 6 inches over the disturbed areas to be reclaimed. Where soils are shallow or where subsoil is stony, as much topsoil would be salvaged as possible. Topsoil would be stockpiled separately from subsoil materials and marked with signs or identified on alignments sheets. Runoff would be diverted around topsoil stockpiles to minimize erosion of topsoil materials.
- Depending on the conditions, it may be possible to crush in-place rather than clear vegetation and leave topsoil in place rather than blade and stockpile. In sandy soils this technique would reduce the magnitude and severity of disturbance impacts and hasten successful reclamation.
- As soon as practicable after backfilling the trench, all work areas would be final graded and restored to pre-construction contours and natural drainage patterns as closely as possible. Non-cultivated lands would be reseeded as soon as possible to minimize erosion. The current vegetative cover is similar to that at the plant site. The seeding procedure would be the same as described above.
- If seasonal or weather conditions are not favorable, temporary erosion controls would be maintained until the area is revegetated. Surplus construction material and debris would be removed from the ROW unless otherwise approved. Fences and other existing infrastructure would also be returned to their pre-construction condition as approved by landowners and/or land management agencies.

2.1.6 Noxious Weeds and Invasive Species

- Any grading or earth disturbance in the project area would be done in a manner to minimize the spread of weed seeds or propagative parts to uninfested locations.
- A revegetation plan approved by the BLM would be implemented.
- All known concentrations of African rue within the work area would be identified and clearly flagged prior to the clearing of vegetation. DCP would conduct pre-construction noxious weed control by herbicide spraying to kill and weaken weeds, and prevent seed formation. All herbicide spraying would be completed by a state-approved and licensed applicator.
- At the start of construction when the site is being prepped for earthmoving activities, vehicles including personal vehicles and equipment entering the work site would be inspected to ensure that they are free of loose soil and debris capable of transporting invasive species seeds, roots, or rhizomes. As the site is cleared of vegetation and soil is graded, care would be taken to segregate the vegetation and soil from areas where invasive species infestations have been identified from non-infested vegetation and soil. The infested material would be stockpile away from the buffer zones to minimize the potential for transporting soil-borne invasive species seeds, roots, or rhizomes to the undisturbed areas. BMPs used for stormwater management would be weed free and used as additional protection to prevent the spread of invasive species to the undisturbed buffer areas.
- Post-construction areas of the site that would be graveled, paved, or built on and would remain vegetation free through the use of herbicides. In those areas where vegetation would be allowed, revegetation efforts using weed free seed mixes would begin at the earliest practical planting season to re-establish a ground cover on exposed soils that would help prevent the encroachment, establishment, and/or spread of invasive species.
- Noxious weed free straw or hay bales would be required to be used on the site for erosion control, including any mulch obtained off-site. Seed applied in reclamation would be required to

be weed free. Only clean fill materials would be imported onto the site for use during construction.

Water Resources

- Hydrostatic test water would be discharged to an upland area in compliance with required permits from the New Mexico Environment Department, using appropriate discharge and erosion control measures.
- DCP would prepare and implement stormwater BMPs in accordance with internal policies or the BLM Gold Book standards and guidelines, whichever is more stringent.

Wildlife and Special Status Species

- Sensitive areas that are nearby the plant site or pipeline routes would be identified on the construction alignment sheets and would be clearly identified in the field with signs and/or construction fencing.
- DCP would use public and existing roads as much as possible to lessen new surface disturbance and habitat fragmentation. No temporary access roads would be built.
- All personnel working on the construction of the proposed project would be instructed to avoid intentionally harassing all animals. BMPs on pipeline burial are available from the New Mexico Department of Game and Fish (2012) Habitat Handbook trenching guidelines. These guidelines have been developed to prevent wildlife mortalities from entrapment. Reptiles, amphibians, and small mammals are particularly vulnerable to that risk.
- To avoid the loss of migratory bird active nests, eggs, or young, construction activities on the pipelines should occur outside the migratory bird breeding season (March–August). If construction activities are to occur during the migratory bird season, pre-construction nest surveys would be conducted.

Dunes Sagebrush Lizard Protective Design Features

- SWCA recommends that a New Mexico Department of Game and Fish take permit for DSL be acquired prior to starting construction (see New Mexico Statutes Annotated 17.2.41 and 17.2.45).
- Trench monitoring for wildlife during construction of the pipeline would be required when working inside the RMP-zoned DSL habitat distribution as specified by BLM protocols.
- In sand dune areas designated by BLM, top-sand will be piled in a mogul structure when construction is finished to simulate dune structures and aid in the recovery of disturbed areas.
- Drift fences constructed from bio-degradable material will be used where designated by BLM monitors for the purpose of sand dune restoration. This measure is anticipated to capture blowing sand in order to aid in the natural dune-building process.

Lesser Prairie-Chicken Protective Design Features

- For lands enrolled in the Candidate Conservation Agreement to protect LPC, noise from oil and gas operations cannot exceed 75 decibels (db) at the fence line of the plant site. DCP would design the plant so that noise would not exceed the 75-db threshold at the plant fence line. Within 90 days of completing construction of the plant, DCP would conduct a noise analysis at normal operational function along with BLM wildlife staff to determine if the 75-db level has been met. If the normal operating noise level exceeds the limit, DCP would develop and implement a plan to bring the plant into compliance within 60 days. Lowering the db level may require a severe rated exhaust muffler, an intake silencer, an enclosure around the compressors, and/or a very low fan tip speed on the cooler fan.
- Lights at the operation gas plant would be directed downward and inward to minimize any disturbance to the LPC inhabiting areas outside the gas plant site fence.
- The construction schedule and morning activities would be modified during lekking season (March 1–June 15). The goal is to conduct most of the earthmoving activities prior to the timing restrictions that go into effect on March 1. From March 1 until the end of the timing restrictions on June 15, DCP would continue with construction; However, construction activities would only occur

between the hours of 9:00 am and 7:00 pm. Other non-construction activities would be allowed before 9:00 am and may include parking vehicles, conducting safety tailgate meetings, conducting walk-arounds, receiving equipment, and measuring foundation forms. No operation of heavy equipment would be allowed until after 9 a.m. Following the end of the timing restrictions on June 15, DCP would continue with all construction activities with the goal to be complete with construction and commissioning of the plant by March 1, 2015. Restoration of the disturbed sites outside the fence line would be ongoing until the area is stabilized.

- As far as timing restrictions for the LPC individual exceptions may be granted within the LPC timing area and are valid for the current LPC breeding season only. The individual exception must be granted before an action can begin and must be on-site (in possession of the field project manager and/or subcontractors) during all phases of construction activity during the restricted time period. A contingency accompanies the exception: if new information is received (for example, new leks found), the BLM would take measures immediately to protect the habitat and/or birds. These protective measures would be on a case-by-case basis and could possibly entail ceasing all construction activities.
- Any new fence constructed will be a four-strand wire; with the top three wires being barbed and the bottom most wire being of smooth. Wires on the fence will have the following spacing intervals starting from the ground to the bottom wire and proceeding from wire to wire: 16, 6, 8, and 12 inches for a total height of 42 inches from the ground to the top most wire strand.
- Any new fence constructed in occupied or suitable lesser prairie-chicken habitat will include spikes or other predator perching deterrents on fence posts.
- Fence markers will be used to reduce LPC collisions. Fence markers will be approximately 3 inches long and 1.5 inches wide. Fence markers will be constructed of a BLM approved reflective material. The markers will placed approximately 4 feet apart on the top and third wires in an alternating pattern, so the markers on the third wire are attached approximately halfway between the markers on the top wire.

Cultural Resources

- In the event of an unanticipated discovery of cultural material during construction, all work at that location would be stopped immediately and the area fenced off. The appropriate agency would be notified. Work would not begin again in the area until clearance is obtained from the agency.

Visual Resources

- For the pipeline, all disturbed areas would be revegetated.
- The proposed plant and other permanent aboveground facilities would be encircled by chain-link fence enclosures and would be similar in nature to the oil and gas infrastructure that already exists in the vicinity.
- All aboveground facilities would be painted according to BLM specifications to blend with the surrounding landscape and infrastructure.

Livestock Grazing

- All fences and other existing infrastructure would be returned to their pre-construction condition as approved by the BLM and allotment permit holders.
- See design features under Soils and Vegetation above that relate to livestock grazing.
- Pipeline areas impacted during construction would be returned to their pre-disturbance state as soon as final construction is completed. Topsoil from the disturbed areas would not be stockpiled for more than 60 days and would be redistributed over the surface. Disturbed soil in construction areas outside the plant fence line and along the pipeline route would be prepared and amended as necessary in preparation for seeding with a native grass seed mix approved by the BLM and allotment permit holders. Weed free straw or other suitable mulching material would be used during revegetation.
- The goal of the final reclamation is to 1) restore primary productivity of the site and establish vegetation that would provide for natural plant and community succession, and 2) establish a

vigorous stand of desirable plant species that would limit or preclude the invasion of undesirable species including non-native and noxious weeds.
- All construction areas would be graded to original contours following the construction period, thereby mitigating potential injuries to livestock from holes, ditches, and trenches. Surplus materials and debris from construction would be removed from the ROW.

Public Health and Safety

Plant and Pipeline Construction

- The plant and pipeline are being designed and would be built in accordance with all applicable state and federal codes and regulations. To ensure compliance with these codes and standards, DCP requires that contractors follow DCP Engineering Standards, DCP Required Practice Specifications, and, DCP General Construction Specifications (DCP 2013).
- The pipelines would be designed and constructed to meet DCP Steel Line Pipe Selection and Design Recommended Practice, DCP Engineering Standards;, and the CFR DOT 192 or 195, whichever is applicable as a minimum standard. These design standards specify pipeline material and qualification, minimum design requirements, and protection from internal and external atmospheric corrosion. The MAOP of the gathering pipelines would be above 1,000 psig, which is commensurate of a Class 1 area. The pipe wall thickness would range from 0.375 inch to 0.500 inch, with the thicker walled pipe being used at road crossings. If a subsequent increase in population density adjacent to the ROW indicates a change in class location for the pipelines, DCP would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness. Other applicable federal and state regulations, including U.S. Department of Labor, OSHA requirements and EPA regulations, would be followed during the construction of the pipelines.
- Constant monitoring of the pipeline and all associated equipment would occur throughout the length of the pipeline. DCP maintains a rigorous inspection program that monitors all aspects of construction and operation, including welding, environmental, safety, etc. The pipeline would be instrumented and monitored continuously for potential leaks. If a leak is determined or reported during operation, the pipeline would be shutdown and the source of the leak would be determined.
- To avoid or minimize the potential for harmful spills and leaks during construction, DCP would ensure implementation of a Spill Prevention and Response Plan (SPRP). The SPRP describes spill and leak preparedness and prevention practices, procedures for emergency preparedness and incident response, and training requirements.
- All solid waste associate with the construction of the project would be managed in accordance with all federal, state, and local regulations. Construction debris would be containerized and disposed of at appropriate facilities in a timely manner. Temporary sewage disposal units would be provided by the contractor in areas of active construction and would be maintained regularly to prevent water or soil contamination. Spill kits would be available at all active construction areas. Any leaks from equipment or vehicles would be cleaned up in accordance with all applicable regulations and contaminated material disposed of at appropriate facilities.

Plant Operations and Maintenance

DCP is committed to operating its facilities in a safe and environmentally sound manner. To achieve this goal the company has numerous systems and procedures in place ranging from written operating procedures, required internal policies and standards, and compliance audits/inspections and accountability for correcting findings. They include the following:

- The plant would be staffed 24 hours a day, 7 days a week, 365 days a year. Emergency shutdown devices are strategically placed throughout the plant. In the event of an emergency, staff from other nearby plants can be called upon to provide additional support and direct safety operations as necessary.
- Operations personnel would receive training in the proper operation of equipment. All operators would participate in an Operator Qualification program, which includes training in normal

operating procedures, emergency procedures, and emergency response. DCP also maintains a drug and alcohol testing program.

- The plant would have a Hydrogen Sulfide Contingency Plan with due consideration of paragraph 7.6 of the guidelines in the American Petroleum Institute publication *Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide, RP-55*, most recent edition, or with due consideration to another division-approved standard. The Hydrogen Sulfide Contingency Plan would contain information on the following subjects, as appropriate to the facility or operation to which it applies: 1) emergency procedures, 2) characteristics of hydrogen sulfide and sulfur dioxide, 3) maps and drawings, 4) training and drills, 5) coordination with state emergency plans, and 6) activation levels.
- Operators would receive extensive OSHA training in a number of subjects such as lockout/tagout, confined space, emergency response, and hazardous material handling. The plant would also be subject to the OSHA Process Safety Management (PSM) program, which requires compliance with 13 elements, including training personnel and contractors, conducting compliance audits, maintaining mechanical integrity programs, conducting Process Hazards Analysis and Pre-Startup Safety Reviews before the start-up of the facility, and after start-up conducting a Management of Change review prior to making any alterations to the original system design.
- The plant would also be subject to the EPA's Risk Management Program. Based on the processes, the plant would be subject to Risk Management Program 3, which would require DCP to analyze both a worst-case release scenario and an alternative release scenario, implement a prevention program, implement an emergency response program, and file a Risk Management Plan with the EPA. The prevention program is identical to what OSHA would require under PSM. DCP has staff dedicated to ensuring that all operations are conducted safely and in compliance with all applicable regulations.
- To protect the environment, a Spill Prevention, Control and Countermeasure (SPCC) Plan would be developed and maintained on-site. Operating procedures, as well as physical structures such as berms, would be in place to prevent and/or minimize any spills from equipment and storage tanks. In the event of a release, operators and contractors would be trained to respond to the release and prevent any off-site impact.
- DCP maintains environmental specialists on staff to ensure routine operations and maintenance activities are in compliance with all federal, state, and local regulations. DCP also has an extensive environmental training program, including training in spill prevention, waste management, and stormwater management. Operators are required to understand each of these subjects, how their activities may impact the environment, and how and when to install pollution control devices.

Pipelines Operations and Maintenance

- The pipelines would be operated in a manner designed to protect the public and prevent natural gas pipeline accidents and failures. The MAOP of the gathering pipelines would be above 1,000 psig, which is commensurate of a Class 1 area. The pipe wall thickness would range from 0.375 to 0.500 inch, with the thicker-walled pipe being used at road crossings. If a subsequent increase in population density adjacent to the ROW indicates a change in class location for the pipelines, DCP would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness.
- Other applicable federal and state regulations, including OSHA requirements and EPA regulations, would also be followed during the construction of the pipelines. These regulations are intended to ensure adequate protection to the public and the environment.
- DCP has minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. DCP must establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan would include procedures for:
    - Receiving, identifying, and classifying emergency events, including gas leakage, fires, explosions, and natural disorders;
    - Establishing and maintaining communication with local fire, police, and public officials and coordinating emergency response;

  - Shutting down the system in an emergency and safely restoring services;
  - Making personnel, equipment, tools, and materials available at the scene of an emergency; and
  - Protecting lives first and then property, making them safe from any actual or potential hazards.
- DCP establishes and maintains liaisons with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency and to coordinate mutual assistance. DCP participates in a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. DCP would provide the appropriate training to local emergency service personnel before the pipelines are placed in service. No additional specialized local fire protection equipment would be required to handle pipeline emergencies.
- To further reduce the likelihood of pipeline accident, DCP has developed a companywide comprehensive operations and maintenance program for pipelines. The purpose of this program is to prevent operational incidents and to effectively respond to any incident that may occur. Part of the program includes a written Integrity Management Plan (IMP) to maintain the integrity of the company pipelines and protect the public. The IMP has been reviewed by the Pipeline and Hazardous Materials Safety Administration and several state pipeline safety regulators in states where DCP operates. All changes recommended by the agencies have been incorporated into the IMP.
- Pipeline facilities would be clearly marked at line-of-sight intervals and at crossings of roads, railroads, and other key points. The markers would clearly indicate the presence of the pipeline and provide a telephone number and address where a company representative could be reached in the event of an emergency or prior to any excavation in the area of the pipeline by a third party.
- DCP participates in all existing “811-Call before Dig” systems. DCP utilizes “Irth” electronic excavation notice tracking software to manage one call notifications. The Irth system logs all one-calls received by the company and assigns notifications to field personnel. The Irth system provides a positive feedback to the excavator as to the status of the locate request and the need to mark the pipeline.
- DCP’s pipeline systems are equipped with block valves. In the event of an emergency, usually evidenced by a sudden loss of pressure, the block valves allow for a section of pipeline to be isolated from the rest of the system. Data acquisition systems are also present at all of DCP’s meter stations; if system pressures fall outside a predetermined range, an alarm is activated.
- Routine inspections would be conducted by pipeline personnel to identify soil erosion that may expose the pipe, dead vegetation that may indicate a leak in the line, conditions of the vegetative cover and erosion control measures, unauthorized encroachment on the ROW such as buildings and other substantial structures, and other conditions that could present a safety hazard or require preventive maintenance or repairs.

2.1.7 Post-Production Phase

The life of the plant and gathering system is expected to be approximately 40+ years. DCP would be making a significant investment in this project and currently has no plans to shut down the plant once operational or abandon any of the proposed pipelines.

At the end of the project’s life, DCP has internal policies and procedures that would be followed to return the disturbed areas, as much as possible, to its pre-disturbed state as quickly as possible. These policies and procedures would include:

- All equipment, tanks, etc., would be cleaned and would either be removed from the site or razed.
- All chemicals and/or other waste, including demolition debris, would be disposed of properly.
- Concrete slabs would be removed and the site regraded to pre-disturbance conditions.
- Depending on the landowner’s preference, buried piping would either be removed or properly abandoned in place.
- A soil and/or groundwater sampling and analysis plan may be developed.

- Samples may be collected and analyzed to determine the horizontal and vertical extent of any contamination in excess of the allowable concentrations.
- Based on the analysis, remediation may be performed to mitigate, remove or reduce contamination. Remediation may include installing groundwater monitoring wells, removing contaminated soils, etc.
- To achieve final stabilization of the site, the areas would be seeded with a native grass mixture as described in Stabilization and Rehabilitation of the Plant and Other Aboveground Facilities above.

2.2 No Action

BLM NEPA Handbook H-1790-1 states that for EAs on externally generated applications, the No Action alternative generally means that the proposed activity would be denied (BLM 2008b:52). This option is provided in 43 CFR 3162.3-1(h)(2). Under this alternative, the BLM would not grant the ROW to the applicant and the proposed gas plant and associated gathering system would not be built and the associated surface disturbance would not occur. The No Action alternative is presented for baseline analysis of resource impacts.

2.3 Alternatives Considered but Eliminated from Detailed Study

Alternatives to the Proposed Action are developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts and meeting other objectives of the RMP. Representatives from the BLM and DCP attended site visits on April 16, 2013, July 25, 2013, and July 26, 2013. Several alternative plant sites and potential pipeline routes for the proposed project were evaluated prior to and following the site visits. These are described below:

- **Plant site alternative locations considered**: Several locations for the plant site were evaluated and discarded due to the proximity to utility systems and delivery markets. One alternative location for the plant was a site in Section 33, T24S, R32E, which was on fee lands but did not provide access to a residue market and would have required additional compression to be installed to meet the project goals. A few existing plant locations were also evaluated for the possibility of collocating the proposed plant. The Lea Plant site was evaluated and dismissed due to the extensive pipeline systems that would be required in order to deliver the gas volume to the facility. Inside Section 19, T19S, R32E the existing Zia Plant and Lusk Plant were also evaluated. The footprint in which those sites were on did not accommodate for the growth and were not expandable due to encroachment from existing pipelines and well facilities.
- **Pipeline alternative routes considered**: Prior to siting the preliminary routes for the pipeline gathering system, a desktop analysis was conducted by DCP and the BLM to identify sensitive areas to avoid. Once the preliminary route was identified, cultural resource and biological resource surveys of the entire preliminary alignment were conducted. The route was then adjusted or realigned in several segments in order to avoid impacts to cultural or biological resources where possible.

The proposed plant site location and gathering pipeline routes and design would meet the BLM's purpose and need while minimizing environmental impacts to the greatest extent possible. The proposed pipeline alignment represents the most direct routes connecting the existing infrastructure with the proposed Zia II plant. Neither the north nor south gathering pipeline routes would impact federally listed threatened or endangered species. In addition, the routes were ultimately planned to minimize impacts to habitat for both the LPC and the DSL. Cultural and historic sites were also avoided (see Section 3.8.3for details regarding avoidance of cultural sites).

Any other proposed pipeline route would likely require a significant increase to the length of the pipelines, causing additional disturbance, and require the development of additional ROWs, which could result in greater surface impacts and environmental impacts. Furthermore, public scoping did not identify an additional unforeseen alternative; therefore, only the No Action and Proposed Action alternatives were brought forward for detailed analysis in this EA.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter is organized by relevant major resources or issues/concerns as presented in Section 1.5.1. On the basis of CEQ guidance and BLM NEPA Handbook H-1790-1, the following discussion is limited to those resources that could be impacted to a degree that detailed analysis is warranted (40 CFR 1502.15) (BLM 2008b:96) as determined by the CFO BLM Interdisciplinary Team. Each resource section includes the following subsections:

Affected Environment:

This section succinctly describes the existing condition and trend of issue-related elements of the human environment that would be affected by implementing the Proposed Action or an alternative, as described in Chapter 2 and limits the description of the affected environment to be commensurate with the potential impacts: "1500.4 (c) impacts shall be discussed in proportion to their significance." For the purposes of providing baseline data for the affected environment, a project area for each resource was delineated, as appropriate.

Impacts from the No Action Alternative:

Direct and Indirect Impacts: The No Action alternative reflects the current situation within the project area and serves as the baseline for comparing the environmental impacts of the Proposed Action.

Cumulative Impacts: A discussion of any cumulative impacts resulting from the No Action alternative.

Impacts from the Proposed Action:

Direct and Indirect Impacts: This EA addresses the resources and impacts on a site-specific basis as required by NEPA. Pursuant to 40 CFR 1508.28 and 1502.21, this site-specific EA tiers to the information and analysis contained in the CFO's RMP, as amended (BLM 1988, 1997, 2008a). For each resource analyzed, the impacts discussion identifies:

- Direct impacts – impacts that are caused by the action and occur at the same time and in the same general location as the action.
- Indirect impacts – impacts that occur at a different time or in a different location than the action to which the impacts are related.
- Short- or long-term impacts – the duration of impacts are described as short or long term. For the purposes of this EA, short-term impacts occur during or immediately after the construction phase, approximately 1 year for construction and an additional year following construction for a total of 2 years. Long-term impacts occur beyond the first 2 years and apply to the production and the overall life of the project through eventual decommissioning.

Cumulative Impacts: A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other action.

The cumulative impact area of analysis can vary by resource. For purposes of quantifying cumulative impacts for resources that use acreage as the impact indicator (vegetation, soils, etc.), the cumulative area of analysis has been defined as 200 feet from the centerline of the ROW and from the boundary of the plant site. This cumulative area was established to identify any other actions within range of the Proposed Action that might affect nearby surface acreage. For other resources that use other indicators for impacts analysis, the resource sections below indicate what the cumulative impact area of analysis would be.

Past and Present Actions: The past and present actions can be defined as all actions contributing to the current condition of resources found in the project area, as described in the affected environment sections below. Past and present actions that have contributed to the current condition of resources include heavy past and present oil and gas infrastructure and development, livestock grazing, and dispersed recreational use of public lands. Within the cumulative impact area of analysis defined above (200 feet in each direction from centerline of proposed ROW), approximately 30 existing well pads or portions of well pads and approximately 6.58 miles of road disturbance is currently in use for production of oil and gas. Using aerial imagery (Google Earth 2013) to calculate the acreages of disturbed areas, approximately 60 acres within the cumulative impact area of analysis is currently disturbed.

Reasonably Foreseeable Future Actions: Reasonably foreseeable future actions include pending applications that are likely to occur within the cumulative area of analysis, which would contribute impacts to resources also impacted by the Proposed Action. To be considered under cumulative impacts, a proposed future action must have a well-defined scope and already be formally proposed or applied for.

According to the BLM's database records, there are seven pending actions that fall within the identified cumulative area of analysis. One pending action is a well pad and the other six are ROW actions including one access road, two power line ROWs, and three salt-water disposal ROWs. All together these actions can be expected to create approximately 3.2 acres of disturbance within the cumulative area of effect (personal communication, BLM 2013a). The cumulative impacts section under each resource analyzed below described the impact of the Proposed Action together with these pending actions.

Mitigation Measures and Residual Impacts: As directed by 40 CFR 1508.20, mitigation measures are those measures that could reduce or avoid adverse impacts and have not already been incorporated into the Proposed Action (as listed in the project design features, Section 2.1.3). These measures may:

- Avoid the impact altogether by not taking a certain action or parts of an action;
- Minimize the impact by limiting the degree of magnitude of the action and its implementation;
- Rectify the impact by repairing, rehabilitation, or restoring the affected environment;
- Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and
- Compensate for the impact by replacing or providing substitute resources or environments.

Residual impacts are those remaining after implementation of mitigation measures. These impacts may be to the subject resource or a different resource.

3.1 Air Resources

The Proposed Action has the potential to release regulated pollutants into the atmosphere and degrade air resources. The primary factors that influence regional ambient air quality are the locations of air pollution sources, the quantity and chemical characteristics of pollutants emitted by those sources, the topography of the region, and local meteorological conditions.

The existing, affected environment and the environmental consequences of the Proposed Action and its potential impacts to air quality and climate change are discussed in this section, as well as the effects to air resources of a No Action alternative. For the purposes of evaluating air quality resource impacts associated with the Proposed Action, the analysis area extends 31 miles from the boundaries of the proposed gas plant and 1 mile from the ROW for the associated pipeline infrastructure. A 31-mile radius for the gas plant facility was chosen in order to be consistent with minimum air quality analysis for major source air quality permitting. Impacts to Carlsbad Caverns National Park (45 miles away from the facility) are evaluated to determine an adverse impact to air quality related values.

3.1.1 Affected Environment

The affected environment, as it relates to the existing climate, terrain, laws and regulatory requirements, and background air quality of southeast New Mexico, is discussed in this section.

Climate and Terrain

Southeastern New Mexico, including Lea and Eddy Counties, experiences a mean annual temperature of 64°F. During summer months, individual daytime temperatures often exceed 100°F; the warmest days often occur in June before monsoon season begins. The average monthly maximum temperature during July (the warmest month) after monsoon season sets in is only slightly above 90°F due to afternoon convective storms that decrease solar insolation, which lowers temperatures before they reach their potential daily high. Minimum temperatures below freezing are common during the winter, but the area is freeze-free for more than 200 days per year (National Oceanic and Atmospheric Administration 1985).

The terrain surrounding the gas plant facility is moderately flat with an elevation ranging from 3,545 to 3,570 feet above mean sea level. The climate is characterized as an arid steppe region or semiarid region (Trinity Consultants 2013a). Semiarid regions generally receive little rain and have low humidity. A wide variation in annual precipitation totals is characteristic of arid and semiarid areas, as illustrated by annual extremes of less than 3 inches to over 33 inches at Carlsbad during a period of more than 71 years. Summer rains fall almost entirely during brief, but frequently intense, thunderstorms. The generally southeasterly circulation from the Gulf of Mexico brings moisture for these storms into New Mexico. During the warmest 6 months of the year, May through October, total precipitation averages 80% of the annual total in and near the Proposed Action area. Winter is the driest season (Western Regional Climate Center 2013a).

The prevailing wind in the Proposed Action location is from the southeast (Trinity Consultants 2013a). Representative temperature and precipitation measurements were collected in Carlsbad, 32 miles southwest of the gas plant facility, at an elevation of 3,120 feet. The representative climate conditions in the Proposed Action area are presented in Table 3.1.

Table 3.1. Representative Climate Conditions in the Proposed Action Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	59.1	64.2	71.5	80.2	87.8	95.4	95.6	94.6	88.3	79.5	67.5	59.1	78.6
Average Min. Temperature (F)	27.8	31.6	37.8	46.5	55.2	63.8	67.1	66	59.2	47.6	35.5	28.6	47.2
Average Total Precipitation (in.)	0.4	0.44	0.47	0.65	1.21	1.47	1.87	1.78	2.13	1.33	0.58	0.51	12.84
Average Total Snowfall (inches)	1.2	1	0.2	0.2	0	0	0	0	0	0	0.6	1.2	4.4

Note: Historical weather data for Carlsbad, New Mexico, Station 291469 from 2/1/1900 to 3/31/2013. Annual averages are presented for minimum and maximum temperatures and annual totals for precipitation and snowfall.
Source: Western Regional Climate Center 2013b.
Source: Western Regional Climate Center 2013b.
°F = degrees Fahrenheit
Max. = maximum
Min. = minimum

Legal and Regulatory Requirements

National Ambient Air Quality Standards

Title I of the Clean Air Act (CAA) requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The EPA established NAAQS for six common, principal pollutants ("criteria" pollutants). Those criteria pollutants include CO, nitrogen dioxide (NO_2), SO_2, ozone (O_3), lead (Pb), and particulate matter (PM), including PM equal to or less than 10 microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$). The EPA designates areas as meeting (attainment) or not meeting (non-attainment) the NAAQS.

The CAA identifies two types of NAAQS, primary and secondary. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. These standards are defined in terms of threshold concentration measured as an average for specified periods of time. Pollutants with acute health effects were given short-term standards and pollutants with chronic health effects were given long-term standards. Since the NAAQS were first established, revisions have been made that modify which pollutants are regulated, the allowable ambient concentrations, and the time interval over which the pollutant is measured. The current NAAQS are presented in Table 3.2.

Table 3.2. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Averaging Time	Level	Averaging Time	Level
CO	1 hour [a] 8 hour [a]	35 ppm 9 ppm	- -	- -
Pb	3 months (rolling) [b]	0.15 µg/m^3	3 months (rolling) [b]	Same as Primary
NO_2	1 hour [d] Annual [c]	100 ppb 53 ppb	Annual [c]	Same as Primary
O_3	8 hour [e]	0.075 ppm	8 hour [e]	Same as Primary
PM_{10}	24 hour [f]	150 µg/m^3	24 hour [f]	Same as Primary
$PM_{2.5}$	24 hour [g] Annual [h]	35 µg/m^3 12 µg/m^3	24 hour [g] Annual [h]	Same as Primary 15 µg/m^3
SO_2	1 hour [i]	0.075 ppm	3 hour [j]	0.5 ppm

[a] Not to be exceeded more than once per year.
[b] Not to be exceeded.
[c] Annual mean.
[d] The 3-year average of the 98th percentile of the daily maximum 1-hour average must not exceed this standard.
[e] The 3-year average of the 4th highest daily maximum 8-hour average O_3 concentration measured at each monitor within an area over each year must not exceed this standard.
[f] Not to be exceeded more than once per year on average over 3 years.
[g] The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed this standard.
[h] The 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed this standard.
[i] The 3-year average of the annual 99th percentile of the 1-hour daily maximum must not exceed this standard.
[j] Not to be exceeded more than once per year.
µg/m^3: microgram per cubic meter.
ppm: parts per million.
Source: EPA 2013a.

New Mexico Ambient Air Quality Standards

Under the provisions of the CAA, any state can have requirements that are more stringent than those of the national program. The EPA has approved New Mexico's State Implementation Plan and the state enforces both state and federal air quality regulations on all public and private lands within the state,

except for Bernalillo County and tribal lands. The New Mexico Air Quality Control Act is codified at New Mexico Statutes Annotated, Chapter 74, Article 2. Rules pertaining to air quality are found at Title 20, Chapter 2, of the New Mexico Administrative Code, administered by the New Mexico Environment Department's (NMED's) Air Quality Bureau (AQB). New Mexico has additional ambient air quality standards in addition to the NAAQS, which are not categorized by primary and secondary standards. The New Mexico Ambient Air Quality Standards (NMAAQS) are shown in Table 3.3.

Table 3.3. New Mexico Ambient Air Quality Standards

Pollutant	Averaging Time	Level
CO	1 hour 8 hour	13.1 ppm 8.7 ppm
NO_2	1 hour Annual	0.10 ppm 0.05 ppm
Total suspended particulates	24 hour 7 day 30 day Annual [a]	150 µg/m^3 110 µg/m^3 90 µg/m^3 60 µg/m^3
SO_2	24 hour Annual	0.10 ppm 0.02 ppm
Hydrogen sulfide (H_2S)	½ hour [b]	0.100 ppm
Total reduced sulfur	½ hour	0.003 ppm

[a] Annual geometric mean.
[b] For the Pecos-Permian Basin Intrastate Air Quality Control Region. Not to be exceeded more than once per year.
Source: New Mexico Administrative Code 2013.
µg/m^3: microgram per cubic meter.
ppm: parts per million.

Hazardous Air Pollutants

Hazardous air pollutants, also known as HAPs, are those pollutants that have been shown to cause or possibly cause cancer in humans or may cause adverse environmental and ecological effects. The EPA has identified 187 toxic air pollutants as HAPs, and in 2001 the agency developed a national network for monitoring ambient levels of air toxics. The 2005 National Scale Air Toxics Assessment (NATA) analysis estimated tract level total cancer risk for the analysis area as 25 to 50 per one million, and the estimated tract level total respiratory hazard index was zero to 1. For comparison, the NATA analysis estimates the average national cancer risk for 2005 was 50 per one million, meaning 1 person out of every 20,000 had an increased likelihood of contracting cancer from breathing air toxics from outdoor sources if exposed to 2005 emission levels over their lifetime. A respiratory hazard index below 1 indicates that exposures in the area do not exceed reference levels that would have adverse effects for human health.

New Mexico Oil Conservation Division Hydrogen Sulfide Gas Rule

The NMOCD has issued rules found in Parts 1 through 39 of Title 19, Chapter 15 of the New Mexico Administrative Code. Due to the two proposed acid gas injection wells at the Zia II gas plant facility, Part 11 of that Chapter applies and an H_2S Contingency Plan must be prepared for the facility. Prior to any injection operations, DCP would prepare and submit the plan to the NMOCD. The plan would provide a comprehensive outline for identifying and addressing the steps necessary to mitigate the effects of any H_2S release. These elements include monitoring, communication with surface owners and operators, public safety organization coordination, and evacuation plans in the case of a major release. The NMOCD rules require that copies of the H_2S Contingency Plan are provided to the affected public and the appropriate public safety organizations.

Prevention of Significant Deterioration Increments

PSD increments prevent the air quality in attainment areas from deteriorating to the level set by the NAAQS. While the NAAQS establishes a concentration "ceiling," a PSD increment is the maximum allowable increase in ambient concentrations allowed to occur above a baseline concentration for a pollutant. Significant deterioration is said to occur when the amount of new pollution would exceed the applicable PSD increment. PSD increments have been established for Class I, II, and III areas. Class I areas are areas of special national or regional natural, scenic, recreational, or historic value. Class II areas are all areas not established as Class I areas. Class III areas are areas that do not have any air quality standards. To date, no Class III areas have been established. The applicable PSD increment standards are presented in Table 3.4. Class I PSD increments are listed for reference.

Table 3.4. Applicable PSD Increments

Pollutant	Period	Class I PSD Increment Standard	Class II PSD Increment Standard
NO_2	Annual	2.5 µg/m^3	25 µg/m^3
PM_{10}	24-hour	8 µg/m^3	30 µg/m^3
	Annual	4 µg/m^3	17 µg/m^3
$PM_{2.5}$	24-hour	2 µg/m^3	9 µg/m^3
	Annual	1 µg/m^3	4 µg/m^3
SO_2	3-hour	25 µg/m^3	512 µg/m^3
	24-hour	5 µg/m^3	91 µg/m^3
	Annual	2 µg/m^3	20 µg/m^3

µg/m^3 = micrograms per cubic meter.
Source: 40 CFR 52.21.

Existing Air Quality

The existing air quality in the Proposed Action area can be determined by the classification of the area by the EPA, background concentrations of pollutants, and an emissions inventory of the counties involved. Special areas of concern, including Class I areas, are identified in this section.

Attainment Status

The EPA designates Lea and Eddy Counties in New Mexico as being in attainment or unclassified with respect to the NAAQS for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb.

Expected Proposed Action Area Background Concentrations

Expected background concentrations for the Proposed Action area are presented in Table 3.5.

Table 3.5. Background Concentrations

Pollutant	Period	Background Concentration	Units
CO	1-hour	2.1 [1]	ppm
	8-hour	1.5 [1]	ppm
NO_2	1-hour	40 [2]	ppb
	Annual	5 [2]	ppb
Total suspended particulate	24-hour	77.1 [3]	µg/m^3
	Annual	32.3 [3]	µg/m^3
PM_{10}	24-hour	58.0 [3]	µg/m^3
	Annual	24.3 [3]	µg/m^3
$PM_{2.5}$	24-hour	19.1 [3]	µg/m^3
	Annual	9.9 [3]	µg/m^3

Pollutant	Period	Background Concentration	Units
SO_2	1-hour	20.3 [4]	ppb
O_3	8-hour	0.067 [3]	ppm

Note: There are no monitors for total suspended particulate, total reduced sulfur, Pb, or H_2S in New Mexico. Pb can be assumed to be zero. All background concentrations from representative monitors.
[1] From 2ZR Rio Rancho Senior Center (2003–2006).
[2] Average of Artesia (6/2/2006–6/2/2009), Carlsbad (2007–2009), and Hobbs (2007–2009).
[3] From Trinity Consultants (2013b).
[4] Average of 3-year 100% maximum concentration from 5ZP Artesia (6/3/2006–6/2/2009).
ppm = parts per million.
ppb = parts per billion.
$\mu g/m^3$ = micrograms per cubic meter.
Source (except where stated): NMED AQB 2011.

Emission Inventory and Regional Sources

Emission inventories are useful in comparing source categories to determine which industries or practices are contributing the most to the general level of pollution in an area. The county-level emission inventories for Eddy and Lea Counties are presented in Table 3.6. Mobile sources account for 100% of the lead emissions in New Mexico (EPA 2013b).

Table 3.6. Lea and Eddy County Emissions Inventory in Tons per Year

Source	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	HAPs	CO_2e
Eddy County								
Agriculture	-	-	598	120	-	-	-	-
Biogenics [1]	11,846	1,437	-	-	-	48,937	10,858	-
Dust	-	-	24,078	2,444	-	-	-	-
Fires	11,354	101	1,108	940	68	2,656	34	114,342
Fuel combustion	1,373	2,788	62	61	6	324	74	-
Industrial processes	1,953	323	1,949	306	716	1,758	110	-
Miscellaneous [2]	5	0	13	13	0	707	65	-
Mobile	9,767	1,751	90	72	20	1,256	329	365,186
Waste disposal	779	25	104	79	1	57	6	-
Subtotal	37,077	6,425	28,002	4,035	811	55,695	11,476	479,528
Lea County								
Agriculture	-	-	1,885	377	-	-	-	-
Biogenics [1]	9,237	2,924	-	-	-	30,634	8,455	-
Dust	-	-	26,600	2,698	-	-	-	-
Fires	903	26	104	88	11	217	34	19,329
Fuel combustion	3,864	12,375	191	182	33	867	314	-
Industrial processes	1,095	309	37	15	9,031	770	16	-
Miscellaneous [2]	6	0	15	15	0	824	75	-
Mobile	9,624	1,848	88	69	21	889	236	394,605
Waste disposal	496	17	70	57	1	37	6	-
Subtotal	25,225	17,499	28,990	3,501	9,097	34,238	9,136	413,934
Total Emissions, Lea and Eddy Counties	***62,302***	***23,924***	***56,992***	***7,536***	***9,908***	***89,933***	***20,612***	***893,462***

Note: "-" denotes that there is no data available.
1 Biogenic emissions are those emissions derived from natural processes (such as vegetation and soil).
2 Miscellaneous categories include bulk gasoline terminals, commercial cooking, gas stations, miscellaneous non-industrial (not elsewhere classified), and solvent use.
CO2e = carbon dioxide equivalent.
Source: EPA 2013c.

Based on a review of the existing background source inventory data, there are 643 regional air emission sources within 60 miles of the gas plant facility within New Mexico (NMED AQB 2013). Many support oil and gas operations in the area. Common types of facilities include pipeline compressor stations, gas plants, and oil and gas tank batteries.

Class I and Other Special Designation Areas

The nearest Class I Area to the Proposed Action is Carlsbad Caverns National Park, approximately 45 miles southwest of the proposed gas plant facility. There is no IMPROVE monitor in the park, but a representative monitor exists at Guadalupe Mountains National Park, approximately 35 miles southwest of Carlsbad Caverns National Park. The standard visual range is the distance that can be seen on a given day. From 1989 to 2010, the standard visual ranges for Guadalupe Mountains National Park range from 111 to 155 miles on the best visibility days, 71 to 104 miles on intermediate visibility days, and 40 to 61.5 miles on the worst visibility days (IMPROVE 2011). The visibility on the worst days at Guadalupe Mountains National Park may have diminished since monitoring began, but a careful analysis of fire activity in the area would be necessary in order to draw conclusions about the cause of some peaks in recent years (BLM 2013b). A recent study indicates that pollutants contributing to reductions in visibility are largely coming from outside the region (Applied Enviro Solutions 2011).

3.1.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, the gas plant facility and associated equipment would not be built. Presently, production at well sites in the Permian Basin is outpacing available processing infrastructure. Construction and operation of the Zia II facility would provide expansion of gas processing capacity, resulting in reduction of the amount of gas either vented directly to atmosphere or flared at surrounding well production facilities. A result of the No Action alternative would be emissions of regulated pollutants from the flaring activities and no increase in processed natural gas for consumers.

Cumulative Impacts

A cumulative impact to air quality could occur should the No Action alternative be selected. Flaring and venting of natural gas in the region would continue to occur and the Lusk Booster Station would continue to operate. Air quality in the region would be expected to degrade as additional wells are drilled and additional flaring activities could occur.

3.1.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Impact Criteria

Under the Federal Land Policy and Management Act and the CAA, the BLM cannot conduct or authorize any activity that does not conform to all applicable federal, state, tribal, or local air quality laws, statutes, regulations, standards, or implementation plans. Therefore, impact criteria are based on those laws, statutes, standards, or implementation plans. Significant direct and indirect impacts from the Proposed Action can be assumed to result if it is demonstrated that:

- The NAAQS or NMAAQS would be exceeded;
- Class I or Class II PSD increments would be exceeded; or
- Air quality related values would be impacted beyond acceptable levels.

These potential significant impacts are evaluated separately as construction-phase emissions (those emissions that are expected to be temporary in nature) and operational-phase emissions (those emissions that are expected to originate from the gas plant facility).

Construction-related Emissions

Emissions from the construction of the Proposed Action are expected to be short-term. During construction, impacts to air quality are generally from fugitive dust generation and the combustion of fuel from commuting and construction equipment. Common sources of fugitive dust include unpaved roads, aggregate storage piles, and heavy construction operations (EPA 1995). The sources of construction-related emissions are grouped as construction equipment engine exhaust (including the two acid gas injection wells), fugitive dust from earthmoving and equipment, emissions from worker vehicle commuting trips, and material and equipment delivery to the Proposed Action area. Unmitigated construction emissions from the Proposed Action are presented in Table 3.7.

Table 3.7. Unmitigated Construction Related Emissions in Tons per Year Resulting from the Proposed Action

Source	NO_X	SO_X [1]	CO	PM_{10}	$PM_{2.5}$	VOC	HAPs [2]	CO_2e
Construction equipment	50.33	0.08	24.27	2.20	1.96	6.37	0.64	7,798
Fugitive dust	-	-	-	585.33	58.53	-	-	-
Construction worker commute	2.76	0.05	27.88	0.39	0.25	2.96	0.30	4,660
Material delivery	1.04	0.00	0.36	0.05	0.04	0.09	0.01	181
Total	***54.13***	***0.13***	***52.51***	***587.97***	***60.78***	***9.42***	***0.95***	***12,639***
Percent of Total Eddy County Emissions	***0.84%***	***0.02%***	***0.14%***	***2.10%***	***1.51%***	***0.02%***	***0.01%***	***2.64%***
Percent of Total Lea County Emissions	***0.31%***	***0.00%***	***0.21%***	***2.03%***	***1.74%***	***0.03%***	***0.01%***	***3.05%***

[1] Oxides of sulfur.
[2] Emissions of HAPs assumed to be 10% of VOC emissions.

All emissions from the construction of the Proposed Action (except for PM_{10} and carbon dioxide equivalent [CO_2e] emissions) are below 2% of each county inventory. Emissions of fugitive dust are greatest due to the area of construction for the 50 miles of pipeline and associated earthmoving activities. These calculations assume that the entire length of the pipeline would have fugitive dust emissions for the construction duration of the Proposed Action, which would not be the case. The transient nature of construction activities occurring along the pipeline segments would minimize annual impacts in any one location. At the gas plant facility site, construction emissions would be localized around the vicinity of the plant.

Operational and Maintenance-related Emissions

The gas plant facility would be a major source of pollutants and would be permitted under PSD guidelines. A PSD air dispersion modeling report has been prepared according to the PSD program for NMED AQB. The resultant modeled and calculated emissions from the gas plant facility operations and operational worker commuting are presented in Table 3.8. The Zia II gas plant facility emissions, presented in Table 3.8, include emergency acid gas flare emissions and do not take into account the sequestration of H_2S and CO_2 by the two acid gas injection wells. These pollutant emissions are compared to the percent of total emissions for Eddy and Lea Counties.

Table 3.8. Operation Related Emissions in Tons per Year Resulting from the Proposed Action

Source	NO_X	SO_X	CO	TSP	PM_{10}	$PM_{2.5}$	H_2S	VOC	HAPs [1]	CO_2e [2]
Zia II gas plant facility	406.5	100.3	175.6	24.4	23.4	22.9	1.4	157.7 [3]	85.0	367,537
Operational worker commute	0.24	0.0	2.39	0.03	0.03 [4]	0.02	- [5]	0.25	0.03	400
Total Operational Emissions	***406.74***	***100.3***	***177.99***	***24.43***	***23.43***	***22.92***	***1.4***	***157.95***	***85.03***	***367,937***
Percent of Total Eddy County Emissions	***6.3%***	***12.4%*** [6]	***0.5%***	***0.1%***	***0.1%***	***0.6%***	***-***	***0.3%***	***0.7%***	***76.7%***
Percent of Total Lea County Emissions	***2.3%***	***1.1%***	***0.7%***	***0.1%***	***0.1%***	***0.7%***	***-***	***0.5%***	***0.9%***	***88.9%***

[1] Emissions of HAPs for Zia II gas plant facility from Notice of Air Quality Permit Application. Emissions of HAPs from operational worker commute assumed to be 10% of VOC emissions.
[2] Emissions of CO_2e from preliminary air emission calculations for controlled emissions (DCP 2013).
[3] Emissions of VOC taken from Table 7 of the Pre-Construction Monitoring Report, prepared by Trinity Consultants (2013a).
[4] Emissions of total suspended particulate (TSP) for the operational worker commute is assumed to be equal to emission of PM_{10}.
[5] Emissions of H_2S not applicable to the operational worker commute.
[6] Emissions of SO_2 from the county inventory are assumed to be equal to all SO_x for the purposes of comparison.

At the Zia II gas plant facility, waste acid gases are generated during operation from natural gas processing. Without an acid gas injection well, a natural gas processing gas plant must rely on an SRU or a flare system to dispose of the waste acid gases generated from the gas processing. An SRU removes H_2S but does not remove CO_2, which is vented to atmosphere. If the waste acid gas is flared, H_2S is oxidized to SO_2, and then the SO_2 and CO_2 are vented to atmosphere. Instead of sending the waste acid gas to an SRU or flare and ultimately venting these gases to atmosphere, the proposed project includes two acid gas injection wells that would sequester H_2S and CO_2 underground. Once the well is in operation and at its designed maximum capacity of 13 million standard cubic feet of acid gases, it will sequester approximately 25,000 tons of H_2S and 244,000 tons of CO_2 per year. Only H_2S and CO_2 from the waste acid gas stream will be sequestered; there will still be emissions of those air pollutants from other processes. The plant does have an emergency acid gas flare in the event that the acid gas injection wells are not operational, and emissions from the emergency acid gas flare have been included for operation.

With the construction and startup of the gas plant facility, the current Lusk Booster Station would be shut down. The Lusk Booster Station, also owned by DCP, is a PSD major source for NO_X located 0.5 mile from the proposed Zia II facility site. The emissions from that station and a comparison of emissions from the two facilities are provided in Table 3.9. The emissions from the Zia II facility operations include operation of the emergency acid gas flare.

Table 3.9. Net Difference of Emissions from Proposed Action in Tons per Year

Source	NO_X	SO_X	CO	TSP	PM_{10}	$PM_{2.5}$	H_2S	VOC	HAPs	CO_2e [1]
Zia II facility operations [2]	406.74	100.3	177.99	24.43	23.43	22.92	1.4	157.95	85.0	367,937

Source	NO_X	SO_X	CO	TSP	PM_{10}	$PM_{2.5}$	H_2S	VOC	HAPs	CO_2e [1]
Lusk Booster Station [3]	583.4	10.6	229.5	6.4	6.4	6.4	-	61.1	-	-
Net Difference	***-176.66***	***+89.7***	***-51.51***	***+18.03***	***+17.03***	***+16.52***	***+1.4***	***+96.85***	***+85.0***	***+367,937***

[1] Emissions of CO_2e from preliminary air emission calculations for controlled emissions (DCP 2013.)
[2] Zia II facility operations include emission from the Zia II facility and operational worker commute emissions.
[3] Lusk Booster Station emissions are listed as maximum allowable emissions in NMED New Source Review Permit No. 0355M5. Emissions of H_2S, HAPs, and CO_2e do not have permit limits and are not listed here. The net difference between those values can be assumed to be less than reported above.
Source: Trinity Consultants 2013a.

Modeling results for the Zia II gas plant facility are directly comparable to the NAAQS, NMAAQS, and PSD increments. A comparison of the Zia II gas plant facility modeling results and the ambient air quality standards and increments are presented in Table 3.10. The Zia II gas plant facility modeling results include the operation and emissions of the emergency acid gas flare without the operation of the two acid gas injection wells.

Table 3.10. Zia II Gas Plant Facility NAAQS, NMAAQS, and PSD Increment Analyses

Pollutant	Period	NAAQS and NMAAQS Analysis			PSD Increment Analysis	
		Maximum Calculated Impact	NAAQS	NMAAQS	Maximum Calculated Impact	PSD Increment
CO	1-hour	40.5	0.1% (35,652)	0.3%	-	-
	8-hour	26.9	0.3% (9,167.50)	0.3% (8,862)	-	-
NO_2	1-hour	0.0057	0.0% (188.06)	-	-	-
	24-hour	26.6	-	15.9% (167.3)	-	-
	Annual	11.7	11.8% (99.67)	14.0% (83.6)	11.5	45.8% (25)
Total suspended particulate	24-hour	99.39	-	66.3% (150)	-	-
	Annual	38.18	-	63.6% (60)	-	-
PM_{10}	24-hour	63.95	42.6% (150)	-	5.9	19.8% (30)
	Annual	26.42	-	-	2.1	12.5% (17)
$PM_{2.5}$	24-hour	22.44	64.1% (35)	-	3.3	37.1% (4)
	Annual	10.77	89.7% (12)	-	0.9	21.5% (9)
SO_2	1-hour	180.7	92.0% (196.4)	-	-	-
	3-hour	143.9	11.0% (1,309)	-	143.9	28.1% (512)
	24-hour	61.7	-	26.5% (232.9)	61.7	61.7% (91)
	Annual	9.8	-	20.9% (46.6)	9.1	45.4% (20)
H_2S	1-hour	1.89	-	1.5% (123.9)	-	-

Note: For NAAQS, NMAAQS, and PSD increment values, the first value is the standard and the second value (in parentheses) is the percent of the standard.
Source: Trinity Consultants 2013b.

Modeling determined that the emissions from the Zia II gas plant facility would not exceed any ambient air quality standard or Class I or Class II PSD increment. Furthermore, it was found that there is no adverse impact to air quality related values in the nearest Class I area (Carlsbad Caverns National Park). All impact criteria were not exceeded, and there is expected to be no significant impact to air resources from the Proposed Action.

Cumulative Impacts

Potential cumulative effects when combined with neighboring oil and gas development projects and existing ambient air quality may include an increase in short- or long-term regional air quality deterioration. The Proposed Action is located in the Pecos-Permian Basin Air Quality Control Region, an area that has good farm and rangeland, extensive oil and natural gas deposits, and potash resources (NMED AQB 2013a). Fossil fuel production, which includes oil and gas production, natural gas compressor stations and pipelines, gas plants, and petroleum refining, contributes to air pollutants and GHG emissions in Lea and Eddy Counties. In 2010, there were approximately 25,502 active, producing, or inactive oil and gas wells in Lea, Eddy, and Chavez Counties (BLM 2013b).

In Carlsbad, ozone concentrations have increased approximately 6% from 2001 to 2010 (EPA 2012a). An emissions inventory conducted for 2007 included Chaves, Lea, and Eddy Counties and shows that VOC emissions from biogenic (natural) sources are far greater than those from anthropogenic (human) sources and account for 91% of VOCs inventoried (BLM 2013b). Point source emissions account for 40% of anthropogenic VOC emissions in the area, solvent use account for 15%, and fire accounts for 8%. Oil and gas area sources produce only 1.4% of VOCs in the area, while pipeline transport of oil and gas accounts for 1.7%.

NO_x emissions in the Carlsbad area are largely anthropogenic, and account for 88% of the 2007 inventory. Of the total human-caused NO_x emissions, industrial point sources account for 84%, on-road mobile sources account for 7%, oil and gas area sources account for 5%, non-road mobile sources account for 2%, and residential heating with natural gas and propane account for 1% (BLM 2013b).

New Mexico shows a trend in reduction of CO concentrations, which mirrors the national trend. In Chaves, Lea, and Eddy Counties, anthropogenic sources account for 65% of CO emissions and biogenic sources 35%. Of the anthropogenic sources, 47% are from on-road mobile sources, 24% from industrial point sources, 14% from non-road mobile sources, 9% from fire, and 2% each from oil and gas area sources and waste disposal burning (BLM 2013b).

Particulate matter concentrations (including PM_{10} and $PM_{2.5}$) have decreased from 2001 to 2010 (EPA 2012a). The bulk of emissions for both PM_{10} and $PM_{2.5}$ are from dust from unpaved roads (88% and 65%, respectively). For PM_{10}, the next three highest categories are point at 2.8%, tilling and harvesting at 2.6%, and paved roads at 2.4%. Oil and gas area sources account for only 0.1% of PM_{10} emissions. For $PM_{2.5}$, the next three highest categories are point sources at 17%, fire at 4.3%, and tilling and harvesting at 2.8%. Oil and gas area sources account for 0.8% of $PM_{2.5}$ emissions in the area (BLM 2013b).

Nationally, SO_2 concentrations have decreased 83% since 1980 and have decreased 6% from 2000 to 2010 (EPA 2012b). SO_2 monitoring sites in southeastern New Mexico have been discontinued due to very low concentrations. The Carlsbad area 2007 emissions inventory does not differentiate between SO_2 and SO_x, but SO_x includes SO_2 and other oxides of sulfur, and the percentage of emissions by category is similar. Oil and gas sources account for 74% of all SO_x emissions with most of the remainder (25%) accounting for industrial point sources (BLM 2013b).

Levels of lead have decreased 94% nationwide between 1980 and 1999. Mobile sources account for 100% of the lead emissions in New Mexico (EPA 2013a).

The NMED has no routine monitors for H_2S. In a recent study by the USFS, H_2S was monitored in southeastern New Mexico to determine potential impacts to wildlife (USFWS 2010). Peak H_2S measurements near oil and gas facilities were generally found to be below 6 parts per million (ppm) but occasional peaks at 33 ppm and 27 ppm were noted near Loco Hills, New Mexico. Away from oil and gas operations, readings were less than 1 ppm.

According to the BLM's database records, there are seven pending actions that fall within the identified cumulative area of analysis. One pending action is a well pad and the other six are ROW actions including one access road, two power line ROWs, and three salt-water disposal ROWs. All together these actions can be expected to create approximately 3.2 acres of disturbance (DCP 2013). These emissions,

when taken into account the Proposed Action emissions, are not expected to have a substantial cumulative impact to air quality based on the existing number of wells in the area.

Construction emissions have the potential to increase short-term emissions of pollutants. These emissions are expected to be transient and temporary in nature. The operation and maintenance of the Zia II facility have the potential to increase long-term emissions of pollutants. The sequestration of H_2S and CO_2 from the acid gas injection wells will prevent these emissions from being emitted to atmosphere and degrading air quality. The removal of the Lusk Booster Station and discontinued flaring and venting of potential natural gas would lower the emissions of some pollutants (NO_x and CO), but is seen to increase the emissions of others (SO_2, PM, H_2S, VOC, HAPs, and CO_2e).

Proposed Action and Effects on Climate

Climate change is a global process that results from global GHG emissions. Climate change may be affected by numerous factors including solar radiation, ocean circulation, and human activities such as burning fossil fuels or altering the Earth's surface through deforestation or urbanization (EPA 2013d). Projected climate change impacts include air temperature increases; sea level rise; changes in the timing, location, and quantity of precipitation; and increased frequency of extreme weather events such as heat waves, droughts, and floods. These changes would vary regionally and affect renewable resources, aquatic and terrestrial ecosystems, and agriculture. While uncertainties would remain regarding the timing and magnitude of climate change impacts, the scientific evidence predicts that continued increases in GHG emissions would lead to increased climate change. According to the Intergovernmental Panel on Climate Change (IPCC), increased atmospheric levels of CO_2 are correlated with rising temperatures. Climate models indicate that temperatures would likely increase by 1.1 to 6.4 degrees Celsius by 2100 (IPPC 2007).

Preliminary GHG emissions inventories have been prepared for each state in a cooperative effort between the Center for Climate Strategies and the environmental departments for each state. According to the inventory for New Mexico the GHG emissions for reporting year 2000 were 83 million metric tons of CO_2e. The reference case GHG emissions for year 2020 were estimated at 102 million metric tons of CO_2e (Center for Climate Strategies 2006).

In another report by the NMED, emissions of GHGs remained essentially level from 2000 to 2007, despite a 6.7% growth in New Mexico's population over that period. The largest sources of GHG emissions in 2007 were electricity production (41%), the fossil fuel industry (22%) and transportation fuel use (20%), which remains consistent with estimation for the years 1990 and 2000 (NMED AQB 2010). It is estimated that approximately 17.3 million metric tons of GHGs from the natural gas industry and 2.3 million metric tons of GHGs from the oil industry were projects in 2010 as a result of oil and natural gas production, processing, transmission, and distribution (Center for Climate Strategies 2006). It is estimated that 0.02% of U.S. total GHG emissions are produced through oil and gas production in the Permian Basin (BLM 2013b).

Currently, there are no sites within or near the Proposed Action area that are collecting ambient GHG data. Ambient background data that exist are parametrically derived from fossil fuel combustion and other industrial sources. The potential CO_2e emissions from the proposed gas plant facility (without the operation of the two acid gas injection wells) is a significant increase in CO_2e emissions in southeastern New Mexico, representing 79.4% and 88.8% of total CO_2e emissions in Eddy and Lea Counties, respectively. However, with the operation of the two acid gas injection wells, it is estimated that 244,000 tons of CO_2 will be sequestered per year. This is a significant reduction in CO_2e emissions (66.3%) and the proposed project would emit 123,937 tons of CO_2e, instead of 367,937 tons, when the acid gas injection wells are operational. A recent study indicated that the increase in mean annual temperatures in New Mexico have exceeded the global average increase by nearly 50% since the 1970s (Enquist 2008). Increases in mean winter temperatures have contributed to the rise. When compared to baseline levels, the period between 1991 and 2005 show temperature increases in over 95% of the geographical area of New Mexico. Warming is greatest in the northwestern, central, and southwestern parts of the state.

Therefore, it is difficult to state with any certainty what impacts on global warming may result from GHG emissions or to what extent the Proposed Action would contribute to those climate change impacts. As a result, any attempt to analyze and predict the local or regional impacts of the Proposed Action on GHG emissions cannot be done in any way that produces reliable results. On May 14, 2008, the Director of the USFWS noted, "The best scientific data available today do not allow us to draw a causal connection between GHG emissions from a given facility and effects posed to listed species or their habitats, nor are there sufficient data to establish that such impacts are reasonably certain to occur" (USFWS 2008)

The Proposed Action would be a source of CO_2 and other GHGs, which could have an undetermined effect on local, regional, and global climate change. This analysis is unable to identify the specific impacts of the Proposed Action GHG emissions on global warming and climate change because there is insufficient information.

Mitigation Measures and Residual Impacts

Measures to minimize or eliminate impacts to air quality are described in the Proposed Action's project design features (see Section 2.1.3). No additional mitigation measures have been recommended.

3.2 Soil Resources

3.2.1 Affected Environment

Over 65% of the soils found within the proposed project area for the Zia II gas plant and associated pipelines can be best characterized as loamy sands to sandy soils with coarse to moderately textured surface soils. Due to the coarse texture of the soils within the project area, they are all highly susceptible to wind erosion (Table 3.11). These soils do not typically experience a texture change until depths of 20 to 30 inches or upwards of 40 inches in the deeper sands. The four most common soil mapping units encompass 53% of the project area and are Maljamar and Palomas fine sands, 0% to 3% slopes; Berino complex, 0% to 3% slopes, eroded; Kermit-Palomas fine sands, 0% to 12% slopes; and Pyote loamy fine sand.

Table 3.11. Soil Erosion Potential

Area	Total Acreage	Slope (%)	Sensitive Soil Groups[1]							
			Erosion Potential				Restrictive Layer (cm)	Soil Compaction	Flooding	Reclamation Sensitivity[2]
			Water (K-factor)	Water erosion potential	Wind (tons/acres/year)	Wind Erosion Potential				
Gas Plant	164	5	0.17	Very Low	220	Very High	>200	Low	U	Low
North Line	82	5	0.17	Very Low	134	Very High	>200	Low	U	Low
South Line	458	7	0.17	Very Low	134	Very High	>200	Low	U	Low

[1] All parameters were obtained from the Natural Resources Conservation Service (2013) Web Soil Survey.
[2] Determined qualitatively by looking at the average slopes, potential wind and water erosion, and depth to restrictive layer.
3 U = Undetermined. Area not mapped by the Federal Emergency Management Agency.

These soils and associated features were identified using the Natural Resource Conservation Service (2013) web soil survey for Eddy and Lea Counties in New Mexico. This proposed project would cross two different counties and 36 different soil mapping units. The primary use of the soils within the project area is for livestock grazing and wildlife habitat.

Sensitive Soils: The project area is located within a region where sensitive gypsum and dune soils are found. Sensitive soils can be defined as those that are difficult to reclaim due to the inherent properties of the soil (i.e., ponding, flooding, dunes, etc). No gypsum soils were identified in the project area; however, the project area does include approximately 128 acres of potentially sensitive Kermit soils and dune lands. These soils are particularly sensitive because of their location on dunes and sandhills, which are prime habitat for special status species in the area. While not all Kermit soils include dunes, one 5.2-acre area of dunes was identified during site visits located on the south segment of proposed pipeline. This area would be subject to dune mitigation measures (see mitigation measures below).

Soil Erosion (*Wind*): As shown in Table 3.11, it can be concluded that all of the soils within the project area have a rating of high or very high wind erosion potential. Wind erosion potential typically increases with soils that have textures of fine sand or loamy sand. Wind erosion of soils can cause air quality issues if not managed properly during site preparation and construction activities. Visual impacts such as dune formation/erosion and plant desiccation can also result from wind erosion.

Soil Erosion (*Water*): Based on the K factors in Table 3.11, it can be concluded that all soils within the project area are at a low potential for water erosion. The K factor is a soil erodibility factor that measures a soil's potential to erode. According to information provided on the U.S. Department of Energy (2013), Pacific Northwest National Laboratory website, soil K factors can range from 0.02 to 0.6. Therefore, natural breaks were made to determine low, moderate, and high values. Low K values were assumed to range from 0.02 to 0.25, moderate K values from 0.25 to 0.37, and high K values greater than 0.37.

Biological Soil Crusts (BSCs): Disturbances to the soil surface has the potential to damage and/or destroy BSCs, which can result in a decrease to organism activity and in turn a decrease in soil nutrients, stability, and amount of organic matter, all of which impact plant germination and growth. BSCs have evolved to live in the poor conditions of desert environments; however, they are not well adapted to compressional disturbances that would occur as a result of the Proposed Action. BSCs are expected to be found within the project area; however, the spatial extent of BSCs is unknown since no field mapping is currently available. That said, in sandy soil environments, which are found throughout the project, BSCs have only been observed on a few occasions. The potential to locate BSCs is much greater on soils that are stabilized by vegetative cover (BLM 2013c). Recovery of BSCs after disturbance can range in time from 1 to 5 years for visual recovery, 50 years for thickness, and up to 250 years for the recovery of mosses and lichens (Rosentreter et al. 2007).

Soil Compaction: A majority of the soils within the project area are not highly susceptible to compaction because of their coarse texture. However, where fine-textured soils exist, compaction may become an issue. Soil compaction results in reduced infiltration, permeability, and gas and nutrient exchanges within the soil, as well as limited root growth. Soil compaction can be exacerbated when construction activities occur during times of high soil moisture. Unmitigated soil compaction can result in increased runoff and erosion rates, which can adversely affect the long-term health and productivity of the soil and surrounding vegetation.

Steep Slopes: No soils within the proposed project area have slopes that exceed an average of 10%.

Restrictive Layers: Restrictive layers can be defined as shallow soils that have a restrictive layer that is within 60 inches of the soil surface. Restrictive layers tend to restrict root growth and hold less water, which can make reclamation difficult. There are soils within the project area that have restrictive layers within the top 60 inches, which are dominated by a petrocalcic horizon.

Flooding Hazard: Table 3.11 shows that there is a low potential for flooding to occur within the project area. None of the soils within the project area are at risk of ponding.

Reclamation Sensitivity: Due to the coarse nature of the soils, the deep profiles, low slopes, and low water erosion potential, reclamation sensitivity is expected to be low. This would mean the potential for successful reclamation would be high, provided the environmental conditions were favorable (such as normal to high seasonal precipitation levels).

3.2.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to soil resources, because the ROW would not be granted and no soils would be disturbed.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.2.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Construction activities (e.g., clearing vegetation, grading, excavating, etc.) related to the plant construction and the trenching of the pipeline would directly impact 694 acres of soil resources. Most of this would be short-term disturbance. Direct impacts to soils include damages to BSCs, increased erosion from the removal of the vegetative cover, contamination from accidental spills or leaks, and compaction of soil from heavy equipment usage resulting in a loss of structure and porosity. These impacts can lead to increased runoff and subsequently increased erosion.

Indirect impacts to soil resources can include a change to the overall productivity from the mixing of the topsoil with subsoil during trenching and grading activities. This has the greatest chance of occurring on sensitive soils, which include soils that are easily eroded with shallow profiles that occur infrequently within the project area. Another indirect impact is the colonization of noxious weeds on disturbed soils. This can occur anywhere a soil is disturbed. Weeds have the ability to out compete native species because of their abilities to thrive under conditions with low soil water content, poor nutrient availability, and coarse textures. Air quality can also be diminished due to wind erosion of the soil resources.

The project design features in Section 2.1.3 have been developed to minimize impacts to soils and maximize the potential for successful reclamation.

Cumulative Impacts

Overall, 694 acres of soil would be disturbed during the construction of the project. Approximately 60 acres is already disturbed (as noted under past and present actions), and as described under reasonably foreseeable future actions, the CFO expects an additional 3.2 acres of disturbance from other pending oil and gas projects in the cumulative area of analysis. Total acreage of cumulative impact would be 697.2 acres. Other activities that impact soils in the cumulative area of effect are grazing and dispersed recreational use. Cumulatively, these combined actions could result in the loss, and further fragmentation, of native habitat and soil resources. Implementation of the Proposed Action's project design features, as well as implementation of BMPs for other future planned activities, would mean that overall cumulative impact to soils would be low.

Mitigation Measures and Residual Impacts

Soil protection and restoration methods are included in the project design features, Section 2.1.3. Two additional mitigation measures have been recommended for the 5.2-acre dune area identified on the south pipeline:

- The BLM identified one 5.2-acre area of established dunes, which would require dune mitigation. Drift fences constructed from bio-degradable material will be used where designated by BLM monitors for the purpose of sand dune restoration. This measure is anticipated to capture blowing sand in order to aid in the natural dune-building process. This mitigation would beneficially impact any DSL that could be inhabiting the area by re-establishing habitat following pipeline construction.
- In the same area, top-sand will be piled in a mogul structure when construction is finished to simulate dune structures and aid in the recovery of disturbed areas.

3.3 Water Resources

3.3.1 Affected Environment

Surface Hydrology

The project area occurs within two surface drainage sub-basins, as defined by the eight-digit Hydrologic Unit Codes (HUCs). Both watersheds are part of the Pecos River drainage system.

Lower Pecos-Red Bluff Reservoir Sub-basin (HUC 13070001)

Approximately 6 miles of the southern gathering pipeline lies within the Lower Pecos-Red Bluff Reservoir surface water sub-basin. This area is relatively flat with little defined drainage or topography, but generally drains to the southwest towards the Pecos River. There are no drainages as defined either by available databases or by field surveys within the area crossed by the pipeline. The National Hydrography Dataset typically identifies even small tributary washes; no washes were identified from this dataset within this sub-basin (U.S. Geological Survey 2013). A field survey completed in June 2013 to delineate the presence of jurisdictional waters of the U.S. under the Clean Water Act similarly identified no potential waters within this sub-basin (SWCA 2013). There are no impaired waters designated under Section 303(d) of the Clean Water Act within this sub-basin, nor are there any Outstanding National Resource Waters, as defined under New Mexico Administrative Code 20.6.4.9.

Upper Pecos-Black Sub-basin (HUC 13060011)

The remainder of the southern gathering pipeline, the northern gathering pipeline, the residue pipeline, and the plant site lie within the Upper Pecos-Black surface water sub-basin. This area is also relatively flat with little defined drainage or topography and generally drains to the west-southwest towards the Pecos River, located roughly 20 miles to the west. There is no major drainage channel towards the Pecos River, only small localized drainages. Based on the National Hydrography Dataset, a single wash is crossed by the southern gathering pipeline; however, based on the field surveys completed in June 2013, no field evidence was observed that this drainage would be jurisdictional. This feature was identified to be an upland dry swale that displayed no ordinary high water mark, no distinct bed or banks, and no indicators of wetlands, such as hydrophytic vegetation, hydric soils, or wetland hydrology (SWCA 2013). No other potential waters of the U.S., wetlands, or special aquatic sites were identified that would be impacted directly by the project.

The dominant hydrologic feature of this area is the presence of salt playas, which are the terminal areas of small closed drainage networks. There are four salt playas near the project area: Laguna Plata (about 1,100 acres in size), Laguna Tonto (200 acres), Laguna Gatuna (400 acres), and Laguna Toston (170 acres). The proposed plant site is 4 to 5 miles northwest of the playas. The southern pipeline route does go through the vicinity of the salt playas, but is still approximately 1,800 feet west of the nearest playa (Laguna Gatuna).

There is one impaired water as defined by Section 303(d) of the Clean Water Act within this sub-basin. The Pecos River, from the confluence of the Black River (south of Carlsbad) to the Texas border, is impaired with respect to boron, dissolved oxygen, and polychlorinated biphenyls (PCBs) in fish tissue. The cause of these impairments is not fully known, but indications are that they may be from atmospheric deposition, springs, and anoxic groundwater (New Mexico Environment Department 2012).

There are no Outstanding National Resource Waters within this sub-basin.

Groundwater Hydrology

The project area occurs primarily within two groundwater basins: the Carlsbad and Capitan Basins.

Carlsbad Basin

Approximately 24 miles of the southern gathering pipeline overlies the Carlsbad Basin. Groundwater uses include agriculture; public supply for Carlsbad, Loving, and other towns; and industrial uses (including

mining for potash and salt). Groundwater supplies in the Carlsbad Basin are derived from underlying sedimentary formations, including the Delaware Mountain Group, the Carlsbad and Capitan Limestones, the Castile Formation, the Rustler Formation, and the Dockum Formation, as well as shallower alluvium and terrace deposits. The primary groundwater supplies come from Capitan and Carlsbad Limestone Reef Aquifer (Capitan Reef) and the shallow groundwater found in alluvium and terrace deposits. Irrigation wells have primarily been developed in the farming areas from Carlsbad south to Malaga, and along the Black and Delaware Rivers. Groundwater quality varies from good to poor (BGW 2001).

Capitan Basin

The remainder of the southern gathering pipeline, the northern gathering pipeline, the residue pipeline, and the plant site overlie the Capitan Basin. Groundwater use within this basin is relatively limited, with small livestock and domestic uses, and industrial use for potash, oil, and gas development. Groundwater supplies in the Capitan Basin are primarily derived from the Capitan Limestone and also from the Castile, Rustler, and Dockum Formations. Groundwater quality is generally poor and well yields are limited (BGW 2001).

Groundwater Levels

There are relatively few groundwater level measurements in the vicinity of the project area. The few that are available indicate relatively deep groundwater levels, ranging from 100 to 400 feet below ground the surface (NMOSE 2013a, 2013b). The nearest groundwater level to the plant site is approximately 100 feet below the ground surface.

3.3.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to water resources, because the ROW would not be granted and no additional water use would occur.

Cumulative Impacts

No cumulative impacts would be realized as a result of the No Action alternative.

3.3.3 Impacts from the Proposed Action

Direct and Indirect Impacts

There are no jurisdictional waters of the U.S. or other surface water bodies, including any salt playas located within the proposed project area; therefore, there are no direct impacts to surface waters. Depth to groundwater in the area is at least 100 feet so there would be no direct impact from construction activities on groundwater resources, as trenching of the pipeline would only penetrate to approximately 5 to 6 feet deep.

The proposed project would include two acid gas injection wells for sequestration of carbon dioxide and hydrogen sulfide gases, which would have the potential to directly impact groundwater resources. The targeted zones for injection are the Permian Cherry Canyon and Brushy Canyon Formations. Both of these formations are oil-bearing and likely have compromised water quality, although there are very few water quality samples available. Those available in the vicinity of the injection wells indicate specific conductance is greater than 3,000 microSiemens/cm (BGW 2001), which is generally too poor for domestic use. Pressurization of the Cherry Canyon and Brushy Canyon formations through gas disposal would improve production from the formation; however, there is also the potential for migration of injected gas upwards through other formations, with H_2S being the primary concern for contamination of potable supplies. While the potential for this to occur exists, there is no evidence for any domestic or public water supplies with the project area, or potable groundwater that overlies the injection zone that could be impacted by possible upward H_2S migration.

Potable aquifers that could be present in the project area include the Ogalalla and Santa Rosa Formations, the Rustler Formation, and the Capitan Limestone. The Ogallala and Santa Rosa Formations generally contain potable water and are both relatively shallow, only several hundred feet below ground surface. The Rustler Formation is brackish and located approximately 1,245 to 1,600 feet below ground surface. The Capitan Limestone aquifer is deeper, located approximately 2,850 to 3,750 feet below ground surface. There are approximately 1,700 feet of intervening geologic formations between the permeable portion of the Capitan Limestone and the top of the proposed injection zone in the Brushy Canyon formation. The lower 890 feet of the Capitan Limestone, from about 3,750 to 4,640 feet below ground surface, is comprised of tight, anhydritic carbonates with limited permeability. From 4,640 feet below ground surface to the injection zone 5,550 feet below ground surface there are thick sections of low permeability rock (less than 10%), interspersed with more permeable layers of the Cherry Canyon Formation. The impermeable zones of the Cherry Canyon Formation and the lower part of the Capitan Limestone, in all a thickness of about 1,700 feet, form a confining layer that separates the injected acid gas from potentially potable aquifers above.

If shallow, potable aquifers were present in the vicinity of the well, well construction is also designed to be protective of these aquifers during drilling and operation. Well construction details call for three separate cemented casings. The surface casing would be cemented to a depth of 1,025 feet, the intermediate casing would be cemented to a depth of 2,700 feet, and the production casing would be cemented to a depth of 6,100 feet, with perforations added later after cement testing is completed. The production casing would include a 250-foot section of corrosion-resistant material at the packer depth (5,500 feet) to ensure a proper packer seal without deterioration of the packer seat over time. Cementing of the production casing from this joint downwards would make use of acid-resistant cement. These construction requirements ensure that the annular space of the well is properly sealed and impermeable to movement of any liquid or gas, and is therefore protective both of migration of water between saline and fresh water aquifers, but also preventive of acid gas leaking upwards into fresh water sources.

The proposed injection wells are located within an area with special well construction requirements required by the BLM and meant to protect the Capitan Aquifer. The proposed well construction could be modified to reflect these special requirements prior to submittal of permit applications. The well construction would first be reviewed by NMOCD through the C-108 permitting process (application for authorization to inject). Once approved, the well construction would then be reviewed by BLM through the APD process to ensure that all applicable well construction requirements are met.

Injection of the acid gas would be monitored continuously with leak detection to ensure that the gas is not escaping upwards in the well, but is entering the intended injection zone. In addition to protections afforded by the well design, the drilling process would employ a closed-loop drilling system to prevent release of drilling fluids at the surface that could migrate downwards to any potable aquifers. Based on the necessity to obtain an Underground Injection Control permit through the NMOCD, the construction details and drilling methods to be employed for the wells, the need for an APD to be submitted for these wells, and the lack of evidence for any domestic or public water supplies within the project area, it is unlikely that direct impacts to potable groundwater supplies would occur due to the use of the acid gas injection wells.

The potential to impact water resources primarily lies with the indirect impacts that could occur due to stormwater runoff from pipeline construction activities into the salt playas. While indirect impacts from stormwater movement of contaminants or sediment due to ground disturbance is a possibility, the stabilization and rehabilitation procedures described in Section 2.1.3, including DCP's established BMPs, are likely to limit any movement of contaminants or sediment and limit any indirect impacts to the salt playas. The distance to the nearest salt playa is approximately 1,800 feet. This Proposed Action would have no impact on the Pecos River.

The project would also involve discharge of hydrostatic test water following completion and testing of the pipelines. Hydrostatic test water would be discharged to an upland area in compliance with required permits from the New Mexico Environment Department, using appropriate discharge and erosion control measures. Given the nature and location of the controlled discharge, there is not likely to be any direct or indirect impacts to any waters of the U.S., salt playas, or groundwater resources.

Discharge of sanitary waste via a permitted septic field within the plant site is not expected to result in impact to any water resources, given that it would be constructed to comply with state health regulations.

Raw water use for the plant would potentially involve pumping from the Lusk well, which would result in additional extraction of water from the aquifer. The lack of evidence for any domestic or public water supplies with the project area indicates that it is unlikely that additional groundwater use would substantially impact any other existing water supplies.

Cumulative Impacts

The Proposed Action is unlikely to result in direct or indirect impacts to surface water and groundwater resources in the larger cumulative area of analysis. Cumulative effects would not be expected.

Mitigation Measures and Residual Impacts

Measures to minimize or eliminate impacts to water resources are described in the Proposed Action's project design features (see Section 2.1.3). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed. No additional mitigation measures have been recommended.

3.4 Upland Vegetation

3.4.1 Affected Environment

The project area occurs within two EPA ecoregions, Chihuahuan Desert Grasslands and Shinnery Sands (Griffith et al. 2006). Chihuahuan Desert Grasslands are found in areas of fine-textured soils, such as silts and clays, that have a higher water retention capacity than coarse-textured, rocky soil. These grasslands are present in areas of somewhat higher annual precipitation (10–15 inches), such as elevated basins between mountain ranges, low mountain benches and plateau tops, and north-facing mountain slopes. Chihuahuan Desert Grasslands were once more widespread, but heavy grazing in the late nineteenth and early twentieth centuries was unsustainable, and desert shrubs invaded where the grass cover became fragmented. In grassland areas with lower rainfall, areal coverage of grasses may be sparse, 10% or less. Some areas are now mostly shrubs as grasslands continue to decline due to erosion, drought, and climatic change. Typical grasses are black grama (*Bouteloua eriopoda*), blue grama (*B. gracilis*), sideoats grama (*B. curtipendula*), dropseeds (*Sporobolus* spp.), bush muhly (*Muhlenbergia porteri*), and tobosagrass (*Pleuraphis mutica)*, with scattered creosotebush (*Larrea tridentata*), prickly pear (*Opuntia* sp.), and cholla cacti (*Cylindropuntia* sp.) (Griffith et al. 2006).

The Shinnery Sands ecoregion includes sand hills and dunes, as well as flat sandy recharge areas. These sand beds lie at the western edge of the High Plains where rising winds drop heavier sand grains and carry finer material further east onto the flat expanse of the Llano Estacado. The ecoregion is named for the Havard (shinnery) oak (*Quercus havardii*) brush that stabilizes sandy areas subject to wind erosion. Although the shinnery oak rarely grows higher than 4 feet, its extensive root system can reach over 50 feet through dune sand to reach water. The largest area of sand dunes, at the southwestern edge of the Llano Estacado, is composed of sands blown out of the Pecos River Basin against the Mescalero Escarpment of the Llano Estacado by prevailing southwesterly winds. These dunes serve as a major recharge area for the Pecos River. While sand sagebrush (*Artemisia filifolia*) and prairie grasses may create a continuous plant cover in portions of the Shinnery Sands ecoregion, the vegetative cover is vulnerable to overgrazing and subsequent wind blowouts, which may begin a cycle of dune formation. In dune areas, anchoring shrubs such as shinnery oak, fourwing saltbush (*Atriplex canescens*), and yucca (*Yucca* spp.) stabilize the dune sand for herbaceous grasses and forbs such as sand verbenas (*Abronia fragrans*), sunflowers (*Helianthus annuus*), fringed sagewort (*Artemisia frigida*), and hoary rosemary-mint (*Poliomintha incana*). Ephemeral ponds and swales between the dunes support rushes, sedges, and sandbar willow (*Salix interior*). The shinnery sands are habitat for the LPC and DSL, two species that are in serious decline. The shrubs offer cover and shade for nesting LPCs, and shinnery oak acorns are a staple food source. Parts of the sand plains and dune fields of the Shinnery Sands ecoregion contain dense arrays of oil fields (Griffith et al. 2006).

SWCA biologists performed pedestrian surveys of the project area in March and April 2013. The results of these surveys and a list of plant species observed can be found in the BE (see Appendix A).

3.4.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to vegetation, because the ROW would not be granted and no ground disturbance would occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.4.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Impacts to plant communities and habitats from the construction of the gas plant and associated pipelines would include direct impacts from habitat removal or habitat exclusion (from fencing of the plant site) of 694 acres. Short-term impacts would be incurred during initial site preparation and would continue until successful revegetation of the pipeline ROW is achieved. Long-term impacts from disturbance of the gas plant facility site (63.5 acres of long-term vegetation removal) would last throughout the operational life of the gas plant. Direct or indirect impacts from project activities could incur short- or long-term changes in species composition, abundance, and distribution.

Direct impacts on plant communities and habitats would be expected to occur along the ROWs for access roads and pipelines. Vegetation would be permanently cleared at the plant site, access roads, and aboveground appurtenant facilities, and temporarily along the pipeline route. Areas along ROWs that would be temporarily impacted by construction activities would be restored in the same manner as other temporarily disturbed project areas. The plant communities that become established on any area disturbed during construction would depend on the restoration practices that are implemented, including the species selected, the species present in adjacent habitats, the degree of disturbance to vegetation and substrates, and the vegetation management practices selected for implementation.

Measures to minimize impacts to vegetation, as well as revegetation measures, are described in the Proposed Action's project design features (see Section 2.1.3). In some areas, restoration may potentially include species that are not locally native or plant communities different from local native communities. Although the replanting of disturbed soils may successfully establish vegetation in some locations (i.e., with a biomass and species richness similar to those of local native communities), the resulting plant community may be quite different from native communities in terms of species composition and representation of particular vegetation types, such as shrubs. The community composition of replanted areas would likely be greatly influenced by the species that are initially seeded, and colonization by species from nearby native communities may be slow. In addition, the planting of non-native species may result in the introduction of those species into nearby natural areas. The establishment of mature native plant communities may require decades, and some community types may never fully recover from disturbance. Successful re-establishment of some habitat types, such as shinnery oak and sand sagebrush communities, may be difficult and may require considerably greater periods of time. Restoration of plant communities in areas with arid climates (e.g., averaging less than 9 inches of annual precipitation) would be especially difficult (Monsen et al. 2004).

Habitats adjacent to the project area may become fragmented or isolated as a result of construction. Biodiversity may subsequently be reduced in fragmented or isolated habitats. The fragmentation of large, high-quality, undisturbed habitats would be considered a greater impact than construction through previously disturbed or fragmented habitat.

The deposition of fugitive dust (including associated salts) generated during clearing and grading activities, the use of access roads, or from wind erosion of exposed soils, could reduce photosynthesis and productivity, increase water loss (Eveling and Bataille 1984) in plants near the project area, and

result in injury to leaves. Considerable amounts of fugitive dust could be generated from the large areas of disturbed soil from trenching and blading associated with construction. Plant community composition could subsequently be altered, resulting in habitat degradation. In addition, pollinator species could be affected by fugitive dust, potentially reducing pollinator populations in the vicinity. Localized impacts on plant populations and communities could occur if seed production in some plant species is reduced.

Cumulative Impacts

Overall, 694 acres of vegetation would be disturbed during the construction of the project. Approximately 60 acres is already disturbed (as noted under past and present actions) within the cumulative area of analysis. As described under reasonably foreseeable future actions, the CFO expects an additional 3.2 acres of disturbance from other pending oil and gas projects in the cumulative area of analysis. Total acreage of cumulative impact would be 697.2 acres. Other ongoing activities that impact vegetation in the cumulative area of analysis are grazing and dispersed recreational use. Cumulatively, these combined actions could result in the loss, and further fragmentation, of native habitat. Provided that revegetation efforts on the cumulative disturbance areas are successful through implementation of the Proposed Action's project design features, as well as implementation of BMPs for other future activities, the overall cumulative impact to vegetation would be low.

Mitigation Measures and Residual Impacts

Measures to minimize impacts to vegetation, as well as revegetation measures, are described in the Proposed Action's project design features (see Section 2.1.3). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed. No additional mitigation measures have been recommended.

3.5 Noxious Weeds and Invasive Species

3.5.1 Affected Environment

Noxious weeds are officially designated as non-native plant species that are invasive and/or can become monocultures and cause harm to land value, native ecology, agricultural interests, wildlife habitat, livestock forage, riparian resources, and aesthetic and visual values of land. The New Mexico Department of Agriculture (NMDA) has adopted a list of 37 species that are classified as noxious weed species (NMDA 2009). Only one listed noxious weed species was observed.

SWCA biologists observed and mapped two populations of African rue during an April 5, 2013 biological survey (Figure 3.1). African rue is a Class B noxious weed, regulated by the State of New Mexico. Class B noxious weeds are "limited to portions of the state. In areas with severe infestations, management should be designed to contain the infestation and stop any further spread" (NMDA 2009).

African rue is native to North Africa and the Mediterranean region. It was introduced into the United States around the 1920s. In New Mexico it was first noticed in the Deming area but is now common near Carlsbad and throughout southern New Mexico. The plant's deep and robust perennial root system is a major obstacle to plant control (McDaniel and Duncan 2006).

African rue is known to contain four poisonous alkaloids and is toxic to cattle, sheep, and horses. The effects on livestock include loss of appetite, trembling, and loss of coordination. Severe poisoning can result in hemorrhaging in the heart and liver. Because of its bad taste and smell the plant is usually avoided by livestock, unless other forages are unavailable. The seeds are the most toxic part of the plant, with leaves somewhat less toxic (McDaniel and Duncan 2006).

The Carlsbad Soil and Water Conservation District (CSWCD) has a program that is an adaptive management strategy utilized at the CFO to reduce noxious weeds. A weed potential rating is determined for projects and that corresponds to the amount of the contribution a company must pay to participate in the program. Once the fee is paid, the CSWCD will work with the BLM or a third-party contractor to treat the project site for the 5 years after the project is complete. By contributing to the program companies can waive the 5-year requirement to maintain a weed free project area. The BLM and its third-party contractor (if used) would in turn agree to notify DCP prior to treatments for worker safety purposes.

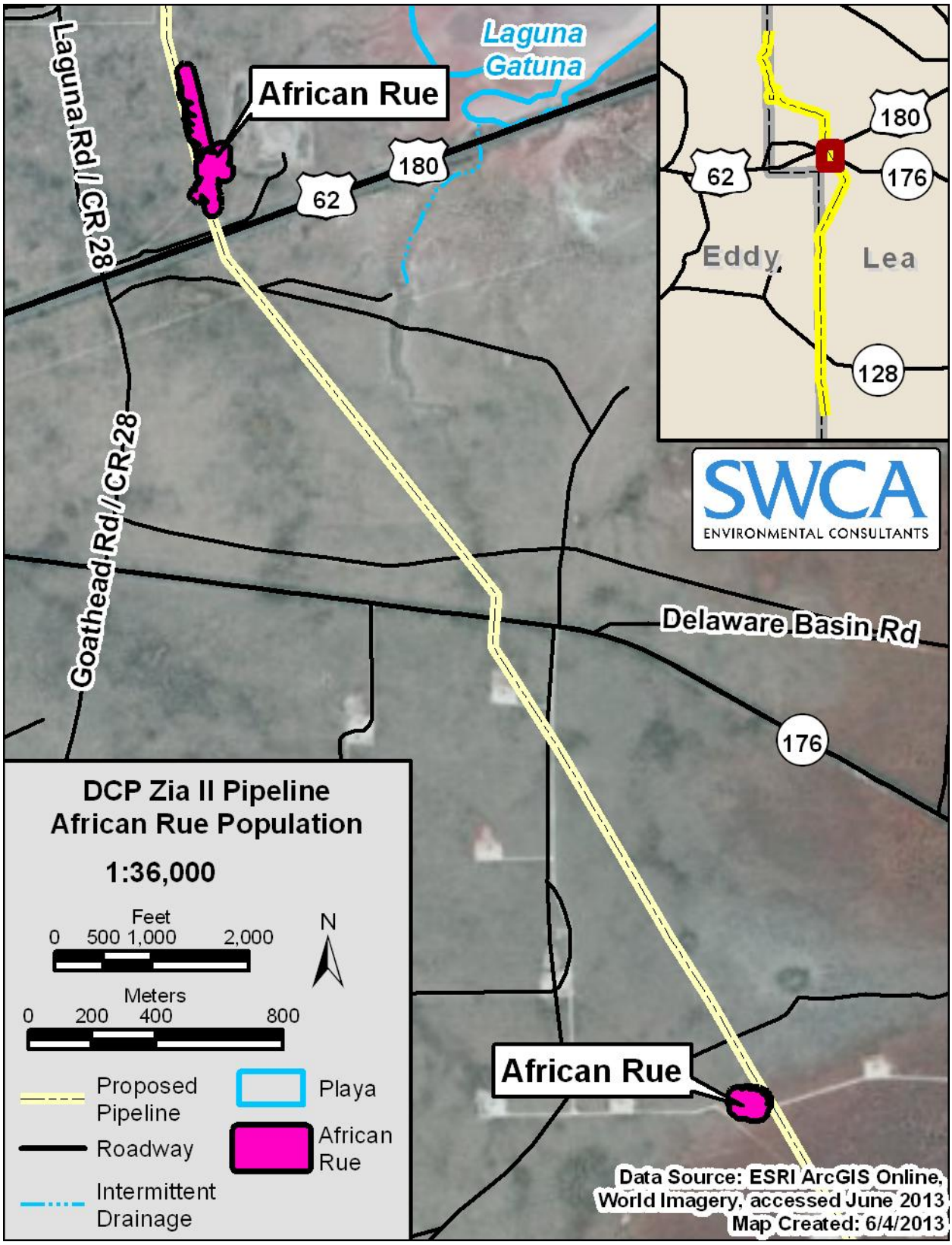

Figure 3.1. Population of African rue within the proposed pipeline ROW.

3.5.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative the ROW would not be granted. Since DCP would not be required to remove and dispose of the two identified populations of African rue, those individuals would potentially germinate and spread. No ground disturbance would take place and the potential indirect impacts described below for the Proposed Action would not occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.5.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Treatment and responsible removal and disposal of the identified African rue population, as described in Section 2.1.3, would create a beneficial and direct project impact, by eliminating the population and potential for those individuals to germinate and spread.

An indirect potential impact could result from the disturbance of soils and removal of vegetation. Invasive species are generally tolerant of disturbed conditions, and disturbed soils at project sites may provide an opportunity for the introduction and establishment of non-native invasive species. Seeds or other propagules of invasive species may be transported to a project site from infested areas by heavy equipment or other vehicles that are used at the site. Invasive species may also spread from established populations near a project site and colonize soils disturbed by project activities. The longer time periods required for the re-establishment of plant communities in arid regions may create an increased potential for the establishment and spread of invasive species. Invasive plant species typically develop high population densities and tend to exclude most other plant species, thereby reducing species diversity and potentially resulting in long-term effects.

Indirect impacts to native vegetation may be possible if encroachment of unmanaged invasive and noxious weed species occurs. The establishment of invasive species may greatly reduce the success of native plant community restoration efforts in project areas and create a source of future colonization and degradation of adjacent undisturbed areas. Project design features meant to control the spread of invasive species would lessen this potential indirect impact (see Section 2.1.3).

African rue favors disturbed and barren areas such as oil pads, roadsides, parking lots, corrals, stockyards, and abandoned crop fields. African rue is currently expanding into rangeland and can dominate pastures, as it is very drought tolerant (McDaniel and Duncan 2006).

Cumulative Impacts

Overall, 694 acres of vegetation would be disturbed during the construction of the project. Approximately 60 acres is already disturbed (as noted under past and present actions) within the cumulative area of analysis. As described under reasonably foreseeable future actions, the CFO expects an additional 3.2 acres of disturbance from other pending oil and gas projects in the cumulative area of analysis. Total acreage of cumulative impact would be 697.2 acres. Other ongoing activities that could contribute to the spread of noxious weeds in the cumulative area of analysis are grazing and dispersed recreational use. Future planned oil and gas development within the project area, together with agricultural practices such as grazing, could increase and/or expand the areas where African rue is present. Implementation of BMPs would minimize this potential spread and the cumulative impact from the pending activities together with the Proposed Action would be low.

Mitigation Measures and Residual Impacts

Measures to minimize or eliminate the spread of noxious weeds are described in the Proposed Action's project design features (see Section 2.1.3). Additionally, DCP would participate in the CSWCD's program

for noxious weeds. A weed potential rating for the Zia II project was completed on September 27, 2013, and it was determined that DCP would contribute a one-time fee of $7,500 to participate (BLM 2013d). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed. No additional mitigation measures have been recommended.

3.6 Wildlife

3.6.1 Affected Environment

General Wildlife

The Chihuahuan Desert Grasslands and Shinnery Sands Ecoregions (Griffith et al. 2006) provide habitat for a variety of wildlife species. The BLM CFO RMPA contains a description of wildlife species that are found within the planning area (BLM 2008a:3-9). The BLM CFO wildlife management objective is to manage habitats on public land for the conservation and rehabilitation of fish, wildlife, and plant resources consistent with multiple use management principles (BLM 2008a).

An SWCA biologist observed habitat utilization by 31 bird species, 11 mammals, and five reptiles during April and May 2013 surveys of the proposed project area, as described in the BE (see Appendix A: Table 2).

A number of big game species have the potential to occur in and around the project area including mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), elk (*Cervus canadensis*), collared peccary (*Peccari tajacu*), and wild turkey (*Meleagris gallopavo*). Small games species could include scaled quail (*Callipepla squamata*), northern bobwhite quail (*Colinus virginianus*), and Montezuma quail (*Cyrtonyx montezumae*). Raccoon (*Procyon lotor*), badger (*Taxidea taxus*), long-tailed weasel (*Mustela frenata*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), ringtail (*Bassariscus astutus*), and bobcat (*Lynx rufus*) also have potential to occur in the project area in a variety of habitats. A number of waterfowl species may also utilize the project area as it is located within the Central Flyway (BLM 2013c)

An abundance of non-game species are also known to occur within the CFO's jurisdiction, including mammals, reptiles, amphibians, raptors, and neotropical migrants not discussed above.

Due to the range of habitats present within the project area, such species are numerous and diverse. Non-game mammals with the potential to occur in the project area include desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), ground squirrels, mice, rats, shrews, and bats. Numerous bat species are also known to occur in or surrounding the project area, including big brown bat (*Eptesicus fuscus pallidus*), California myotis bat (Myotis californicus), western small-footed myotis bat (*M. ciliolabrum melanorhinus*), Mexican free-tailed bat (*Tadarida brasiliensis*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), hoary bat (*Lasiurus cinereus*), eastern red bat (*L. borealis*), pallid bat (*Antrozous pallidus*), and western pipistrelle bat (*Pipistrellus hesperus*) (BLM 2013c).

Various reptiles and amphibians have the potential to occur in the project area, including but not limited to western diamondback rattlesnake (*Crotalus atrox*), coachwhip (*Masticophis flagellum*), desert kingsnake (*Lampropeltis getula*), bull snake (*Pituophis melanoleucus*), Texas horned lizard (*Phrynosoma cornutum*), side-blotched lizard (*Uta stansburana*), checkered whiptail (*Cnemidophorus grahamii*), collared lizard (*Crytaphytus collaris*), ornate box turtle (*Terrapene ornata*), plains leopard frog (*Rana blairi*), Great Plains toad (*Bufo cognatus*), New Mexico spadefoot toad (*Spea multiplicata*), Couch's spadefoot toad (*Scaphiopus couchii*), and tiger salamander (*Ambystoma tigrinum*) (BLM 2013c).

Migratory Birds

EO 13186, dated January 17, 2001, calls for increased efforts to more fully implement the Migratory Bird Treaty Act (MBTA) of 1918. The federal MBTA prohibits the taking, hunting, killing, selling, purchasing, etc., of migratory birds, parts of migratory birds, or their eggs and nests. Most bird species native to North America are covered by the MBTA. All birds observed in the project area are covered by the MBTA

(USFWS 2013b). No active bird nests were observed in or near the project area during surveys in March and April 2013 (see Appendix A for a full list of birds observed during biological surveys).

A variety of raptor species have the potential to occur in the project area, including but not limited to golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*B. jamaicensis*), rough-legged hawk (*B. lagopus*), Harris's hawk (*Parabuteo unicinctus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), western burrowing owl (*Athene cunicularia hypugaea*), great horned owl (*Bubo virginianus*), western screech owl (*Otus kennicotti*), American kestrel (*Falco sparverius*), prairie falcon (*F. mexicanus*), peregrine falcon (*F. peregrinus*), and aplomado falcon (*F. femoralis*). A myriad of neotropical migrants may also be found in the project area varying with vegetation community type (BLM 2013c).

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles are protected under the Bald and Golden Eagle Protection Act and the MBTA. Bald eagles are unlikely to occur in the project area due to the lack of water, trees, and preferred prey. Golden eagles may occur in the project area, especially outside the breeding season when they can perch on utility poles far from cliffs and other rugged terrain (BLM 2013c).

3.6.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to wildlife or migratory birds, because the ROW would not be granted and no ground disturbance or noise related to construction and operations would occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.6.3 Impacts from the Proposed Action

General Wildlife

Construction of the gas plant and pipeline sections would result in approximately 694 acres of surface disturbance or habitat exclusion.

Impacts to wildlife would result from actions that alter wildlife habitats, including changes to habitat and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels and increased human activity). Gas development includes both direct and indirect impacts to wildlife associated with ground disturbances caused by drilling, constructing road networks, installing pipelines, and other associated infrastructure, as well as disturbance associated with ongoing maintenance.

Ground disturbance from construction of the plant facility (69 acres) and pipeline (530 acres) would directly impact a total of 599 acres of habitat in the short-term. Construction of the pipeline would cause short-term impacts by temporarily removing vegetation from the 90-foot-wide ROW. Construction of the gas plant facility area would cause long-term impacts from the permanent removal of vegetation from 63.5 acres for the plant facility and access from Lusk Road. The plant facility would be fenced to restrict access by wildlife. Reclamation of the disturbed pipeline areas would likely return those affected areas to pre-construction herbaceous production within two to three growing seasons. Additional short-term impacts may include displacement of wildlife during construction activities or exposure of wildlife to hazards such as open trenches and project-related vehicle traffic.

Fencing of the 164-acre plant site perimeter would impact wildlife by excluding some species from the fenced off area; however, this perimeter fencing would consist of three-strand barb wire, which is not as restrictive to some wildlife. The BLM has specifications for this outer fence, which are included in the

project design features. The fence is to be 42 inches high with three barbed wire strands, one of which is smooth.

After construction, most species should become acclimated to the operational activity associated with maintenance and operations of the facilities as wildlife typically habituate to and become accustomed to new noise and activity over the long term.

Migratory Birds

Adult migratory birds would not be directly harmed by the Proposed Action because of their mobility and ability to avoid areas of human activity. No nests were observed during surveys in April and May 2013. Any nests within the project area at the time of construction, along with eggs and juveniles, may be directly impacted during construction and removal of vegetation. The primary vegetation within the project area that would be impacted by the Proposed Action would be shinnery oak shrublands and Chihuahuan desert grasslands. Because of the abundance of similar habitat in the surrounding area, the impact to the bird populations that utilize these habitats would be low and short term.

The increased human presence, traffic, noise levels, and dust dispersion during construction and reclamation may indirectly disturb or displace adults from nests and foraging habitats within and surrounding the project area in the short term (approximately 1 year of construction and 1 year of reclamation). Long-term production operations would result in only a slight increase in human activity in the immediate project area.

Cumulative Impacts

Large-scale oil and gas development in the area has caused habitat alteration and fragmentation. Well pad and road density break the available habitat into smaller and smaller pieces, which can lead to displacement and physiological stress in wildlife species. Fragmentation results in indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy in order to avoid disturbed areas or when experiencing alarm due to human presence (traffic, noise, interaction).

Watkins et al. (2007) describes quantitative thresholds of fragmentation impact as moderate, high, and extreme, based on the density of well pads per section and cumulative surface disturbance. Moderate impact is defined as one to four wells and less than 20 acres of disturbance per section. High impact is defined as five to 16 wells and 20 to 80 acres of disturbance per section. Extreme impact is defined as more than 16 wells and greater than 80 acres of disturbance per section. The density of current oil and gas development varies across the project area; however, the existing habitat fragmentation in the project area is considered high.

Overall, 694 acres of wildlife habitat would be disturbed or excluded during the construction of the project. Approximately 60 acres is already disturbed (as noted under past and present actions) within the cumulative area of analysis. As described under reasonably foreseeable future actions, the CFO expects an additional 3.2 acres of disturbance from other pending oil and gas projects in the cumulative area of analysis. Total acreage of cumulative impact would be 697.2 acres. Other ongoing activities that impact habitat and wildlife in the cumulative area of analysis are grazing and dispersed recreational use. Cumulatively, these combined actions could result in the loss, and further fragmentation, of native habitat. Wildlife habitat alteration includes modification of the vegetation type on the disturbed areas and, on a larger scale, habitat fragmentation for some species, along with noise and visual intrusion into the area during various phases of the project. Provided that revegetation efforts on the cumulative disturbance areas are successful through implementation of the Proposed Action's project design features, as well as successful revegetation for other future activities, the overall cumulative impact to wildlife as a result of habitat fragmentation would be low.

Mitigation Measures and Residual Impacts

Measures to minimize impacts to wildlife are described in the Proposed Action's project design features (see Section 2.1.3). Areas impacted during construction would be returned to their pre-disturbance

condition as soon as possible after final construction is completed. No additional mitigation measures have been recommended.

3.7 Special Status Species

3.7.1 Affected Environment

The special status species evaluated in this EA are described in the BE (see Appendix A) and consist of 1) all federally protected (i.e., endangered and threatened) species; 2) additional species listed by the USFWS as candidate and proposed species, and species under review (USFWS 2013a); 3) state listed endangered and threatened species; and 4) BLM sensitive species, some of which are also listed as candidates or are under the review by the USFWS and/or are state listed. The BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. The authority for this policy and guidance is established by the ESA, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act of 1976; and Department of the Interior Manual 235.1.1A.

The species evaluated in this EA are listed in Table 4 and Table 5 of the BE (see Appendix A).

Special Status Plants

The New Mexico Rare Plant Technical Council (1999) lists 28 species as rare for Eddy County and no rare plants in Lea County. Of the 28 species listed, four—Kuenzler's hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*), Sneed's pincushion cactus (*Coryphantha sneedii* var. *sneedii*), Lee's pincushion cactus (*Coryphantha sneedii* var. *leei*), and gypsum wild-buckwheat (*Eriogonum gypsophilum*)—have federal listing by the USFWS (see Appendix A, Table 4). In addition, Wright's marsh thistle (*Cirsium wrightii*), Tharp's blue-star (*Amsonia tharpii*), gypsum wild-buckwheat, and Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*) are New Mexico State listed or BLM sensitive species known to occur in Lea or Eddy Counties (see Appendix A, Table 5). None of these species were observed by the SWCA biologist during the biological survey in April/May 2013. The project area provides potential habitat for one state threatened and BLM sensitive species, Scheer's beehive cactus.

Special Management Species

In total, six federally endangered, three federally threatened species, and two experimental, non-essential populations have the potential to occur in Lea and Eddy Counties (see Appendix A, Table 4). Of those, only the aplomado falcon may occur in the project area. Two of the other species are fish; two more are riparian birds. All of them are unlikely to occur in the project area due to the lack of water. None of the last six species have the potential to occur in the project area based on current distribution and habitat requirements. The aplomado falcon is further evaluated in Section 8.1 of the BE (see Appendix A).

Fifty-five other special status species are possible in Lea and Eddy Counties (see Appendix A, Table 5). Of those, eight species were found to have the potential to occur in the project area and are further evaluated in Section 8.2 of the BE and listed in Table 3.12. The eight species include two reptiles, the DSL, listed as sensitive by the BLM and state endangered, and the Texas horned lizard (*Phrynosoma cornutum*), listed as sensitive by the BLM. Six additional species are birds: ferruginous hawk, burrowing owl, and loggerhead shrike (*Lanius ludovicianus*), listed as sensitive by the BLM; Sprague's pipit (*Anthus spragueii*), a USFWS candidate species; common ground-dove (*Columbina passerina*), a state endangered species; and LPC, a USFWS candidate and BLM sensitive species. Full species lists and species descriptions are included in the BE (see Appendix A).

Table 3.12. Special Management Species with the Potential to Occur in the Project Area

Common Name	Status	Range or Habitat Requirements	Potential for Occurrence in Project Area
Northern aplomado falcon (*Falco femoralis septentrionalis*)	USFWS ENEP State E	Associated with semi-desert grasslands with scattered yuccas, mesquite (*Prosopis* spp.), and cactus. Naturally occurring populations are essentially restricted to the southern tier of New Mexico. The species has also been reintroduced on the Armendaris Ranch in Socorro and Sierra Counties and on lands administered by the BLM, White Sands Missile Range, and the New Mexico State Land Office beginning in 2006.	May occur in the project area. Aplomado falcons occur in open country throughout much of southern New Mexico. Utility poles in or near the proposed route afford hunting perches to raptors.
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* associations often in playas or on bajadas and mountain foothills.	May occur. Open mesquite associations represent suitable habitat for the species within the project area.
Dunes sagebrush lizard (*Sceloporus arenicolus*)	State E BLM Sensitive	A habitat specialist native to the shinnery oak sand dune habitats extending from the San Juan Mesa in northeastern Chaves County, Roosevelt County, and through eastern Eddy and southern Lea Counties. DSLs have an extremely strong affinity for bowl-shaped depressions in active dune complexes referred to as sand dune blowouts. They prefer relatively large blowouts and select microhabitat within a given blowout. Within their geographic range, the presence of the DSL is also associated with composition of the sand; they only occur at sites with relatively coarse sand.	May occur. Shinnery oak sand dune habitat is located throughout the project area.
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	USFWS C BLM Sensitive	Occurs in southeastern New Mexico primarily in shinnery oak or sand sagebrush grasslands. Also occurs in shinnery oak-bluestem habitats dominated by sand bluestem (*Andropogon hallii*), little bluestem (*Schizachyrium scoparium*), sand dropseed, threeawn (*Aristida* spp.), and blue grama.	May occur in the project area, which has extensive area dominated by shinnery oak and sand sagebrush and lies within the estimated LPC distribution (Davis et al. 2008).
Sprague's pipit (*Anthus spragueii*)	USFWS C	Occurs in New Mexico only as a sporadic winter resident. Its distribution in the state is not well known, but includes the lower Pecos River valley, Otero Mesa, and the Animas Valley. It is associated with southern desert grasslands of the state. Species as a whole prefers dry, open grasslands.	May occur in winter in grasslands of the project area.
Common ground-dove (*Columbina passerina pallescens*)	State E	Associated with shrubby riparian habitat or riparian woodland edges. Also occurs in desert scrub dominated by mesquite and pricklypear (*Opuntia* spp.). Feeds exclusively on the ground, in sparsely vegetated areas.	May occur in the project area due to the presence of sparse vegetation including desert scrub.
Ferruginous hawk (*Buteo regalis*)	BLM Sensitive	Occurs year-round in New Mexico. During the breeding season it is present in grasslands, badlands, and along the ecotone between grasslands and piñon-juniper woodlands, especially in the vicinity of prairie dog (*Cynomys* spp.) towns. During the winter, ferruginous hawks are primarily associated with grasslands but may be found in other habitat types such as ponderosa pine (*Pinus ponderosa*) forest. Prairie dogs are important year-round in the diet of New Mexico's ferruginous hawks.	May occur in the project area, which is characterized by open vegetation and has utility poles for perches.

Common Name	Status	Range or Habitat Requirements	Potential for Occurrence in Project Area
Burrowing owl (*Athene cunicularia hypugaea*)	BLM Sensitive	Present mainly during the breeding season in the northern half of the state and present year-round in the southern half. Found in grasslands especially in association with prairie dog colonies, in desert scrub, and in agricultural and semi-urban environments. Depends on prairie dogs, rock squirrels (*Otospermophilus variegatus*), and other fossorial mammals for the availability of burrows.	May occur due to grassland and desert scrub vegetation in the project area.
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state primarily in open country including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur due to open country and grasslands within the project area.
Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*)	State T BLM sensitive	Typically associated with gravelly or silty soil in desert grassland and Chihuahuan desert scrub. May also be found on rocky benches or bajadas on limestone or gypsum; the elevation range of this cactus is 3,300–3,600 feet.	May occur in the project area. Although this cactus was not observed during surveys, there is suitable habitat in the project area.
E = Endangered; T = Threatened; = C = Candidate; ENEP = Experimental, Non-essential Population.			

Habitat

The 2008 Special Status Species RMPA identified the LPC area based on then current population levels and suitability of habitat. The planning area has four designate management areas: the Core Management Area (CMA), the Primary Population Area (PPA), the Sparse and Scattered Population Area (SSPA), and the Isolated Population Area (IPA). Included in the IPA are 17 Habitat Evaluation Areas (HEAs).

Segments of the Proposed Action occur within the Southpaw and Bilbrey LPC HEAs as described in the 2008 Special Status Species RMPA. Seventeen HEAs were established in the RMPA as potential LPC habitat building blocks for expansion of the species. These areas contain a combination of three key components: 1) suitable LPC vegetation habitat, 2) a minimum habitat patch size of 320 acres not affected by fragmentation (development), and/or 3) a history of LPC occupation.

Southern Great Plains Crucial Habitat Assessment Tool

The Western Governors' Association (WGA) Southern Great Plains Crucial Habitat Assessment Tool (SGP CHAT) is the result of phase one of a 3-year WGA Wildlife Council project, led by the Oklahoma Department of Wildlife Conservation and the Kansas Department of Wildlife, Parks and Tourism. The purpose of the project is to model crucial habitat for the LPC throughout its historical range and create an online tool usable by conservation managers, industry, and the public that identifies priority habitat, including connecting corridors that can be used in the early stages of development or conservation planning. The crucial habitat layer displayed in SGP CHAT classifies land by its relative value as LPC habitat, according to WGA-defined categories as described below:

- Category 1 (Irreplaceable): Habitat that is rare or fragile and is essential to achieving and/or maintaining LPC population viability.
- Category 2 (Limiting): Habitat which is limiting to LPC populations or metapopulations. Loss of any of this habitat could result in a significant local or population-level decline in species distribution, abundance, or productivity.
- Category 3 (Significant): Habitat, including wildlife corridors, that contributes significantly to the maintenance of LPC populations or metapopulations. Loss of a significant portion of the habitat or corridor could result in local or population-level declines in species distribution, abundance, or productivity.

- Category 4 (Unknown): Lands likely to have significant value to the LPC, but for which there is insufficient data or a lack of information about the importance of the habitat in meeting conservation objectives.
- Category 5 (Common): Habitat which is relatively common, generally less limiting to LPC populations or metapopulations, and generally better suited for land use conversion.

Note: Surface disturbance associated with the plant footprint is located outside designated SGP CHAT habitat. However, segments of the pipeline occur within Category 2 and 3 type habitats.

The project area lies within the RMPA zoning area established by the BLM. The RMPA zoning area was designated to provide greater protection for LPC and DSL habitat. Criteria have been established by the BLM for installation of new pipelines within the RMPA zoning area, which include BMPs for construction and revegetation and completion of occupancy surveys (BLM 2008a, 2013e).

On April 22, 2013, SWCA biologist Matthew McMillan was on-site with BLM biologist Johnny Chopp and USFWS biologist Ty Allen to identify DSL habitat within the proposed pipeline routes. Adjustments were made to the proposed routes to avoid good and marginal DSL habitat, and these were incorporated into the latest alignment for the proposed pipeline. In addition, see mitigation measures for DSL habitat below.

3.7.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to special status species, because the ROW would not be granted and no ground disturbance or noise related to construction and operations would occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.7.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Short-term impacts to special status species include removal or crushing of existing vegetation and compaction of soils from construction and maintenance traffic and disturbance from noise and human activity.

Potential short-term direct impacts to special status species are the risk of direct mortality of species during construction, and loss or degradation of native habitat and displacement of wildlife species from habitat due to development. Potential short-term indirect impacts to special status species may include disruption or displacement of species from nesting/birthing and foraging areas, other activity patterns due to construction, increased human activity, increased predation on sensitive species due to displacement from their habitat during construction, and other human activities.

Long-term impacts include permanent loss of habitat due to placement of the gas plant facilities and associated fencing and disturbance from noise and human activity associated with operation and maintenance of these facilities. Potential long-term impacts to special status species could include increased risk of direct mortality from vehicle collisions, direct loss or degradation of native habitat and displacement of wildlife species from habitat due to development, and direct mortality of bird species due to the collision threat posed by structures, transmission lines, grounding wires, and guy wires, as well as potential injury or mortality from electrocution.

Potential long-term indirect impacts to special status species could include fragmentation and isolation of connected habitats, including reduced habitat patch size, reduced distance to areas of disturbance, and the potential displacement of wildlife; increases in the potential for harassment of wildlife due to the increased traffic; and displacement of species from habitat areas due to operation, including increased

noise, or location of the project components. See project design features (Section 2.1.3) for operational noise and lighting design plans that would mitigate impacts to LPC from the operations phase of the proposed gas plant facility.

Cumulative Impacts

Overall, 694 acres of wildlife habitat would be disturbed during the construction of the project. Approximately 60 acres is already disturbed (as noted under past and present actions) within the cumulative area of analysis. As described under reasonably foreseeable future actions, the CFO expects an additional 3.2 acres of disturbance from other pending oil and gas projects in the cumulative area of analysis. Total acreage of cumulative impact would be 697.2 acres. Other ongoing activities that impact special status species in the cumulative area of analysis are grazing and dispersed recreational use. Cumulatively, these combined actions could result in the loss, and further fragmentation, of native habitat for the special status species listed above. Cumulatively, the Proposed Action would add to the existing habitat fragmentation for some special status species, along with noise and visual intrusion into the area during various phases of the project.

Mitigation Measures and Residual Impacts

Measures to minimize impacts to special status species are described in the Proposed Action's project design features (see Section 2.1.3). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed. One additional mitigation measure has been recommended:

- The BLM identified one 5.2-acre area of established dunes, which would require dune mitigation. Drift fences constructed from bio-degradable material will be used where designated by BLM monitors for the purpose of sand dune restoration. This measure is anticipated to capture blowing sand in order to aid in the natural dune-building process. This mitigation would beneficially impact any DSL that could be inhabiting the area by re-establishing habitat following pipeline construction.
- In the same area, top-sand will be piled in a mogul structure when construction is finished to simulate dune structures and aid in the recovery of disturbed areas.

3.8 Cultural Resources

3.8.1 Affected Environment

Several federal laws and implementing regulations apply to the evaluation and protection of significant cultural resource properties and preservation of cultural standards. Among the most significant of these laws and regulations are:

- NHPA, Section 106, as amended (16 USC 470, EO 13007);
- National Register of Historic Places (NRHP) (36 CFR 60);
- Protection and Enhancement of the Cultural Environment, 1971 (EO 11593);
- American Indian Religious Freedom Act Amendments of 1978, as amended (42 USC 1996, 43 CFR 7);
- Archeological Resources Protection Act of 1979 (16 USC 470aa-47011, 43 CFR 7); and
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001, 43 CFR 10).

The project area encompasses portions of the Mescalero Plains in southeastern New Mexico, within present day Lea and Eddy Counties. This area is largely covered by eolian sands, eroded from river valley alluvium and redeposited during Quaternary times. Geology underlying the project area and vicinity comes mainly from quaternary colluvium with valley fill and piedmont alluvium and discontinuous eolian deposits. Bedrock levels include Permian sandstone, siltstone, gypsum, dolomite, and limestone (Griffith et al. 2006). Much of this area consists of extensive fields of coppice dunes, which formed beginning in the late nineteenth century by increased desertification resulting from overgrazing and well digging. Occasional lakes and playas, mostly saline, formed in some areas and include Laguna Plata, which is near the project area. Other areas of broken terrain have formed low escarpments, from which springs issued in the past and provided past human inhabitants with surface water and riparian zones with higher

biomass than the surrounding landscape. The Maroon Cliffs are situated in one of these areas of broken terrain and are just west of the project area. Elevations in the project area range from 3,422 feet on the south end of the project area to 3,741 feet at the north end of the project area.

Management of cultural resources on BLM lands is determined by policy directives contained in the CFO RMP, as amended. The BLM makes land use decisions that could limit access or require alterations to the Proposed Action to minimize impacts to cultural resources.

SWCA archaeologists conducted an intensive Class III inventory of the Proposed Action's area of potential effect (APE). SWCA conducted the Class III survey over seven sessions between March and June 2013, in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005) and *Standards for Survey Site Evaluation and Reporting for the CFO* (BLM 2012). The survey was conducted by a four-person crew over a corridor consisting of the segment centerline in transects spaced no more than 50 feet apart. The surveyed area included 1913.6 acres, consisting of the 90-foot ROW, plus 55 feet of additional survey width on either side of the ROW to accommodate changes in the final engineered route, for a total surveyed width of 200 feet.

In total, the Class III inventory investigated 19 cultural properties, including two multi-component sites. The survey relocated eight previously identified sites and discovered 11 new cultural sites within the area of the Proposed Action. Three previously recorded sites were not relocated and have likely been removed by previous construction or erosion or were misplotted by previous investigators. Six previously recorded sites that appeared in records searches to be within the project area were relocated outside it and not updated.

Of the previously recorded sites, three were listed in the NMCRIS database as eligible for inclusion in the NRHP; no changes to these determinations were made based on field visitation. One site has been determined eligible by the BLM CFO and one by the New Mexico State Land Office. Two additional previously recorded sites are recommended eligible to the NRHP based on this field investigation. One previously recorded site has been determined not eligible in previous consultation. Of the newly identified sites, seven were recommended eligible for listing in the NRHP and four are recommended not eligible. In addition, 42 isolated manifestations were also identified; these resources lack additional data potential and are recommended not eligible to the NRHP. Full site descriptions are provided in SWCA's cultural resource inventory report (Carlson et al. 2013).

All NRHP-eligible sites in the project area are recommended eligible under Criterion D, as defined in 36 CFR 60.4: "eligible sites are those cultural properties that have yielded, or may be likely to yield, information important in prehistory or history."

3.8.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to cultural resources, because the ROW would not be granted and no ground disturbance would occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.8.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Direct impacts to a cultural site, if disturbed by construction, would include alterations to the physical integrity of the site. However, of the sites recommended or determined eligible to the NRHP, nine are located outside the proposed construction corridor. These resources would not be impacted by the Proposed Action. Three NRHP-eligible sites (LA 22120, LA 163692, and LA 176305) would be partially

impacted in that a portion of the defined eligible cultural site boundary lies within the area of direct ground disturbance. These sites would not be adversely affected provided the recommended mitigation measures of fencing and construction monitoring are implemented. All three of these sites are located on land managed by the New Mexico State Land Office (SLO), and the SLO has concurred with the proposed mitigation measures (Appendix B).

One NRHP-eligible site (LA 43257) lies squarely within the area of direct ground disturbance. A data recovery plan will be prepared and a Memorandum of Agreement drafted in order to resolve adverse effects to this site.

If a cultural site is significant for other than its scientific information, direct impacts may also include the introduction of audible, atmospheric, or visual elements that are out of character for the cultural site. A potential indirect impact from the Proposed Action is the increase in human activity that could contribute to the unauthorized removal or other alteration to cultural sites in the area.

Cumulative Impacts

There would be no contribution to cumulative impacts to cultural resources from this project, as significant cultural sites are being avoided. A positive cumulative effect of all cultural studies required to be conducted ahead of oil and gas development is the additional scientific information yielded by the consistent archaeological surveys, providing a greater database of information for the cultural record of the area.

Mitigation Measures and Residual Impacts

Mitigation measures would apply to cultural sites recommended eligible for listing in the NRHP that could potentially be adversely impacted by the Proposed Action. Eligibility recommendations and mitigation measures are provided in Table 3.13. The BLM has reviewed the cultural resource report and provided concurrence (BLM 2013f).

Table 3.13. Site Summary, Eligibility, and Mitigation Recommendations

LA No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Recommended Mitigation
22120	Artifact scatter/Middle Archaic (3200–1800 B.C.) and Formative (A.D. 500–1450)	Determined eligible, Criterion D (HPD Log Nos. 35476 and 42937)	Monitoring
29410	Lithic scatter/unspecified prehistoric	Not eligible (not relocated)	None
35708	Feature and artifact scatter/Formative (A.D. 500–1450)	Not eligible (not relocated)	None
43257	Features and artifact scatter/Late Formative (A.D. 1100–1450) and NM Statehood to WWII (A.D. 1915–1930)	Eligible, Criterion D (BLM CFO determination)	Data Recovery
83577	Artifact scatter/unspecified prehistoric	Eligible, Criterion D (SWCA recommendation)	None
89617	Artifact scatter/Formative (A.D. 200–1350)	Determined eligible, D (HPD Log No. 35478)	None
89619	Artifact scatter/Formative to Historic (A.D. 500–1550)	Determined eligible, Criterion D (HPD Log Nos. 35476 and 42937)	None
89672	Artifact scatter/Formative (A.D. 750–1175)	Not eligible (not relocated)	None
130744	Communication line (A.D. 1948–1987)	Determined not eligible (HPD Log No. 89445)	None
153413	Feature with artifact scatter/Formative (A.D. 500–1450)	Eligible, Criterion D (State Land Office determination)	None
163692	Artifact scatter/Formative (A.D. 500–1450)	Eligible, Criterion D (SWCA recommendation)	Monitoring

LA No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Recommended Mitigation
176300	Features with artifact scatter/Late Formative to Post-Formative (A.D. 1100–1500)	Eligible Criterion D	Avoidance
176301	Industrial features with artifact scatters/WWII to Recent (A.D. 1940–1960)	Not eligible	None
176302	Artifact scatter/unspecified prehistoric	Eligible, Criterion D	None
176303	Industrial feature/unspecified historic	Not eligible	None
176304	Artifact scatter/unspecified prehistoric	Not eligible	None
176305	Artifact scatter/Late Formative (A.D. 1100–1450)	Eligible, Criterion D	Monitoring
176306	Feature with artifact scatter/unspecified prehistoric	Eligible, Criterion D	None
176307	Features with artifact scatter/unspecified prehistoric	Eligible, Criterion D	None
176308	Artifact scatter/unspecified prehistoric	Eligible, Criterion D	None
176309	Industrial feature/unspecified historic	Not eligible	None
176310	Feature with artifact scatter/unspecified prehistoric	Eligible, Criterion D	None

3.9 Visual Resources

3.9.1 Affected Environment

The BLM is responsible for managing public lands for multiple uses while ensuring that the scenic values of public lands are considered before authorizing actions on public lands. The BLM accomplishes this through the Visual Resource Management (VRM) system. The VRM system classifies land based on visual appeal, public concern for scenic quality, and visibility from travel routes or observation points. The system is based on the premise that public lands have a variety of visual values, and these values mandate different levels of management. Visual values are identified through the VRM inventory (BLM Manual Section 8410) process that consists of scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four visual resource inventory classes. The visual resource inventory classes are then evaluated with other management considerations and a VRM class is assigned to identify the degree of acceptable visual change (contrast to form, line, color, and texture) within a landscape based on the physical and sociological characteristics: Classes I and II are the most valued, Class III represents a moderate value, and Class IV is of least value.

The proposed plant and pipeline are within VRM Class IV. The objective for VRM Class IV lands is to provide for activities that require major modification of the landscape. The level of change to the landscape can be high, and management activities may dominate the view and be the major focus of attention. For lands with more restrictive VRM classes, the level of change to the landscape is to be lower and activities may not dominate the view of the casual observer.

The project area occurs within two EPA ecoregions, Chihuahuan Desert Grasslands and Shinnery Sands (Griffith et al. 2006). Vegetation on the proposed plant site is primarily sparse grasslands. The landform topography is flat with some ridges and hilltops visible in the distance. Vertical elements in the surrounding landscape include pumpjacks and aboveground tanks associated with the surrounding oil and gas production facilities. Linear features are present in the form of oil and gas access roads and overhead power lines. Colors are tans and browns from the sandy soils, and light greens from the vegetation. The following photographs (Figure 3.2 and Figure 3.3) provide a visual depiction of the representative landscape at the proposed plant site.

Figure 3.2. View from the northeast corner of the gas plant site facing west along Lusk Road. Other area oil and gas infrastructure is viewable to the right (taken March 27, 2013).

Figure 3.3. View from the northwest corner of the proposed plant site facing southeast. The proposed gas plant would be visible from this location. The photograph also shows typical vegetation (taken March 27, 2013).

3.9.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to visual resources, because the ROW would not be granted and the proposed gas plant facility would not be built.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.9.3 Impacts from the Proposed Action

Direct and Indirect Impacts

The area is rural and not a high-use area for recreation. The most frequent viewers would be residents of Lea and Eddy Counties traveling past the plant, and employees actively working in area oil and gas activities. The plant would draw the attention of viewers and the plant would dominate the viewshed, but the duration would be brief as viewers pass by. These users of nearby roads would not be considered to have a high sensitivity to development of the site as the roads are not considered scenic and the plant would be consistent with existing landscape developments. Overall the project would create contrasts to form, line, color, and texture. Form contrasts would come from the structural element of the gas plant and fencing added to the flat landscape. Line contrasts would result from cleared vegetation on the linear pipeline ROW, until reclamation is complete and successful. Color contrasts would come from the disturbance to vegetation, as well as the darker or lighter elements introduced such as paving and facilities. Textural contrast would come from the reflective quality of metallic surfaces on the largely vegetative landscape.

Construction of the pipelines would have short-term direct visual impacts from the removal of existing vegetation. Fugitive dust dispersion during construction and reclamation would create a short-term impact to visibility. A few aboveground facilities would also create a visual impact for the life of operations. The pipeline ROW would disturb primarily grassland vegetation. In some areas, this type of vegetation can recover quickly with successful revegetation treatments. If drought conditions persist, re-establishment of vegetation may take longer than the 2 years previously defined for short-term impacts. Construction of pipelines creates linear features in the landscape and causes contrasts in soil color and changes in vegetation. Soil color contrasts would be eliminated after the ROW is reclaimed and revegetated, but the contrasts caused by the difference in vegetation types between the ROW and the surrounding landscape would be a long-term effect until the disturbed area is revegetated to pre-construction conditions.

Operation of the proposed gas plant would create long-term direct visual impacts for the life of the project. The plant facilities would introduce new vertical and structural elements to the landscape, although the area is already well developed with oil and gas infrastructure. During the operational life of the gas plant, the visual impact would include the facilities, fencing, and nighttime lighting (see project design features for details). To mitigate impacts, the facilities would be painted according to BLM specifications to blend as much as possible with the predominant colors of the existing landscape. Lights would be pointed inward and downward and would primarily be for safety and not to illuminate any unnecessary areas.

The Proposed Action is in compliance with VRM Class IV management objectives as proposed activities would represent a major modification to the landscape and, at close range, would dominate the attention of the casual observer.

Cumulative Impacts

As described under reasonably foreseeable future actions in the introduction to Chapter 3, seven other pending oil and gas projects are proposed in the cumulative area of analysis. Some of these actions would also introduce new visual elements to the landscape in the form of oil and gas facilities, and others would contribute to the presence of linear on-the-ground features from cleared vegetation and disturbed soils associated with ROWs. Total acreage of cumulative impact would be 697.2 acres in the cumulative area of analysis, together with the approximately 60 acres of current disturbance. Implementation of the Proposed Action's project design features, as well as implementation of BMPs for other future activities, would mean that overall cumulative impact to visual resources would be low.

Mitigation Measures and Residual Impacts

Measures to minimize impacts to visual resources, as well as revegetation measures, are described in the Proposed Action's project design features (see Section 2.1.3). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed. No additional mitigation measures have been recommended.

3.10 Livestock Grazing

3.10.1 Affected Environment

Livestock grazing is common in the area of the proposed gas plant and along the extent of the proposed pipeline segments. The most common livestock operations in the project area are cattle and calf operations. The project area coincides with several BLM allotments within the CFO, summarized in Table 3.14. The gas plant and northern and southern sections of pipeline would cross 11 separate BLM grazing allotments. Grazing authorizations vary for each allotment. The term grazing authorization grants BLM permit holders utilization of a certain number of active animal unit months (AUMs) of forage. An AUM is the amount of forage needed to sustain a cow (1,000 lbs) or cow/calf pair for 1 month.

Table 3.14. BLM CFO Allotments on BLM-administered Lands Coinciding with the Project Area

Project Section	Allotment	Allotment Acreage	Permitted Livestock Numbers	Permitted AUMs	Average Carrying Capacity (acres/AUM)
North pipeline	Querecho Plains No. 76008	9,595 (BLM) 320 (private) (Total = 9,915)	115 cattle	1,339	7.40
Gas plant	Twin Wells North No. 77012	82,406 (BLM) 370 (private) 14,590 (state) (Total = 97,366)	1,195 cattle	11,615	8.35
			5 horses	49	
North pipeline	Twin Wells North No. 77012	82,406 (BLM) 370 (private) 14,590 (state) (Total = 97,366)	1195 cattle	11,615	8.35
			5 horses	49	
			5 horses	49	
South pipeline	Laguna Tonto (Salt Lake) No. 76011	36,988 (BLM) 1600 (private) 7071 (state) (Total = 45,659)	620 cattle	6175	7.30
			10 horses	100	
South pipeline	Clayton Basin No. 77013	47,059 (BLM) 790 (private) 5,860 (state) (Total = 53,709)	1,000 cattle	10,200	5.24
South pipeline	Halfway No. 76021	14,346 (BLM) 401 (private) 1,755 (state) (Total = 16,502)	359 cattle	3576	4.56
			4 horses	40	
South pipeline	Bilbry Basin No. 76023	4,947 (BLM) 640 (state) (Total = 5,587)	75 cattle	792	7.05
South pipeline	Antelope Ridge No. 77032	67,000 (BLM) 2068 (private) 8749 (state) (Total = 77,817)	950 cattle	9,576	8.12
South pipeline	SWAG No. 76028	11,327 (BLM) 80 (private) 640 (state) (Total = 12,047)	160 cattle	1,805	6.67

Project Section	Allotment	Allotment Acreage	Permitted Livestock Numbers	Permitted AUMs	Average Carrying Capacity (acres/AUM)
South pipeline	Fairview No. 76038	22,306 (BLM) 1,475 (private) 1,640 (state) (Total = 25,421)	363 cattle	3,703	6.74
			7 horses	71	
South pipeline	Twin Wells No. 77042	37,112 (BLM) 205 (private) 10,468 (state) (Total = 47,785)	710 cattle	6,646	7.19
South pipeline	Phantom Banks No. 77040	53,484 (BLM) 632 (private) (Total = 54,116)	670 cattle	7,477	7.24

3.10.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to livestock grazing, because the ROW would not be granted and no vegetation removal or fencing of available AUMs related to construction and operations would occur.

Cumulative Impacts

No cumulative impacts would be realized as a result of the No Action alternative.

3.10.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Forage removal from the plant and pipeline areas and new fencing restricting livestock from the 164-acre plant site would be the main impact to grazing resources in all 11 allotments affected by the Proposed Action. Construction of the pipeline would temporarily remove or impact vegetation from a 90-foot-wide ROW (which includes 50 feet of disturbance area and 40 feet of temporary use or construction area), and construction and fencing of the gas plant area would cause permanent removal of vegetation from 62 acres and fencing around the entire 164 acres of the plant site, which solely impacts the Twin Wells North allotment. In total there would be approximately 689.5 acres disturbed or excluded across 11 grazing allotments on BLM-administered lands. Table 3.15 shows the temporary and permanent loss of AUMs as related to total acres disturbed or excluded in each allotment.

Table 3.15. Potential Impacts to Grazing Allotments Managed by the BLM CFO

Project Section	Allotment Name and Number	Proposed Surface Disturbance (acres)	Temporary (T) and Permanent (P) AUM Loss
Gas plant	Twin Wells North (77012)	164.0	20.53 (P)
North pipeline	Querecho Plains (76008)	16.5	2.23 (T)
North pipeline	Twin Wells North (77012)	71.8	8.6 (T)
South pipeline	Twin Wells North (77012)	6.2	0.75 (T)
South pipeline	Laguna Tonto (Salt Lake) (76011/77029)	88.3	12.11 (T)
South pipeline	Clayton Basin (77013)	6.2	1.17 (T)
South pipeline	Halfway (76021)	60.1	13.16 (T)
South pipeline	Bilbry Basin (76023)	20.8	2.95 (T)

Project Section	Allotment Name and Number	Proposed Surface Disturbance (acres)	Temporary (T) and Permanent (P) AUM Loss
South pipeline	Antelope Ridge (77032)	136.9	16.86 (T)
South pipeline	Swag (76028)	9.7	1.45 (T)
South pipeline	Fairview (76038)	52.9	7.85 (T)
South pipeline	Twin Wells (77042)	34.3	4.77 (T)
South pipeline	Phantom Banks (77040)	21.8	3.02 (T)
Totals		***689.5****	***95.45***
*Note: Total disturbance is slightly less than total disturbance from the Proposed Action as not every acre of ROW impacts a grazing allotment.			

Reclamation of the disturbed pipeline areas would likely return those affected areas to pre-construction herbaceous production and forage levels within two to three growing seasons.

Additional short-term impacts may include displacement of permitted livestock during construction activities or exposure of livestock to hazards. Movement of livestock may also be temporarily impeded in areas of active construction. After construction, livestock should become acclimated to the plant and pipeline activity associated with maintenance of the facilities. Vehicle traffic associated with the Proposed Action could pose impacts to livestock considering that the area is open range and livestock may be found on roads in the area.

Direct impacts to livestock occur when holes or ditches are not excluded properly. Any type of hole or ditch is potentially a hazard to livestock while grazing. Cow or calf injuries may occur if they fall into a ditch-type cavity or in the process of trying to get out. Cow or calf leg injuries also may occur when any small hole is left uncovered. Livestock can step into the hole and break or injure a leg.

Impacts to livestock may occur when containment of livestock is compromised (e.g., fencing cutting). This could result in injury to livestock or individuals in the event of a vehicular accident. Indirect impacts include extra time required by the permit holder to locate livestock or potential trespass issues for the respective livestock owner if the livestock cross allotment boundaries.

The project has the potential to temporarily impact natural or human-made barriers to livestock movement (fencing/ditches) and range improvements such as watering ponds or water delivery systems (ditches/pipelines) on BLM-administered lands.

Surface disturbance resulting from construction and ongoing maintenance may facilitate the introduction and spread of noxious weeds throughout grazing allotments.

Cumulative Impacts

Overall, 694 acres of vegetation would be disturbed or excluded during the construction of the project. Approximately 60 acres is already disturbed (as noted under past and present actions) within the cumulative area of analysis. As described under reasonably foreseeable future actions, the CFO expects an additional 3.2 acres of disturbance from other pending oil and gas projects in the cumulative area of analysis. Total acreage of cumulative impact would be 697.2 acres. Implementation of the Proposed Action's project design features, as well as implementation of BMPs for other future activities, would mean the cumulative impact to the grazing resources in relation to the availability of forage in the larger surrounding area would be low, because revegetation efforts would restore AUMs in the majority of the cumulative area of analysis.

Mitigation Measures and Residual Impacts

Mitigation measures have been built-in to the Proposed Action and are detailed in Section 2.1.3. No other mitigation has been recommended.

3.11 Social and Economic Conditions

3.11.1 Affected Environment

Introduction

According to the U.S. Census Bureau's American Community Survey estimates, minority populations account for 59.8% of New Mexico's total population (U.S. Census Bureau 2012a). Important state industries include federal government spending, education and health care services, tourism, mining, and oil and gas development (New Mexico Economic Development Department 2013). Excluding federal offshore production areas, New Mexico ranked as the sixth largest producer in crude oil in the United States, typically producing just over 3% of the nation's total output. New Mexico's marketed production of natural gas totaled 5.3% of all U.S. marketed natural gas production in 2011, with less than one-tenth consumed within the state (Energy Information Administration 2013).

The proposed project area is located within the oil and gas-rich Permian Basin in Eddy County, New Mexico, near the Eddy–Lea County line, and 36 miles northeast of Carlsbad.

Population

Population densities in Eddy and Lea Counties are slightly below the New Mexico state average of 17.0 persons per square mile, with 12.9 persons per square mile residing in Eddy County and 14.7 persons per square mile in Lea County (U.S. Census Bureau 2012b, 2012c). The countywide growth rate of Eddy County was 4.2% between 2000 and 2010, a significantly slower rate of growth than the state growth average of 13.2%. The countywide growth rate of Lea County was 16.6%, exceeding the state average. Population projections for Eddy and Lea Counties between 2010 and 2020 anticipate a growth in resident populations for both counties over the next several years (Bureau of Business and Economic Research [BBER] 2012a) (Table 3.16).

Table 3.16. Population Estimates, Projections, and Growth Rates in New Mexico and Counties Impacted by the Proposed Action

Area	2000[1]	2010[2]	2020[3]	Growth Rates[3]		Population Density
				2000–2010	2010–2020	
New Mexico	1,819,046	2,059,179	2,351,724	13.2%	14.2%	17.0
Eddy County	51,658	53,829	57,908	4.2%	7.5%	12.9
Lea County	55,511	64,727	78,407	16.6%	21.1%	14.7

Sources:
1 US Census Bureau, Census 2000 Summary File.
2 US Census Bureau, Census 2010 Summary File.
3 BBER 2012a, 2012b.

Income and Employment

Income

Personal income is defined as the sum of net earnings, property income, and personal current transfer receipts (U.S. Bureau of Economic Analysis 2013). Personal income is regularly used as a barometer for quality of life and economic sufficiency. Per capita income is the total personal income of a region divided by the number of persons residing in that area. Between 2000 and 2010, New Mexico's per capita income rose 69%, while Eddy County's rose by 50% and Lea County's rose by 59% (BBER 2012c). New Mexico's per capita income in 2011 was $34,133, approximately 82% of the national per capita income of $41,560 (BBER 2013). The 2011 per capita personal incomes for Eddy and Lea Counties were $41,539 and $37,898, respectively. The 2011 per capita income for Eddy County is 122% of the New Mexico per capita income and over 99% of the national per capita income. The 2011 per capita income for Lea County is 91% of the national per capita income and 111% of the state per capita income (Table 3.17) (BBER 2012c).

Table 3.17. Per Capita Income in New Mexico State, Eddy and Lea Counties

Area	2000	2010
New Mexico	$22,746	$32,940
Eddy County	$20,594	$40,803
Lea County	$20,299	$34,607
Source: BBER 2012c		

Industry Employment and Wages

The resident civilian labor force in Eddy and Lea Counties are primarily engaged in jobs related to Education Services and Health Care, Agriculture, Mining, Accommodation and Food Services, and Retail Trade (U.S. Census Bureau 2013a, 2013b). The oil and gas industries are a subset of the mining sector and are vital sources of employment for residents of Eddy and Lea Counties. As of the fourth quarter of 2012, the mining sector employed an average of 5,799 persons in Eddy County and 7,696 persons in Lea County (New Mexico Department of Workforce Solutions 2013).

Average weekly wages reported in the fourth quarter of 2012 within the mining sector ranged from $1,422 in Eddy County to $1,427 in Lea County. Wages tend to be higher in the mining economic sector than in the education services and health care, agriculture, accommodation and food services, and retail trade industrial sectors (New Mexico Department of Workforce Solutions 2013).

Unemployment Rates

Unemployment rates in Eddy and Lea Counties are divergent with broader trends in national and statewide unemployment rates. New Mexico has historically maintained a lower rate of unemployment than the nation as a whole; in 2012, the seasonally adjusted unemployment rate for New Mexico was 6.9%, 15% lower than the national unemployment rate of 8.1% (Bureau of Labor Statistics 2013a, 2013b). Primarily the result of the thriving mining sector in the Permian Basin economy, Eddy County boasted a 2012 unemployment rate of 4.1% and Lea County maintained an unemployment rate of 4.3%. These rates are 51% to 53% lower than the national unemployment rate (Table 3.18).

Table 3.18. Unemployment Rates in the United States, New Mexico, and Eddy and Lea Counties, 2002–2012

Area	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	5.8%	6.0%	5.5%	5.1%	4.6%	4.6%	5.8%	9.3%	9.6%	8.9%	8.1%
New Mexico	5.5%	5.9%	5.8%	5.2%	4.1%	3.5%	4.5%	6.8%	7.9%	7.4%	6.9%
Eddy	5.9%	6.0%	5.7%	4.7%	3.5%	2.8%	3.1%	5.3%	5.7%	4.6%	4.1%
Lea	5.4%	5.3%	5.0%	4.1%	3.0%	2.3%	2.9%	7.2%	7.3%	5.2%	4.3%
Source: Bureau of Labor Statistics 2013a, 2013b.											

Fiscal Conditions

The presence and quality of energy infrastructure impacts a county's fiscal status primarily through its impact on the property tax base. Property taxes are based on the assessed value of property and mineral production within a county, and these taxes contribute a substantial portion of the revenue base to New Mexico local governments and schools. New Mexico assesses three types of property: residential, non-residential, and mineral extraction, the latter of which includes ad valorem ("according to value") production and production equipment. All property is taxed at one-third of its assessed value. The New Mexico Department of Taxation and Revenue values pipelines at cost, less depreciation. In tax year 2012, residential property accounted for 57% of the state's net taxable value, non-residential property accounted for 30%, and ad valorem production accounted for 13%. Between 2004 and 2012 net taxable property values in Eddy and Lea Counties increased by 200% and 108%, respectively (Table 3.19). This was primarily due to the 125% value increase of mineral extractions (New Mexico Taxation and Revenue Department 2004; New Mexico Department of Finance and Administration 2012).

Table 3.19. Net Taxable Value in New Mexico and Eddy and Lea Counties (in million dollars)

Area	2004 Tax Year[1]				2012 Tax Year[2]			
	Total	Resi-dential	Non-Resi-dential	Mineral Extraction[3]	Total	Resi-dential	Non-Resi-dential	Mineral Extraction[3]
New Mexico	$34,907	$19,396	$10,834	$4,667	$54,130	$30,701	$16,371	$7,058
Eddy County	$1,967	$299	$434	$1,234	$3,937	$488	$1,111	$1,599
Lea County	$1,697	$234	$329	$1,134	$3,540	$418	$866	$2,256

[1] Source: New Mexico Taxation and Revenue Department 2004.
[2] Source: New Mexico Department of Finance and Administration 2012.
[3] Includes ad valorem production and production equipment.

3.11.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, the ROW would not be granted and the proposed plant and pipeline would not be built. The beneficial direct and indirect impacts to socioeconomics associated with additional employment opportunities and increases in public sector revenues from property taxes or sales tax revenues associated with the Proposed Action would not occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.11.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Socioeconomic impacts from the Proposed Action would primarily derive from the workforce opportunities affiliated with the project and the duration of project activities. DCP estimates that construction of the plant and 50 miles of pipeline would involve an average workforce of between 300 and 500 workers over a 12-month construction period. Therefore, most socioeconomic impacts associated with the Proposed Action would be short term in nature. Once operational, the plant would be staffed 24 hours a day, 7 days a week, 365 days a year, supporting approximately 22 new full-time positions.

Population

The workforce associated with the Proposed Action would be transitory and temporary. It is not expected that this staff would impact existing trends in regional population growth.

Employment and Income

The majority of employment associated with the Proposed Action would be short term. DCP estimates the need for between 300 and 500 laborers over the course of the projected 12-month construction period. The average weekly wage for workers engaged in oil and gas pipeline construction in Eddy and Lea Counties was $1,127 in 2011 (Bureau of Labor Statistics 2013a, 2013b). Once operational, the plant would be staffed 24 hours a day, 7 days a week, 365 days a year. The plant and associated gathering system would support 22 full-time, local, permanent positions for the life of the project.

The Proposed Action would indirectly impact the local economies of Eddy and Lea Counties through purchases of construction-related goods and services through local contractors and providers. Most of these regional benefits would be realized in Carlsbad and/or Hobbs, the nearest sources of relevant service businesses. Those retailers providing consumer goods and services would derive economic benefit from the influx of pipeline construction workers and their local purchases.

Another potential beneficial and indirect impact would be created from the proposed plant's capacity to process natural gas, which is currently being flared. As more producers have the opportunity to sell gas for processing, more area employment opportunities may be created.

Fiscal Conditions

The primary source of public revenues associated with the Proposed Action would be the property taxes associated with the pipeline and the processing plant and an undetermined portion of the natural gas produced would likely be sold within New Mexico and generate sales tax revenues. In New Mexico, the assessed value of a pipeline depends on its property value, which is equal to the original cost less accumulated depreciation less an adjustment for functional or economic obsolescence. Assessors typically use a 30-year depreciation schedule to value pipelines. With approximately 7 miles of new pipeline proposed to be installed in Eddy County and 42 miles of new pipeline for Lea County, both counties crossed by the Proposed Action would see increases to public revenues from property taxes associated with the presence of the pipelines. Eddy County would yield additional property taxes from the processing plant. The Proposed Action is not expected to impact property taxes on natural gas production or production equipment, federal mineral royalties, or severance tax revenues. Eddy and Lea Counties can also expect increases to sales tax revenues during the 12-month construction period.

Cumulative Impacts

Due to the limited duration of the Proposed Action's construction phase (1 year), cumulative effects to local populations, employment, and wages are not anticipated. Cumulative socioeconomic effects are possible, due to the ongoing staffing of the processing plant, but these effects are not quantifiable for the purposes of this analysis.

Mitigation Measures and Residual Impacts

No mitigation measures have been recommended for the Proposed Action.

3.12 Public Health and Safety

3.12.1 Affected Environment

A major priority in land management for the CFO is ensuring health and human safety on its public lands. The BLM's goals are to effectively manage safety hazards and hazardous materials, protect the health and safety of public land uses, protect the natural and environmental resources, minimize future hazardous risks including costs and liabilities, and mitigate physical hazards in compliance with all applicable laws, regulations, and policies. The BLM follows its national, state, and local contingency plans as they apply to emergency responses. These plans are also consistent with federal and state laws and regulations.

The proposed gas plant and pipelines are located in an area with established oil and gas exploration, development, transportation, and processing operations with the accompanying pipelines, drilling rigs, pumpjacks, traffic, and other related activities. During construction of the plant and pipeline physical hazards such as welding equipment, heavy machinery, and deep trenches would be present.

No residential dwellings are located in the vicinity of the proposed gas plant. The closest communities or population centers to the proposed plant are Carlsbad and Hobbs which are located 36 miles southwest of the gas plant and 39 miles east of the gas plant, respectively. Aerial photography shows the nearest residence to both the plant and pipeline is approximately 5.5 miles southeast of the proposed plant site and approximately 1.0 mile from the south segment of the proposed pipeline route. Due to their proximity to construction and operations, oil and gas industry workers would be the most vulnerable to health and safety issues.

A small number of seasonal recreation users (i.e., hunters, and off-highway vehicle riders) may occasionally be in the vicinity of the project area. However, these users are warned about possible hazardous conditions in the project area through posted signs, have no access to the plant site and

limited access to the pipeline during construction, and would be restricted from the gas plant area during operations.

OSHA regulates worker safety under the Occupational Safety and Health Act of 1970. This act requires employers and operators to provide a safe and healthy workplace for employees, and the agency must track and monitor reportable incidents of accidents and injury.

OSHA requires all chemicals stored within the project area during construction and operations must be handled according to label directions for each chemical. All chemicals present within the project area must also have a Material Safety Data Sheet (MSDS) located in a specified central location where it could be accessed during an emergency situation. These MSDSs must be kept up to date and any new chemical added to the project area must have an MSDS added to the existing catalog. All lists of hazardous substances which may be stored within the project area must be updated at a minimum of once per month or more frequently if chemicals are added more often.

The EPA also regulates public health and safety through its Risk Management Program. This program requires facilities using extremely hazardous substances in excess of specified threshold quantities to evaluate typical and worst case scenarios and have emergency response procedures in place to protect the public and the environment.

DCP is committed to operating their facilities in a safe and environmentally sound manner. To achieve this goal, the company has numerous systems and procedures in place ranging from written operating procedures, required internal policies and standards, and compliance audits/inspections and accountability for correcting findings. See the Public Safety heading in Section 2.1.3 for additional information on policies and safeguards.

Hazardous Materials

The EPA, along with state and local government agencies, has numerous laws and policies designed to protect the public including:

- The Resource Conservation and Recovery Act (RCRA), passed in 1976, establishes a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. The EPA regulations define solid wastes as any “discarded materials” subject to a number of exclusions. A “hazardous waste” is a solid waste that 1) is listed by the EPA as a hazardous waste, 2) exhibits any of the characteristics of hazardous wastes (ignitability, corrosivity, reactivity, or toxicity), or 3) is a mixture of solid and hazardous waste. On July 6, 1988, the EPA determined that oil and gas exploration, development, and production wastes would not be regulated as hazardous wastes under the RCRA. A simple rule of thumb was developed to determine whether exploration, development, and production waste is likely to be considered exempt or non-exempt from RCRA regulations. If 1) the waste came from downhole or if 2) the waste was generated by contact with the oil and gas production stream during removal of produced water or other contaminants, the waste is most likely to be considered exempt by the EPA. Typical wastes associated with the Proposed Action include trash, sanitary wastes, produced water, and produced hydrocarbons. Based on the discussion above, these are generally exempt from the RCRA.
- The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), passed in 1980, deals with the release (spillage, leaking, dumping, accumulation, etc.) or threat of a release of hazardous substances into the environment. Despite many oil and gas constituent wastes being exempt from hazardous waste regulations, certain RCRA-exempt contaminants could be subject to regulations as hazardous substances under CERCLA. The NMOCD administers hazardous waste regulations for oil and gas activities in New Mexico.
- All hazardous chemicals, as defined by the EPA Hazardous Substances Reportable Quantities and the Emergency Planning and Community Right to Know Act (EPCRA) list within 40 CFR 302–312 (EPA 2011b), stored at quantities greater than the reportable quantities must be reported as required by the EPCRA regulations. Any release of a hazardous substance above a specified reportable quantity for the hazardous substance must be reported to the EPA.

Hazardous substances planned for use in association with operations of the Zia II plant are gasoline, diesel, lube oil, slop oil, used oil, produced water, triethylene glycol, amine, condensate, natural gas liquids, H_2S, mercaptan, methanol, and propane.

Any spill must be cleaned up immediately based on information that is available in the MSDS. If any spill is of a sufficient quantity to require notification and possible emergency response, the emergency response agency within Lea and Eddy Counties, as well as the NMOCD, must be notified immediately upon discovery of the release. All hazardous substances that are recovered during the cleanup must be handled and disposed of in accordance with available information.

Any emergency response necessary would be based upon information available regarding the specific hazardous associated with the substance and after consultation of DCP Operations Manager and the proper emergency response officials.

3.12.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to public health and safety, because the ROW would not be granted and no construction or operations would occur.

Cumulative Impacts

No cumulative impact would be realized as a result of the No Action alternative.

3.12.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Numerous laws and safeguards are detailed in the Proposed Action design features to protect both workers and the public (see Section 2.1.3). Some potential risk is inherent in any construction project and this could include the potential risk of contamination to soil through improper disposal of waste, leaks from equipment, or accidental releases. A SPRP is included in the POD in order to mitigate the risk of spills and leaks during construction (DCP 2013). There is also potential for releases of hazardous materials from the pipeline and plant facility during operation. Release of H_2Sgas could pose a severe health risk to employees, contractors, and neighboring residences. A Hydrogen Sulfide Contingency Plan would be developed prior to startup of operations.

When significant amounts of chemicals are stored on-site, governmental agencies would be notified as required under the EPCRA. The notification of releases such as natural gas, natural gas liquids, and petroleum outside the facility site is required under CERCLA. All facilities must have informational signs, as directed under 43 CFR 3160.

DCP anticipates using 300 to 500 contractors across the 14-month construction period. This increase in traffic to area roads could pose a hazard to other vehicles and road users. However, area roads are already utilized by oil and gas traffic and users would be accustomed to the type of vehicles necessary for construction. The increase in vehicles would be spread across the project area and drivers would be warned of possible hazards by appropriate signage, and would be expected to follow all rules of the road. This impact to area roads would be short term for construction of the plant and pipelines, and would lessen considerably during the operations phase of the plant (see details under Operations Phase, Section 2.1.2).

Cumulative Impacts

No cumulative impacts to public health and safety are expected. Operators of other nearby oil and gas facilities would be made aware of the construction and location of the proposed pipeline and plant.

Mitigation Measures and Residual Impacts

Measures to protect the public's health and safety would be implemented as described in the Proposed Action's project design features (see Section 2.1.3). No additional mitigation measures have been recommended.

4 SUPPORTING INFORMATION

4.1 List of Preparers

The following individuals contributed to or reviewed portions of this EA.

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4.2 References

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APPENDIX A BIOLOGICAL EVALUATION

APPENDIX B NEW MEXICO STATE LAND OFFICE CONCURRENCE LETTER